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DEMAND FOR IMPORTED FISH PRODUCTS IN EGYPT: A COINTEGRATION AND ERROR CORRECTION ANALYSIS

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ABSTRACT

This paper examined the determinants of fish products import demand in Egypt between 1980 and 2007. Exogenous variables were selected based on demand theory and the traditional import demand functions. Quantitative estimates were based on OLS as well as cointegration and error correction models. The results confirmed the existence of long-run equilibrium relationship between fish import demand, consumption expenditure, exchange rate, and prices of imported and domestically produced fish, on per-capita basis. The estimated import demand functions fit the data well. Estimated coefficients had the correct signs in the short and the long-run functions. The results showed that in the long-run imported fish products were inelastic with respect to its own price, price of locally produced fish, real exchange rate, and consumption expenditure. Cointegration results showed that the long-run import elasticities of demand with respect to import price, locally produced fish price, real exchange rate, and consumption expenditure were -0.39, 0.36, -0.29, and 0.82, respectively. The dominant determinant of fish products import demand in the short and long-run is consumption expenditure meaning that economic growth would lead to higher import demand. Results of the estimated short-run equation indicated that any deviation from long-run equilibrium in per-capita fish import demand is completely corrected the following year. Measures to support fish sector in the area of production, transportation, and marketing could lead to reduction in fish prices and in imports and dampen the increase in import demand that is driven by economic growth.

INTRODUCTION

During the period from 1980 to 2007, Egypt's fish imports increased from 47.91 to 258.9 with an annual average of 145.37 thousand tonnes, while production increased from 143.06 to 1008 with an annual average of 471.63 thousand tonnes [General Authority for Fish Resources Development (GAFRD), Central Agency for Public Mobilization and Statistics (CAPMAS), 1980 – 2007]. During this period, the estimated annual average per-capita production and imports were 7.82 Kg and 2.51 Kg, respectively. While the average ratio of fish products imports to the amount of fish available for consumption was about 26.03%. The estimated annual growth rate in per-capita fish imports and domestic fish production were 2.44% and 5.57%, respectively (Calculated from available data).

As domestic fish production failing to keep up with local demand over the last 28 years, studying and understanding of the determinants of import demand for fish in Egypt to meet domestic demand is pertinent. The results of such studies should provide useful information for understanding the relationships between fish products import demand and its key determinants in Egypt. This information could be utilized by policy makers to predict changes in fish consumption and fish trade balance and to take the necessary actions to optimize fish products imports.

The purpose of this paper is to empirically investigate the determinants of import demand function for fish products in Egypt. A related objective is to derive prices, income, and exchange rate elasticities of fish products import demand.

The Model, Data, and Econometric Methods

The Model:

Based on the extensive literature focusing on the econometric estimation of import demand, the basic determinants of imports include: import price, domestic price, real income, exchange rate, and population. Sometimes, researchers tend to use the relative price of imports, ratio of import price to domestic price, when multicollinearity exists (Doroodian, Koshal, and Al-Muhanna, 1994; Abbott and Seddighi, 1996; Sanos and Montanes, 2002; Agbola and Damoense, 2005). However, other researchers have used import and domestic prices as separate variables in estimating import demand functions (Fuller, Gutierrez, and Capps 1992; Fuller, Bello, and Capps, 1992; King, 1993; Peridy, Guillotreau, and Bernard, 2000; Fischer, 2004). Gross Domestic Product (GDP) is generally used as a measure of income, however, many researchers have pointed out that consumption expenditure might represent a better proxy of income than GDP (King, 1993; Periday, Guillotreau, and Bernard, 2000). The most commonly used functional forms for import demand are linear and log-linear forms. The choice between the two forms is an important issue as there will be both statistical and economic implications. Many researchers have adopted the use of the log linear form of the import equation in their empirical work (Fuller, Gutierrez, and Capps, 1992; Periday, Guillotreau, and Bernard, 2000; Doroodian, Koshal, and Al-Muhanna, 1994; Abbott and Seddighi, 1996; Fischer, 2004; Agbola and Damoense, 2005). The small country assumption is invoked, hence, Egypt is a price taker and import supply elasticities are assumed infinite. Consequently, import price may be treated as exogenous and a single equation import demand can be specified (Fuller, Gutierrez, and Capps, 1992; Fuller, Bello, and Capps, 1992). The per-capita import demand equation for fish products in Egypt can be specified in general terms as follows:

