Analysis of European Demand for Cassava Products from Nigeria (1985-2000)

Okidim, I . A[1] & Ellah, Grace. O[2]

[1]Department of Agricultural & Applied Economics/ Ext. Rivers State University of Science and Technology, Port Harcourt, Rivers State. Nigeria.
[2]Department of Agricultural Technology, Rivers State College of Art and Science, Rivers State. Nigeria.

Abstract

The analysis of export demand for cassava products from Nigeria by Europe is the focus of this study. The study focused on the export of cassava products such as cassava chips, cassava starch, tapioca, fresh cassava, cassava meal. The objectives of the study were to determine what type of cassava products are exported to Europe from Nigeria as well as the various prices, to determine the quantity of cassava products exported and factors affecting the export demand for cassava products. Purposive sampling was used to sample 4 countries out of the 45 countries in Europe. The selection was based on the export need of export countries. Ordinary least square regression analysis was used as analytical technique, tables were also used to present results. Result revealed that cassava starch, cassava flour, cassava feeds, cassava chips had the highest export demand by Europe Union, Netherland and Portugal demand were poor in all products. The study also shows that prices in the internal market (X_2) were good, even though the price has a negative relationship with tapioca (Y_1), cassava pellet (Y_4) also had a negative relationship with the per capita income of the importing countries(X_3). The study recommended that there should be improvement in quality of export products for cassava.

1.0 Introduction

Cassava is scientifically known as Manihot Esculenta it has about 98 species. Cassava is also called Manioc, Yuca, tapioca or Mandio (Porto et al, 1991). Cassava is a root crop and is grown in many tropical countries of Africa, Asia, latin America. The world's production of cassava is about 250 million tons a year. In 1973 Nigeria produced 1,600 tons of cassava. Brazil was the highest with about 26, 559 tons followed by Indonesia with 11, 185 tons (FAO, 1975). Today, Nigeria is the highest producer of cassava, with 45 million tons a year. This is followed by Democratic republic of Congo with 15 million tons and Ghana and Angola with 12 million tons each. The potentials of cassava has now received a global attention. This is why global cassava development strategy is now on board. The globalised strategy is seen as an Amalgamation of National regional and continental strategies and plans, assisted by global efforts to identify and stimulate cassava product market. Cassava provides for the livelihood of up to five hundred million farmers (FAO 1997) it is the basic staple for millions of people in tropical and subtropical belt. Cassava is grown even in less fertile and unproductive land.

Cassava was originated in Brazil in South America and was brought into Africa by the Portuguese. Cassava belong to the family Euphorbiaceous, its genus is manihot which has alkaloid cytogenetic glycoside characteristic that gives the cassava a bitter flavor (Uguru, 1989).Cassava tuber may be processed into a variety of product which are hot cake in the international market, these products include; chips flakes peelers starch and flour, pellets. Many European countries such as Germany, UK, France, Netherlands Italy etc, demand huge quantities of processed cassava products annually.

1.1 Problem Statement

The international market for cassava began to develop in 1950s with the exportation of the by-products of the cassava flour milling industry from Thailand to European markets- A development that made Thailand to be outstanding in terms of cassava product export. In recent time, the federal government of Nigeria has taken bold steps to encourage the export of farm products including cassava products, so as order to raise her revenue capacity . To do this, Nigeria will have to take cognizance of her absolute and comparative advantage in cassava product export as in the case in Thailand. This step was necessitated by the fact that a large chunk of the cassava and cassava product produced in Nigeria is consumed locally in-spite of international demand for cassava products. It is for this reason that this study of European demand for cassava product from Nigeria is carried out to ascertain wither or not cassava product could have international market, and if there is international market what factors affect export of products. This study will also create awareness to intending investor.

1.2 Objectives of the Study

The general objective of the study is to analyse the European demand for cassava product from Nigeria (1980-2000) while the specific objectives include

(1) To determine what type of cassava product are exported to Europe from Nigeria as well as the various prices
(2) To determine the exchange rate and income of importing countries
(3) To determine the quantity of cassava demanded from Nigeria by European countries as well as factors affecting cassava products demand.

