GRBER Global Review of Business and Economic Research
Vol. 11 • No. 1 • Spring 2015 : 37-59

ANALYSIS THE EXPORTS MARKET OF DATES AMONG THE MEMBERS OF ORGANIZATION OF ISLAMIC COUNTRIES (OIC)

Amir. H. Chizari[1] *and Sohrab. Sadafi A.*[2]

Abstract: *Global Dates production has expanded to 7.55 (MMT), not to mention 95% of dates production belong to countries which are the members of Organization of Islamic countries (OIC). In addition, the value of world dates trade reached one billion dollar. In the period 1980-2012, global export of Dates fluctuated between 0.037 and 0.697 million metric tons,represents an annual spread of approximately -3.46 percent. This paper aims to study the trade performance and competitiveness among major producers of Dates, which measured by "Revealed Comparative Advantage", Chi-square, Michaely Index, Hillman condition and Galtonian regression. Moreover, we have made various causality tests among RCA, relative prices and Agricultural total factor productivity growth in order to find out more about the direction of impacts. The results suggest a significant increase of Iran's comparative advantage in the period of examination. The findings also shown higher specialization and stability of Dates export market after 2000 among OIC countries.*

Key Words: *Dates fruit, comparative advantage, trade specialization indices, Galtonian regression.*

JEL: *C19, F14, O43, Q17.*

INTRODUCTION

As a result of rapid globalization following by dismantlement of trade barriers, international trade environment experienced many changes during the recent decades. A notable example of these changes occurred in the food and agricultural sectors.

Traditionally, Datesclassified as a dried fruit on the same basis as almonds, pistachios and raisins. They called dry fruits, because they have moisture reduced by natural or artificial drying and long keeping potential. Dates found in many Islamic and non-Islamic countries, where they form part of the diet, so they would be serveat many feasts, particularly during Ramadan.

Dates production are one of the most important sources of foreign exchange earnings also the main source of income for a large group of producers and

1. Assistant Professor of Agriculture Economics, Tehran University. Tehran, Iran. Corresponding author: *E-mail: chizari8000@ut.ac.ir*
2. MSc Student of Agriculture Economics, Tehran University. Tehran, Iran, *E-mail: sohrab_sadafi@ut.ac.ir*

exporters in the Islamic countries. Unfortunately, in these countries little action has taken for managing and using enough financial resources to extend production, introduction and international marketing for increased consumption of Dates. Therefore, evaluating competitive advantage and export specialization is necessary to provide the possibility of planning and policy making for Dates production and its export market. Before this, the trend of production, cultivation, turnover, and Dates trade should beconsidered.

Dates produced in 37 countries worldwide on about 2.7 million acres. However, average yields are just over 5400 lbs. per acre. According to the United Nations Food and Agriculture Organization (FAO), Global production of Datesover 1996-2012 has soared from 5.02 to 7.55 million metric tons with annual growth rate of approximately 2.7 percent. It worth nothing that top 10 countries (% of world production) are Egypt (17%), Iran (15%) Saudi Arabia (13%), Iraq (10%), United Arab Emirates (9%), Pakistan (9%), Algeria (8%), Sudan (5%), Oman (4%) and Libya (2%). Egypt, Iran and Saudi Arabia were the leading producers, followed by Pakistan, Algeria, Yemen, Libya and the Sudan. Global Dates cultivation areagrows significantly from 0.88 to 1.1 million hectares during the same period with an average growth rate of about 2 percent annually. In 2012, highest share of the world's Datescultivation area were Algeria (15%), Saudi Arabia (14%), Iran (14%), Iraq (11%), Pakistan (9%) and UAE (5%), respectively.

Average growth rate of world's Dates exports over 1996-2012 was nearly 5.3 percent, which implies an increase of world's Dates exports during these years. In 2005, shares of Iran, Pakistan, Saudi Arabia and United Arab Emirates in global Dates exports were 16%, 7%, 7% and 11% respectively. During the study, Iran wasone of the largest Dates exporters in the world market. Total value of world's Dates exports during 1996-2012 has increased from 363 to 761 million dollars.

The average growth rate of world's Dates imports during 1996-2012 was around 1.9 percent, implying that the total import of this product has increased. In other words, value of world's Dates imports has nearly doubled with average annual growth rate of about 7 percent. Furthermore, shares of main importers of world's total value of Dates imports in 2005 were: India (13.1%), France (12.78%), United Kingdom (7.6%), and United Arab Emirates (6.15%). It is worth bearing in mind that 84 percent of total EU's Dates imports in volume, done by France, United Kingdom, Germany, Italy, Spain and Netherlands. Above all, on average 95% of Dates production were belonging to Islamic countries (OIC). In addition, Exports of Dates in OIC member countries accounted, in average, for about 92 percent of total world'sDates exports. It should mentioned that, from 17 non-OIC Dates exporters, China, Israel, Mexico, Spain and USA are producers of this product and the other are re-exporter. An average 75 percent of export values of Datesbelong to OIC member countries.

There are many different Dates packaging types in the world market, whereas the ravier has the leadership. There is not a real uniformity of packaging and weight, except the 5-kg bulk, which is common to every country. Hence various types of packaging can be found: Punnets, bags, ravier, tubs, glove boxes and window boxes. There are also many different package weights, ranging from 150g to 2 kg. While wholesalers mainly sell in bulk, while supermarkets tend to carry small packaging.In this study we used common Dates which classified as Kenta, Alligh, KouatAlligh, Sayer, Zahedi and Mozafati.

METHODOLOGY

Concept of 'revealed'comparative advantage introduced by Liesner (1958) but refined and popularized by Balassa (1965). Balassa's revealed comparative advantage (from now RCA) approach assumes the 'true' pattern of comparative advantage can be observe from post-trade data. RCA measure can employ to analyze the changing pattern of comparative advantage across commodities (or industries) because of accumulation process ofphysical and human capital that characterizes economic development (Balassa, 1979).

RCA has widely applied in many studies:Laursen (1998) used it to examine revealed comparative advantage and the alternatives as measures of international specialization. Bojnec (2001) employed it for his study of central and Eastern European agricultural trade. Bender and Wai (2002) examined to the changing trade and Revealed Comparative Advantages of Asian and Latin American manufacture exports. Wai and Bender (2003) used it to examine the gain and loss in export advantage among world regions. Hinloopen and Van Marrewijk (2001) used it to analyze the dynamics of Chinese comparative advantage. Svaleryd and Vlachos (2005) examined to what extent a related index value is instrumental for explaining a country's level of financial development. Cole *et al.* (2005) analyzed why the grass is not always greener: the competing effects of environmental regulations and factor intensities on US specialization by examining the USA's RCA and other measures of specialization. Sharma and Dietrich (2007) analyzed the Structure and composition of India's exports and industrial transformation using trade indices such as Balassa's RCA index.