LQM = f (LPM, LPFP, LREX, LQFPL, LRGDP or LCEX) (1)

The dependent and explanatory variables are measured on a per-capita basis to account for changing population size. Variables are deflated by the appropriate index to eliminate the effect of changes in general price level using 2002 as the base year. The letter (L) denotes natural logarithm. QM expresses the quantity of imported fish products (Kg) and PM reflects the real price of imported fish products (L.E. /Kg). PFP is the real price of domestically produced fish (L.E. /Kg), and REX is the real exchange rate (L.E./ $). QFPL is per-capita domestically produced fish, RGDP is the real gross domestic product, and CEX is the real household consumption expenditures (L. E.). A dummy variable reflecting the introduction of economic reform program in 1991, and a trend reflecting the changes in tastes and preferences can be added as additional explanatory variables in equation (1). The effect of PM or REX on the dependent variable QM is expected to be negative. The influence of income (RGDP or CEX) or PFP is hypothesized to be positive. Finally, the sign of QFPL is hypothesized to be negative.

Data Sources:

Quantities and values of fish production and imports were obtained from GAFRD and CAPMAS and were used to obtain nominal PM and PFP in addition to QM. Nominal RGDP values were obtained from Ministry of Economic Planning, while consumer price index and population estimates were obtained from CAPMAS. Nominal REX and CEX values were obtained from National Accounts Main Aggregates Data Base section of the web page maintained by the United Nations. Consumer price index for all items with 2002 being the base year was used to estimate real REX, RGDP, PFP, and PM. The data cover the period from 1980 to 2007.

Econometric Methods:

Normal statistical inference for linear regression on non-stationary time series is not valid and casts doubts on the reliability of the results. In addition, non-stationarity of the series implies a different econometric method. Therefore, before estimating the equation, all data series have to be tested to determine whether they were stationary. The concepts of stationarity, integration, cointegration, and error correction modeling have been reviewed by many researchers [see, for example, Engle and Granger (1987); Kennedy (1992); Charemza and Deadman (1992); Hendry and Juselius (2000, 2001); Wang and Tomek (2007)]. This section relies on the work of the above-mentioned references. A variable (X) is said to be stationary if its mean and variance are constant over time and its covariance with other X values, say X_{t-k}, do not depend on time. If one or more of the conditions above are not fulfilled, the variable is said to be non-stationary. A non-stationary variable which can be stationary by differencing d times is said to be integrated of order d (i.e. I (d)). The most popular methods to test for stationarity and the order of integration are Augmented Dickey-Fuller test (ADF), Phillips-Perron test (PP), and Kwiatkowski, Phillips, Schmidt, and Shin test (KPSS). Non-stationary variables can be modeled and estimated by OLS using only the appropriated differenced variables. However, this approach results in loosing valuable information concerning the long-run equilibrium properties of the data. This motivated researchers to introduce the concept of cointegration and the associated error correction models. A group of non-stationary variables is cointegrated if there is a linear combination of them that is stationary. This linear combination is termed cointegrating equation and is interpreted as a long-run equilibrium relationship. If a set of integrated variables are cointegrated, then regressing one on the others should produce residuals that are stationary. Engle and Granger (1987) have shown that any cointegrated series have an error correction representation. The Engle-Granger method consists of two steps, first the long-run model is estimated using the variables in levels and the residuals series is tested for unit root. If residuals were stationary, the short-run model in the required differenced form is estimated with lagged residuals from the long-run model included as an additional explanatory variable (error correction term). Another method to test for cointegration is the Johansen maximum likelihood. The test uses vector autoregression method to determine the number of the cointegrating equations, which is termed the cointegrating rank (r). If there are N integrated variables, there can be from zero to N-1 cointegrating equations. If there are N cointegrating equations, it means that none of the variables is actually integrated.

Empirical Results and Discussions

ADF, PP, and KPSS tests are used in this study to test for the stationarity of the variables. The null hypothesis in both ADF and PP tests is that the variable has a unit root (i.e. non-stationary) and the alternative is that the variable is stationary. KPSS test has the null hypothesis of stationarity and the alternative of non-stationarity. KPSS test should be viewed as complementary with other unit root tests rather than competing.

