Demand for Egyptian Molasses in the World Market: a Panel Estimation

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Abstract: Although Egypt is considered one of the most important export countries for molasses in the world market, Egyptian molasses export witnessed notable fluctuations during the last decade. Nevertheless, there is almost no study investigates and estimates the factors affecting its demand in the world market. The present study aims mainly toestimate demand function of the Egyptian molasses in the global market and in each individual importer market. Competitors' relative prices, income of import country, exchange rate of rival exporters, and volatility of relative prices and exchange rate were the proposed determinants of the exported quantity of Egyptian molasses in the global market. Random effects analysis was conducted to estimate the demand function using panel data of three importer countries during the period of 1986-20012. The results showed that Egypt/India price ratio, Egypt/Pakistan exchange rate, and pricesvolatilityare significantly affecting negativelythe Egyptian molasses exports. The results of the estimation of demand function for each importer country independently showed nearly the same conclusions with minor differences. The responsiveness of Egyptian molasses exports to UK, Italy, and Spain Markets to the price ratios were measured by the price ratios elasticities in each market. The elasticities of Egypt/Pakistan Price ratio showed highest elasticities in UK and Spain markets by 4.85% and 4.12%, respectively. The Egypt/India price elasticity was the highest in Italy market by -5.

Keywords: Price volatility – Exchange rate – Exports - Im-Pesaran-Shin test (IPS) - Random Effects Model

INTRODUCTION

Egypt's agriculture is the main pillar upon which ancient Egyptian civilization flourished and has been a vital source of wealth throughout history. Nevertheless, the sectoral growth rate of value added in agriculture was persistently lower than half that of industry and services sectors (Kheir-El-Din, 2008). Despite agriculture played anessential role in boosting Egypt's exports accounted for two-thirds of total exports until the mid-1970 (Al-Santarisi, 1995), the relative importance of Egypt's agricultural exports had dropped dramatically to 33% in 1987 and 10.4% during 1995-2003 (Bassyouni, 2009). On the other hand, agricultural imports increased significantly. Such phenomenon leads to chronic deficit in agricultural trade balance. As a result, the agricultural exports/imports ratio was 0.28 in 2005 (Alboghdady, 2007) and increased to 0.31 in 2012. Therefore, the policy of agricultural development is paying an attention to a new export strategy that would allow Egypt to, (i) alter from old strategies of exporting residuals to a new concept that is agriculture for export, and (ii) improving the international competitiveness of the agricultural export sector (World-Bank, 2001).

Molasses is one of the processed agricultural product by which Egypt competes in the global market. Egypt produced about 20% and exported about 50% of the African total production and export value, respectively during the period of 2005-2011. With widerinsight, Egypt produced about 1.2% and exported on average of 8% of the global molasses market[1]. The major countries compete in molasses world market are Indonesia, Pakistan, Thailand, Egypt, Germany, Guatemala, India, and United States of America. Pakistan, Thailand, India, and USA are the common competitors in the Egyptian molasses demand markets.

Egyptian molasses export witnessed notable oscillations during the last decade as seen in Figure (1). The world market share of Egyptian molasses export value decreased from 44 million US dollar representing 7% in 2006 to 0.3% in 2009 and 1.7% in 2011. Therefore, the present study aims mainly toexamine the main factors affecting Egyptian molasses export in the global market by estimating Egyptian molasses demand function.

METHODOLOGY

Goldstein and Khan (1978) set out the standard outline for analyzing export demand function at specific market. The main idea of the model specification is as follows:

$$X_t = \beta_0 + \beta_1 \left(\frac{Px_t}{Pw_t}\right) + \beta_2 Y_t \quad (1)$$

where, X_t is the quantity of export demand at time t, Px_t is the price of export at time t, Pw_t is the export price of competitors, and Y_t is the country's real income of the trading partner as the conventional demand theory says that, the consumer is postulated to maximize utility subject to a budget constraint, and β_0 and β_1 are unknown parameters. The model has been extended in such a way to account for real exchange rate and its volatility (Asseery and Peel, 1991; Chowdhury, 1993; Cushman, 1983; Hooper and Kohlhagen, 1978; Kenen and Rodrik, 1986; Serenis and Tsounis, 2012). The model can be summarized by:

$$X_t = \beta_0 + \beta_1 \left(\frac{Px_t}{Pw_t}\right) + \beta_2 Y_t + \beta_3 R_t + \beta_4 RV_t + \beta_5 PV_t \quad (2)$$

where, R_t is exchange rate of Egyptian currency with rivals. RV_t is the exchange rate volatility and VP is the volatility of the price ratio of $\left(\frac{Px_t}{Pw_t}\right)$. In terms of cross countries level panel data and flowing (Jin, 2010), the model for competitors j and imported market i will be:

