

FOOD INSECURITY IN IRAQ MEASUREMENT AND DETERMINANTS FOR DURATION (2004-2020)

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Abstract

The problem of food insecurity is one of the problems that attract the attention of international societies and organizations. The study and analysis of food insecurity indicators and the statement of the most important determinants of achieving food security locally are important in economic studies. The research aimed to calculate the quantitative measures that depend on determining the level of food insecurity in Iraq for the period From 2004-2020, the research showed that the level of undernourishment as a quantitative indicator for measuring food security through the number of undernourished people in Iraq was on the rise during the period (2004-2020), reaching (5.9) million people in the year (2004), While it reached (14.7) million people in (2020), as for the hunger index, it showed a fluctuation in its rates from (22.42) in (2005) as a minimum and a highest level (27.13) in (2014), which puts the levels of food insecurity in Iraq within the semi-dangerous level Which requires concerted government efforts to reduce food insecurity, through coordination between economic policies to ensure employment, more social justice, redistribution policy, social transfers, support for the poorest groups, and the adoption of a short-term policy through Dr. Supporting the poor groups and a long-term policy by guaranteeing health services, education and increasing job opportunities, which supports individuals obtaining greater opportunities for self-reliance in providing their daily needs.

The Introduction

The problem of food insecurity is one of the problems that many countries of the world suffer from, at different levels and with various determinants. The level of countries' suffering from this problem may differ from one country to another and from time to time. There are many quantitative measures of food insecurity that are used globally and which are used to measure that problem. To provide food requirements and enable community members to obtain their requirements to live a healthy life, the stability of the food market and the safety of available food, and the undernourishment index, the hunger index (GHI) and the general food security index (GFSI) are among the most important indicators of food security, which indicate that individuals who were unable to obtain the necessary quantities of Food shows indicators used to calculate these indicators.

Economic systems, despite the different economic systems in countries, consider the problem of food insecurity and reduce its effects as one of its priorities. With the aim of achieving economic and political stability and achieving and raising the level of well-being for its people. The determinants of food security differ from one country to another, as well as the economic

tools that are available to the economic policy maker, according to the nature of the economic system in that country, its level of development, and the availability of economic resources in it. And that Iraq is one of the countries that have moved towards an open economy, in which the economic policy maker still has the possibility of influencing the reality of food security through some economic policy tools.

The research gains its importance through the importance of achieving food security in Iraq, and the great role it plays in achieving economic development. Because Iraq is one of the countries that suffer from food insecurity rates that exceed many countries in the world, despite the availability of the natural and human resources necessary to achieve acceptable levels of decent life and economic well-being commensurate with the various economic resources available in that country.

Research problem: Despite the economic resources that Iraq possesses, large proportions of Iraqi society members still suffer from food insecurity. Perhaps this is due to the lack of success of the economic policies used in achieving its objectives, and thus the increase in the food gap on the one hand, and the inability of the economic openness policy to reduce the proportions of those who suffer from food insecurity, and the problem of not achieving food security becomes a long-term problem that requires the concerted solution of all individuals and institutions of society. To raise the real standard of living. This is so that food can be secured in accordance with recognized scientific and health standards for every member of society, especially the poor groups.

Research hypothesis: The research is based on a set of hypotheses:

- 1- There is a high percentage of individuals suffering from food insecurity due to the failure of economic policies and the economic and security reality.
- 2- Some economic policies did not play their role because of the structural imbalances in those policies or because of the lack of planning for them and supervising their implementation according to sound foundations that guarantee them the realization of their roles.
- 3- The determinants of food security play a role in disrupting the work of economic policies in reducing food security indicators.

Research objective:: The research aims to study and analyze the most important determinants of Iraqi food security and measure food security indicators for the period 2004-2020, and measure the impact of the main and secondary economic factors affecting food security indicators and determine the role played by each of these factors, in addition to explaining the role of policies economy to improve food security.

Research Methodology: To achieve the objectives of the research and prove the hypothesis, the researcher adopted the method of mixing the descriptive analytical approach to clarify the theoretical framework for each of the tools of economic policy and food security in Iraq and the inductive approach using the analytical relationship between economic variables and the problem of food security.

Research Structure: The research was divided into two axes. The first axis dealt with the theoretical framework of food security and the indicators and factors determining food security, while the second axis dealt with measuring and analyzing food security in Iraq for the period (2004-2020) through internationally approved quantitative measures.

The first axis: the concept and determinants of food security:

The world is facing at the present time four problems that haunt humanity in its present and

future, and they are as put forward by international organizations (the problem of food, inflation, population and the environment), and therefore the issue of food security is a strategic issue that requires giving it great importance and making it a priority. World Agriculture (FAO) in Rome a year after the global food crisis in 1972 made recommendations in this regard (the need for the international community to adopt the goal of eliminating hunger and malnutrition that afflicted millions within ten years), and this crisis still affects several countries, especially developing countries.