2.0 Literature Review

Cassava product export was originated in Thailand with the export of cassava chips and pellets to Europe for livestock feed (Donald et al, 2000) This led to the development of dynamic cassava industries in Thailand. Since then, there has been increasing demand for cassava product. (Jones, 1983) that the world trade in cassava product has risen from 600,000 tons to 700,000 tons per annum. There are so many cassava products processed for human or animal consumption they include chips, pellets, spent-pulp, sago, pearls, flakes, garri, crushed cassava, noddles, march paste, flour, starch, granules, spiced, fresh vegetable with the diversification of both products and markets by cassava industry and with the discovery of new markets for cassava products in Asia, the export demand for cassava product has increased. (Olayide and Olatunbosun ,1982) The demand for cassava chips and pellets is large worldwide, especially for livestock feeds. Apart from livestock feeds, the processed cassava serves as industrial raw materials for production of adhesives bakery products, dextrin, dextrose glucose, lactose and sucrose. Dextrin is used as a building agent in the paper and packing industry and adhesive in cardboard, plywood and veneer binding.

Food and beverage industries use cassava products derivatives in the production of jelly caramel and chewing gum, pharmaceutical and chemical industries, industries also use cassava for the production ethanol, which is used in the production of cosmetics and drugs, school chalks, textile and dry cell

3.0 Methodology

3.1 Study Area/Population

Europe comprises of some many countries delineated into seven regions including the Mediterranean south, the western fringe, the insular realms, the Germanic core, the eastern crush ton, the northern frontier and the European Soviet Union. These 7 regions comprise of the following countries: Albania, Indorama, Austria, Belarus, Belgium Bosnia, Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Holy See, Hungary, Iceland, Ireland, Italy, Kosovo, Latvia, Liechtenstein, Lithuania, Luxemburg, Macedonia, Malta Monrovia, Monaco, Netherlands, Norway, Poland, Romania, san Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Ukraine, Untied Kingdom, Portugal.

3.2 sample size/sampling method

Out of the 45 countries listed as the population of the study, 5 countries were purposively selected based on import need of cassava products. The counties selected include Belgium, France, Germany, Italy, Netherlands, Portugal, Spain and United Kingdom.

3.3 Sources of data

Primary and secondary data were used,   The secondary sources data were time series data on the export demand for cassava products from Nigeria from 1986 to 2000 from Federal Ministry of Agriculture, Federal Ministry of Commerce, export promotion council, national bureau of statistics international institute of tropical agriculture**.**

3.4 Method of data analysis

In order to anlyse or determine the quantity of each cassava product demanded from Nigeria and to estimate the elasticity of demand coefficient, a model stating the functional relationship was built as follows

$Y_{1-4} = f (b_0 + B_1X_1 + B_2X_2 + b_3X_3 + b_4x_4) + Ut$

Where

Y =   Cassava product export demand

   $Y_{1-4} = Y_1(tapioca), Y_2(cassava) Y_3(cassava starch) Y_4(cassava pellet) Y_5(cassava   chips)$

X_1 =   price of cassava product at the international market

X_2 =   price of cassava product at the local market

   X_3 =   income of importing country

X_4 =   Market size (population)

X_5 =   Exchange rate of trading countries

U =   Stochastic variable

4.0 Results and Discussion

Table 4.1 shows the cassava products from Nigeria by European union. The table shows that as years increased, the quantity of cassava product exported to European union increases as well as the prices of product. In 1987, the price per tons was 1.157 dollar, as the years go by, the price increased to 8.989 dollar per kg. The same goes for cassava flour, starch, cassava feed cassava pellets, chips showed a decline (fairly) in prices even though the quantity increased .The table shows that as years progress cassava product such as Tapioca, dried cassava, increased in prices and quantity. This also showed that there is a ready market for cassava product in European union.