[1] Computed from FAO database, www.faostat.fao.org

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$$X_{ti} = \beta_0 + \sum_{k=1}^{j}\left(\beta_{0k}\left(\frac{p_{xti}}{p_{k_{ti}}}\right) + \beta_{1k}PV_{kt} + \beta_{2k}R_{kt} + \beta_{3k}RV_{kt}\right) + \sum_{n=1}^{i}(\beta_{4i}GDP_{ti}) \quad (3)$$

According to economic theory, a rise in Egyptian molasses prices would reduce its quantity demanded and subsequently its market share. On the contrary, a rise in competitors' prices may stimulate the importer market to increase the importing of Egyptian molasses. Therefore, the expected signsof the coefficients (β_{0k}) of the price ratios $\left(\frac{p_{xti}}{p_{k_{ti}}}\right)$ are negative. Likewise, a rise in Egyptian currency against competitors in specific market may also reduce the demand for the Egyptian molasses in these markets. Thus, the expected signs of the coefficients β_{2k} of exchange rate ratios R_{kt} are negative. Intuitively, the volatility of exchange rate and prices have an inverse effect on exports due to high risk to importers that is why the expected sign of the coefficients of prices (β_{1k}) and exchange rate (β_{3k}) are expected to be negative. In contrast, the expect sign of the coefficients of real income of the trading partners are expected to be positive.

Measuring of exchange rate volatility is not directly observable so; there are many techniques of measuring volatility. Most empirical studies have utilized the standard deviation of the moving average (Serenis and Tsounis, 2012). Following Koray and Lastrapes (1989) and Akhtar and Hilton (1984), the volatility measure was calculated as:

$$V_t = \left[\frac{1}{m}\sum_{i=1}^{m}(\log R_{t+i-1} - \log R_{t+i-2})^2\right]^{1/2} \quad (4)$$

where,V_t is the volatility and m is the order of moving average which is specified as 3 in the present study.