1-1- The concept of food security: The World Bank defined food security as “the possibility for all people at all times to obtain adequate food necessary for their activity and health, and food security for a country is achieved when all citizens are able to obtain adequate food at all times and even in times of crisis and even in times of deterioration in domestic production and international market conditions” [18] and in a report by the World Bank (poverty and hunger) in (1986) a distinction was made between two cases of food insecurity. The first: the state of chronic food insecurity, which is linked to the persistence of structural problems of the economy, poverty and low incomes. The second: the state of temporary food insecurity, which includes periods of intense pressure, which are represented by natural disasters, financial crises, and ethnic conflicts, in addition to other factors.

1-2- Elements of food security: In order for countries and international organizations to be able to provide food for individuals, there must be components or elements of food security that must be available as a whole to lead to achieving it, and the elements of food security are as follows[2]:

1- Abundance: It means the presence of a sufficient amount of raw materials and production involved in the food industry, and the possibility of compensating for the shortfall in them through import, which requires the provision of funds of its own, or through foodstuffs from countries and international organizations, which can be obtained on a constant and continuous basis.

2- Stability: There is no benefit in providing food security or providing foodstuffs for a period of time, but it must be continuous and regular. Food security cannot be achieved. In addition to continuity, there must be an optimal use of resources and foodstuffs, and measures must be taken appropriate in order to preserve it from damage such as proper storage.

3- A healthy diet: Countries must ensure that the diet is a healthy system that builds a healthy body free from diseases and defects, i.e. ensuring food safety and suitability for human consumption at all times, and food or industrial food crops must be available in it. All environmental and health conditions, and that this does not affect the environment.

4- Access to food: the ability of individuals to obtain food continuously and adequately according to a nutritious diet and within the available capabilities, as the possibility of obtaining food is determined by the income of families, the prices of food commodities, and the amount of support and social transfers that families enjoy, as it must That the prices of commodities and food products be within the material capabilities of individuals, in a way that ensures the diversity of the diet. [9]

3- Dimensions of food security: Food insecurity includes a number of dimensions related to the concept of food insecurity, most notably the following:

First - the demographic dimension: the population of the least developed countries has witnessed a remarkable acceleration on the one hand, and on the other hand, the quantitative increase of the population has been accompanied by rural migration to cities within the same country or between labor-seeking countries to a significant increase in the population of cities and the deprivation of

the agricultural sector in these areas. This means that the effect of the demographic dimension with a qualitative increase or a quantitative increase has an unlimited impact on food security[17]. Second - the economic dimension: the dependence of developing countries to achieve their food security through imports as a result of the failure of their policies and exposes them to permanent food dependence, which means an increase in the balance of payments deficit. Also, dependence on imports exposes countries to the risk of rising prices of food commodities as a result of their rise in global markets, and thus The local currency loses its purchasing value, as happened in many countries, and the deficit of the balance of payments of those countries and the loss of their currencies of their purchasing value, as well as their exposure to obstruction of the process of development and development resulting from the tendency of countries to abandon development projects in return for providing the necessary food for members of society. [5]

Third - the cultural dimension: the cultural dimension does not require a political decision or an enforceable order because the issue here is largely related to the type of individual's beliefs and the implications of those beliefs in the context of the land and its work and the value of agricultural work. Which the people had to participate in, that is, the right of individuals to obtain food, and to ensure that individuals' need for food is not exploited [17].

Fourth - The political dimension: This dimension is no less important than the economic dimension, since the political variable plays a major role at the international level, and the dependence of countries on the outside in providing their food constitutes a source of danger to the present and future of these economies, as the country becomes vulnerable to international pressures exerted by countries that It owns the production and export of food, and it is mostly developed countries that have bargaining power, influence, and influence in international decisions to force countries to implement their will.

1-4- Determinants of Food Security: Studies have shown that both poverty and hunger are the result of mismanagement of resources and capabilities, as efforts must be made to ensure that everyone has access to adequate food by raising the level of production and productivity in the agricultural sector through sustainable agricultural development, and adopting An agricultural policy that is consistent with other economic policies to ensure breaking the cycle of inherited malnutrition by relying on overcoming the restrictions that restrict the achievement of this goal [4]. Population growth rate and urban expansion versus rural shrinkage, lack of specialization in agricultural labor, lack of management and organization of labor in the agricultural sector, as well as structural distortions of the agricultural sector, as well as external factors that are related to the government's dealings with abroad in the field of trade exchange in order to provide food, which is affected by the availability The surplus of food in the international markets, the degree of price stability of food commodities in those markets, and the extent of the availability of foreign exchange that can be obtained from Through the surplus of exports as well as the nature of the global food market, as a few developed countries have the largest share in grain exports, which makes food commodities linked to fluctuations in those countries, which constitutes a negative impact on the sustainability of food provision Among the most important factors affecting food security[8]:

First: the demographic factor, represented by the following: _

-Movement from the countryside to the city: the migration of the population from the countryside to the cities within the country leads to an increase in the number of the population in the cities and a decrease in the population in the countryside, and thus a shortage of labor in agriculture

and its negative impact on the decline in agricultural production. In addition to changing food consumption patterns [7], as studies have shown that the average per capita consumption in cities is more quantitative and qualitative than in the countryside, due to simulation of consumption patterns and availability of food as well as the improvement of the standard of living and the impact of the imported consumption pattern and the reason for the concentration of population. And the desire for the best, most quality, and variety [1], [10].

