IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS)
e-ISSN: 2319-2380, p-ISSN: 2319-2372.Volume 4, Issue 3 (Jul. - Aug. 2013), PP 36-41
www.iosrjournals.org

Effect of Subsidy on Fish Production in Ondo State, South West, Nigeria.

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Abstract: *This study was undertaken to investigate the impact of subsidies on the level of fish production by the fishermen in the coastal area of Ondo State. Two hundred and five (205) respondents were randomly sampled to obtained information on socio – economic characteristics of the fishermen. The data was analyzed using descriptive statistics and production level of the fish farmers. The result from this study shows that when fishing inputs are subsidized this increases fishing activities, efforts and output of the fishermen. This study also shows that fisheries subsidies not only have their own peculiar production distortion effects but they have adverse effects on the environment and economic sustainability.*

Keywords*: fishermen, respondents, subsidy, fishing vessels*

I. Introduction

Nigeria with a land mass of 232,772 square kilometer and a coastal West Africa country lying on the shore of Gulf of Guinea is the twelfth largest country in Africa with a population of about 150 million (Ondo State, Nigeria market feasibility study for sustainable development, 2008). Nigeria is traditionally an agrarian country and agriculture remains a major employer of labour However crude oil is the major source of revenue accounting for over 90% of the export earnings (Ondo State, Nigeria market feasibility study for sustainable development, 2008).

In Nigeria, demand for fish is on the increase due primarily to the health benefit attributed to the eating of fish and secondarily to the increase in human population and the reduction in availability and affordability of red meat (cattle, sheep and goat) fish constitute about 40% of animal protein intake in Nigeria (Olatunde, 1998).

There is enormous confusion surrounding the terminology and definition of subsidies. Government intervention, assistance, transfers and support measure can be generally considered as a form of subsidy. The narrowest and perhaps most commonly used definition of subsidy is a direct cash payment by a government to producers or consumers United Nation Environmental Progamme (UNEP, 2003). Organization for Economic Co-Operation and Development (OECD, 1998) defined subsidy in a general term as any measure that keeps prices for consumers below market levels, or for producers above market level or that reduces cost for consumers and producers.

In a similar way, International Energy Agency, IEA defined subsidy as any government action that primarily lowers the cost of production, raises the price received by producers or lower the price paid by consumers (IEA, 1999).

This research does not adopt any specific definition but work within the ideas of what subsidy is and its impact on the level of fish production in Ondo State, Nigeria.

In many countries of West Africa, subsidies to the fisheries section take the form of reduction in the price of fishing inputs, reduction in the price of consumer goods (mainly foods), the provision of infrastructure and services such as extension and training (Mabawonku, 1986).

Subsidy for fish production in Nigeria was primarily directed at small scale fishermen and this involves the purchase of fishing materials by government and distributed to the fishermen at 50% of procurement cost. Government provides credit facility through the Nigerian Agricultural and Co – operative Bank (NACB) at 5 – 7% interest rate, establishment and provision of training and training facilities for fishermen.

This study examines the impact of subsidies on fish production in Ondo state.

Study area

The study was carried out in five communities of coastal area of Ondo State, Nigeria. Ondo State is situated within the tropic region of Nigeria and it covers an area of about 8,092 square miles (20,959 square km) with a fairly large population of 3.4 million. It is regarded as the sixth largest state in Nigeria. The State lies between latitude 4°.45E and 6°.00E and longitude 5°.45N and 8°.15N. The communities where the study was carried out were, Owena, Ilaje, Igbokoda, Ayetoro and Irele.

II. Materials And Methods

Data was collected through field survey, qualitative and useful information were gathered from concerned fishermen from the five choosing communities using questionnaires. Copies of structured questionnaires were administered to obtain information on socio–economic characteristics, fishing activities and production of the fishermen. Focus group discursion (FGD) methods (Apata et al; 2009) were applied to obtain information on issues of common concerns to the fish farmers. Other sources of information are the records of activities kept by the fish farmers, research publications, literatures, journals, published magazines and data from relevant organizations.

The information extracted from the questionnaires was analyzed using descriptive statistics. Production function analysis was used to determine the production level of the fish farmers.