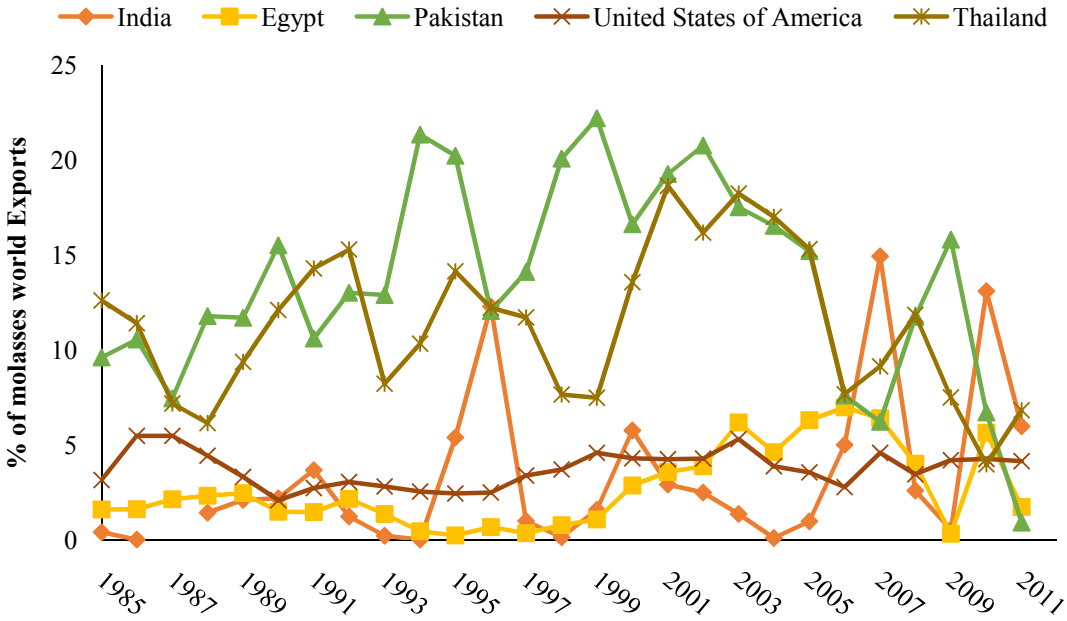

Fig. (1): Market Shares of Molasses Export in the World Market (1986-2012)

Data

Annual panel data covering the period of 1986-2012 were used in the current study. Egyptian exports quantities and prices of molasses to target markets and those from competitors are obtained from FAO statistics database. Exchange rates are acquired from Agricultural Exchange Rate Data Set (ERS) United States Department of Agriculture (USDA) Economic Research Service. A summary statistics of all data set are presented in Table (1).

Time series properties

When dealing with time series, a general problem is non-stationarity with the data. Non-stationary and co-integration may also exist in panel data, which may lead to spurious regressions. There are many tests for unit root or stationarity in panel datasets. Levin *et al.* (2002), Breitung and Das (2005), Im *et al.* (2003), and fisher-type Choi (2001) tests have as the null hypothesis that all the panels contain a unit root. Im-Pesaran-Shin (IPS) unit-root test has been adopted because of its several advantages compared with the other mentioned tests: (i) IPS test is not as restrictive as the Levin-Lin-Chu test. (ii) Since it allows for heterogeneous coefficients, the small sample performance of the IPS test is better than Levin-Lin-Chu test.` (iii) It allows unbalanced panels, while most of the remaining tests require balanced panels. The general structure used by most panel unit root testing procedures is:

$$\Delta y_{it} = \rho_i y_{i,t-1} + \sum_{i=1}^{p_i}\theta_{i,j}\Delta y_{i,t-1} + \beta_i d_{it} + \varepsilon_{it} \quad (5)$$

where, d_{it} are the deterministic components. ρ_i= 0 means the y process has a unit root for individual i, while ρ_i< 0 means that the process is stationary around the deterministic part.

Table (1): Summary statistics of export demand function components for Egyptian molasses during the period of (1986-2012).

Item	Unit	Mean	St. Dev.	Min.	Max.
Egyptian molasses exports	1000 Tons	201.61	143.71	19817	476826
Egyptian price	US $	98.75	35.93	52.91	175.32
Indian price	US $	86.92	65.05	38.48	345.68
Pakistan price	US $	56.14	25.41	23.66	122.48
Thailand price	US $	57.95	23.85	27.61	129.32
Indian currency Exchange rate	Indian Rupee	55.65	9.90	36.38	68.42
Pakistan currency Exchange rate	Pakistani Rupee	84.45	13.56	62.83	113.25
Thailand currency Exchange rate	Thai Baht	34.84	5.65	27.40	45.91
UK GDP	Billion USD	1653.90	684.28	601.93	2964.40
Italy GDP	Billion USD	1428.45	504.93	631.72	2403.21
Spain GDP	Billion USD	812.75	419.26	250.68	1642.74

Source: FAO statistics database and Agricultural Exchange Rate Data Set (ERS).

The results of unit root test are presented in Table (2). The test was applied for drift and trend models.We could reject the null hypothesis (the series contains a unit root) at the significance level 5% for molasses price of India, Thailand, and USA. The null hypothesis also could rejected at significance level of 1% for molasses prices of Egypt and Pakistan. In contrast, we could not reject it for the variables of exchange rates except of Pakistan exchange rate at the first order of difference.

The results of trend model indicated that the null hypothesis was rejected at significance level of 5% for USA price and at 1% for Egypt, India, Pakistan, and Thailand prices. Instead, a unit root has been detected in exchange rate prices. As a result, the differencing was conducted to induce stationary. An i (1) was required for Pakistan exchange rate, i (2) for India exchange rate, and i (3) for Thailand and USA exchange rates.