Table 4.1: Export Demand and for Cassava Products from Nigeria by the European Union (Quantity in Thousand Tons; Price in Us $ Per Ton)

Cassava product	Cassava flour		Cassava starch		Cassava pellets Cassava chips		Cassava feed meal and Cassava roots	
Years	Qty	Price	Qt y	Price	Qty	Price	Qty	Price
1985	409.80	269.5	0.2000	160.1	3.45	97.60	1373.179	156.0
1986	499.90	230.9	0.282	163.0	3.19	98.40q	1401.13	160.1
1987	513.06	214.3	0.538	166.0	3.25	100.50	1539.79	163.0
1988	562.05	211.0	1.256	196.0	4.570	104.0	1736.63	166.0
1989	742.145	209.0	0.503	220.0	4.290	105.5	1905.95	196.0
1990	788.15	237.0	0.634	244.0	8.740	107.0	3621.214	226.0
1991	812.66	227 .0	0.651	232.0	12.57	178.0	5843.43	224.0
1992	821.62	212.0	0.630	195.0	15.16	183.0	8010.69	232.0
1993	902.67	223.0	0.587	256.0	55.15	137.0	8482.10	195.0
1994	1015.03	313.0	0.660	358.0	70.24	144.0	7915.69	256.0
1995	1822.14	294.0	0.457	277.0	77.98	177.0	9424.66	358.0
1996	2047.97	228.0	0.511	244.0	100.58	152.0	10029.60	277.0
1997	2595.96	222.0	0.462	176.0	113.63	108.0	11,279.59	244.0
1998	2359.42	200.0	0.396	205.0	115.36	107.0	11,250.04	281.0
1999	125.12	180.0	0.3341	150.0	153.42	102.0	13341.00	172.0
2000	2766.56	165.0	0.3042	1777.0	440.92	88.0	14,137.72	158.0

Source federal bereau of statistics

Table 4.2: Export Demand for Cassava Products from Nigeria by Netherland (Quantity in Thousand Tons; Price in Us $ Per Ton).

Cassava Product	Cassava flour		Tapioca		Cassava starch		Cassava Pellets		Cassava Chips		Cassava feed meal	
Year	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price	Qty	Price
1985	0.097	269.5	0.018	306.3	0.107	156.0	1.111	98.4	0.390	88.0	0.501	156.0
1986	0.099	230..9	0.024	315.0	0.132	160.1	1.010	100.5	0.200	89.3	0.534	160.1
1987	0.105	214.3	0.029	320.0	0.145	163.0	0.925	104.0	0.190	90.5	0.567	163.0
1988	0.0926	211.0	0.035	325.0	1.139	166.0	0.776	105.5	0.019	91.0	0.597	166.0
1989	0.099	209.0	0.046	325.0	0.109	196.0	0.538	107.7	0.017	92.5	0.600	196.0
1990	0.092	237.0	0.0159	333.0	0.103	226.0	0.479	178.0	0.009	94.6	0.877	226.0
1991	0.086	227.0	0.066	337.0	0.100	224.0	0.392	183.0	0.0063	95.2	0.020	224.0
1992	0.016	212.0	0.091	341.0	0.078	232.0	0.361	137.0	0.0035	95.8	0.999	232.0
1993	0.063	223.0	0.150	349.0	0.073	195.0	0.288	144.0	0.003	96.0	0.9994	195.0
1994	0.007	213.0	0.213	352.0	0.071	256.0	0.249	177.0	0.0010	97.5	0.994	256.0
1995	0.007	294.0	0.900	357.0	0.057	358.0	0.212	152.0	0.0008	99.1	1,009.4	358.0
1996	0.0093	228.0	1.814	277.0	0.039	277.0	0.168	108.0	0.0005	99.9	1,224	277.0
1997	0.014	222.0	3.264	244.0	0.017	244.0	0.141	107.0	0.00032	100.4	11750	244.0
1998	0.018	200.0	2.937	281.0	0.013	176.0	0.122	102.0	0.00022	108.0	1239.4	176.0
1999	0.024	180.0	6.394	170.0	0.0101	205.0	0.110	158.0	0.00017	105.0	2121.0	205.0
2000	0.029	165.0	5.173	152.0	0.0092	158.0	0.091	152.0	0.0006	103.0	1214.0	158.0

Source: Federal Bereau of Statistics. 1995

Table 4.2 is the Export demand for cassava product from Nigeria by the Netherlands in thousand tons. (price in dollar) 1980-2001).

