

An Analytical Economic study Of Egyptian fisheries

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Abstract: To identify the comparative importance and evolution of economic fish resources in all fisheries and production worthiness during year 1990 – 2007 were main objective of this study. Descriptive and analytical statistical methods were applied. The results showed the following orders: 1) Natural fisheries contribute 13%, Lakes contribute about 14.3%, fresh water fisheries contribute 10% and finally fish farms contribute 62.5% of fish production in Egypt. 2) Auto-fishing ships constitute about 8.2% working totally in marine fisheries. The rest of ships 91.8% which work manually are located in Lakes and fresh water fisheries. 3) Labor force in fishing business is characterized by having poor skills and relatively big ages. These production techniques are mostly traditional and inefficient. Number of fishermen is gradually declining because of domestic and beyond border immigration. Future plans concentrated on developing hatching techniques and export promotion as well. [Journal of American Science 2010; 6(9):768-772]. (ISSN: 1545-1003).

Keywords: fresh water fisheries; Natural fisheries; marine fisheries; immigration.

1. Introduction

The world food shortage and the shakable situation of Egyptian food security have made development of our food resources an inevitable necessity. Fish Resource sector with its natural fisheries and fish farming is seen as one of the vehicles for attaining food security and bridging the widening food gap. An ultimate goal of attaining food security is to rise per capita of protein to its world level. Fish sector is a major part of the Egyptian economy. It is one of the important traditional components of Egyptian citizen's meal, for its comparative cheap fresh protein.

2. Material and Methods

Problem of the research:

Coasts of A.R.E. extend to over 2420 km. on each of the Mediterranean Sea, Red Sea, Suez Gulf and Aquaba Gulf. The area of continental platform is estimated by about 78120 km (up to 200 miles) ⁽¹⁾ in addition northern lakes (Manzalah, Borolus, Edko and Mariott) and coastal depressions, (Portfouad and Bardureel), internal lakes (Qaroon, Rayan, Bitter lakes, High dam and Toshki reservoir, River Nile with its branches and fish farms. The fishing fleet accommodates about 39.1 thousand ships and 55.2 thousand fishermen are working in this activity.

Though gigantic fishing resources and potentialities, fish production does not meet the growing consumption. That is why fish imports are

increasing. In year 2007 imported Fish reached about 258.9 thousand tons, valued at L.E. 1.2 billion.

Objectives of this research are to identify:

The relative importance and evolution of Egyptian fish resources and production efficiency during years 1990 – 2007

Analyzing major Economic indicator, in fish resources sector to know the moreover. The Economic role of Fish production is essential to apply of the present Study obstacles and chances of development.

3. Results

Descriptive and analytical methods were estimated statistical analyses. The impact of various variables on fish economics was statistical analyzed. The Percent study based on secondary data obtained from the Central Agency for Public Mobilization and Statistics (CAPMAS), General Authority for Fish Resources Development and (CAFRD) previous studies applied in fish Production Trend Results.

Egyptian fish production:

Egyptian fish resources are Depending on Marine Fisheries, lakes, Fresh water and Aquacultures. Natural fisheries contributed about 79% of total fish production in year 1990, increased to rate of 86% in year 1994, decreased to 65% in year 1999, 45.5% in year 2004, and Decreased to The reaching its lowest Rate (36.90%) in year 2007. Marine Fisheries contributed about 21%, lakes 46% and Fresh water 12% in year 1990. In year 2007 contribution took a downward trend, as Marine

⁽¹⁾ The Arab Republic of Egypt. FAO Fishery Country profile. The main aspects Qatar Fisheries oct. 2003.

Fisheries contributed about 13%, lakes 14.3% Fresh water 10% and aquaculture had contributed about 62.5%.

a- Marine Fisheries:

Marine Fisheries included Mediterranean and Red Sea, Suez Canal and Aquaba Gulf. Their area together is estimated at about 11.2 million faddans or 85.2% at the natural fisheries. Their production represents 35.1% of natural sources production.