Unit Root Tests Results

ADF and PP tests including intercept and trend were used to test for the stationarity of the variables. Table 1 reports the unit root statistics for each variable. The null hypothesis of a unit root (non-stationarity) was rejected for LPFP and LQM series and KPSS test results support this finding. LRGDP variable proved to be non-stationary in the level and stationary in its first-differenced form by the results of the three tests. There was no definite conclusion regarding the stationarity of LPM, LREX, LQFPL, and LCEX, since ADF, PP, and KPSS statistics yield different results. One can accept the hypothesis of non-stationarity of these variables as a working hypothesis (Agbola and Damoense, 2005). On the other hand, given that unit root tests are sensitive to small samples, one can assume the stationarity of the variables (Anaman and Buffong, 2001).

Table 1. Test Results for Unit Roots.

Variable	ADF Test		P.P Test		KPPS Test	
	level	First Difference	level	First Difference	level	First Difference
LQM	- 5.450***	———	- 5.472***	———	0.074	———
LPM	- 3.722**	———	- 2.506	- 4.227***	0.108	———
LPFP	- 4.082**	———	- 4.149**	———	0.103	———
LREX	- 2.573	- 7.005***	- 2.343	-6.480***	0.133	———
LRGDP	- 2.232	- 7.634***	- 1.608	- 7.136***	0.162**	0.058
LQFPL	- 2.719	- 3.440*	- 2.930	- 6.208***	0.0519	———
LCEX	- 4.806***	———	- 3.030	- 4.389***	0.057	———

Notes: *, **, and * represent 1%, 5%, and 10% significance levels, respectively.**

Ordinary Least Squares Estimation of Long-Run Fish Import Demand

Following the option of ignoring stationarity test results due to small sample size (28 observations), fish import demand model was estimated using OLS method bearing in mind to compare its results with those obtained from cointegration and error correction methods. The total per-capita expenditure variable (LCEX) proved to be more powerful than LRGDP in explaining variations in LQM. The dummy, QFPL, and trend variables have been tested in the model with out success, consequently, they were omitted from the estimated equation. The final equation is presented below after correcting for serial correlation:

LQM = -9.332 - 0.142 LPM + 0.629 LPFP - 0.466 LREX + 1.184 LCEX) (2)

	(2.521)	**(0.058)**	**(0.178)**	**(0.108)**	**(0.274)**
	(-3.702)	**(-2.466)**	**(3.524)**	**(-4.302)**	**(4.317)**
	(0.001)	**(0.022)**	**(0.002)**	**(0.000)**	**(0.000)**

R^2= 0.76; R^{-2} = 0.70; S.E= 0.13; F = 13.25; Prob. of F-statistic = 0.00; DW = 2.28.

Where figures in the first set of parentheses are the estimated standard errors of the coefficients, the figures in the second set of parentheses are the calculated t-statistics, and the figures in the third set of parentheses are significance levels. The null hypothesis of Ramsey's test was not rejected (F = 0.498; Probability of F = 0.61) indicating no specification errors including incorrect functional form, omitted variables, or correlation between the explanatory variables and the error term. Breusch – Godfrey Lagrange multiplier test result support the absence of serial correlation in the residuals (F = 1.89; probability of F = 0.18). All the estimated coefficients had the expected sign. These coefficients represent elasticities with respect to per-capita fish imports. Income measured as per-capita total expenditure had the greatest elasticity followed by price of domestically produced fish, exchange rate, and price of imports, in order. Fish products import demand proved to be inelastic with respect to its own price, domestically produced fish price, and exchange rate, and proved to be slightly elastic with respect to total consumption expenditure. The increase in the price of imports or exchange rate by one L. E leads to a decrease in the per-capita fish products imports by 108 g or 181g, respectively. While an increase in the price of locally produced fish or in per-capita total expenditure by one L. E. results in increasing the per-capita fish products imports by 156.2 g or 0.76 g, respectively.