Revealed Comparative Advantage index is defined as:

$$BI = RCA_{ij} = \frac{X_k^i / X_a^i}{X_k^w / X_a^w} \quad (1)$$

The numerator represents the percentage share of a given sector in total exports where X_k^i is country i's export value of sector k and X_a^i is country i's total export value. The denominator represents the percentage share of a given sector in world exports where X_k^w is the world, or the group of reference countries. Export of sector k and X_a^w is total world, or the group of reference countries,export value.

The RCA index, thus, contains a comparison of national export structure (the numerator) with the world export structure (the denominator). This index takes values between 0 and +∞. For a given sector, an RCA index value of one means the percentage share of that sector is equal to the world average. The RCA value higher (lower) than one, indicates specialization (under-specialization) or that a country has a comparative advantage (comparative disadvantage) in that sector.

Revealed Symmetric Comparative Advantage (RSCA)

For empirical testing however, the Balass a measure implies a risk of non-normality, because it takes values between zero and one represents a lack of specialization. So, a value between one and infinity represents the presence of specialization, regression analyses using RCA give too much weight to values above one. A solution first suggested by Laursen (1998) is to use a simple transformation of the RCA index providing what he called Revealed Symmetric Comparative Advantage (RSCA) where:

$$RSCA_{ij} = \left(RCA_{ij} - 1\right) \Big/ \left(RCA_{ij} + 1\right) \tag{2}$$

The benefit of this method is that it attributes changes below unity the same weight as changes above unity. The measure has applied by Dalum *et al.* (1998), Laursen (1998), Bender and Wai (2002) and Cole *et al.* (2005).

Michaely Index (MI)

By used Michaely index (MI) for specialization measures that have widely employed in the literature. The Michaely Indicator (Michaely, 1962/67) is defined as:

$$MI_{ij} = \left(X_{ij} \Big/ \sum_{i} X_{ij} \right) - \left(M_{ij} \Big/ \sum_{i} M_{ij} \right) \tag{3}$$

Where, X_{ij} is the exports value of sector ifrom country j and M_{ij} is the imports value of sector i to country j. The first part of the formula (before the minus sign) represents the percentage share of a given sector in national exports, while the latter part represents the percentage share of a given sector in national imports. The measure ranges between plus and minus one. A positive (negative) value means a country is specialized (under-specialized) in that sector.

The measure has applied by Kol and Mennes (1985), Laursen (1998), Doganer (2000), Bender and Wai (2002) and Cole *et al.* (2005).

- χ^2 Index

The χ^2 Measures sum of the squared difference between the export distribution of a given country and the total world divided by the world export distribution. The size of χ^2 is in indication of how strongly each country specialized. The χ^2 Measure can be define as follows:

$$\chi^2 = \frac{\left[\left(X_{ij}\Big/\sum_i X_{ij}\right)-\left(\sum_j X_{ij}\Big/\sum_i\sum_j X_{ij}\right)\right]^2}{\left[\sum_j X_{ij}\Big/\sum_i\sum_j X_{ij}\right]} \tag{4}$$

Where, X_{ij} is the exports value of sector i from country j. ($X_{ij}/\Sigma_i X_{ij}$)represents the percentage share of a given sectori in national exports of country j and ($\Sigma_i X_{ij}/\Sigma_i\Sigma_j X_{ij}$) represents the percentage share of a given sector iin world exports. The measure ranges between 0 and ∞"; although the index only takes value of zero, if there is only one country in the world, producing everything. The more a country differs from world, the greater the value. The measure has applied by Dalum *et al.* (1998).

Hillman condition

Hillman (1980) developed a condition that must fulfilled, to earn a correspondence between the RCA index and pre-trade relative prices incross-country comparisons for a given product. He showed that comparativeadvantage calculated under pre-trade relative prices for country Ain commodity j requires the following necessary and sufficient condition:

$$1-\frac{X_j^A}{W_j}=\frac{X_j^A}{X^A}\left(1-\frac{X^A}{W}\right) \tag{5}$$

Where, $X_j^A$is exports of commodity j by country A; X^A is total exports of country A; W_j is world exports of commodity j and W is the world's total exports. Assuming identical homothetic preferences across countries (implying that as income increases consumption increases proportionately, i.e. income elasticityof demand for each good equals one). The condition in equation (5) isnecessary and sufficient to guarantee that changes in the RCA index are consistentwith changes in countries' relative factor endowments. To test equation (5) empirically, Marchese and de Simone (1989) transform Hillman's condition (givenin equation (5)) into the following form:

$$HI=\frac{\left(1-\left(X_j^A/W_j\right)\right)}{\left(X_j^A/X^A\right)\left(1-\left(X^A/W\right)\right)} \tag{6}$$

If *HI*>1, the Hillman condition is indefeasible, means the Balassa index used in cross-country comparisons will be a good indicator of comparative advantage.If *HI* = 1, the country is fully specialize in production and export. If *HI* = 0, the country is a monopolist in the global market. Marchese and de Simone (1989) contend that *HI* should calculated in any empirical research attempting toidentify long-term implications of trade liberalization using RCA or its transforms.

As the concomitant transformation of the Balassa index has to be monotonic, Hillman's condition can interpreted as a monotonicity condition for scaling a country's exports by a measure of its (sector) size. In particular, the Hillman condition states that:

$$1-\frac{X_j^A}{W_j}>\frac{X_j^A}{X^A}(1-\frac{X^A}{W}) \qquad (7)$$

Condition (7) must met for the value of the Balassa index to be in concordance with pre-trade relative prices. Note the Hillman condition consists of three parts that all have a distinct economic interpretation:

- Market share: as measured by (X_j^A/W_j), i.e. the share of a country's exports in a particular sectorrelative to the total exports in that sector of thegroup of reference countries;
- Degree of export specialization: as measured by (X_j^A/X^A), i.e. the share of a country's exports in aparticular sector relative to that country's totalexports;
- Country size: as measured by (1-(X_j^A/W)), i.e. the shareof a country's total exports relative to totalexports of the group of reference countries.