III. Results and Discussion

The socio–economic qualities of the fishermen in the five communities were presented in table I. A total of 250 questionnaires were administered and 205 fishermen were sampled throughout the survey. The respondents' age structured was grouped into six classes, 16 – 25, 26 – 35, 36 – 45, 46 – 55, 56 – 65 and 66 and above. Their age ranged from 21 to 66 years, class 36 – 45 had the highest representation for all the respondents having total of 77 which is 37.76% and followed by age brackets of 46 – 55, 56 – 65 and 66 years and above which translated to 24. 88%, 23.41% and 2.93% respectively.

The lowest age representation of the respondent is 19, which falls within the age class of 16 – 25 which is equal to 1.99% of the respondents. This shows that fishing profession is not limited to a certain age but practiced by fisher folks of different ages.

The result in table 1 below shows that 95.12% of the respondents fall within the age class of 26 – 65 years while the remaining 4.88% are elderly and adolescent. This indicates that fishing is undertaken by able bodied which have the ability, strength and experience to carry out the rigorous exercises that are involved in fishing. Dey et al; (2002) reported an average age of 43 to 53 years among Asian farmers; this is also in line with Bolorunduro (2003), Ifejika (2006).

As also shown in Table 1, majority of the respondents (29.02%) are males while the remaining 0.98% are females. This shows that male fishermen are more involved in fishing activities than their female counterpart though the percentage of involvement of the female in fisheries is small compared to their male counterparts but they are not left behind. This was previously supported by Williams and Awoyemi (1998) and Ikenweiwe et al; (2011). The low participation of female can be attributed to some factors such as culture, religion and oppressive land tenure system against women. This agrees with the findings of Nigeria Institute of Social and Economic Research (NISER) (2003).

Table 1 again shows that 60% of the respondents were married while 34.63% were singled and 5.37% were divorced or widowed. The result indicates that married men were involved in the fishing activities than the unmarried. This implies that most of the fish farmers have a lot of family responsibilities.

Response on years of experience in table 1 revealed that 80% of the respondents have more than five years experience. Sevilleja, (2000). Edward, (2007), Dey et al; (2002) and Ifejika (2007) agreed that experience is important to the success of fishing and aquaculture.

Table I. Shows that 13.66% of the respondents have not had any formal education 33.66% have primary education, 47.80% attended secondary school, 4.39% attended tertiary institutions and 0.49% had other forms of education such as adult education. This implies that higher education is not required in fish farming, but minimum basic education is important to adopt modern techniques in fishing and aquaculture.

Table 1: Socio – economic-characteristics

Sex	**Frequency**	**Percentage**
Male	203	99.02
Female	2	0.98
Total	**205**	**100**
Age		
16 – 25	04	1.95
26 – 35	19	9.27
36 – 45	77	37.56
46 – 55	51	24.88
56 – 65	48	23.41
66 and above	06	2.93
Total	**205**	**100**
Marital Status		
Single	71	34.63
Married	123	60.00
Divorced	07	3.42
Widowed	04	1.95
Total	**205**	**100**
Education background		
No formal education	28	13.66
Primary education	69	33.66
Secondary education	98	47.80
Tertiary education	09	4.39
Other form of education	01	0.49
Total	**205**	**100**
Years of fishing experience		
1 – 5	41	20
6 – 10	164	80
Total	**205**	**100**

Table 2 below shows that 34.63% of the respondents used cast nets, 28.78% used drag nets, 28.78% used gill nets, 13.17% used hooks and line, 0.49% used seine to catch their fish and there are some that used other methods like fish basket or trap.

Table 2, also shows that 6.83% of respondents used outboard engines and 13.17% used Ghana made canoes while 28.78% used dugout canoes to sail on the rivers for fishing operations 51.27% however did not use any canoe at all. The result in table 2 also reveals that 24.88% of the respondents had only one fishing craft, 11.71% had two, and 8.29% had three, while 54.63% had none. The percentage of respondents with no fishing crafts was higher followed by those with one while those with two and three were very low and this shows that only very few farmers can afford to have fish craft.

