

An Economic Study to Estimate the Ideal Demand for Meat in Egypt

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Abstract The animal protein is considered one of the food ingredients necessary for human nutrition and health, as animal protein sources are obtained from red meat, white meat and fish, and the demand for it is related to increasing the population and increasing the average personal income, in addition to the level of health and nutritional awareness of the population, and increase the average per capita from them, as the average per capita red meat, white meat and fish in Egypt during the average period (2000-2018) was about 15.0, 12.4, 17.4 kg / year, while the annual growth rate was about 1.1%, 3.1%, 2.7 %, Respectively, which indicates that the rate of increase in population growth The rate of increase in the demand for red meat exceeded the result of the increase in individual incomes, which led to an increase in the price of red meat, which reached about 148.3 EGP / kg in 2018, which resulted in the transformation of the consumer to the available alternatives in the market of white meat and fish. This research targets the standard estimation of the optimal demand for the meat group in Egypt during the period (2000-2018) using the Almost Ideal Demand System and identifying the most important variables affecting the consumption of the meat group, based on the prices of red meat, white meat and fish, and relationship analysis among them in light of competition in the proportion of spending on them. The results of the standard estimating of the demand for meat group using AIDS in Egypt during the period (2000-2018). 1. Increase in the Egyptian consumer spending on red meat than white meat and fish , where it amounted to about 62.8%, 15.9%, and 21.3%, respectively, which means the consumer prefers red meat over white meat and fish in meeting his needs of animal protein products. 2. the most important variables affecting to the demand for meat group in Egypt are: the average retail prices of red meat, white meat and fish, and spending on meat group. 3. It was clear from the indication and value of the spending elasticity (income demand) that red meat is a luxury good, which means that the greater the consumer's income, the greater the percentage of spending on that commodity at a rate greater than the rate of increase in income, while the white meat and fish are essential commodities, this means that the higher the consumer's income, the greater the percentage of spending on those commodities at a rate less than the rate of increase in income. 4. It was clear from the indication and the value of the elasticity of the price demand - that the demand for red meat, white meat and fish is not flexible, as the response of the quantity consumed of these commodities to price changes decreases. 5. The cross-reference price elasticity of the elasticity index indicates that red meat and both white meat and fish are complementary goods, meaning that the price of both white meat and fish increases, so that the percentage of spending on red meat are decreases. It was also found that white meat and both red meat and fish are considered complementary commodities because the increase in the price of both red meat and fish leads to a decrease in the percentage of white meat spending. While it was found that fish and white meat are two competitive commodities, because an increase in the price of white meat leads to an increase in the proportion of spending on fish.

Keywords: self-sufficiency, consumption, optimum demand, price elasticity, complementarily goods

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1. Introduction

Food consumption represents the goal of productive and economic activity, to achieve the greatest possible of satisfaction for the needs and desires of an individual from

food commodities, as consumption is affected by a set of economic factors such as individual income, prices, and population, that is, the study of consumer demand, especially in light of the open market system requires the provision of a commodity High quality at the right time [1].

The consumption pattern is considered an indication of the individual's consumption of different food commodities

at a specific time and place, which necessitates the necessity of studying the consumer behavior and the different levels of spending from his disposable income. Therefore, rationalization of consumption is one of the most important objectives of the food policy that achieves food security.

The agricultural sector is an important source for providing the needs of the population with the necessary commodities, for achieving food security, and the problem of providing food, especially animal protein commodities, is of great importance to the authors of the production policy [2].

The animal protein sources are obtained from red meat, white meat and fish, but the increasing increase in the costs of production of the meat group is considered one of the most important current problems in the animal production sector, which leads to higher consumer prices and less average per capita share. The alternatives to solve this problem were presents in encourage increased domestic production of red meat substitutes to ensure increased domestic production of white meat and fish [1].

1.1. Research Problem

Achieving food security is considered one of the most important economic problems that threaten economic and social development in Egypt, through an imbalance between supply and demand, this occur a food gap due to the increased demand for food as a result of increasing the rate of population growth, in addition to the inability to increase agricultural production to meet the increasing demand for food.