Table (2): Results of Im-Pesaran-Shin unit root test

Variables	Drift		Trend	
	Statistic	Lags	Statistic	Lags
Egypt Molasses Export Price	-3.6114 (0.0005)**	0	-3.6114 (0.0005)**	0
India Molasses Export Price	-3.2497 (0.0298)*	0	-3.8699 (0.0060)**	0
Pakistan Molasses Export Price	-3.5213 (0.0006)**	0	-3.5213 (0.0006)**	0
Thailand Molasses Export Price	-2.7290 (0.0185)*	0	-3.0050 (0.0059)**	0
U.S.A Molasses Export Price	-3.2542 (0.0176)*	0	-3.2622 (0.0400)*	0
Egypt-India Exchange Rate	-0.2419 (0.4044)	2	-1.8939 (0.0291)*	2
Egypt-Pakistan Exchange Rate	-3.4769 (0.0003)**	1	-2.1267 (0.0167)*	1
Egypt-Thailand Exchange Rate	0.1489 (0.5592)	3	-3.7854 (0.0001)**	3
Egypt-U.S.A Exchange Rate	0.7038 (0.3876)	3	-1.5785 (0.0455)*	3

Symbols * and ** refer to the rejection of the null hypothesis of unit root at the percent of 5 and 1 significance levels, respectively. Values between parentheses are standard error.

RESULTS AND DISSCUSION

This section is divided into two parts; the first part concerned with the results from the panel estimation of the Egyptian molasses export demand in the world market that are presented in Tables (3) and (4). The second part concentrates on the results of demand function estimation for each import market separately using ordinary least squares regression.

To decide between fixed or random effects model (FE or RE), a Hausman test has been conducted where thenull hypothesis is that the preferred model is random effects vs. the alternative thefixed effects (Greene, 2003). It mainly tests whether the uniqueerrors are correlated with the explanatory variables; the null hypothesis is they are not. The results of the Hausman test indicate to accept the null hypothesis as the difference in coefficients is not systematic. Thus, the RE is preferred than FE.

Results in Table (3) are the panel estimation of Random Effects Models of factors affecting the export demand quantity of Egyptian molasses. The results indicated that Egypt/Indian price ratio had negative and significant relationship with total export demand of Egyptian molasses, as one unit decrease in such relative price will lead to increase of the Egyptian molasses export by 686 tons. In contrast, Pakistan and Thailand relative prices were not significant. Coefficient of import country's income was positive and significant ate level 5% implying that one billion dollar increase corresponds to an increase of import of Egyptian molasses by about 281 tons. This result is consistent with economic logic because increase of the income for import countries lead to increase in their purchasing power. With respect to the relationship between exchange rate and export quantities, the results showed that the higher the Egyptian pound rate to Pakistani Rupee, the lower is the quantity demanded of Egyptian molasses. The negative sign of the estimated parameter was statistically significant at level 5%. The inter-relationship between the exchange rate and nation's competence to export is a complicated issue because of the feedback loop between them. Exchange rate has an impact on the trade balance (surplus or deficit), which sequentially affects the exchange rate. In general, however, depreciation of domestic currency stimulates exports and vice versa.

Table (3): Estimation of random effects model of the demand for Egyptian molasses in the world market

Variables	Coef.	Standard Error.	Z
Intercept	84454.96*	38349.95	2.2
Egypt/Indian price ratio	-685.94**	278.23	-2.57
Egypt/Pakistan price ratio	481.58 NS	584.84	0.82
Egypt/Thailand price ratio	-348.42 NS	421.23	-0.83
GDP	280.87*	14.68	1.97
Egypt-Pakistan Exchange rate	-799.19**	266.76	-3.00
Egypt-India Exchange rate	909.07 NS	672.96	1.35
Egypt Thailand Exchange rate	-508.26 NS	438.48	-1.16
Egypt/Indian price volatility	111.45 NS	98.41	1.13
Egypt/Pakistan price volatility	-220.54*	118.92	-1.95
Egypt/Thailand price volatility	75.776 NS	149.76	0.51
Egypt-Pakistan Exchange rate volatility	-1525.50*	862.34	-1.97
Egypt-India Exchange rate volatility	-433.81 NS	641.64	-0.68
Egypt Thailand Exchange rate volatility	-1633.46**	562.26	-2.91
R^2 within	0.51		
R^2 between	0.87		
R^2 overall	0.61		
Log likelihood	-295.96*		

Symbols * and ** refer to the significance of the parameters at the percent of 5 and 1 significance levels, respectively. NS refers to not significant.