As Hillman (1980) notes, violations of equation (5) readilyearn in case a country exports one commodity only(in which case $X_j^A=X^A$ and the degree of exportspecialization is equal to one) or when a countryis the sole supplier of a particular product (in whichcase $X_j^A=W_j$ and the market share is equal to one). In general, the Hillman condition violated if acountry has a significantly high market share in thesupply of the particular commodity in combinationwith a 'high enough' degree of export specialization (Hinloopen and Marrewijk, 2008).

Galtonian Regression

Technological accumulation and the pattern of industrial comparative advantageoften remain stable over time, for firms in any given national industry, especiallyif sunk costs and long gestation period involved. If revealed comparativeadvantage would expected to show such persistence patterns, it would be reasonableto suppose that RCA indices and transforms such as the RSCA indiceswould also remain stable overtime. If the RSCA index calculated for anational group of firms at two different points in time.Then, these two

sectoraldistributions of revealed symmetric comparative advantage should positivelycorrelated with each other. However, since the nature of innovative activitychanges overtime, the degree of correlation is likely to fall, the further apart arethe two groups of years under consideration. In this context, a Galtonian (1889)regression model can be employ, which is a statistical technique for bivariatedistributions. The approach originally employed by Hart andPrais (1956),who used it to analyze size distributions of firms. Some other applications of thistechnique have made by Cantwell (1989) for technological innovations inindustry. Hart (1976) and Creedy (1985) for income distribution in the UK.Sutcliffe and Sinclair (1980) for the case of seasonality of tourist arrivalsin Spain.In industrial structural transformation and evolution ofrevealed comparative advantage, the correlation between the sectoral distribution of the RSCA index at time t_2 and at an earlier time period $t_1$estimated throughthe simple cross-section regression represented by:

$$RSCA_{jA}^{t_2} = \alpha_j + \beta_j RSCA_{jA}^{t_1} + \varepsilon_{jA} \quad (8)$$

Where, superscripts t_1 and t_2 describe the early year and the final year (for analysis),respectively. The dependent variable, RSCA at time t_2 for sector j in country A, tested against the independent variable, which is the value of the RSCA inthe early year t_1. α and β are standard linear regression parameters. Equation (8) estimated for a given country. In this analysis it assumed the regressionis linear and the residual ε_{jA} is stochastic ($\varepsilon_{jA} \sim N(0,\sigma_\varepsilon^2)$) and independentof $RSCA_{jA}^{t1}$ (Independent Identically Distributed or IID). If $\beta = 1$, this suggests anunchanged pattern of RSCA between periods t_1 and t_2. If $\beta > 1$, the countrytends to be more specialize in product groups in which it already specialize, and it is less specialize in those industries where initial specialization is low (fora graphic derivation of these ideas (Cantwell, 1989). In other words, early specialization of the country is strengthened. If $0<\beta<1$, then commoditygroups with low (negative) early RSCA indices grow over time, and/or groupswith high (positive) early RSCA indices decline. The special case where $\beta<1$ shows a change in the sign of the index. It must be note, as Dalum *et al.* (1998) point out that $\beta > 1$ is not a necessary condition for growth in the overall specialization pattern.This is valid if the cross-industry RSCA index nearly conforms to be a normal distribution overtime.

An analysis of the RSCA distribution also eases a simple test of changes in the degree of revealed symmetric comparative advantage. The degree of revealed symmetric comparative advantage in a country canmeasured by the variance of its RSCA index. Which shows the extent of distribution dispersion around the mean.Pavitt (1987) used the standard deviation of an analogous concept.The Revealed Technological Advantage (RTA) index as a measure of such specialization such analysis can extend to the preceding RSCA regression analyses. Where the standard deviation of the RSCA index can identify as a measure of such revealed

symmetric comparative advantage. The procedure for estimating changes in the variance of the distribution overtime follows from Hart (1976) and Cantwell (1989). Taking equation (8), if the RSCA index variance at time $t_2$showed by $(\sigma_{t2})^2$ then:

$$(\sigma_{t_2})^2 = \beta_j^2(\sigma_{t_1})^2 + \sigma_\varepsilon^2 \tag{9}$$

Where β_j^2 is the square of the regression coefficient (from equation (8)), $(\sigma_{t1})^2$ is the RSCA index variance at time t_1 and σ_o^2 is the variance of the error term. The coefficient of determination R_j^2 given by:

$$R_j^2 = 1\text{-}(\sigma_\varepsilon^2 / (\sigma_{t_2})^2) = ((\sigma_{t_2})^2 - \sigma_\varepsilon^2)(1/(\sigma_{t_2})^2) \tag{10}$$

Combining equations (9) and (10) gives us:

$$(\sigma_{t_2})^2 - \sigma_\varepsilon^2 = \beta_j^2(\sigma_{t_1})^2 = R_j^2(\sigma_{t_2})^2 \tag{11}$$

Equation (11) can be rewritten to show the relationship between the variance ofthe two distributions as follows:

$$(\sigma_{t_2})^2 / (\sigma_{t_1})^2 = \beta_j^2 / R_j^2 \tag{12}$$

This can be simplified to:

$$\sigma_{t_2} / \sigma_{t_1} = \left|\beta_j\right| / \left|R_j\right| \tag{13}$$

R_j^2 is the square root of the coefficient of determination, earned from the regression. From equation (22) we can see the degree of trade specialization rises when $\beta^2 > R^2$, and it falls when $\beta^2 < R^2$. A high variance of RSCA indices distribution over time shows higher variance in specialization or narrow degree of specialization, while a low variance suggests the country has a broad range of technological advantage/specialization or a low variance of specialization. Using the estimated regression values, the extent of specialization rises if $|\beta_j/R_j| > 1$, whereas if $|\beta_j/R_j| < 1$, specialization decreases (Sharma and Dietrich, 2007).

Causality Test

In this paper, the Granger causality test between comparative advantage of dates, dates export prices relative to world price and Agricultural total factor productivity growth[1] has used for OIC countries. Since most of OIC countries, are dates exporters and producers,it seems, there is a relationship between productivity growth, comparative advantage and export prices.

The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another (Granger, 1969). This approach to the question of whether *x* causes *y* is to see how much of the current *y*

can be explained by past values of y and then to see whether adding lagged values of x can improve the explanation. y is said to be Granger-caused by x if x helps in the prediction of y, or equivalently if the coefficients on the lagged x's are statistically significant. Note that two-way causation is frequently the case; x Granger causes y and y Granger causes x.