An inability of production to meet the increasing needs increases the imports of crops and food commodities lead to increases the deficit in the Egyptian agricultural and trade balance.

The red meat is considered an important food commodity [1], as its self-sufficiency ratio reached about 65.7% in 2018, while the quantities available for consumption of it reached about 1484 thousand tons, while the average per capita share reached about 15.1 kg / year in 2018, where the average share increased Red meat per capita at an annual increase of about 1.1% during the average period (2000-2018), as the red meat prices increased from about 58.6 EGP / kg in 2011 to about 148.32 EGP / kg in 2018, by increasing about 153.1% from 2011, which led to a decrease in the self-sufficiency rate of red meat from about 82.2% in 2011 to about 65.7 % In 2018, by declining about 20.1% from 2011, which led to the shift of the consumer to its available alternatives in the markets (white meat, fish) where the average per capita share of these alternatives was about 14.7 and about 22.3 kg / year in 2018, while it reached The annual growth rate is about 3.1%, 2.7% of white meat and fish, respectively during the period (2000-2018) - Table 2, Figure 1 [2].

1.2. Research Aims

The research aims at the standard estimation of the Almost Ideal Demand System for the meat group in Egypt during the period (2000-2018) by studying: -

(1) The development of capita consumption of red, white and fish meat in Egypt during the period (2000-2018).

(2) Most important economic indicators of Almost Ideal Demand System functions for the meat group during the study period.

(3) Setting a standard model for the (Almost Ideal Demand System) on the meat group in Egypt to determine the most important variables affecting the consumption of the meat group, based on the prices of red meat, white meat and fish, and analyzing the relationships between them in light of competition in the proportion of spending on it [2].

The main objective of the research is estimating the best demand for red meat in Egypt during the period (2000-2018) using Almost Ideal Demand System (AIDS), in order to identify the most important variables affecting the red meat based on the prices of red meat, poultry and fish, and analysis of the relationships between them on the light of competition in the percentage of their expenditure.

The research was using the (Zellner) method, which used the Stones Price Index.

2. Materials and Methods

The research relied on achieving its goals on the two methods of descriptive and quantitative statistical analysis, where some statistical analytical methods were used as time series analysis, and the research relied on the use of statistical and econometric analysis tools where the standard model for demand for meat group in Egypt was estimated during the period (2000-2018) Using the Almost Ideal Demand System (AIDS) using the Zellner method, the Stones Price Index was used.

The research relied on secondary data published in many official bodies such as the Ministry of Agriculture and Land Reclamation, and the publications of the Central Agency for Public Mobilization and Statistics, in addition to the database of the Central Agency for Public Mobilization and Statistics on the website, and some researches, messages, studies, and Arab and foreign scientific books were used, which It is related to the subject of the study [1].

The AIDS model is as follows:

The model of (AIDS) defined as:

$$W_i = \alpha_i + \sum \gamma_{ij} \ln P_j + \beta_i \ln (E/P^*)$$

Where:

W_i: consumer expenditure on a commodity per i item.

α_i: constant term.

γ_{ij}, β_i: Parameters of the model.

E: total expenditure on commodity group.

P_j: current prices for a product j under consideration on the algorithm image.

P*: Number of Stones Price Index, calculated from the following equation:

$$\ln P^* = \sum W_i \ln P_j$$

This model was account by some important economic indicators, demand elasticity's of price (Own), Cross and expenditure Elasticity, where cannot directly estimate from the model (because the coefficients of the model's response rates for income and not quantity), where these elasticizes are:

1 - Own Price Elasticity (ϵ_{ii}):

It is known as non-compensated elasticity Marshall, which is estimated on the light of changing prices without taking into account the impact on the real income of the consumer and calculated from the following equation:

$$\epsilon_{ii} = \delta_{ii} + \frac{\gamma_{ii}}{W_i}$$

Where:

$\delta_{ii} = 1$, if $i = j$

W_i : is the share of the item of expenditure.

γ_{ii} , β_i : parameters.