2- Population growth: The growth in the population is one of the main factors in increasing the demand for food, as there is a direct relationship between the growth of the population and the rate of demand for food in the event that other factors are constant, as the increase in the number of population in developing countries leads to a rise in The level of dependency of the population, the high level of unemployment, the low level of health, urban growth [20].

Second - Agricultural economic policy: Adopting an agricultural policy and adopting its tools depends on the institutional structure and the extent of economic development, as there is a group of countries that follow the directed economic system and others that operate under an economic climate that operates according to the market mechanism, and even at the level of these systems there is a difference in the extent of economic development. There was a variation in the interpretation of determining sovereignty and the level of food security required and providing it depending on the available resources and the ability of the executive agencies to implement economic policies efficiently that contribute to achieving their goals [13].

Third - Poverty and inequality: There is a general trend of increasing incomes for the more developed countries and a decline in the share of low-income countries, as the developed countries received (67%) of the total income at the global level, while the percentage of the population reached (18%) of the total population at the global level. the world . [19]. Poverty and lack of justice in the distribution of income is one of the most important causes of food insecurity in many countries of the world.

Fourth - The deterioration of the supply of agricultural commodities: There are several reasons that led to the decline in agricultural production, especially in the least developed countries, such as the narrow agricultural area and the low production and productivity of agricultural resources, as most of the countries with limited productivity did not succeed in providing the necessary investments to establish pioneering agricultural projects that raise productivity and achieve agricultural development. . In addition to the low level of support provided to the agricultural sector and the weak use of modern technologies in agricultural production, which led to an imbalance between human and agricultural resources, as well as climate changes and the resulting droughts or low amounts of rain in some countries, of which Iraq is one or The sinking of other parts and the rise in sea levels due to climate change, or the rise in temperatures and climate changes, as the percentage of decline in grain production is estimated at about (20%) in Canada and Australia, which is the reason for the lack of production and the desire to limit exports of agricultural products [16] .

Fifth - political instability: political and security stability has a great impact on achieving agricultural development and the ability of the government and its institutions to provide appropriate conditions for producers in order to carry out agricultural development activities, in addition to the depletion of wars and conflicts of financial resources and the stopping of major projects and the destruction of infrastructure in a way that enhances poverty and food insecurity , Reducing investment in the agricultural sector and reducing financial returns for governments,

which affects reducing the possibility of social transfers and government support and reducing the rate of food availability. and preventing producers, intermediaries, and consumers from accessing markets [6]. Undernourishment is the most indicative indicator of the spread of hunger in Arab countries. It is clear from table (1_1) the lack of food at the level of the Arab world, as countries are classified into two groups, group (A) countries that witness conflicts and group (B) countries that do not witness conflicts, as the data shows that undernourishment in group (B) ranges between (5 -8% between (2007-2019) and despite the decrease in the rate of undernourishment, it is much higher than the global level, as it reached (2.5%). As for the countries of the group that are experiencing conflicts (A), the rate of undernourishment reached (24-30%) For the same period, which shows the impact of wars and conflicts in exacerbating poverty and food insecurity rates.

Table (1-1) Prevalence of undernourishment in the Arab region and sub-classifications for the periods 2007/2009-2017/2019

19-2017	18-2016	-2015 17	16-2014	-2013 15	13-2011	11-2009	-2007 09	
12.2	12.2	12.1	11.7	11.9	12.7	13.1	13.7	Total Arab countries %
25.2	25.0	24.7	24.1	24.0	25.2	25.6	26.7	Countries in Conflict (a) (%)
5.2	5.3	5.2	5.1	5.3	5.8	6.1	6.4	Non-Conflict Countries (B) (%)

Source: 2020, FAO.stats,

* Notes / a. Iraq, Libya, Somalia, Sudan, Syria and Yemen, b. Algeria, Bahrain, Comoros, Djibouti, Egypt, Jordan, Kuwait, Lebanon, Mauritania, Morocco, Oman, Palestine, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates.

The second axis: Measuring food security in Iraq: Food security is linked to many indicators and economic criteria, including.

1- The percentage of self-sufficiency: the general meaning of self-sufficiency is that each country must rely on its own resources to produce the food requirements of its population. [3].