Let *X1* and *X2* be stationary time series. To test the null hypothesis that *X1* does not Granger-cause *X2*, consider a bivariate linear autoregressive model of two variables *X1* and *X2*:

$$\begin{aligned} X1_t &= \sum_{j=1}^{p} a_{11,j} X1_{t-j} + \sum_{j=1}^{p} a_{12,j} X2_{t-j} + u1_t \\ X2_t &= \sum_{j=1}^{p} a_{21,j} X1_{t-j} + \sum_{j=1}^{p} a_{22,j} X2_{t-j} + u2_t \end{aligned} \tag{23}$$

Where p is the maximum number of lagged observations included in the model (the model order), the matrix a_{ij} contains the coefficients of the model (i.e., the contributions of each lagged observation to the predicted values of $X1_t$ and $X2_t$, and $u1_t$ and $u2_t$ are residuals (prediction errors) for each time series. If the variance of $u1_t$ (or $u2_t$) is reduced by the inclusion of the *X2* (or *X1*) terms in the first (or second) equation, then it is said that *X2* (or *X1*) Granger causes *X1* (or *X2*). In other words, *X2* Granger causes *X1* if the coefficients in a_{12} are jointly significantly different from zero. This can be tested by performing an F-test of the null hypothesis that $a_{12} = 0$, given assumptions of covariance stationary on *X1* and *X2*. The magnitude of a Granger causality interaction can be estimated by the logarithm of the corresponding F-statistic (Geweke 1982). Note that model selection criteria, such as the Bayesian Information Criterion (BIC, (Schwartz 1978)) or the Akaike Information Criterion (AIC, (Akaike 1974)), can be used to determine the appropriate model order p (Seth, 2007).

Since in this study data are cross-section, we also adopted the approach of Dumitrescu-Hurlin (2012) for causality Test between comparative advantage, relative export price, intra-industry trade and Agricultural total factor productivity growth for Saffron exporting countries. This test calculated by simply running standard Granger Causality regressions for each cross-section individually.

Let us consider two stationary variables, denoted x and y; observed on T periods and on N individuals. For each individual $i = 1,\ldots,N$, at time $t = 1,\ldots, T$, we consider the following linear model:

$$y_{i,t} = \alpha_i + \sum_{k=1}^{K} \gamma_i^k y_{i,t-k} + \sum_{j=1}^{p} \beta_i^k x_{i,t-k} + \varepsilon_{i,t} \tag{24}$$

With $K \in N^*$ and $\beta_i = (\beta_i^1, \ldots, \beta_i^K)$. For simplicity, individual effects α_i are supposed to be fixed. Initial conditions $(y_{i,-K}, \ldots, y_i, 0)$ and $(x_{i,-K}, \ldots, x_i, 0)$ of both individual processes $y_{i,t}$ and $x_{i,t}$ are given and observable. We assume that lag orders K are identical for all cross-section units of the panel and the panel is balanced. In a first part, we allow for autoregressive parameters γ_i^k and regression coefficients slopes β_i^k to differ across groups. However, contrary to Weinhold (1996) and Nair-Reichert and Weinhold (2001), parameters γ_i^k and β_i^k are constant. It is important to note that our model is not a random coefficient model as in Swamy (1970): it is a fixed coefficient model with fixed individual effects. To the test of the non-causality hypothesis for units $i = 1, \ldots, N$ Dumitrescu-Hurlin (2012) defined The average statistic $W_{N,T}^{Hnc}$ associated to the null Homogenous Non Causality (HNC) hypothesis is defined as:

$$W_{N,T}^{Hnc} = \frac{1}{N}\sum_{k=1}^{N} W_{i,T} \tag{25}$$

Where $W_{i,T}$ denotes the individual Wald statistics for the i^{th} cross section unit associated to the individual test H_0: $\beta_i = 0$.

Under assumption of Individual residuals $\varepsilon_i = (\varepsilon_{i,1}, \ldots, \varepsilon_{i,T})$ are independently distributed across groups, the individual $W_{i,T}$ statistics for $i = 1, \ldots, N$ are identically and distributed with finite second order moments as $T \to \infty$, and therefore by Lindberg-Levy central limit theorem under the HNC null hypothesis, the average statistic $W_{N,T}^{Hnc}$ sequentially converges in distribution.

$$Z_{N,T}^{Hnc} = \sqrt{\frac{N}{2K}}\left(W_{N,T}^{Hnc} - K\right) \underset{T,N\to\infty}{\to} N(0,1) \tag{26}$$

With $W_{N,T}^{Hnc} = \frac{1}{N}\sum_{k=1}^{N} W_{i,T}$, where $T, N \to \infty$ denotes the fact that $T \to \infty$ first and then $N \to \infty$.

For a large N and T sample, if the realization of the standardized statistic $Z_{N,T}^{Hnc}$ is larger than the normal corresponding critical value for a given level of risk, the homogeneous non causality (HNC) hypothesis is rejected. For a detailed explanation see Dumitrescu-Hurlin (2012).

RESULTS AND DISCUSSION

Since the current trading of common Dates in the world market, of the lowest prices and the consumers tendency to shift towards higher quality of products.

There is little scope for a large increase in export of Dates to the world market. To improve trading, OIC member countries would have to invest in promotion and advertising campaigns to convince people to consume more Dates. The profitability of trading activity for a newcomer would be low, even with low production cost. Investment in more modern processing facilities will likely lead to improvements in product quality. The expected rise in supply due to increase in plantations expected to keep prices at a relatively low level.

The results of calculating values of revealed comparative advantage (RCA), Chi-square (χ^2), Michaely (MI) and Hillman (HI) indices in the OIC member countries,presented in table 1. The studied period divided into three subperiods due to evaluating the indexesvariations more accurately. According to table 1,most of the major Dates exporting countries,in the period 1980-2012, have comparative advantage (RCA>1), excepting Morocco, Syria, Turkey, Kuwait, Libya, Bahrain, Malaysia, and Indonesia. Highest and lowest RCA index during studied periodwere 2527.33 and 4.03×10^{-11} for Iraq and Indonesia respectively. Libyawith the average growth rate of 88.87% had the highest annual growth rate of RCA in the same period.