2 - Compensated Cross Price Elasticity ($\hat{\epsilon}_{ij}$):

It is known as compensated elasticity Hicks - Slutsky, which are estimated on light of changing prices, taking into account the impact on the real income of the consumer and calculated from the following equation:

$$\hat{\epsilon}_{ij} = \delta_{ij} + \frac{\gamma_{ij}}{W_i} - \beta_i \frac{W_j}{W_i}$$

Where: $\delta_{ii} = \text{zero}$, if $i \neq j$.

3 - Expenditure Elasticity (μ_i):

Estimated from the following equation:

$$\mu_i = 1 + \frac{\beta_i}{W_i}$$

Results can be validated ensure the relationship between the weighted elasticity of commodity group as follows:

$$1 = W_i \sum_{i=1}^n \mu_i$$

Where, the total expenditure elasticity of the total value of expenditure on commodity group was equal to one.

Method for estimating parameters of the AIDS Model:

To estimate the parameters of the (AIDS) equations for the meat group in Egypt during the period (2000-2018) from three equations have been created, where the dependent variable represents the spending shares of the groups of red meat, white meat and fish, while the independent variables are represented in the prices of red meat, whites meat and fish, the total spending on the meat group in the logarithmic image. The following methods have been used to estimate model parameters for differentiation between them: Seemingly Unrelated Regression (SUR), Three Stage Least Square (3SLS), and Generalized Method of Moments (GMM).

By comparing the results of these three methods, it was found that the use of Three Square Least Square (3SLS) method is considered one of the best methods for estimating the parameters of present-day application form equations at one time, where full information methods and limitations are included in the form equations, in addition to that it gave unbiased, consistent and efficient estimates, as this method takes into account the variance between random variables in different estimation model equations for the time series of data used in the estimation. Therefore, the estimation results for the parameters (AIDS) were relied on by this method, for the quality of the estimation results in them by the Seemingly Unrelated Regression method.

3. Results and Discussion

First: The most important economic indicators of the semi-optimal demand functions for the meat group in Egypt during the period (2000-2018):

This part aims to measure the semi-optimal demand for meat group in Egypt during the period (2000-2018) using (Almost Ideal Demand System (AIDS)), by way of (Zellner) according to the Stones Price Index engineering index, and used the Hausman Specification Test to determine the quality of the application estimate for the meat group in Egypt.

It was revealed from the Table No. (3) that the average expenditure on meat group during the period (2000-2018) was about 71.0 and about 17.9 and about 24.1 million pounds for red meat, white meat and fish, respectively, as the consumer's share of spending on red meat and meat White and fish respectively, about 0.628, about 0.159, and about 0.213 of the average total spending on meat group of about 113.1 million pounds during the study and research period. The percentage of the consumer's share in spending on red meat, white meat and fish was about 62.8%, about 15.9%, and about 21.3%, respectively.

Second: The standard estimate of the optimal demand models for meat groups in Egypt:

Results of the Requirements Function Test for Estimated Forms:

The Hausman specification test to detect the existence of a correlation between the internal variables in the model or not, the basis of Instrumental Variables, which expresses the external variables in the model as variables on the right hand side and the left side variable can be one of the internal variables, then we test the significance of the transactions, if they were not significant, it indicates that there is no correlation between them, and then it is estimated by the OLS method, without to need the evaluation in three stages [5].

As it was found from the results of choosing the largest probability ratio (LRT) to the possibility of rejecting the two basic assumptions, which included no homogeneity or symmetry [6], as it was found that the calculated value of the (Log likelihood Ratio Test) (LRT) calculated less than the value of the CHI Square (χ^2) tabular at the level of significance 0.05. Thus, the function of demand for meat group in Egypt was estimated during the average period (2000-2018) using the semi-optimal application form (AIDS) under the constraints of homogeneity and symmetry together - Table No. (1).