Since the price is the final result of production and consumption, agricultural products are characterized by price volatility due to production and consumption variability. Variability in production may come from weather shocks, planted area, and yield variability. Consumption variability may come from changes in income. Thus, price of agricultural product is very vulnerable. The current concern is that food price volatility may have increased over recent years and may increase further in the future (Gilbert and Morgan, 2010). Accordingly, we investigated the impact of price volatility on Egyptian molasses exports. The results showed that price ratio volatility of Egypt/Pakistan had negative relation with Egyptian molasses export at significance level of 5% while the volatilities of Indian and Thailand price ratios were not significant. In this context, it is worried that augmented volatility creates uncertainty over future price levels which complicates investment, export, and impedes economic growth.

While it is commonly thought that exchange-rate volatility has negative impact on trade, for instance. Doğanlar (2002) and Cheung and Sengupta (2013), the economic literature has found that this is not always true. Therefore, we investigate the impact of the volatility of exchange rate on Egyptian molasses exports. The results showed that Egypt-Pakistan exchange rate volatility had negative and significant impact at level 5%, and also Egypt-Thailand exchange rate volatility had negative and significant impact at level 1%. In contrast, the relationship between Egypt-India exchange rate volatility and Egyptian molasses export was not proved. This result is consistent with Karemera *et al.* (2015) as the study results confirmed that exchange rate volatility is one of the factors affecting global meat trade.

Since most of volatility variables were not significant, it is sensible to re-estimate the model without volatility variables to avoid specification bias in the estimation through a redundant variable problem and the results are displayed in Table (4). The results in Table (4) are consistent with those in Table (3) in terms of quantity and quality of significant variables. To sum up, Pakistan and India are the most important competitor to Egypt in world market of molasses.

Table (4): Estimation of random effects model without volatility variables

Variables	Coef.	Standard Error.	Z
Intercept	75671.89*	43306.28	1.99
Egypt/Indian price ratio	-569.60*	294.86	-1.98
Egypt/Pakistan price ratio	409.69NS	658.89	0.62
Egypt/Thailand price ratio	-171.78 NS	465.82	-0.37
GDP	216.59*	15.97	2.04
Egypt-Pakistan Exchange rate	-609.49*	276.98	-2.20
Egypt-India Exchange rate	429.49 NS	707.79	0.61
Egypt Thailand Exchange rate	-145.99 NS	489.69	-0.30
R^2 within	0.482		
R^2 between	0.633		
R^2 overall	0.42		
Log likelihood	-303.71308*		

Symbols * and ** refer to the significance of the parameters at the percent of 5 and 1 significance levels, respectively. NS refers to not significant.

With closer insight, three markets had been selected according to Egyptian market share, and import regularity of Egyptian molasses. Fig. (2) displays time series of quantity demanded of Egyptian molasses in destination markets; UK, Italy, and Spain during the period 1986-2012. It is not difficult to note that the time trends of Italian and Spanish market imports are declining while UK market is not. Accordingly, it is necessary to estimate demand function for Egyptian molasses in each individual market. The estimated parameters of suchdemand function are presented in Table (5). The results of UK market showed that the price ratios of India had negative relationship with Egyptian molasses export and significant at level of 1%. As well as the coefficient of Pakistani price ratio is negative and significant at 5%. The results of the impact of exchange rate were similar to those of prices. On the other hand, the only significant coefficient of price ratio volatility was for Pakistani price. The Egypt-Pakistan Exchange rate volatility and Egypt-Thailand Exchange rate volatility had have negative signs indicating the inverse relationships between them and Egyptian molasses demand in UK market.