The average RCA index for Iran has increased from 7.92 in the first period to 32.13 in the second period and dropped in the third period (2001-2005) to 23.83. Early increase can related to the Iran-Iraq War ended in 1988 and thus improvement in structures of production and exports in the second period (1991-2000). Further reduction in the third period due to reduced production could result because of consecutive droughts events in the region in this period. As is clear from the results, the regional countries like Iraq, Egypt, Morocco, Algeria, Oman,UAE, Kuwait,Libya,Sudan and Bahrain also has the negative growth rate of RCA index from second to the third period.Of course in Iraq, a decreasing trend of RCA over the study period had continued so the average annual growth of this index calculated at -1.72%. Also drought, this can also due to the repeated event of wars and the dehydration effects caused by construction of many dams on the Tigris and Euphrates rivers in Iraq's neighboring countries.

The average value of Chi-square index during the study for the OIC Member States located between 0.0002 for Bahrain and 886.95 for Tunisia. As mentioned in the research methodology, higher value of this index implies the higher degree of specialization in exports. Values of Chi-square indices also suggest that Tunisia and Iraq with values of 886.95 and 300.03 respectively have a high degree of specialization; and the remaining countries have a lower degree of specialization. Average value of the index for Iran has a continuously increasing trend over the three periods studied with the annual growth rate of 34.85 percent. This increasing trend is also visible for Jordan, Pakistan,Egypt, and Syria.

Among the 19 Dates exporting OIC member countries in 1980-2012, only Morocco, Syria,Jordan, United Arab Emirates,Turkey, Kuwait, Libya, Bahrain,

Table 1
Comparative advantage and trade specialization indices among OIC Dates exporting countries

Country	*index*	*1980-1990*	*1991-2000*	*2001-2005*	*1980-2012*	*growth rate (percent)*
Iran (Islamic	RCA	7.92	32.13	23.83	21.26	16.63
Rep. of)	χ^2	61.01	341.36	360.04	297.74	34.85
	MI	0.001	0.002	0.001	0.001	14.32
	HI	8502.10	555.54	928.96	3314.23	-12.84
Iraq	RCA	52.00	355.58	6.06	128.93	-1.72
	χ^2	812.16	26.64	11.47	300.03	-7.17
	MI	0.005	0.025	0.0002	0.009	-3.70
	HI	196.14	648.47	8577.61	1990.43	5.28
Egypt	RCA	0.94	2.01	1.73	2.63	13.18
	χ^2	0.13	0.66	0.58	2.90	27.18
	MI	-0.0001	0.0001	0.0001	0.0001	6.94
	HI	19338.23	10992.54	18364.18	13743.96	-9.96
Pakistan	RCA	23.85	40.75	47.60	36.23	14.46
	χ^2	35.40	133.55	171.98	99.07	33.12
	MI	0.002	0.002	0.002	0.002	16.02
	HI	2814.02	422.99	488.86	1249.63	-11.04
Saudi Arabia	RCA	3.88	5.19	6.06	4.55	5.13
	χ^2	57.55	72.29	179.13	96.47	5.64
	MI	0.0003	0.0003	0.0002	0.0003	3.88
	HI	6325.48	3783.51	3921.33	8589.59	-3.19
Morocco	RCA	1.30	0.33	0.06	0.56	4.63
	χ^2	0.11	0.02	0.0004	0.04	13.52
	MI	-0.00002	-0.0002	-0.001	-0.001	10.74
	HI	18295	404549	887415	720886	-2.50
Syria	RCA	0.02	0.25	1.11	0.78	23.38
	χ^2	0.0001	0.01	0.06	0.02	21.56
	MI	-0.0003	-0.001	-0.0001	-0.0004	-0.32
	HI	7.18×10^{12}	499484	107619	2.39×10^{12}	-17.32
Algeria	RCA	6.56	44.57	13.47	19.29	5.73
	χ^2	19.49	286.71	58.33	108.34	8.96
	MI	0.001	0.003	0.001	0.001	3.63
	HI	3238.73	538.40	1859.01	2193.32	-3.62
Oman	RCA	4.86	9.69	5.55	6.19	-4.61
	χ^2	1.26	3.78	2.81	2.31	-5.77
	MI	0.0003	0.001	0.0002	0.0002	-6.10
	HI	2795.62	2016.29	6417.15	4208.64	6.99
Jordan	RCA	3.24	2.13	5.51	4.25	14.17
	χ^2	0.39	0.06	0.39	0.40	43.04
	MI	-0.0002	-0.001	-0.0003	-0.0003	1.46
	HI	113735.63	27571.77	5128.34	47657.24	-10.66

contd. table 1

Country	*index*	*1980-1990*	*1991-2000*	*2001-2005*	*1980-2012*	*growth rate (percent)*
Tunisia	RCA	97.85	116.20	172.81	132.84	5.64
	χ^2	361.39	607.22	1639.13	886.95	10.06
	MI	0.009	0.007	0.007	0.008	3.54
	HI	113.51	122.15	106.38	110.68	-4.23
United Arab	RCA	5.06	26.32	13.63	12.59	5.86
Emirates	χ^2	18.61	523.34	423.95	252.52	18.39
	MI	-0.001	-0.0002	0.0004	-0.0005	1.99
	HI	17421.21	927.14	2494.13	7815.60	-3.79
Turkey	RCA	0.10	0.12	0.24	0.18	1.32
		0.002	0.04	0.16	0.11	17.19
	MI	-0.00001	-0.00001	-0.00002	-0.00002	-5.72
	HI	156540	262643	113405	165725	0.71
Kuwait	RCA	2.22	0.08	0.01	0.77	-17.83
		10.91	0.0005	0.00	3.64	-39.93
	MI	-0.0002	-0.0003	-0.00005	-0.0002	-4.54
	HI	42622	365640	45449054	7459640	24.35
Libya	RCA	0.04	0.98	0.23	0.35	88.87
		0.003	0.10	0.005	0.03	4.42
	MI	-0.0002	0.000001	-0.00001	-0.0001	0.73
	HI	9.34×10^{13}	7.75×10^{12}	946430	3.35×10^{13}	-46.00
Sudan	RCA	13.91	16.87	0.06	9.77	-8.43
	χ^2	0.56	0.12	0.00001	0.22	-22.50
	MI	0.001	0.001	-0.0001	0.001	-12.08
	HI	4.54×10^{11}	47407	722846	1.51×10^{11}	11.43
Bahrain	RCA	0.04	0.09	0.04	0.06	15.10
	χ^2	0.0001	0.0001	0.00002	0.0002	13.03
	MI	-0.001	-0.0003	-0.0001	-0.0003	-8.37
	HI	847968	5.23×10^{12}	1267361	1.58×10^{12}	-11.36
Malaysia	RCA	0.06	0.09	0.21	0.12	-1.82
	χ^2	0.01	0.11	0.41	0.14	1.91
	MI	-0.0002	-0.0001	-0.0001	-0.0001	-1.22
	HI	500917.94	391061.26	184061.50	349058.88	3.93
Indonesia	RCA	0.01	0.03	0.43	0.08	81.17
	χ^2	0.0001	0.01	1.90	0.29	1.02
	MI	-0.00005	-0.0001	-0.00003	-0.0001	1.09
	HI	9.01×10^{13}	1274999	1565731	3.00×10^{13}	-43.69