2- The food gap: The food gap refers to the difference between the amount of domestic production of food commodities and the quantity imported from abroad to meet the population's needs for daily food, in accordance with recognized international standards of calories and proteins. The food gap is a complex and complex problem that overlaps. Political and economic factors are internal and external and are affected by two main factors, namely [3]:

1- Increasing domestic production of food commodities leads to a shrinking of the food gap, and vice versa

2- Increasing the rationalization of the basic needs of food commodities, leading to a reduction in the size of the food gap.

The size of the food gap is measured as follows:

$$\text{Food gap size} = \text{production} - \text{consumption}$$

3- Food dependency: It is one of the important indicators that show whether or not food security is available in a country, and it is closely related to economic dependence. Food, the extent of geographical concentration of imported food sources, the ratio of total payments related to food imports to the proceeds of visible and invisible exports from the balance of payments of the country under study, the extent of reliance on foreign loans and grants to finance the country's food imports, and the extent of the country's ability to face the suspension of food imports, for reasons Military or political, in terms of the ratio of strategic stocks of food commodities to total food needs, for example, and the ratio of foreign exchange reserves to total payments for food imports.

Food dependency is measured by making a comparison between imports and exports of food commodities and preparing a balance for them, as the value of food imports must not exceed (10%) of the value of total exports so that the country does not fall into food dependency, but if the proportion of food imports exceeds (10-20%) This indicates the existence of an imbalance in the trade balance whose causes must be addressed, but if it exceeds the percentage (30%), the country falls under food dependence on total exports in [3].

1-2 Measuring food insecurity: The set of quantitative measures is used to measure and determine the level of food security as undernourishment is part of the set of food security indicators developed by the (FAO), which was the mainstay of the annual reports on the state of food insecurity related to the four pillars of food security (Food availability, accessibility, utilization and stability) and (FAO) aims to make the information base related to food security unified all over the world by measuring levels of food security, and benefiting from it in policy-making, as it provides a comprehensive view of the state of food security in a relatively specific manner. Easy to understand and one of the most important measures of food security. [14].

1: Undernourishment prevalence scale: Undernourishment is one of the indicators that are inferred in monitoring levels of food security, as the undernourishment indicator is related to the availability of food and the possibility of obtaining and using it, as undernourishment represents the percentage of the population that does not receive sufficient quantity and type of food. Food at the right time and appropriate methods to ensure the practice of normal life, and the problem of undernutrition lies in the poor distribution of food, lack of purchasing power, and the safety and quality of food and water, in a way that guarantees the safety of the consumer and reduces his exposure to diseases (food is free from food contamination of food and water such as bacterial contamination, viruses and pollutants chemical) [11], and undernourishment depends on the amount of food diversity and potable water that he gets, as an adult needs (2800-3200) calories (kcal), which is a composite indicator of malnutrition problems From lack of food, wasting and stunting in children, anemia in women, and the constant instability in areas suffering from conflicts, as well as the climatic conditions that some countries of the world suffer from.

Undernourishment in Iraq (Pun): Iraq witnessed a continuous rise in the number of people suffering from undernourishment, as it reached a minimum of (5.9) million people suffering from undernourishment in the year (2004), while it reached its highest level in (2020), as the number of undernourished people reached (14.7) million, with a growth rate of (149%) between the period (2004-2020).

As the number of people suffering from undernourishment reached (6.3) million people in the

year (2005), meaning that (23.8%) of the population suffers from undernourishment, while the year (2010) witnessed a growth in the number of people suffering from undernourishment at a rate of change of (14% compared to the previous year, as the percentage of the population suffering from undernourishment reached (27.9%) of the total population, and the number of people suffering from undernourishment reached (8.1) million, while the number of people suffering from undernourishment reached (12.6) million people in the year (2015), i.e. a rate of change of (3%) compared to the previous year, and by (36.8%) of the population, while the highest level of the number of people suffering from undernourishment reached in (2020), as it reached (14.7) million people, i.e. (37.5) of the total population, as shown in Table (2-12), and poverty is one of the main causes of undernutrition, as (22.5%) of Iraqis still live below the national poverty line of (105) thousand Dinars, that is, about (84) dollars per month, and the poverty rate is high in rural areas, as this poverty in the countryside exceeds (60%) of the population, in addition to the high rates of poverty due to economic and social unrest and pain Intention, as the events of (ISIS) contributed to an increase in poverty rates in the affected governorates by more than (40%), and an increase in the percentage of the population at risk of food insecurity to about (53%) of the total population [14].

Table (2-1) People who suffer from undernourishment in Iraq for the period (2004-2020).