The data in Table 2 illustrates that 10.24% and 0.49% of the respondents used petrol and diesel respectively as a source of energy in their vessels or crafts. Since 89.27% used manual labour to power their crafts (Boats) little or no expenses was incurred while only those that used outboard engines spent money on fuel for powering their crafts.

The results in Table 2 indicate that 62.27% of the respondents sourced their credit facilities from personal savings, 18.54% from the government, and 6.34% from co – operative societies, while 3.41% from their relatives and 2.44% from friends. It can be said that the low percentage of those that sourced for credit from the government and co – operatives societies may be due to lack of requirements requested for by the government, banks or co – operatives societies.

The result in Table 2 shows that 71.71% of the respondents belonged to different co – operative associations while 28.29% did not belong to any fisheries association. The larger percentage recorded for those that belonged to one or more associations are largely due to the benefits they derived from such associations.

Table 2 reveals that all the respond ends sold their products in baskets and 45.37% had an average catch of three baskets per day while 36.10%, 10.24% and 8.29% of the respondents had an average catch of four, two and one baskets per day respectively. It may be that those that had low percentage of average catch are those that doesn't have any fishing crafts, acquire new technology in fishing or have little or no capital.

Also from the results in Table 2, 48.29% of the respondents made an average income of N10,000 to N20,000 and 44.88%, 4.88% and 1.95% made an average income of N21,000 to N40,000, N41,000 to N60,000 and N60,000 and above respectively.

Table 2 also shows that 64.88% of the respondents were into fishing to make profit, while 22.92% fish for both consumption and profit and 12.20% were into fishing mainly for consumption. Only that is not all the respondents were into fishing because of profit making.

Table 2: Fishing characteristics

Types of fishing gear used	**Frequency**	**Percentage**
Hooks and line	27	13.17
Gill net	21	20.00
Cast net	61	34.63
Drag net	39	28.78
Seines	31	0.49
Others	06	2.93
Total	**205**	**100**
Types of fishing craft/vessels used		
Outboard engine	14	6.83
Ghana made canoe	27	13.17
Dugout canoe	59	28.78
None	105	51.21
Total	**205**	**100**
Source of energy for vessels / crafts		
Kerosene	-	-
Diesel	-	49
Petrol	21	10.24
Electricity	-	-
Manual / labour	183	89.27
Others	-	-
Total	**205**	**100**
Average catch per day		
1 basket	17	08.29
2 basket	21	10.24
3 basket	93	45.37
4 basket and above	74	36.10
Total	**205**	**100**
Credit source / assistances		
Labour merit	38	18.54
Co – operatives	13	6.34
Relatives	07	3.41
Friends	05	2.44
Personnel saving	142	69.27
Total	**205**	**100**
Ownership of craft		
Bought	121	59.02
Inherited	23	11.22
Rent	19	9.27
No canoe	42	20.49
Total	**205**	**100**
Price of source of energy per litre, kg, kw.		
Less than N20	-	-
N21.00 – N 40.00	-	-
N41.00 – N 60.00	-	-
N61.00 – N 80.00	-	-
N81.00 – N100.00	19	9.27
N100.00 and above	186	90.73
Total	**205**	**100**
Membership of co – operation		
Yes	147	71.71
No	58	28.29
Average monthly income		
N10,000 – N20,000	99	48.29
N21,000 – N40,000	92	44.88
N41,000 – N60,000	10	4.88
Above N60,000	4	1.95
Total	**205**	**100**
Purpose		
Sales / profit	133	64.88
Consumption	25	12.20
Consumption / sales	47	22.92
Total	**205**	**100**

IV. Theoretical Analysis

The effect of an input subsidy is to decrease the cost of production. As shown in figure 1. The supply curve shifts downward i.e. there is an increase in supply in the form of a shift from SS to S_1S_1. The equilibrium price of a commodity produced decreases from EP to EP_1 while equilibrium quantity increases from Eq to Eq_1.

The subsidy is given by xy. This has the effect of benefitting both producers (Fishermen) and the

consumers. Fishermen benefit at this point even though price of their products has fallen partly from the increase in output and partly from the fact that they are able to produce at lower cost.