Table (1) shows that Marine Fisheries produced 68.4 thousand tons (Tt) of fish in year 1990, increased to 93.9 thousand (Tt) in year 1994 and 172.3 thousand (Tt) in year 1999. As from year 2004 this production began to decline to about 114 thousand (Tt) in year 2004 and 130.7 thousand tons in year 2007. Registered fishing fleet contains 4.6 thousand ships covering Rafah up to Saloum in the west. Labor force working in fishing business reached 22.8 thousand fishermen.

Registered fishing fleet covering Red sea, Aquaba and Suez Gulf is about 2.2 thousand ships. Because of the coral reef in the Red Sea coasts, fishing is done in traditional ways. Number of fishermen is about 4.9 thousands according to year 2007 estimates. ⁽²⁾

Public time trend equation points to the annual increase in sea fisheries fish production (Table 2) is about 0.0327% with a difference from the average estimated at about 2.9% which reached about 110.3 thousand tons.

b- Lakes fisheries:

These fisheries include northern lakes, coastal depressions and inland lakes. Their area is estimated at about 1.8 million faddans or 13.9% of the natural fisheries area. It produced 38.7% of natural resources production. As shown in Table (1) production of lakes fisheries is about 146.6 thousand tons in Year 1990, which increased to about 163.7Tt tons in 1994.

Lakes fisheries production reached about 186.3 thousand tons in Year 1999, which decreased gradually to about 177.1 thousand tons in Year 2004 and 144 thousand tons in Year 2007. Registered fleet in lakes fisheries was estimated by 20.5 thousand ships in nine lakes, (Manzalah, Borlous, Edko, Mariout, Qaroun, Rayan, Bardweel, Portfoad and High dam). Labor force working in lakes fisheries is estimated at about 14.7 thousand fishermen in Year 2007. Northern lakes are considered as shallow lakes

which had a little content of dissolved oxygen. Fishing is done mostly by triangular or conical nets and others.

Tilapia, cat fish and mullet fishes are the important species in these lakes. Major constraints which meet these lakes are pollution, over fishing, dehydration and aqua- plants spreading. Coastal depressions lakes are of high salinity for its contact with sea water. Major species are mullet, crusts, tilapia and sea fish. Most production of fishes from Qaroon lake are tilapia and others as it is fed with fingerlings of mullet, sole and shrimp. Public time trend equation (log) points to The annual increment in lake production is about 0.0046% during Years 1990-2007 according to the result in table(2).

C- Fresh water fisheries (Nile, canals and drainages):

Area of fresh water fisheries is estimated at about 178 thousand faddans or 1.36%, the production of which is 97.7 thousand tons or 26.2% of the natural resources production according to data of Year 2007. Table (1) shows fluctuation of production from 37.9 thousand tons in Year 1990 to 57.5 thousand tons in Year 1994 and 64 thousand tons in Year 1999 and 120 thousand tons in Year 2002. But it declined again to 105 thousand tons in Year 2004 and 97.7 thousand tons in Year 2007. Fishing fleet working in fresh water is about 11.8 thousand ships and fishermen reached around 12.8 thousands in Year 2007. Annual increment in production of fresh water is about 0.066 according to the equation (table 2).

d- Aquaculture:

Aquaculture is one of the most common commercial activities in Egypt. It includes ponds fish farms, cages, rice fish farms and also intensive aquaculture. Area of fish farms is about 360.2 thousand faddans, which is equal to 3% of Egyptian fisheries.

According to year (2007) estimation, fish farms contribute about 62.5% of total fish production in Egypt. Hybrid tilapia is the best species raised in cages in fresh water, for its rapid growth rates. Average of cages production is about 62.3 thousand tons which equals 9.8% of fish farms production. Rice- fish farms production is estimated at about 5.3 thousand tons, equals 0.5%, while ponds fish farms produced about 567.9 thousand tons or about 89.6% of fish farm production in year 2007.

As shown in table (2), Public time trend equation estimates the annual increment rate of fish farms production is about 0.211% over years 1990-2007 as shown in table (2).

⁽²⁾ Ministry of Agriculture & land Reclamation statistics GAFRD Statistics of fish production (1990 – 2007) published papers during.