Table 2
Results of estimated Galtonian regression

Period	β	*R*	β/R
1980-1990	0.36	0.91	0.40
1991-2000	0.74	0.80	0.92
2001-2005	0.98	0.92	1.06
1980-2010	0.69	0.62	1.11
1980-2012	0.58	0.54	1.08

Malaysia and Indonesia didn't specialized, due to the negative value of Michaely index. Trend of Michaely index for Iran, like the RCA trend, suggests an increase from the first period to second period, and then decreasing from second to third period. This shows the consecutive droughts event in the third period (2001-2005) has a negative effect on the countries specialization like comparative advantage. Decreasing trend of Michaely index from second to third period also noted in the regional countries such as Iraq, Egypt, Pakistan,Oman and Bahrain but it was stable for Saudi Arabia.

As mentioned before, lower Hillman index value shows higher trade specialization. In this period, Tunisia and Libya had the lowest and highest values of Hillman index by the values of 106.36 and 9.34×10^{13} respectively. The value of Hillman indices for overall Dates exporting OIC member countries, during the studied period and in all sub-periods have been larger than one.Whichsuggests the establishment of specialization conditions in this period.

To evaluate stability of trade specialization among OIC Dates exporting countries.We use Galtonian regression, for the entire period 1980-2010 and three sub-periods; 1980-1990, 1991-2000 and 2001-2005. In this regression,for each period, the independent variable ($RSCA_{t1}$) is "Revealed Symmetric Comparative Advantage" in the first year and dependent variable ($RSCA_{t2}$) is "Revealed Symmetric Comparative Advantage" for the final year. Summary results of four periods presented below:

1980-1990:

$$\begin{aligned} RSCA_{t_2} &= 0.2943 + 0.7428\ RSCA_{t_1} + \varepsilon \\ t &= \quad (1.7384)\ \ (4.1401) \\ R^2 &= 0.4428\ \ D.W. = 1.3382\ \ \ F = 13.5094 \\ LM &= 0.0000\ \ \ JB = 0.2698 \end{aligned} \tag{14}$$

1991-2000

$$\begin{aligned} RSCA_{t_2} &= 0.0791 + 0.7433\ RSCA_{t_1} + \varepsilon \\ t &= \quad (0.8211)\ \ (7.1295) \\ R^2 &= 0.6484\ \ D.W. = 2.3015\ \ \ F = 31.2921 \\ LM &= 0.7979\ \ \ JB = 3.8154 \end{aligned} \tag{15}$$

2001-2005

$$RSCA_{t_2} = -0.0791 + 0.9815\ RSCA_{t_1} + \varepsilon$$
$$t = \quad (-0.8718)\ \ (2.8453)$$
$$R^2 = 0.8513\ \ D.W. = 1.8490\ \ \ F = 97.3621 \qquad (16)$$
$$LM = 0.1071\ \ \ JB = 0.2666$$

1980-2010

$$RSCA_{t_2} = 0.2474 + 0.6907\ RSCA_{t_1} + \varepsilon$$
$$t = \quad (1.3604)\ \ \ (3.7928)$$
$$R^2 = 0.3844\ \ D.W. = 1.1387\ \ \ F = 10.6157 \qquad (17)$$
$$LM = 0.0000\ \ \ JB = 0.1890$$

1980-2012

$$RSCA_{t_2} = 0.2691 + 0.5828\ RSCA_{t_1} + \varepsilon$$
$$t = \quad (1.3729)\ \ \ (3.1144)$$
$$R^2 = 0.2917\ \ D.W. = 1.0083\ \ \ F = 7.0012 \qquad (18)$$
$$LM = 0.0000\ \ \ JB = 0.1458$$

As can be seen table 2, the β Coefficient values for the OIC countries during three subperiods haveslumped and the value of the coefficient for the entire period estimated at 0.58. Since estimated β values are smaller than one, for judgments about the export specialization status, relationship between β and *R* should considered. For OIC member countries in most of periods the condition of $\beta > R$ settled. During 1980-1990 due to Iran-Iraq War degree of specialization of these countries have decreased. During 1991-2000 Also due to The Asian Financial Crisis[2] (SESRIC, 2014) degree of specialization have decreased. So the specialization degree of these countries during the studied period in Dates exports have increased. The valuesearnedfrom β/R, certify that during the period 2001-2012, the Dates exporting OIC member countries, were stable in trade.

Competing countries in the global Datesmarket

Finding out the relationship between the Dates exporting countries,wecalculate Spearman's rank correlation coefficient (SRC)of "Revealed Comparative

Advantage"for any country. According to coefficient signsat the significantly,we can showpresence or absence of rivalry, and perhaps it's insignificant. The higher absolute value of this coefficient meanshigher correlation.The results are visible in Table 3.

The matrix from this study determined, for example Iraq and Sudan are the only two competitors of Iran's Dates. Correlation coefficient of Iraq and Sudan are equal to -0.2659 and -0.2627 respectively. In other words, the relative advantage of Iran's Dates export negatively affected by comparative advantage of these countries. So, when their comparative advantage have decreased (increased). The comparative advantage of Iran has increased (decreased) too.Thus, when their share in the global market declined, Iran's share increased, so there is rivalry between Iran and the two countries. There is positive and significant relationship between Iran's RCA with Egypt, Saudi Arabia, Pakistan, Algeria, Tunisia, UAE and Israel.Means that when the competitive advantage of Iran's Dates export has increased, competitive advantage of these countries have increased too. Therefore, the share of the country's trade has increased with the increase of Iran comparative advantage, then they are also Iran's rivals.