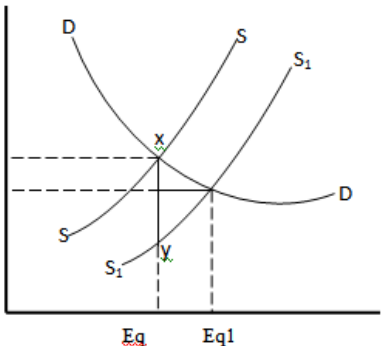

Figure 1: The effect of subsidy on the price of product F (Adegeye and Dittoh; 1985)

V. Quantify The Benefit Of Subsidy

The degree of benefit however depends on the elasticity of demand for the product (Adegeye and Dittoh;1985). Consumers in their own case benefit because the commodity is cheaper. Again, the degrees to which consumers benefit also depend on the price elasticity of the demand for the commodity. If the demand for a commodity is relatively inelastic, consumers benefit more from an input subsidy than producers as shown in figure 2.

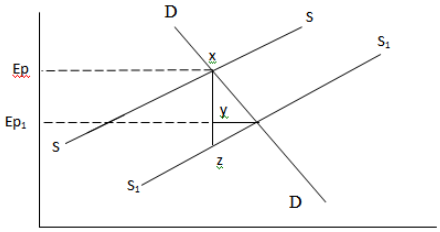

Figure 2: Input Subsidization and its Relative benefit to Producers and Consumers

XY is the amount of subsidy. Price falls from EP to EP_1 (x to y) and that is the benefit that accrues to the consumers while yz is the benefit that accrues to the producer when there is subsidy (Adegeye and Ditto;1985). If the demand for commodity is relatively elastic as in the case of fisheries production, producers benefit more from an input subsidy as shown in figure 3. From the diagram, ab is the benefit occruing to the consumers since the price has fallen from EP to EP_1 while bc is the benefit occruing to producers due to subsidy.

A subsidy on fishing input will benefit fish farmers more than the consumers and at this level the fish farmers will like to catch more.

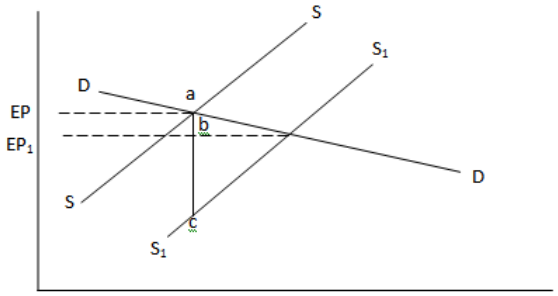

Figure 3: Input Subsidization and its Relative benefit to Producers and Consumers

It is generally accepted that commercial fish farmers catch fish for profit. The more profit they can make by fishing the more they will fish, other things being equal (Summaila et al; 2008). If profit π, is determined by difference between total revenue TR and Total cost TC, TR is a function of P (P) and catch (H), and TC is a function of fishing effort, which in turn is a function of fuel cost (f) and cost (0) such as the cost of labour, Let profit without fuel increase and no fuel subsidy, π0, be expressed as;

$\pi 0 = PH(x, E) - c[(E(f,0)]$……1

Where x is the stock size and E the fishing effort. Note that in a well behaved cost function $\alpha\pi/\alpha f<O$, i.e. the higher the f, the lower the profit, other things being equal with a fuel increase from f to f^1, the profit be expressed as;

$\pi 0 = PH(x, E) - c[(E(f,0)]$ …… 2

As $f^1 > f$, the profit will be less.

With fuel subsidies (s), $0<S\leq (f^1 - f)$, and the effect of the increase in fuel cost is either reduced or completely negated.

Added to this are the findings by various environmental groups (e.g. WWF) that fisheries subsidies not only have their own peculiar production distortion effects but they have adverse effect on the environment and economic sustainability (Downess and Dyke, 2003).

VI. Conclusion

Fisheries inputs need to be subsidized and introduced in the study area as it can be deduced from the result, that fishing activities are carried out by the fishermen using old, traditional and dilapidated fishing gears and vessels. As a result of this the output of the fishermen are very low to the high demand of fish. Furthermore, the increase in fuel price paid by the fishermen increases the cost of fishing activities and output.

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