Third: Expenditure transactions:

The results of the study of the equations of spending on the three meat groups showed that they are statistically significant at the levels of significance 0.01, that is, there is a relationship between the total spending on the three groups of meat and the proportion of the group of red meat, white meat and fish [6], where the proportion of spending on the red meat group increases, as it is clear from A review of the results of Table No. (4) indicates that the value of the R^2 coefficient for the demand equations for the meat group in Egypt has reached were about 0.606, 0.767, and 0.655 for the red meat group, white meat and fish respectively, and this shows that the changes in the prices of red meat, white meat and fish, the

total consumer spending explains were about 60.6%, 76.7%, 65.5% of the changes in the proportion of spending on red meat, white meat and fish, respectively, and the rest of the changes are attributable to other factors - [Table 4](#).

Fourth: Price Logarithm Transactions:

1- Red Meat Group:

It was found a direct relationship between the total consumption expenditures on the meat group and the percentage of consumption expenditures on red meat, which shows that an increase in the total consumption expenditures on the meat group by one pound per kilogram leads to an increase in the percentage of consumer spending on red meat by about 0.131 pounds per kilogram. It also showed from the results of the study of the equation of spending on the red meat group that an inverse relationship between the ratio of spending on the red meat group and the prices of the two groups of white meat and fish, that is, the decrease in the prices of white meat and fish will reduce the percentage of spending on the red meat group, it was found the statistically significant relationship at level 0.01- [Table 4](#) [3].

2- White Meat Group:

It was found that there is an inverse relationship between the total consumption expenditures on the meat group and the percentage of consumption expenditures on white meatn [3], which shows that an increase in the total consumption expenditures on the meat group by one pound per kilogram leads to a decrease in the percentage of consumer spending on white meat by about 0.026 pounds per kilogram. It also showed from the results of the study of the equation of spending on the white meat group that an inverse relationship between the ratio of spending on the white meat group with the prices of the two groups of red meat and fish, that is, the decrease in the prices of red meat and fish will reduce the proportion of spending on the white meat group, it was found the statistically significant relationship at level 0.01- [Table 4](#).

3- Fish group:

It was found that there is an inverse relationship between the total consumption expenditure on the meat group and the percentage of consumer spending on fish, which indicates an increase in the total consumer spending on the meat group by one pound per kilogram, will be lead to a decrease in the percentage of consumer spending on fish by about 0.112 pounds per kilogram [3]. It also showed from the results of the study of the equation of spending on a group of fish that an inverse relationship between the ratio of spending on a group of fish with the prices of the two groups of red meat and white meat, that is, the decrease in the prices of red meat and white meat will be decrease the proportion of spending on the fish group, as it was found the statistically significance relationship at level of significance 0.01 - [Table 4](#).

According to the symmetry condition, [5] it was found that the regression coefficient of the ratio of spending on the red meat group in relation to the prices of the white meat group is identical with the regression coefficient of the proportion of spending on white meat group to the prices of the red meat group similar to the regression coefficient of the ratio of spending on the fish group in relation to the prices of the red meat group - [Table 4](#).

Fifth: Flexibility of Demand

1- Red Meat Group:

It turned out to reach about 1.21, where the value of spending flexibility indicates that the red meat commodity is a luxury commodity, as the amount consumed from the red meat group increases with increasing income, meaning that the 10% increase in income leads to an increase in the consumed amount from the red meat group by about 12.1%, which is more than the rate of increase in income - [Table 5](#).

2- White Meat Group:

It turned out to reach about 0.84, where the value of spending flexibility indicates that the white meat commodity is a necessary commodity, as the amount consumed from the white meat group increases with increasing income, meaning that the 10% increase in income leads to an increase in the consumed amount to the white meat group by about 8.4%, which is less than the rate of increase in income - [Table 5](#).

3- Fish group:

It turned out to reach about 0.47 where the value of the spending flexibility indicates that the fish commodity is a necessary commodity, as the amount consumed from the fish group increases with increasing income, that is, the 10% increase in income leads to an increase in the consumed amount from the fish group by about 4.7%, which is Less than the percentage of increase in income - [Table 5](#).

Sixth: Self-compensatory price elasticity:

1- Red Meat Group:

It turned out to reach about (-0.67) where the value of price elasticity indicates that the demand for the red meat group is inflexible, that is, the degree of response of the consumed amount from the red meat group to any changes in their prices in light of the constant prices of the two groups of white meat and fish are not flexible, that is, a change in the prices of the red meat group by 10% leads to a change in the consumed amount from it by less than 6.7% - [Table 5](#).