To test the results of Spearman's rank correlation coefficient we calculate Granger causality test between competing countries (RCA) in the global Dates market. According to F test significantly, we can show whether Vertical RCA Cause the Horizontal RCA or not. Significant F test suggests that whether Horizontal RCA time series is useful in forecasting Vertical RCA time series (Table 4). For example Iran dates Revealed Comparative Advantage is useful in forecasting Iraq and Algeria RCA. As a re-exporter United Arab Emirates RCA is Granger Cause of Pakistan and Tunisia and was a good forecaster of Saudi Arabia's RCA.

To explain causality relationshipamong:

1. Comparative advantage of dates (RCA),
2. Dates export prices relative to world price, or relative export prices
3. Agricultural total factor productivity growth,

Granger causality tests has used for Dates Exporting OIC countries individually. The Significance tests shown in Table 5.

The results show that Algeria, Libya and UAE dates RCA are Granger Cause dates export prices relative to world price, which means the comparative advantage is cause of relative export prices.In other words, for these countries export prices relative to world price is a good predictor for comparative advantage. However, for countries Libya and Pakistan dates export prices relative to world price are Granger Cause dates RCA. In case of Libya there is two way causality between dates relative export prices and dates RCA.

Table 3
Competing countries in the global Dates market

Country	*Iran*	*Iraq*	*Egypt*	*Saudi Arabia*	*Pakistan*	*Algeria*	*Tunisia*	*UAE*	*Israel*	*Sudan*
Iran	1									
Iraq	-0.2659*	1								
	(0.0075)									
Egypt	0.5461*	-0.3150*	1							
	(0.0000)	(0.0014)								
Saudi Arabia	0.4762*	-0.1700*	0.1707*	1						
	(0.0000)	(0.0908)	(0.0895)							
Pakistan	0.5605*	-0.5701*	0.5910*	0.4782*	1					
	(0.0000)	(0.0000)	(0.0000)	(0.0000)						
Algeria	0.6584*	-0.0454	0.3016*	0.6025*	0.5734*	1				
	(0.0000)	(0.6540)	(0.0023)	(0.0000)	(0.0000)					
Tunisia	0.5382*	-0.6159*	0.6591*	0.3676*	0.7087*	0.2949*	1			
	(0.0000)	(0.0000)	(0.0000)	(0.0002)	(0.0000)	(0.0029)				
UAE	0.5090*	-0.1938*	0.2671*	0.5983*	0.6434*	0.8582*	0.3324*	1		
	(0.0000)	(0.0534)	(0.0072)	(0.0000)	(0.0000)	(0.0000)	(0.0007)			
Israel	0.5043*	-0.5113*	0.6381*	0.1431	0.4332*	0.2394	0.7622*	0.1471	1	
	(0.0000)	(0.0000)	(0.0000)	(0.1555)	(0.0000)	(0.0165)	(0.0000)	(0.1443)		
Sudan	-0.2627*	0.6672*	-0.5606*	-0.0890	-0.5447*	-0.0922	-0.7013*	-0.1792*	-0.6118*	1
	(0.0083)	(0.0000)	(0.0000)	(0.3785)	(0.0000)	(0.3616)	(0.0000)	(0.0744)	(0.0000)	

The * symbol demonstrate thesignificant correlation coefficients

Table 4
Granger causality test between competing countries (RCA) in the global Dates market

Null Hypothesis: *Vertical Variables* does not Granger Cause *Horizontal Variables* (Lags:1)

Country	*Iran*	*Iraq*	*Egypt*	*Saudi Arabia*	*Pakistan*	*Algeria*	*Tunisia*	*UAE*	*Israel*	*Sudan*
Iran		2.3238	1.31604	0.07254	0.87549	0.02308	0.15803	2.53749	0.06084	0.07234
		(0.1390)	(0.2614)	(0.7897)	(0.3577)	(0.8804)	(0.6941)	(0.1228)	(0.8070)	(0.7900)
Iraq	12.608*		0.02584	0.78049	9.32567*	5.49026*	0.9692	0.04674	0.02572	0.39394
	(0.0014)		(0.8735)	(0.3848)	(0.0050)	(0.0267)	(0.3336)	(0.8305)	(0.8738)	(0.5355)
Egypt	0.2586	2.9955*		0.30805	0.38732	0.11535	0.0003	0.78405	1.43841	0.10102
	(0.6152)	(0.0949)		(0.5834)	(0.5389)	(0.7368)	(0.9862)	(0.3837)	(0.2408)	(0.7531)
SaudiArabia	1.1443	0.2357	0.01771		0.86474	0.85118	1.19569	7.23549*	0.10157	0.40914
	(0.2942)	(0.6313)	(0.8951)		(0.3607)	(0.3644)	(0.2838)	(0.0121)	(0.7524)	(0.5278)
Pakistan	1.0253	1.7835	7.5106*	1.43972		0.14305	1.33254	0.28855	0.04135	0.02183
	(0.3202)	(0.1929)	(0.0107)	(0.2406)		(0.7082)	(0.2585)	(0.5956)	(0.8404)	(0.8836)
Algeria	16.030*	38.783*	0.00214	0.13243	2.99424*		6.05999*	2.75132	7.10862*	0.10114
	(0.0004)	(0.0000)	(0.9635)	(0.7188)	(0.0950)		(0.0205)	(0.1087)	(0.0128)	(0.7529)
Tunisia	0.1950	0.0490	1.02073	0.09828	0.29123	0.66141		1.33305	0.43808	0.92831
	(0.6623)	(0.8264)	(0.3213)	(0.7563)	(0.5939)	(0.4232)		(0.2584)	(0.5137)	(0.3439)
UAE	0.4546	0.0329	1.04542	0.22576	8.84572*	0.94191	3.9906*		0.00591	1.12791
	(0.5059)	(0.8574)	(0.3156)	(0.6385)	(0.0061)	(0.3404)	(0.0559)		(0.9393)	(0.2976)
Israel	2.6088	0.0625	4.8241*	0.01603	4.60376*	4.59356*	0.00039	0.01259		3.02691*
	(0.1179)	(0.8045)	(0.0368)	(0.9002)	(0.0411)	(0.0413)	(0.9844)	(0.9115)		(0.0933)
Sudan	0.0058	0.1905	0.04251	4.6228*	0.37838	2.38833	2.52049	0.13508	1.15421	
	(0.9398)	(0.6659)	(0.8382)	(0.0407)	(0.5436)	(0.1339)	(0.1240)	(0.7161)	(0.2922)	

The * symbol demonstrate thesignificant correlation coefficients

The results also show that Egypt, Iran and Saudi Arabia Agricultural total factor productivity growth are Granger Cause their dates RCA.Which,suggests that countries with high comparative advantage growth rate (Table 1), have a comparative advantage due to productivity growth. However, TFP Growth in case of Indonesia, Kuwait, UAE and Morocco are Granger Cause dates relative export prices, noted that these countries faced with comparative disadvantage.In case of Indonesia and Morocco unless Kuwait there is a positive comparative advantage growth rate. However, in cases of Indonesia, Jordan and Syria dates RCA are Granger Cause TFP Growth, which means growing comparative advantage (Table 1) has cause motivation for productivity growth. However, for Iraq and Turkey dates relative export prices are Granger Cause TFP Growth, so these countries relative export prices is the motivation for productivity growth. In case of UAE, RCA and TFP Growth are both Granger Cause relative export prices, this could be cause, as result of re-exporting by this country.