%The ratio	Annual rate of change %	Number of people (million)	the years
23.1	---	5.9	2004
23.8	6.78	6.3	2005
23.8	1.59	6.4	2006
25.1	7.81	6.9	2007
25.7	4.35	7.2	2008
24.9	(1.39)	7.1	2009
27.9	14.08	8.1	2010
31.6	16.05	9.4	2011
36.7	20.21	11.3	2012
37.1	4.42	11.8	2013
36.7	3.39	12.2	2014
36.8	3.28	12.6	2015
37.8	6.35	13.4	2016
38.4	5.22	14.1	2017
37.9	0.71	14.2	2018
37.4	1.41	14.4	2019
37.5	2.08	14.7	2020

[Fao.org/faostat/ar:2021](https://faostat.fao.org/)



Figure (1-2) Indicator of undernourishment in Iraq for the period (2004-2020).

Source: from the researcher's work based on Table (1-2).

2-2- The Global Hunger Index (GHI): It is a tool for comprehensively measuring food insecurity at the global and national levels. This indicator was approved by the International Food Policy Research Institute (IFPRI) in 2006. This indicator was developed to be used in determining The availability of food security and the extent to which sustainable development goals related to the eradication of hunger are achieved. This indicator is determined annually. The global hunger index is one of the tools for measuring and defining the phenomenon of food insecurity (hunger) at the global, regional and local levels, and assessing the level of efforts made to address food insecurity, as This indicator is based on defining values for undernutrition (%), under-five mortality, and wasting and stunting for children under five (%).

Formula for calculating the Global Hunger Index (GHI)

The degree of food insecurity according to this scale is obtained through three steps: [12]

First: Determining the values of the four indicators through the available data for the country, namely:

The proportion of the population that is undernourished. (Pun).

Percentage of children under 5 who are wasted (low weight-for-height) (CWA)

Percentage of children under five who are stunted (short stature for age) (CST).

4- Proportion of children dying before the age of five. (CM)

Second: Unifying the indicators through the ratio of each indicator through the data and the global standard values for it

$$PUN = PUN/80 * 100$$

$$CWA = CWA/30 * 100$$

$$CST = CST/70 * 100$$

$$CM = CM/35*100$$

Third: The standard ratios for each indicator are collected in order to calculate the level of food insecurity (the Global Hunger Index (CHI)), as undernutrition of the population and mortality of children under the age of five contribute to two-thirds of the degree, while wasting and stunting contribute to one-third of the degree according to the following formula:

$$3/1 * CHI = (Pun * 1/3) + (CWA * 1/6) + (CST * + 1/6) + (CM$$

These criteria result in the score of the Global Hunger Index (CHI), and the score is between (0-100), as (0) is the best value, as undernutrition and child mortality, as well as the prevalence of wasting and stunting, while the score (100) represents the maximum level of low security food. From (0-100), since the best percentage is (9.9%) or less, and food insecurity (hunger index is low).

(9.9%) Low.

(10-19.9) average.

(20-34.9) dangerous.

(35-49.9) worrying.

(50-100) Very disturbing.

The World Health Organization has identified the most important reasons that contribute to the high rates of food insecurity in the low income level of families and the high rates of poverty, as children are born to poor families with less resistance to diseases and living conditions that contribute to a decline in their intellectual abilities, in addition to the contribution of wars and conflicts to a decline in food security rates as well. Corruption rates in government institutions and poor implementation of health and nutrition programs contribute to this. In addition to the economic crises, environmental conditions, and climate fluctuations in the decline in food availability rates (2020, Klaus rou.), and through table (2-2) that shows the levels of food insecurity, we put Iraq within the low risk levels that are (20%-34.9%)), as the food insecurity rate reached between (22.23%), the lowest level in (2019), and (27.13%), the highest level in (2014).

The hunger index in Iraq reached (22.42) in the year (2005), i.e. a decrease of (-5.97%) compared to the previous year, and with the increasing number of people suffering from undernourishment, which represents the lack of food supply and its diversity and the quality and safety of the diet in the country The global hunger index increased in the year (2010) at an annual rate of change of (5.26%), as the hunger index reached (24.08), and with the continued rise in the percentage of undernutrition and wasting, which is one of the indicators of undernutrition, and a reflection of the unfair distribution of food, the hunger index increased in (2014) to reach (27.13), which is the highest level during the study period, then it decreased in subsequent years as it reached its lowest level in (2019), when it reached (22.23), i.e. an annual rate of change of (8.53-%), which indicates the achievement of fairness In distribution, as well as the role of measures aimed at eliminating poverty and hunger as the most important goals of sustainable development, as well as the role of transformational expenditures in reducing hunger indicators.

Table (2-2) The hunger index scale in Iraq for the period (2004-2020).