Fish Import Demand Functions: Cointegration Approach

Long-Run Import Demand Function:

Johansen maximum likelihood cointegration testing procedure was applied to test for possible cointegrating relationships between variables in the import demand equation. Table 2 reports the results of the rank test of the model. The Trace test results indicate that the null hypotheses of $r = 0$ and $r \leq 1$ are rejected by the data at 1% and 5% levels, indicating that there are two cointegrated vectors. These results confirm the existence of an underlying long-run equilibrium between the variables in logarithms in the import demand function. Based on economic theory and the signs of the vector cointegration components, the following vector was used to represent the long-run relationship.

LQM = -5.784 – 0.392 LPM + 0.364 LPFP – 0.289 LREX + 0.819 LCEX *(3)*

	(0.728)	**(0.015)**	**(0.048)**	**(0.028)**	**(0.079)**
	(7.939)	**(25.85)**	**(7.498)**	**(10.29)**	**(10.27)**

Table 2. Johansen Cointegration Tests – Variables LQM, LPM, LPFP, LREX, LCEX.

H_o	H_A	Eigen - value	Trace Statistic	Trace 5% Critical Value	Trace 1% Critical Value
r = 0	r =1	0.973	154.247**	76.07	84.45
r ≤ 1	r =2	0.698	63.845**	53.12	60.16
r ≤ 2	r =3	0.610	33.860	34.91	41.07
r ≤ 3	r =4	0.233	10.284	19.96	24.60

****: denotes the rejection of Ho at 1% level.**

Where figures in the first set of parentheses are the estimated standard errors of the coefficients and the figures in the second set of parentheses are the calculated t-statistics. All
the estimated coefficients were statistically significant at 1% level of significance. Residuals were obtained from the long-run equation (equation 3) and tested for stationarity. Results of the stationarity test of the residuals (ECT) indicate the absence of unit root (Table 3). The stationarity of ECT is an additional evidence of the existence of long-run relationship between the variables in the import demand equation. The results showed that fish import demand is inelastic with respect to its own price, price of domestically produced fish, exchange rate, and consumption expenditure. This is in agreement with the results obtained from equation (2) except for consumption expenditure elasticity. The demand with respect to consumption expenditure in equation (2) was slightly elastic. However, the expenditure elasticity obtained here (equation 3) is consistent with conventional theory that food is a necessity item. Also, this result is in agreement with previous research findings. Utilizing Egyptian family budget survey data, EL-Eraky (1991) estimated fish expenditure elasticity at 0.88, while Hebicha (1991) estimated it at 0.92 in rural areas, and AL-Seretty (2007) found it to be 0.9. In their study across 114 countries using 1996 data, Seal, Regmi, and Bernstein (2003) have shown that expenditure elasticity for fish in middle-income countries ranged from 0.57 to 0.81 with Egypt having an estimate of 0.77. The estimated elasticities and the effect of increasing determinants of the import by one unit on imports are shown in table (4) for both equations. However, in subsequent analysis and recommendations, the estimates obtained using cointegration analysis (equation 3) will be used.

Table 3. Unit Root Test of the Residuals Obtained from Equation (3).

	ADF Test	P.P Test	KPPS Test
Calculated Test Statistic	-3.763***	-5.508***	0.396
Test Critical Value at:			
1 % level of significance	-3.752	-4.339	0.739
5 % level of significance	-2.998	-3.587	0.463
10 % level of significance	-2.638	-3.229	0.347

*****: significant at 1% level of significance**

Table 4. Long-Run Elasticities and the Effect of Key Variables on Per-Capita Fish Products Import for the Estimated Two Long-Run Equations.

Key Variables	Effect of one Unit Increase in Key Variables on Per-Capita Fish Imports.		Elasticity of Per-Capita Fish Imports with Respect to key Variables.	
	Cointegration Method (Eq. 3)	Classical OLS (Eq.2)	Cointegration Method (Eq. 3)	Classical OLS (Eq.2)
Import Price (L.E./Kg)	- 0.15	- 0.108	- 0.392	- 0.142
Locally Produced Fish Price (L.E./Kg)	0.09	0.156	0.364	0.629
Exchange Rate (L.E./$)	- 0.112	-0.181	- 0.289	- 0.466
Consumption Expenditure (L.E.)	0.0005	0.0007	0.819	1.184*

Source: Author's calculation, *: Wald Test did not reject the null hypothesis that the coefficient = 1 (F=0.45, Probability = 0.50)

Short-Run Import Demand Function:

The lagged residual error derived from the log-run model (Equation 3) was incorporated into the error correction model proposed by Engle and Granger (1987). The estimated model is:

$$\Delta LQM = -0.014 - 0.247\ \Delta LPM + 0.597\ \Delta LPFP - 0.341\ \Delta LREX + 1.879\ \Delta LCEX - 1.007\ ECT \quad (4)$$

(0.035) (0.109) (0.236) (0.305) (0.658) (0.221)

(0.411) (-2.269) (2.531) (-1.119) (2.855) (-4.548)

(0.685) (0.033) (0.019) (0.275) (0.009) (0.000)

R^2= 0.62; R^{-2} = 0.53; S.E= 0.16; F = 6.79; Prob.of F-statistic = 0.00; DW = 2.26.

Where ECT is the lagged residual error from equation (3), and Δ denotes first difference operator. Figures in the first set of parentheses are the estimated standard errors of the coefficients, the figures in the second set of parentheses are the estimated t values, and figures in the third set of parentheses represent significance levels. The null hypothesis of Ramsey's test was not rejected (F = 2.18; Probability of F = 0.14) indicating no specification errors, while Breusch – Godfrey Lagrange multiplier test result support the absence of serial correlation in the residuals (F = 1.68; probability of F = 0.21). The R^2 value is 0.62, which is normal for estimating time series data in error correction models. Explanatory variables in the model were collectively significant as indicated by the F test and all the coefficients had the expected sign. The most important coefficient in the short-run model (equation 4) is the error correction coefficient. The coefficient is significantly smaller than zero, as expected, which indicates support for maintaining the cointegration hypothesis. This coefficient measures the speed at which per-capita fish import quantities adjust to changes in the explanatory variables before returning to its equilibrium level. The estimated error correction coefficient (1.007) indicates that adjustment toward long-run equilibrium is about 100% per year. In other words, any deviation from long-run equilibrium of capita fish products import is corrected completely the following year.

Only the estimated elasticities of fish import with respect to its own price and exchange rate were less than their counterparts in the long-run. According to LeChatelier principle, the long-run demand function will have equal or less slope than a corresponding short-run function, i. e. long-run function will be equal or more elastic than short-run counterpart (Beattie and Taylor, 1985). However, in applied research, due to the nature of data and / or sample size, this condition was not met in every case. In examining the relationship between aggregate demand and macroeconomic components and indicators, the estimated long-run elasticity of demand with respect to exports was 0.38 and its short-run counterpart was 0.88 (Alias, and Cheong, 2000). Dritsakis (2003) estimated elasticity of cigarette consumption with respect to price at 0.0008 in the long-run and at 0.07 in the short-run, and the estimates with respect to disposable income were 0.05 and 0.22 for long and short-run, respectively. The estimated elasticity of aggregate food import demand in Germany with respect to tourism was 0.45 in the long-run and 0.69 in the short-run (Fischer, 2004).

CONCLUSION

The purpose of this study was to investigate the determinants of import demand for fish products in Egypt using annual data over the period 1980-2007 and to estimate the associated elasticities. The study starts by examining time series properties of the variables employed in the analysis using ADF, PP, and KPSS tests of unit root and Johansen procedure for cointegration testing. The results indicated the non-stationarity of most of the variables. The results also confirmed the existence of long-run equilibrium relationship between fish import demand, consumption expenditure, exchange rate, and prices of imported and domestically produced fish, on per-capita basis.

The estimated import demand functions fit the data well. Estimated coefficients had the correct signs in the short and the long-run functions. The dominant determinant of fish products import demand in the short and long-run was consumption expenditure meaning that economic growth would lead to higher demand. Results of the estimated error correction model indicated that any deviation from long-run equilibrium in per-capita fish import demand is completely corrected the following year.

The results of the long-run function showed that imported fish product was inelastic with respect to its own price, price of locally produced fish, real exchange rate, and consumption expenditure. Long-run import demand elasticities with respect to import price, locally produced fish price, real exchange rate, and consumption expenditure were -0.39, 0.36, -0.29, and 0.82, respectively. A rise in import price by 10% will cause fish imports to decrease by 3.9%, while a decrease in domestically produced fish price by 10% would decrease imports by 3.6%. Depreciation of the exchange rate by 10% would decrease fish import by 2.9%, and increasing consumption expenditure by

10% would increase fish imports by 8.2%. Therefore, apart from financial policy tools that affect exchange rate, measures to support fish sector in the areas of production, transportation, and marketing could lead to reduction in fish prices and in imports and dampen the increase in import demand that is driven by economic growth.