2- White Meat Group:

It turned out to reach about (-0.029), where the value of self-elasticity indicates that the demand for the white meat group is inflexible, that is, the degree of response of the consumed amount from the white meat group to any changes in its prices in light of the constant prices of the two groups of red meat and fish are inelastic. That is, a change in the prices of the white meat group by 10% leads to a change in the consumed amount of it by less than 0.3% - [Table 5](#).

3- Fish group:

It turned out to reach about (-0.024) where the value of price elasticity indicates that the demand for the fish group is inflexible, that is, the degree of response of the quantity consumed from the fish group to any changes in their prices in light of the constant prices of the two groups of red meat and white meat are inelastic, i.e. A change in the prices of the fish group by 10% leads to a change in the consumed amount from it by less than 0.24% - [Table 5](#).

Seventh: Cross price compensatory elasticity:

1- Red meat group with white meat group:

It turned out to reach about -0.231, where the value of the cross-elasticity indicates that the two commodities are

complementary, and the cross-elasticity signal agreement with the self-price elasticity signal of the red meat group, i.e. there is no substantial substitution between the two groups, that is, the effect of white meat group prices adversely on the consumed amount from Red meat group, and this is due to the effect that the income outweighs the effect of substitution between the two groups, that is, the effect of income resulting from higher prices for the white meat group has caused a decrease in the amount consumed of red meat and white meat together - Table 5.

2- Red meat group with fish group:

It turned out to reach about -0.315 where the value of the cross elasticity indicates that the two commodities are complementary to the cross-elasticity signal agreement for them with the self-price elasticity signal of the red meat group, i.e. there is no fundamental substitution between the two groups, that is, the effect of the prices of the fish group has an adverse effect on the consumed amount from the group Red meat, and this is due to the effect of income outweighing the effect of substitution between the two groups, that is, the effect of income resulting from higher prices for the fish group has caused a decrease in the amount consumed of red meat and fish together - Table 5.

3- White Meat Group with Red Meat Group:

It turned out to reach about -0.68 as the value of the cross elasticity indicates that the two commodities are complementary to the cross-elasticity signal agreement for them with the self-price elasticity signal for the white meat group, i.e. there is no substantial substitution between the two groups, that is, the effect of the prices of the red meat group has an adverse effect on the consumed amount from White meat group, and this is due to the effect of income outweighing the substitution effect between the two groups, that is, the effect of income arising from higher prices for the red meat group has caused a decrease in the amount consumed of white meat and red meat together - Table 5.

4- White meat group with fish group:

It turned out to reach about -0.08 where the value of the cross elasticity indicates that the two commodities are complementary to the cross-elasticity signal agreement with the price self-elasticity signal for the white meat group, i.e. there is no fundamental substitution between the two groups, i.e. the effect of fish group prices has an adverse effect on the consumed amount from the group of White meat, and this is due to the effect of income exceeding the effect of substitution between the two groups, that is the effect of the income which resulting from the increase in the prices of the fish group has caused a decrease in the consumed amount from white meat and fish together - Table 5.

5- Fish group with red meat group:

It turned out to reach about -0.47 as the value of the cross elasticity indicates that the two commodities are complementary to the cross-elasticity signal agreement for them with the self-price elasticity signal for the fish group, that is, there is no substantial substitution between the two groups, that is, the effect of the prices of the red meat group has an adverse effect on the quantity consumed from the group Fish [7], and this is due to the effect of income exceeding the effect of substitution between the two groups, that is, the effect of income resulting from the increase in the price of red meat group has caused a decrease in the amount consumed of red fish and meat together - Table 5.

6- Fish group with white meat group:

It turned out to reach about 0.001 where the cross-elasticity indicates that the two commodities are competitive to the difference of the cross-elasticity signal for them with the self-price elasticity signal for the fish group, i.e. there is a fundamental substitution between the two groups, i.e. the effect of white meat group prices has a direct effect on the amount consumed from the fish group, where the effect of substitution between the two groups exceeds the effect of income - Table 5.