Annual Rate of Change %	Hunger Index	Wasting standard value	Standard value for dwarfism	Mortality standard value	Standard value of undernourishment	Emacia %tion	dwarf %ism	death %	Malnutrition %	Years
-	23.84	23.00	38.29	12.00	28.88	6.9	26.8	4.2	23.1	2004

5.9) (7	22.4 2	14.00	37.57	11.71	29.75	4.2	26.3	4.1	23.8	200 5
0.53	22.5 4	16.00	36.86	11.43	29.75	4.3	25.8	4.0	23.8	200 6
0.11	22.5 6	14.33	36.00	11.14	31.38	5.8	25.2	3.9	25.1	200 7
3.32	23.3 1	19.33	34.57	10.86	32.13	6.3	24.2	3.8	25.7	200 8
1.8) (7	22.8 8	21.00	32.86	10.57	31.13	6.9	23.0	3.7	24.9	200 9
5.26	24.0 8	23.00	31.14	10.29	34.88	7.1	21.8	3.6	27.9	201 0
5.28	25.3 5	23.67	29.43	10.00	39.50	6.5	20.6	3.5	31.6	201 1
5.38	26.7 1	21.67	27.43	9.71	45.88	6.9	19.2	3.4	36.7	201 2
0.03	26.7 2	23.00	25.71	9.43	46.38	5.8	18.0	3.3	37.1	201 3
1.54	27.1 3	28.33	24.43	9.14	45.88	7.4	17.1	3.2	36.7	201 4
3.9) (4	26.0 6	24.67	23.14	8.29	46.00	7.8	16.2	2.9	36.8	201 5
1.26	26.3 9	26.00	21.86	8.00	47.25	7.8	15.3	2.8	37.8	201 6
3.3) (8	25.5 0	21.00	20.57	7.71	48.00	6.3	14.4	2.7	38.4	201 7
4.6) (8	24.3 1	18.67	17.57	7.43	47.38	5.6	12.3	2.6	37.9	201 8
8.5) (3	22.2 3	8.33	17.86	6.86	46.75	2.5	12.5	2.4	37.4	201 9
0.90	22.4 3	10.00	16.57	7.14	46.88	3.0	11.6	2.5	37.5	202 0

Source: The table is the work of the researcher based on the data of the World Bank and the Organization (FAO).

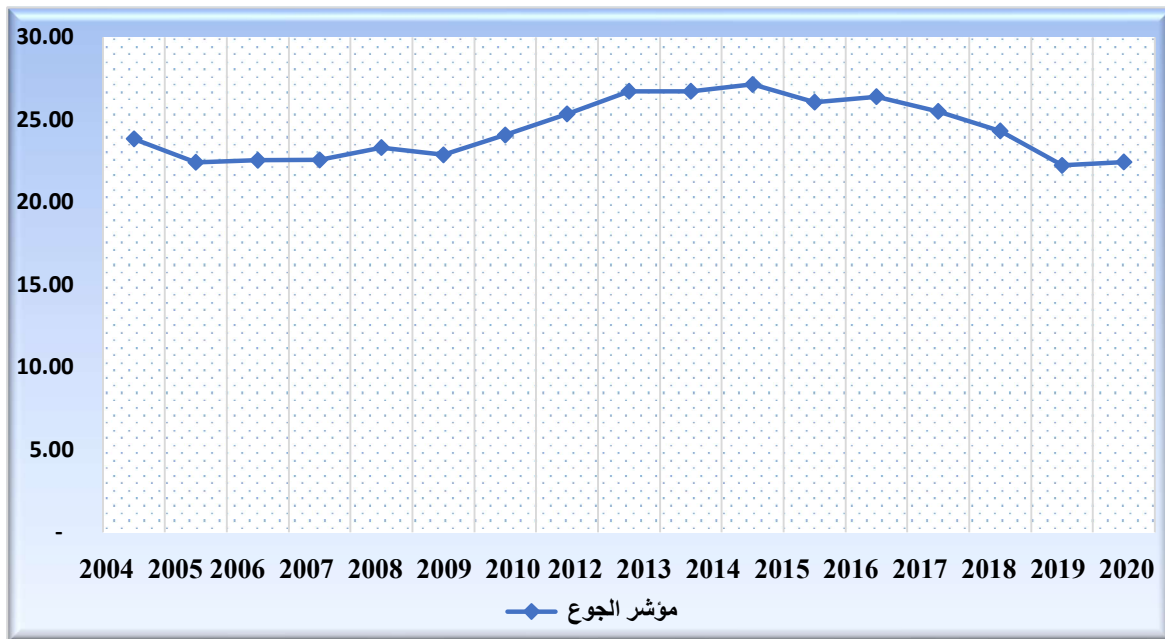


Figure (2-2) Hunger index in Iraq for the period (2004-2020).

Source: from the researcher’s work based on Table (2-2).