REFFERENCES

Abbott, A. J., and H. R. Seddighi. 1996. Aggregate Imports and Expenditure Components in the UK: An Empirical Analysis. Applied Economics, 28: 1119 – 1125.

Agbola, F. W., and M. Y. Damoense. 2005. Time – Series Estimation of Import Demand Functions for Pulses in India. J. of Economic Studies, 32 (2): 146 – 157.

Alias, M. H., and T. T. Cheong. 2000. Aggregate Imports and Expenditure Components in Malaysia. ASEAN Econ. Bulletin, 17 (3): 257 – 269.

Anaman, K. A., and S. M. Buffong. 2001. Analysis of the Determinants of Aggregate Import Demand in Brunei Darussalam from 1964 to 1997. Asian Econ. J., 15(1): 61 – 70.

AL-Seretty, S. M. A. 2007. An Economic Study of Fish Consumption and the Effect of its Expenditure in Egypt. The 15th Agricultural Economics Conference, Live Stock Sector and Egyptian Agriculture Development, Cairo, 17-18 October, PP. 208 – 241, Egyptian Association of Agricultural Economics (in Arabic).

Beattie, B. R, and C. R. Taylor. 1985. The Economics of Production. John Wiley & Sons, Inc.

Central Agency for Public Mobilization and Statistics. 1980-2007. Consumer Price Indexes for Main Sections and Groups.

Central Agency for Public Mobilization and Statistics. Statistical Year Book. Different Issues.

Central Agency for Public Mobilization and Statistics. Fish Production Statistics. Different Issues.

Charemza, W. W., and D. F. Deadman. 1992. New Directions in Econometric Practice: General to Specific Modelling, Cointegration and Vector Autoregression. Edward Elgar Publishing Limited, Hants, England.

Dritsakis, N. 2003. Forecasting Cigarette Consumption in Greece: An Empirical Investigation with Cointegration Analysis. Agri. Econ. Rev., 4 (2): 47 – 56.

Doroodian, K., R. K. Koshal, and S. AL-Muhanna. 1994. An Examination of the Traditional Aggregate Import Demand Function for Saudi Arabia. Applied Economics, 26: 909 – 915.

EL-Eraky, M. B. 1991. Household Size Price Policy and The Cost of Food in Egypt. Egyptian J. Agr. Econ., 1 (1): 33 – 43.

Engle, R. F., and C.W.J. Granger. 1987. Cointegration and Error Correction: Representation, Estimation, and Testing. Econometrica, 55 (2): 251 – 276.

Hebicha, H. A. 1991. The Effects of Income and Family Size on Per Capita Consumption of Food and Major Food Items in Egypt. AL-Azhar J. Agr. Res.,13: 145 – 155.

Peridy, N. P., P. Guillotreau, and P. Bernard. 2000. The Impact of Prices on Seafood Trade: A Panel Data Analysis of the French Seafood Market. Marine Resource Economics, 15: 45 – 66.

Fischer, C. 2004. The Influence of Immigration and International Tourism on the Demand of Imported Food Products. Acta. Agric. Scand., Sect. C, Food Economics, 1: 21 – 33.

Fuller, S. W., H. Bello, and O. Capps, Jr. 1992. Import Demands for U.S. Fresh Grapefruit: Effect of U. S. Promotion Programs and Trade Policies of Importing Nations. Southern J. of Agr. Econ., 24 (1): 251 – 260.

Fuller, S. W., N. Gutierrez, and O. Capps, Jr. 1992. International Dry Onion Trade: Factors Affecting Import Demands for U.S. Dry Onion. Agribusiness, 8 (5): 445 – 455.

General Authority for Fish Resources Development. Fish Production Statistics. Ministry of Agriculture and Land Reclamination. Cairo, Egypt. Different Issues.

Hendry, D. F., and K. Juselius. 2000. Explaining Cointegration Analysis: Part I. The Energy J., 21 (1): 1 – 41.