Table (1): (Development of fish production from Egyptian fisheries during the period (1990 – 2007)

Total production	Rice –fish Farms	Aquaculture	Fresh water	lakes	Marine fisheries	years
320.2	25.0	42.2	37.9	146.6	68.4	1990
320.6	25.0	35.1	37.5	148.2	74.7	1991
318.3	25.0	36.1	36.0	141.8	79.4	1992
326.5	19.0	31.9	45.4	143.3	86.9	1993
368.1	18.0	35.0	57.5	163.7	93.9	1994
407.1	19.8	42.0	67.9	186.5	91.0	1995
431.6	21.3	54.6	79.7	176.5	99.5	1996
457.0	6.9	66.6	77.8	195.6	110.2	1997
545.6	12.4	116.0	79.1	212.9	125.1	1998
648.9	10.0	216.3	64.0	186.3	172.3	1999
724.4	16.4	323.7	80.3	173.1	130.8	2000
771.5	18.4	324.7	109.9	185.4	133.2	2001
801.5	16.3	360.0	120.9	171.8	132.5	2002
876.0	17.0	428.2	118.3	195.1	117.4	2003
865.0	17.2	454.32	105.0	177.1	111.4	2004
889.3	17.6	522.12	83.8	158.3	107.5	2005
970.9	5.6	589.4	105.0	151.3	119.6	2006
1008.0	5.3	630.2	97.7	144.0	130.7	2007
613.9	16.5	239.4	78.0	169.9	110.3	Mean
100	2.7	39	12.7	27.6	18	%

Sources: CAPMAS, Fish statistics in A.R.E. 1990-2007, various editions, Cairo.

-Ministry of Agriculture and land Reclamation, General Authority for Fish Resources Development (GAFRD) 1990 – 2007.

Table (2): The semi – logarithmic statistical analysis for development of fish production from Egyptian fisheries during the period years (1990 – 2007).

Equation	R ²	F	D .w	Average	%	production
$\text{Log } Y_t = 4.366 + 0.0327 X_t$ (.008)*	0.54	18.77	0.57	0.25	2.9	Marine fisheries
$\text{Log } Y_t = 5.083 + 0.0046 X_t$ (0.811)*	0.40	0.66	.053	0.06	0.44	Lakes
$\text{Log } Y_t = 3.66 + 0.0658 X_t$ (5.49)*	0.79	30.17	0.700	0.45	5.8	Fresh water
$\text{Log } Y_t = 2.926 + 0.211 X_t$ 13.39)* (0.91	179.2	0.93	1.2	16.1	Aquaculture
$\text{Log } Y_t = 5.578 + 0.0796 X_t$ (20.6)*	0.96	422.7	0.46	0.49	7.5	Total production

Source: calculated based on data obtained of table (1)

*significant at 0.05%

**significant at 0.01%

Egyptian fishing fleet:

Auto – fishing ships working in the Egyptian fisheries represent about 8.2% of the whole fishing Egyptian fleet. 42.8% of the auto – ships possess engines of 50 – 100 horse power, 1% of 150 – 200 horse power, 6.3% possess 200- 250 horse power. 17.8% of the auto ships possess engines of over 400 horse power and are concentrated in the continental plat form in the Red sea. According to table (4), the number of the fishing fleet is around 40 thousand ships over years 1990 – 2007.

Public time trend equation in its linear form shows an annual decline in the number of fishing ships by about 64 ships a year. Auto ships increased at an annual rate of 140 ships. Gliding fishing ships decreased at an annual rate of 204 ships as shown in table (2).

Fish labor force:

This sector is a good job generator for Human resources; it is a very important component in fish production activity in Egypt.

Lack of well trained labor power is a crucial constraint to development endeavors. Skill – free

labor force working in the fishing business is around 300 thousand workers. ⁽³⁾

Well trained labor force has declined lately from 66.8 thousands in year 1990 to about 27.7 thousands in year 2007.

Ships fishermen decreased from 63 thousand in year 1990 to 14.7 thousands in year 2007. Fishermen in the Nile and its branches decreased from 51.5 thousands in year 1990 to 12.8 thousands in year 2007.