The table shows that the quantity of various cassava products exported from Nigeria by the Netherlands was small between 1986-1991 compared to the quantity exported between 1992 to 2001, between 1992 – 2001 the quantity exported increased. Also price of various products increased within the same period at the international market. Between 1993 – 2000 price per ton was above 200 dollar. For cassava flour, the quantity exported was stable even though the price continues to increase fairly. Tapioca, cassava starch, maintained the same trend but there prices increased fairly.

Table 4.3: Export demand for cassava product from Nigeria by Portugal (quantity in tons, and dollar).

Cassava Product	Tapioca		Cassava Pellets		Fresh/dried cassava	
Year	Qty (kg)	Price	Qty (kg)	Price	Qty (kg)	Price
1986	0.01100	325.00	0.00012	98.40	0.119	160.1
1987	0.0140	325.00	0.00018	100.5	0.354	163.0
1988	0.0155	333.00	0.000195	104.0	0.3910	166.0
1989	0.0183	337.00	0.00027	105.5	0.3951	196.0
1990	0.0197	341.00	0.00034	107.0	0.3980	226.0
1991	0.0237	349.00	0.0005	178.0	0.4120	224.0
1992	0.0410	352.00	0.00082	183.0	0.4530	232.0
1993	0.0480	357.00	0.00145	137.0	0.450	195.0
1994	0.052	277.00	0.00163	144.0	0.475	256.0
1995	0.058	244.0	0.00187	177.0	0.4910	338.0
1996	0.0643	281.00	0.00188	152.0	0.4937	277.0
1997	0.0748	172.00	0.00201	108.0	0.4980	244.0
1998	0.634	158.00	0.00234	107.0	0.512	281.0
1999	0.705	158.00	0.00272	102.0	0.512	172.0
2000	0.930	155.00	0.00281	88.0	0.501	158.0
2001	0.790	150.00	0.00293	85.0	0.500	158.0

The table only showed Tapioca, cassava pellets, fresh and dried cassava root the study showed that Portugal imports from Nigeria was low, for tapioca, cassava pellets and dried cassava root the quantity ranged from 0.00% in 1986 to 0.79 in 2001 meaning that the quantity of cassava product imported from Nigeria by Portugal was very small. In terms of price per ton; there was a steady decline from 325.00 dollar in 1986 to 150.00 dollars for tapioca in 2001. The reduction in export was probably due to plummeted prices of cassava products

Table 4.4:Export demand for cassava products from Nigeria by Spain (Qty in tons, price in dollars (1986-2001)

Cassava product	Tapioca		Cassava pellet		cassava chip	
Year	Qty (kg)	price	Qty (kg)	Price	Qty (kg)	Price
1986	1.44	325.00	0.0121	98.40	0.0037	89.3
1987	1.61	325.00	0.0183	100.5	0.0025	90.5
1988	1.68	335.00	0.0220	104.0	0.0029	91.0
1989	1.73	337.00	0.0253	105.5	0.00212	92.5
1990	1.77	341.00	0.0291	107.0	0.0019	94.6
1991	1.95	349.00	0.0303	178.0	0.0017	95.2
1992	2.02	352.00	0.0344	183.0	0.0013	95.8
1993	2.123	357.00	0.0371	137.0	0.001	96.0
1994	2.365	277.00	0.3987	144.0	0.0091	97.5
1995	2.657	244.0	0.4260	177.0	0.00095	99.1
1996	2.494	281.00	0.4823	152.0	0.00079	99.9
1997	3.434	172.00	0.5221	108.0	0.0013	100.4
1998	4.1230	158.00	0.5518	107.0	0.0017	108.0
1999	4.5050	158.00	0.6153	102.0	0.0019	105.0
2000	4.970	155.00	0.6780	88.0	0.00101	103.0
2001	5.223	150.00	0.7112	85.0	0.0012	103.0