2-3- The Global Food Security Index (GFSI): It is a composite index that aims to monitor progress towards achieving food security at the country level. It was designed by the Economic Information Unit (EIU) in 2012 and covers more than (100) countries. The conceptual framework of the GFSI is based on three dimensions of food security (affordability, availability, and food quality and safety). The food supply is stable and timely and food-related shocks”, Availability is “a country’s ability to produce and distribute food, including risks of food shortages”. Quality and safety refers to “the nutritional quality of average diets and the food safety environment in each country. A total of (28) indicators grouped into three areas: affordability (6 indicators), availability (11 indicators) and quality and safety (11 indicators), focusing on factors contributing to food security rather than outcomes such as food consumption and nutritional status of the population. B sources include The Economist's data is a unified database from the World Bank, the Food and Agriculture Organization, the World Food Program and World Trade. The organization's indicators and individual indicators are weighed and then the final result is determined by an expert committee. The choice of the composite indicator has the advantage of summarizing a large amount of information in one degree. It is a very subtle approach when observing the food security progress of countries, as it greatly expands on trend analyzes of food security and their cross-country comparisons. However, if the composite is misconstrued, then interpreted or understood, it can lead to misleading policy conclusions and decisions (Table 14-2). Shows the main and sub-dimensions, as the three dimensions are estimated by (19) indicators and then formed by (28) individuals. The indicators were selected on the basis of expert analysis (EIU) and consultation with a team of specialists in food security, and it includes indicators from national statistical organizations and international, when there were missing values in the quantitative or survey data, the EIU used them to estimate the quality of the indicators it had created, based on information from development banks and government websites, or drawn from a range of available surveys and data sources[11].

Table (2-3) main indicators and sub-indicators of the general indicator of global food security

Main indicators and sub-indicators	Weight %	Weight %
Food consumption as a proportion of household expenditure	22.22	40 Capacity
Percentage of the population below the global poverty line	20.20	
per capita GDP on a purchasing power parity basis	22.22	
agricultural import	10.10	
Attending programs from the food safety net	14.14	
Access to Finance for Farmers	11.11	
Sufficiency of supply	23.42	44 Availability
Average food supply (%73.33)		
Chronic dependence on food aid (%26.67)		
Chronic dependence on food aid	8.11	
Agricultural Infrastructure 12.61	12.61	
Existence of suitable storage facilities for crops) (%22.2		
Road Infrastructure (%40.74)		
Ports Infrastructure (%37.04)		
Fluctuations in agricultural production	13.51	
Political stability risk	9.91	
Corruption	9.91	
urban carrying capacity	9.91	
Agricultural Infrastructure	12.61	16 Quality
Diet diversification	20.34	
Dietary Standards	13.56	
National Dietary Guidelines (%34.62)		
National Nutrition Plan or Strategy(%30.77)		
Monitoring and controlling nutrition(%34.62)		
Availability of micronutrients	25.42	
Dietary Availability of Vitamin A(%33.33)		
Dietary availability of animal iron(%33.33)		
Dietary availability of plant iron(% 33.33)		
Protein quality23.73	23.73	
Food safety16.95	16.95	
. Food Safety and Health Assurance Agency (32.14)		
Percentage of the population that has access to potable water (%42.86)		
(%25) Existence of an official market for agricultural crops		

source : EIU Global Food Security Index– 2016

As it is difficult to determine the value of this indicator in Iraq due to the difficulty in obtaining data or its unavailability, and by comparing this indicator with the prevalence of undernourishment (Pun), we compare the arrangement of the group of countries for which the total result was calculated for each of (GFSI) and (Pun) for a sample consisting of (73 country,

as it was proven that there is a correlation of Spearman's rank equal to (0.73), and that (GFSI) is less associated with undernutrition compared to the Global Hunger Index, as a comparison of the results of the ranking of the countries that have been studied for the index (GFSI) with the Global Hunger Index (GHI) shows The presence of rank correlation between the two indicators is very high, with Spearman's rank, the correlation coefficient equal to (0.90) (27: 2017, (Thomas A. C: and others).

conclusions

1- The existence of high levels of food insecurity in Iraq, due to the security reality and the failure of economic policies to limit the factors affecting it, such as the increasing number of poor people and insufficient transfer payments, in addition to the failure of the employment policy for productive projects, especially agricultural ones. In order to achieve food security, it is necessary to increase the production of food commodities locally through supporting the agricultural sector, especially agricultural crops, in which Iraq enjoys a comparative advantage in its production, and raising efficiency in the use of water and modern technology, as well as improving animal breeds to maximize animal production.

2- The factor of disputes and conflicts is the most important factor affecting food security because of its direct impact on individuals and its impact on the destruction of projects and infrastructure and lack of confidence in the future, as well as its indirect impact on the government's role in supporting the poorest groups and reducing the revenues needed to finance public spending.

3- By finding the value of the undernourishment index as a quantitative measure of food security, we find that the number of undernourished people has increased continuously during the study period, which indicates the impact of the economic reality on the quantity and type of food for those who suffer from undernourishment, and the impact of high prices, quality and safety of food. Drinking water falls into this category.