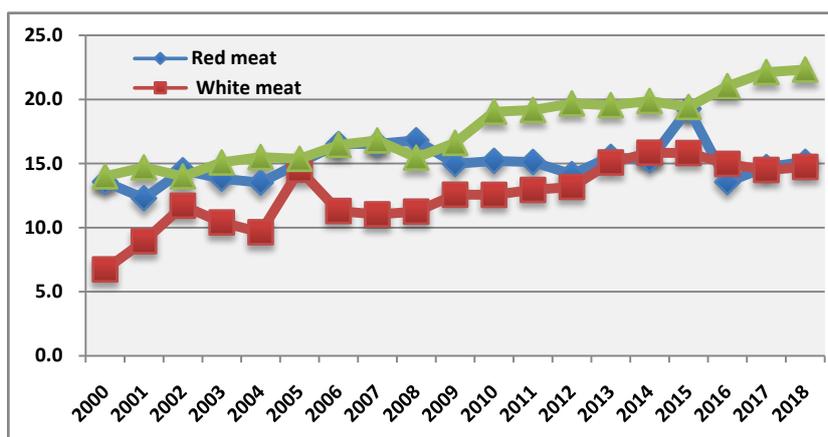


Figure 1. An Evolution of Average Individual Share of Red Meat, White and Fish in Egypt during the period (2000-2018)

Table 1. Results of test requirements demand function using Almost Ideal Demand System (AIDS) on meat group in Egypt during (2000-2018)

AIDS Model	Logarithm of probability function	Ratio test probability	value of χ^2
	LK	LRT	χ^2
Without condition	69.65	-	-
With Homogeneity Condition	70.31	1.32	12.59
With Homogeneity and Symmetry Condition	70.38	1.47	16.92

Source: Compiled and calculated from: Results of analysis of research data - reference [1].

Table 2. The average of individual share of red meat, poultry and fish during the period (2000-2018)(kg/year)

Year	Average of individual share		
	Red Meat	Poultry	Fish
2000	13.6	6.7	14.0
2001	12.3	8.9	14.7
2002	14.5	11.7	14.0
2003	13.8	10.4	15.1
2004	13.5	9.6	15.5
2005	15.0	14.5	15.4
2006	16.5	11.3	16.4
2007	16.5	11.0	16.8
2008	16.8	11.2	15.5
2009	15.0	12.6	16.6
2010	15.2	12.6	19.0
2011	15.1	12.9	19.2
2012	14.2	13.2	19.7
2013	15.5	15.1	19.5
2014	15.2	15.8	19.9
2015	19.3	15.8	19.4
2016	13.5	15.0	21.0
2017	14.7	14.5	22.1
2018	15.1	14.7	22.3
Average	15.0	12.4	17.4
b	0.161	0.380	0.465
Growth	1.1	3.1	2.7

Source: Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, the Central Administration Agrarian economy, The Balance of Food Arab Republic of Egypt, Cairo, numbers of sporadic.

Table 3. Average Expenditure of Assessment of the Meat Group during the period (2000-2018) (value: Million pounds)

Item	Average expenditure share	Expenditure share	% Expenditure
Red meat	71.0	0.628	62.8
Poultry	17.9	0.159	15.9
Fish	24.1	0.213	21.3
Total	113.1	1.00	100

Source: Compiled and calculated from the extension Table 1.

Table 4. Estimated parameters of (AIDS)⁺ to the red meat demand in Egypt during (2000-2018)

Item	Coefficients of log expenditure		Coefficients of prices logarithm (Y _{ij})			R ²
	B _i	Meat	Poultry	Fish		
Meat	0.131 (1.97)**	0.290 (5.05)**	-0.124 (-2.78)**	-0.170 (-6.09)**	0.606	
Poultry	-0.026 (-0.45)	-0.124 (-2.78)**	0.150 (3.08)**	-0.018 (-0.64)	0.767	
Fish	-0.112 (-2.79)**	-0.170 (-6.09)**	-0.018 (-0.64)	0.184 (6.78)**	0.655	

Source: Compiled and calculated from: Appendix (1), by using the E-views 6.