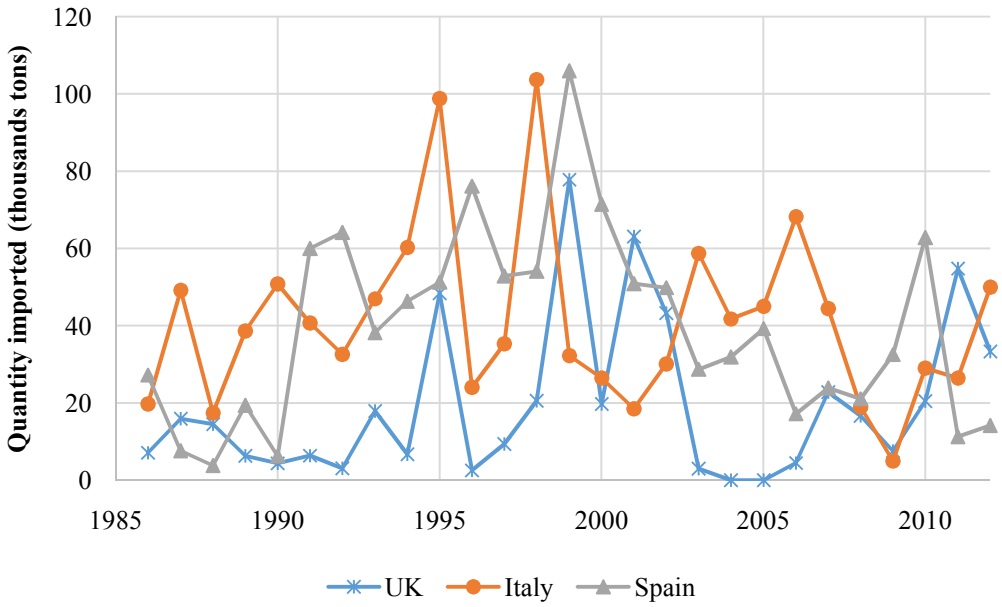

Fig. (2): Exports of Egyptian molasses in selected markets during 1986-2012.

Table (5): Ordinary least squares estimation of export demand function in targeted market.

Variables/ Market	UK	Italy	Spain
Intercept	-92882.80 (-0.57) ^{NS}	-4446900 (-5.16) **	5391030.00 (0.24) ^{NS}
Egypt/Pakistan price ratio	-580.88 (-2.81) *	1907.34 (1.15) ^{NS}	-1458.42 (-2.22) *
Egypt/Indian price ratio	-299.11 (-4.54) **	-1936.29 (-6.66) **	-1066.48 (-13.88)**
Egypt/Thailand price ratio	53.00 (0.07) ^{NS}	-234.72 (-2.68) *	-589.55 (-2.23) *
GDP	136.89 (2.98) *	5.50 (1.07) ^{NS}	11.38 (0.26) ^{NS}
Egypt-Pakistan Exchange rate	-1459.35 (-2.74) *	-1224.00 (-3.18) *	54.39 (0.62) ^{NS}
Egypt-India Exchange rate	-2414.03 (-3.08) **	-387.89 (-1.24) ^{NS}	-1513.17 (-4.86) **
Egypt Thailand Exchange rate	-1040.43 (-1.88) ^{NS}	438.03 (0.93) ^{NS}	221.17 (0.07) ^{NS}
Egypt/Pakistan price volatility	-478.02 (-2.59) *	-362.00 (-0.06) ^{NS}	-890.27 (-0.27) ^{NS}
Egypt/Indian price volatility	202.78 (0.99) ^{NS}	270.40 (1.42) ^{NS}	-340.53 (-3.09) *
Egypt/Thailand price volatility	356.55 (0.75) ^{NS}	-493.37 (-2.48) *	-401.88 (-2.41) *
Egypt-Pakistan Exchange rate volatility	-1688.95 (-4.08) **	678.64 (0.88) ^{NS}	259.77 (0.05) ^{NS}
Egypt-India Exchange rate volatility	-315.65 (-0.30) ^{NS}	-248.17 (-0.75) ^{NS}	-200.82 (-0.18) ^{NS}
Egypt-Thailand Exchange rate volatility	-1631.85 (-2.86) *	-74.74 (-0.92) ^{NS}	1.33 (0.27) ^{NS}
R^2	0.74	0.71	0.91
F	17.36	13.48	22.57
D.W	1.86	2.14	2.05

Symbols * and ** refer to the significance of the parameters at the percent of 5 and 1 significance levels, respectively. Values between parentheses refer to t student values. NS refers to not significant.