4- By finding the value of the global hunger index for Iraq, which determines food insecurity, we find that there is a fluctuation in the value of the index, but all values fall at the dangerous level of the spread of food insecurity. Therefore, it is necessary to work on adopting a government strategy that works to reduce levels of food insecurity, by ensuring the employment of the labor force, in addition to the importance of material and in-kind support for the poorest groups within a short-term plan to ensure that individuals are able to provide food on their own.

5- Decrease in the number of deaths of children under the age of five, as this percentage represents a third of the global hunger index, as this is due to government efforts to pay attention to community health and improve the health status of infants. We recommend continuing to provide health services to the poor.

6- A decline in the underweight index for children under the age of five, which consists of wasting and stunting. We recommend working to reduce the effects of economic shocks, conflicts and disputes on the lowest-income groups and children through emergency grants and reduce their impact on society, as well as ensuring the stability of prices and quantities in Food markets to enable individuals to obtain a variety and sufficient quantity of food.

7- Establishing a governmental entity that monitors food security levels locally, and contributes to the preparation of comprehensive plans to provide food security in coordination with economic policies to ensure the achievement of its comprehensive goals.

the reviewer

- 1- Barry Buzan, 2009 by Lene Heusen. The evolutionary security studies-London: Cambridge University Press 2009
- 2- Sadhan, Sana Muhammad, 2019, The role of the general budget in facing the challenges of food security, Maysan University Journal of Academic Studies, special issue of the third international scientific conference, College of Basic Education, Maysan University, Al-Manara College of Medical Sciences, Maysan, 2019.
- 3- Abboud, Khaled Qahtan, 2005, Arab food security and the prospects for achieving it in light of globalization, an unpublished master's thesis, Al-Mustansiriya University, College of Administration and Economics
- 4- Othman, Weam Al-Sayed, 2021, a future vision for modernizing the theory of political development (2050), an applied study of the role of the food security development strategy in stabilizing sustainable development, Journal of the Faculty of Administration, Economics and Political Science, Cairo, Volume 22, Issue 3, June 2021.
- 5- Ali, Hosni, 2016, The role of agricultural policy in achieving food security, (unpublished master's thesis), University of Biskra, Faculty of Law and Political Science.
- 6- Vito Antini, (2014), Conflict, Refugees and Food Insecurity in the Arab Region, Annual Report of the Arab Forum for Environment and Development - 2014.
- 7- Kahneh, Moulay and Makrani Hassiba, 2017-2018, Master Thesis, The Problem of Food Security in Algeria, 2000-2019, Department of Political Science, Faculty of Law and Political Science - Algeria.
- 8- Al-Makhadami, Abdul-Razzaq Raziq, 2009, The Global Food Crisis - Hats off Economic Globalization and International Integration, Dar Al-Fajr for Publishing and Distribution
- 9- Mekida, Ali and Farid bin Ayada, 2017, the status of Algerian food security and indicators of global food security, an analysis study of the availability of production during the period (2002-2013), Journal of Economic Sciences, Facilitation and Commercial Sciences, Issue (17) for the year 2017.
- 10- Food and Agriculture Organization of the United Nations, (2020), The State of Food Security and Nutrition in the Arab World (2020).
- 11- Food and Agriculture Organization of the United Nations, (20-21) A regional view on the state of food security and nutrition in the Near East and North Africa, Rome, 2021.
- 12- Klaus rou Grebmer, jill Bernstein, Miriam wi emers, Keshia Acheampohg, 2020, Asia Hanano Brona Higgins, Cohnell foley, Global Hunger index-Ghatham house bublin, Bonn, October 2020.
- 13- Al-Najafi, Salem Tawfiq, 2009, Arab Food Security (Approaches to the Hunger Industry), Center for Arab Unity Studies, first edition, Beirut.
- 14- The Economist intelligence unit Limited, 2015, Global food security index (2014) an Ahnal measure of the state of Global food security, 2014.
- 15- Tnomas A.C., Hombres. B, Casubolo. C Kayitakive-F (2017) , Sais and the usa of the Global Food security indexto in form the Situation in food insecuve countries luxembourg. Public cations. office of the European Union, 2017
- 16- Al-Asraj, Hussein Abdel-Muttalib, 2013, Activating the role of joint economic projects in achieving food security, Center for Strategic Studies and Research - Emirates, Issue 181, first edition, Knowledge Path Library

- 17- Belkacem, Sultana, 2009, a pictorial treatment of the concept of food security and its dimensions, Journal of the College of Arts, Humanities and Social Sciences, Muhammad Khudair University, Fifth Issue. 2009.
- 18- World Bank, country data for sustainable development indicators for Iraq
- 19- Hamal, Zaidan, 2016, Agricultural Policy and Food Security in Algeria (1999-2015), unpublished master's thesis, Moulay Al-Taher University, Faculty of Law and Political Science.
- 20- Al-Dulaimi, Subhi Ahmed and Muhammad Karim Ibrahim, 2019, Problems in Economic Geography, first edition, Dar Amjad for Publishing and Distribution.