*Coefficients statistically significant at a significance level 0.05.

**Coefficients statistically significant at a significance level 0.01.

Table 5. Expenditure and price elasticity of the Almost Ideal Demand System (AIDS) at red meat in Egypt during (2000-2018)

Item	Expenditure elasticity M _i	Own price elasticity- non Compensated(E _{ii})			Cross Price elasticity - Compensated (E _{ij})		
		Meat	Poultry	Fish	Meat	Poultry	Fish
Meat	1.21	-0.67	0	0	0	-0.231	-0.315
Poultry	0.84	0	-0.029	0	-0.68	0	-0.08
Fish	0.47	0	0	-0.024	-0.47	0.001	0

Source: compiled from: the analysis of research data using the E-views 6 - Table 4.

Appendix No.1: Evolution of spending and retail prices on the meat group in Egypt during the period (2000-2018)

Year	Expenditure (million pounds)			Retail prices (pounds / kg)		
	Red Meat	Poultry	Fish	Red Meat	Poultry	Fish
2000	14.10	2.19	6.43	16.42	5.13	7.26
2001	13.05	3.07	7.01	16.44	5.31	7.38
2002	16.47	4.45	6.89	17.26	5.76	7.47
2003	18.53	4.54	8.51	19.93	6.49	8.38
2004	22.31	5.34	10.65	24.07	8.07	10.01
2005	21.44	7.42	9.26	20.36	7.30	8.61
2006	34.60	6.74	11.14	29.37	8.37	9.50
2007	38.41	6.93	13.30	31.85	8.62	10.86
2008	45.36	9.99	12.45	36.26	11.94	10.82
2009	46.11	12.44	15.18	40.48	13.01	12.01
2010	63.56	14.34	20.67	53.73	14.68	13.96
2011	70.50	17.13	21.39	58.60	16.63	14.02
2012	72.65	21.87	27.83	62.90	20.36	17.34
2013	87.16	28.54	33.22	67.15	22.63	20.32
2014	101.95	33.85	38.82	77.94	24.93	22.78
2015	146.94	34.08	40.25	86.69	24.50	23.58
2016	119.16	37.64	45.10	97.67	27.92	23.81
2017	197.43	45.92	67.27	139.33	32.92	31.58
2018	220.10	44.18	62.98	148.32	30.58	28.77
Average	71.04	17.93	24.12	54.99	15.53	15.18
b	9.958	2.504	3.088	6.600	1.603	1.292
Growth	14.0	14.0	12.8	12.0	10.3	8.5

Source:1-Ministry of Agriculture and Land Reclamation, Economic Affairs Sector, the central Administration Agrarian economy, **The Balance of Food of Egypt**, Cairo, numbers of sporadic.

2-Central Agency for Public Mobilization and Statistics, **commodity consumption bulletins in Egypt**, Cairo, and separate numbers.

4. Recommendations

1- Encouraging the breeding, production and fattening of calves and developing genetically improved and high-calves to ensure increased production of red meat to ensure its availability at prices appropriate for consumers.

2- Work to provide fodder at affordable prices to ensure increased production of red and white meat.

3- Expanding fish farming to ensure increased fish production as one of the alternatives to red meat.

4- Devising highly productive varieties of alfalfa and maize and transforming them as silages to solve the problem of feed shortage.

5- Expanding the cultivation of winter crops with high productivity, such as fodder beet, which produces about 100 tons of fodder to solve the problem of lack of fodder during the period of the end of the winter clover and the beginning of summer fodder.

6- Expanding the cultivation and production of summer fodder that can bear agriculture in new lands such as millet crops, fodder beans, and sorghum.

7- Extending the cultivation of perennial crops, such as alfalfa and alfalfa fodder.

8- Raising the nutritional value of sugar cane lollipop residues, sugar beet residues, maize, rice straw, cotton wood and injected with ammonia or chemical treatment and preserved as mixtures or silage.

9- Re-cultivation of the northwestern coastal region

from Alexandria to Salloum with rain water in the pasture plants of high nutritional value and high palatability.

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