In Italian market, Price ratios were significant for both Egypt/Indian and Egypt Thailand price ratios at significance level of 5%. Unusually, Egypt/Pakistani price ratio was not significant. In contrast, exchange rates were not significant except of Egypt-Pakistan which was significant at level 5%. Variables of price ratios volatility were not significant except for Egypt/Thailand ratio which was significant at level 5%.

In Spanish market, price ratios are considered important factors since Egypt/Pakistan, Egypt/Indian, and Egypt/Thailand price ratios were significant and have negative relation, as expected, with quantity demanded of Egyptian molasses in the Spanish market. Egypt-India exchange rate showed negative and highly significant relation at level of 1%. Volatility variables showed variant relations and significance. Whereas price ratio volatility of Indian and Thailand are negative and significant at 5%, the volatility exchange rate variables are not significant.

The results of goodness fit for each model indicated that the proposed factors explain about 74%, 71%, and 91% of the total variance of Egyptian molasses exports in UK, Italy, and Spain market, respectively. The results of Durbin Watson test fortunately indicated that there is no auto-serial correlations.

To measure the responsiveness of Egyptian molasses exports to UK, Italy, and Spain Markets to the price ratios, the price ratios elasticities in each market were calculated in Table (6). The results showed that the highest responses of Egyptian molasses exports to Egypt/Pakistan price ratios were in UK and Spain markets reflecting the sever competition between Egyptian and Pakistani molasses in these markets. Consequently, results suggested that 1% increase in such price ratio may led to a decrease in Egyptian molasses to UK and Spain markets by 4.85% and 4.12%, respectively.

Moreover, the sensitivity of Egyptian exports of molasses to Egypt/India price ratios was highest in Italy market by 5.01% followed by in UK market by 1.75%. Conversely, the responsiveness to the Egypt/Thailand price ratios were not as those to Egypt/Pakistan and Egypt/Indian price ratios as they were 0.64% and 1.53% in Italy and Spain Markets respectively.

Table (6): Demand price ratios elasticities for Egyptian molasses in selected markets.

Price Ratio	UK		Italy		Spain	
	Average	Elasticity	Average	Elasticity	Average	Elasticity
Egypt/ Pakistan	1.73	-4.85	1.03	NS	1.13	-4.12
Egypt/India	1.21	-1.75	1.05	-5.01	1.09	NS
Egypt/Thailand	2.07	NS	1.12	-0.64	1.06	-1.53

Note: NS refers to not significant according to the estimated parameters in Table (4).

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الطلب على العسل الأسود المصري في السوق العالمي: تقدير قطاعي - زمني

محمد التابعي علي البغدادي
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تعتبر جمهورية مصر العربية أحد الدول الهامة في انتاج وتصدير العسل الإسود (دبس القصب)، وهو أحد مشتقات صناعة السكر، حيث تنتج مصر ما يعادل ٢٠٪ من اجمالي الناتج لقارة افريقيا، وتصدر ما يعادل ٥٠٪ من إجمالي قيمة الصادرات الأفريقية. تبلغ نسبة الصادرات المصرية نحو ٨٪ من اجمالي قيمة الصادرات العالمية من العسل الأسود والتي تبلغ نحو ٨١٥ مليون دولار كمتوسط للفترة (٢٠٠٥-٢٠١١م). تُعد باكستان والهند وتايلاند والولايات المتحدة الأمريكية اهم الدول المنافسه لمصر في تصدير هذا المنتج. كما تُعد المملكة المتحدة وايطاليا واسبانيا اهم الأسواق المستوردة للعسل الأسود المصري. ولقد شهدت صادرات مصر من هذا المنتج تذبذباً ملحوظاً خلال العقد الأخير حيث تذبذبت من نحو٩٪ من اجمالي الصادرات العالمية عام ٢٠٠٧ الى حوالي ٢.٣٪ عام ٢٠٠٩ ثم الى حوالي ٤.٤٪ عام ٢٠١١م. لذلك يهدف هذا البحث الى دراسة اهم العوامل المؤثرة على صادرات العسل الإسود المصري من خلال تقدير دالة الطلب لصادرات هذا المنتج في السوق العالمي. وقد تم اختبار السكون للسلاسل الزمنية واخذ الفروق المناسبه للمتغيرات غير الساكنه للتأكد من سكونها. ولتحديد التحليل الأمثل لتقدير النموذج في حالة البيانات القطاعية-الزمنية فتطلب الأمر الإختيار ما بين نموذجي التأثير الثابت (Fixed Effect Model) او نموذج التأثير العشوائي (Random Effect Model)، لذا تم تطبيق اختبار هسمان (Hausman test) والذي أوضحت نتائجه ان تطبيق نموذج تحليل التأثير العشوائي هو الأنسب باستخدام بيانات قطاعية زمنية لثلاثة اسواق مستوردة رئيسية خلال الفترة (١٩٨٦- ٢٠١٢م) وهي المملكة المتحدة وإيطاليا واسبانيا. بالإضافة الى انه تم تقدير دالة الطلب لكل سوق على حدة خلال نفس الفترة باستخدام طريقة المربعات الصغرى لتقدير معالم الإنحدار المتعدد.