Table 4.4 shows the export demand for cassava product from Nigeria by Spain, the table also shows that Spain imported tapioca, cassava pellet, cassava chips. The table further revealed that tapioca has the highest quantity of export and that tapioca has the highest price per kg, the import of tapioca increased steadily from 1.44 tons in 1986 to 5.223 tons in 2001. Although, international price for tapioca fell from 325.00 dollars per ton to 155.00 dollar per ton in 2000. Other products such as cassava pellets and chips did not show any appreciable increase in quantity exported even though there was relatively fairly increase in price of cassava chips.

Table 4.5 :Shows Population, Average Per-capita Income of Europe Countries, and Exchange Rate in Dollar of Importing Countries.

Yr	Average Per-capita Income of Countries in Europe	Population in Million	Dollar Exchange Rate
1985	18928	22906764.31	0.9996
S1986	22150	45813528.63	3.3166
1987	22150	45813528.63	4.1916
1988	22150	45813528.63	5.3530
1989	22150	45813528.63	7.6500
1990	22150	45813528.63	9.0001
1991	22507	45813528.63	9.7545
1992	22507	45813528.63	19.6609
1993	22507	45813528.63	22.6309
1994	22507	45813528.63	21.8861
1995	23424	45813528.63	21.8861
1996	23424	45813528.63	21.8861
1997	24186	45813528.63	21.8861
1998	24186	45813528.63	21.8860
1999	24186	45813528.63	21.8860
2000	24186	45813528.63	2.8860

State of the world population san marino

Table 4.5 Summary of Regression Results

$Y_1 - Y_5$	X_1	X_2	X_3	X_4	X_5	R_2
Y_1	-1.644	-0.263	6.67	0.67	-0.92	0.63
Y_2	-0.461	0.397	2.020	2.020	1.22	0.212
Y_3	-0.819	0.660	5.152	-0.284	4.01	0.750
Y_4	-0.153	-2.090	-352	0.612	1.24	0.28
Y_5	0.062	-0.463	3.139		-0.53	0.806

Source ; From regression result.

Y_1 = tapioca, Y_2 = cassava flour, Y_3 = cassava starch Y_4 = pellet, Y_5 = chips

Table 4.6 shows the summary of regression result of dependent and independent variables. The table shows that price of cassava product at the international market (X_1) show a negative relationship with all the dependent variable (cassava products) apart from cassava meal and cassava roots. The study also showed that as income of the exporting country (X_3) increase, import of cassava product (Y_1) also increase. The same also goes for population (X_4) and exchange rate (X_5). The R square for models Y_1, Y_3, Y_5 were 63%, 75%. 80%, meaning that about 63% , 73% and 80% of the variation in dependent variables (Y_{1-5}) were explained by independent variable.

Conclusion

This research revealed that international demand for cassava product from Nigeria by Europe was relatively high, though with some constraint such as price. Among the European nations, Netherlands, Spain, European Union maintained the lead in demand for cassava product such as cassava flour, cassava pellets, chips, cassava feeds/meal. While countries such as Italy and Portugal had relatively low demand for cassava products from Nigeria.

References

Porto, M. C. Asidu, M R. and Dixon. A. (1991) Proceedings of the Ninth symposium of the international society for Tropica root crops 20-26th Oct 1991, Accra, Ghana

Food and Agriculture Organization (1995) 'Cassava information' Rome FAO

Jones, S. F. (1983). The world market for starch and starch product with particular reference to cassava starch report of the tropical development and research institute. 3(173) 98

Donald, L. P. Truman, P. P, Robert B. K. (2000). A Global Development strategy for cassava. – Global cassava strategy

Jones, S. F. (1983). World market for starch and starch product with particular reference to cassava. Report of the tropical development and research institute. Vol 3 pp 173- 98

Uguru, O. O. (1989) An introduction to agricultural science for tropical areas. Nelson Africa, Nigeria State Nigeria, p 229