There is a downward trend in fishermen number in other segments of this sector. Fishermen in Egyptian fisheries decreased from about 181.3 thousands in year 1990 to about 55.2 thousands in year 2007 because of domestic and beyond border migration. Education and training policies in rural and coastal areas were not conducive for creating better and efficient fishermen during years 1990-2007. Number of fishermen decreased by about 793 a year during that period.

⁽³⁾ FAO, Analysis of fish production up to 2030.

Table (3): Development of fleet and fishing labor in Egyptian fisheries during the period (1990 – 2007)

Fishermen	Total Ships	Total Gliding	Fresh water	Lakes	Marine fisheries		fisheries years
					Gliding Ships	Auto Ships	
181379	40370	37984	16353	18621	3010	2386	1990
181805	39921	37463	16614	17899	2950	2458	1991
187541	39083	36520	14233	18961	3326	2563	1992
197153	41606	38924	14230	21273	3421	2682	1993
271986	46269	43372	18025	22937	2410	2897	1994
168338	35728	33375	13701	17111	2563	2353	1995
321819	52066	48720	19360	25026	4334	3346	1996
198581	37405	34541	13728	17667	3146	2864	1997
72608	50969	47811	2094	23623	4094	3155	1998
83915	39092	35834	14608	17996	3235	3258	1999
62872	45065	40836	16757	21952	2127	4229	2000
65153	44910	40956	1836	20162	2434	3954	2001
53886	44191	40379	1839	19604	2736	3812	2002
52663	46307	42218	18360	21479	2379	4089	2003
55666	39582	35330	14725	18261	2344	4252	2004
49854	35370	30987	12399	16221	2367	4383	2005
51060	39645	35155	13914	18843	2398	4490	2006
55192	39053	34510	11806	20502	2202	4543	2007
128415.1	42034.9	38606.4	13032.3	19896.6	2859.8	3428.6	Mean
100	100	91.8	31.7	47.8	6.9	8.2	%

Sources: CAPMAS – fish statistics in A.R.E. (1990 – 2007), Cairo, Egypt.

- Ministry of Agriculture and land Reclamation (1990 – 2007).

Table (4): Statistical analysis in its linear form for development of fishing fleet and fishermen during the period (1990 – 2007).

Equation	R ²	F	D.w	Average	%	Ships
$Y_t = 292.6 + 140.61 X_t$ (11.90)* (16.63)*	0.89	141.68	2.586	3.43	4.10	Auto Ships
$Y_t = 4055.9 - 204.76 X_t$ (-0.936)** (17.118) *	0.52	0.875	2.631	38.6	.43-	Gliding Ships
$Y_t = 4264.5 - 64.14 X_t$ (-2.87)** (17.61)*	0.57	0.082	2.745	0.42	-.16	Total ships
$Y_t = 142.71 - 793 X_t$ (-1.34)** (6.38)*	0.10	1.80	0.87	128.4	-.65	fishermen

*Significant at (P < 0.01)

- Source: CAPMAS, Public Authority for Fish Resources Development.

Fish cooperatives:

The number of fishermen in Cooperatives is estimated at about 91 out of which 83 local coops in natural fisheries and 6 coops fish farming and 2 joint coops. Number of coops members is about 91.4 thousands. Capita of such coops is estimated at L.E. 1.6 million.

Coops duties range from supplying inputs to availing soft credit facilities. But coops failed to improve production techniques and stop dehydration and pollution⁽⁴⁾

Constraints to Development of Egyptian Fish Resources:

Pollution of natural fisheries as a result of agricultural and industrial drainage networks, over – fishing practices,

- Dehydration of some lakes,
- Adoption of irrelevant techniques,
- Weak cooperative system and
- Poor and inaccurate data base

Pillars of Fish Resources Development in Egypt:

- Adoption of well developed fishing techniques.
- Open of new fisheries as Saloum Gulf and Halayeb out of territorial water.
- Establishment of developed fishing farms in seas and barren lands.

Future plans:

- a- Exert more efforts to produce fish for export purposes.

b- Establish hatcheries for producing 4 to 5 million fingerlings a year for high quality fish species.

c- Establish a technical center to conduct feasibility studies for the interest of investors.

d- Strengthen control measures on health and hygiene requirement for fish and mankind as well.

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