Hendry, D. F., and K. Juselius. 2001. Explaining Cointegration Analysis: Part II. The Energy J., 22 (1): 75 – 90.

Kennedy, Peter. 1992. A Guide to Econometrics. 3 rd Edition. The MIT Press, Cambridge, Massachusetts.

King, Alan. 1993. The Functional Form of Import Demand: The Case of UK Motor Vehicle Imports, 1980-90. J. of Economic Studies, 20 (3): 36 – 50.

Ministry of Economic Planning. Macro Indicators. Available at Egypt's Information Portal- Statistical Indicators.

Sanso, M., and A. Montanes. 2002. Cointegration, Error Correction Mechanism and Trade Liberalization: The Case of Spanish Imports of Manufactures. Applied Economics, 34: 231 – 240.

Seale, J. Jr., A. Regmi, and J. Bernstein. 2003. International Evidence on Food Consumption Patterns. USDA, Tech. Bulletin No. 1904.

United Nations Statistics Division – National Accounts. Accessed from http:// unstats.un. org.

Wang, D., and W. G. Tomek. 2007. Commodity Prices and Unit Root Tests. Amer. J. Agr. Econ., 89 (4): 873 – 889.

الطلب علي واردات الأسماك ومنتجاتها في مصر : تحليل بأستخدام التكامل المشترك وتصحيح الخطأ.

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يهدف هذا البحث لدراسة محددات الطلب علي واردات الأسماك ومنتجاتها في مصر وتقدير المرونات المرتبطة بها بإستخدام بيانات سنوية للفترة من ١٩٨٠ الى ٢٠٠٧ م. تم إختبار سكون السلاسل الزمنية للمتغيرات المستخدمة في الدراسة وذلك بتطبيق إختبارات جذر الوحدة (KPSS, PP, ADF) وكذلك إستخدام منهجية جوهانسن للتكامل المشترك للتأكد من وجود علاقة توازنية طويلة الأجل بين المتغيرات . تم إستخدام عام ٢٠٠٢ م كسنة أساس لحساب الأسعار والإنفاق وسعر الصرف الحقيقي. وأوضحت نتائج الإختبارات عدم سكون السلاسل الزمنية لمعظم المتغيرات ووجود علاقة توازن طويلة الأجل بين الكمية المطلوبة من واردات الأسماك (كجم/فرد) ، الإنفاق الإستهلاكي (جنيه/فرد) ، سعر الصرف (جنيه/ دولار) ، سعر الواردات السمكية (جنيه/ كجم) وسعر الأسماك المنتجة محليا (جنيه/ كجم). بينما لم تثبت معنوية المتغير الصورى الخاص ببدء تنفيذ برنامج الإصلاح الإقتصادى فى عام ١٩٩١ أو المتغير الخاص بالزمن. وأكدت نتائج تقدير دوال الطلب المعنوية الإحصائية للمتغيرات المستقلة وإتفاق إشارات معالم الدوال مع النظرية الإقتصادية . تبين أن المحدد الأكثر تأثيرا علي الواردات السمكية في المدي القصير والمدي الطويل هو الإنفاق الإستهلاكي مما يعني أن النمو الإقتصادي سيؤدي إلي زيادة هذه الواردات . كما أكدت نتائج تقدير الدالة في المدي القصير بإستخدام نموذج تصحيح الخطأ أن ١٠٠% من إختلال التوازن في الطلب الفردي علي الواردات السمكية يتم تصحيحة في السنة التالية. أوضحت نتائج التكامل المشترك لتقدير دالة الطلب في المدي الطويل أن تقديرات مرونة الطلب بالنسبة لسعر الواردات وسعر الأسماك المنتجة محليا وسعر الصرف والإنفاق الإستهلاكي هي – ٠,٣٩، ٠,٣٦ ، – ٠,٢٩، ٠,٨٢ علي الترتيب . وعلي ذلك فبغض النظر عن أدوات السياسات المالية التي تؤثر علي سعر الصرف الحقيقي يمكن إتخاذ الوسائل اللازمة لدعم القطاع السمكي في مجالات الإنتاج والنقل والتسويق لتؤدي الي خفض أسعار الأسماك المنتجة محليا وبالتالي خفض الزيادة المتوقعة في الواردات السمكية كنتيجة للنمو الإقتصادي.