وقد تكونت دالة الطلب من كمية الطلب على المولاس المصري في السوق العالمي كمتغير تابع والمتغيرات المستقلة ممثلة في السعر النسبي لكل من باكستان والهند وتايلاند نسبة الى السعر المصري بالإضافة الى سعر الصرف لعملات هذه الدول سالفة الذكر وكذلك مقدار التشتت السعري وتشتت سعر الصرف واللذان يعكسان جانب المخاطرة نتيجة للتغيرات السعرية. وقد أوضحت نتائج الدراسة ان السعر النسبي للهند وسعر الصرف للعملة الباكستانية وتشتت سعر المولاس الباكستاني وكذلك تشتت سعر الصرف لنفس العملة هي من اهم العوامل ذات التأثير السلبى على الطلب للصادرات المصرية من المولاس. من ناحية أخرى كان تأثير الناتج المحلى الإجمالي للدول المستوردة إيجابي عند مستوى معنوية ٥٪ والذي يتوافق مع النمطق الاقتصادي حيث ان المستهلك يعظم المنفعة في ظل الدخل المتاح ومن ثم فإن زيادة الدخل تزيد من القدرة الشرائية الاستيرادية للدول المستوردة.

وبتقدير دالة الطلب لكل سوق على حده، فقد أوضحت نتائج سوق المملكة المتحدة ان معالم التقدير لكل من السعر النسبي الباكستاني والهندي وسعر الصرف لنفس الدولتين بالإضافة الى تشتت السعر النسبى الباكستاني وتشتت سعر الصرف لكل من باكستان وتايدلاند كانت سالبة ومعنوية احصائياً لتؤكد على العلاقة العكسية بين هذه المتغيرات وكمية الطلب على المولاس المصري في السوق العالمي. وبتقدير دالة الطلب في السوق الإيطالي، تأكدت سالبية التأثير لكل من السعر النسبي الهندي والتايلاندي وسعر الصرف الباكستاني وتشتت سعر الصرف التايلاندي. اما بالنسبة للسوق الأسباني فقد ثبيت معنوية التأثير السلبي لكل من السعر النسي البكستاني والتايلاندي وسعر الصرف للعملة الهندية وتشتت السعر الهندي والتايلاندي. في حين لم تثبت معنوية اثر الدخل لكل من السوق الإيطالي والأسباني.

وبتقدير المرونة السعرية للأسعار النسبية للدول المنافسة في الأسواق الإستيرادية، تبين أن قيمة المرونة لسعر مصر/باكستان بلغت نحو ٤.٨٥- في السوق الإنجليزي ونحو ٤.١٨- في السوق الأسباني. وهذا يوضح ان انخفاض قدرة ١٪ في هذه النسبة السعرية سيؤدي الى زيادة صادرات مصر في السوق الإنجليزي بقرابة ٥٪ وفي السوق الأسباني بنحو ٤٪. اما بالنسبة لسعر مصر/الهند فقد بلغت المرونة نحو -٥ في السوق الإيطالي.