Table 6 is the result of Panel Causality Tests for dates exporting OIC countries. It's explain a homogeneous causality between comparative advantage of dates, dates relative export prices and Agricultural total factor productivity growth.Which show that Agricultural TFP Growth ishomogeneously Cause of dates relative export prices. In other words, dates relative export prices is a good predictor or motivation for TFP Growth in Jointly Panel of OIC countries.

Table 5
Significant Applied Granger causality tests for Dates Exporting OIC countries

Country	*Lag (AIC)*	*Null Hypothesis: V1 does not Granger Cause V2*			
		V1	*V2*	*F-Statistic*	*Prob.*
Algeria	1	RCA	Export Price/ World Price	3.73	0.0640
Egypt	2	RCA	Export Price/ World Price	3.19	0.0591
	2	TFP Growth	RCA	3.05	0.0659
Indonesia	2	TFP Growth	Export Price/ World Price	3.31	0.0530
	2	RCA	TFP Growth	3.32	0.0528
Iran	1	TFP Growth	RCA	5.41	0.0278
Iraq	2	Export Price/ World Price	TFP Growth	5.23	0.0130
Jordan	3	RCA	TFP Growth	3.09	0.0493
Kuwait	1	TFP Growth	Export Price/ World Price	12.53	0.0015
Libya	1	RCA	Export Price/ World Price	3.89	0.0589
	1	Export Price/ World Price	RCA	2.92	0.0990
Morocco	2	TFP Growth	Export Price/ World Price	3.78	0.0373
Pakistan	2	Export Price/ World Price	RCA	2.60	0.0953
Saudi Arabia	1	TFP Growth	RCA	5.33	0.0288
Syria	2	RCA	TFP Growth	4.29	0.0255
Turkey	2	Export Price/ World Price	TFP Growth	7.23	0.0035
UAE	2	RCA	Export Price/ World Price	3.12	0.0627
	2	TFP Growth	Export Price/ World Price	4.76	0.0181

Table 6
Pairwise Dumitrescu-Hurlin Panel Causality Tests

Null Hypothesis: V1 does not homogeneously cause V2 (Lags:1)				
V1	*V2*	*W-Stat.*	*Zbar-Stat.*	*Prob.*
RCA	Export Price/ World Price	0.7476	-0.8719	0.3833
Export Price/ World Price	RCA	1.3728	0.7532	0.4513
TFP Growth	Export Price/ World Price	1.8726	2.0761	0.0379*
Export Price/ World Price	TFP Growth	0.9317	-0.3859	0.6996
TFP Growth	RCA	1.3054	0.5781	0.5632
RCA	TFP Growth	1.2277	0.3762	0.7068

The * symbol demonstrate thesignificant correlation coefficients

CONCLUSIONS

Results of comparative advantage and specialization indices showed that among the major Dates exporting OIC member countries, Tunisia, Iran, Iraq, Pakistan, Oman, Jordan, Algeria and United Arab Emirates have comparative advantage and specialized. (Table 1).

So it is necessary to prevent downtrend Dates price in global markets by increasing product quality and adopting appropriate marketing policies. This shows the importance of emphasizing on quality standards and packaging qualities for exporting countries to maintain their position in world trade. Also, advertising and awareness on global television networks about the Dates and its benefits could find new markets for exports.

The Galtonian regression results showed the events like Iran-Iraq War and The Asian Financial Crisis in 1980s and late 1990s respectively had negative effects on the degree of specialization of OIC countries.

Spearman's Correlation Coefficient results showed the relative advantage of Iran's Dates exports affected by this index for Iraq and the Sudan. Therefore it is necessary to more trying for increase export advantages because the main rival of Iran, Iraq, has passed war and the recession and can become a major obstacle to earn foreign exchange from this valuable product in the world market. The UAE also has made progress in Dates re-exporting by adopting appropriate marketing and business policies.

Causality Tests results displayed that Iraq and Algeria dates comparative advantage are good predictor of Iran's dates RCA. It's also showed Agricultural total factor productivity growth have an effective role in dates comparative advantage and dates relative export prices in case of OIC countries. Therefore, it is recommended for these countries to increase productivity through technology development actions to increase dates comparative advantage in world market.

In general, it settled that Iran had create comparative advantage in export of Dates. This is because of the proper policies introduced to increase export to foreign markets, creating industry conversion, continuous training to exporters in marketing and production standards and create tax breaks for companies involved in export marketing and research. The stability condition is the export policies are not only consistent with production policies but also have sufficient flexibility to appropriate response to changes in the structure of global trade.

Notes

1. Published by the USDA which calculated from FAO Data.
2. According to SESRIC (2014) The Asian Financial Crisis lead to a sharp falls in the price of oil in late 1990s, causing a financial depression in OPEC Member Countries and other oil exporters.

References

Akaike, H. (1974), A new look at the statistical model identification. *IEEE Trans*, Control 19, 716-723.

Anonymous (2012), *Economic Report and Balance Sheet*, Central Bank of Islamic Republic of Iran, Tehran.

Anonymous (2012), *Statistic Yearbook of Exports and Imports*, Custom of Islamic Republic of Iran, Tehran.

Anonymous (2013), *E Views 8 User's Guide I*, IHS Global Inc. 4521 Campus Drive, #336, ISBN: 978-1-880411-11-7.

Anonymous (2013), *E Views 8 User's Guide II*, IHS Global Inc. 4521 Campus Drive, #336, ISBN: 978-1-880411-13-1.

Anonymous (2013), United States Department of Agriculture (USDA), *Economic Research Service*.

Anonymous (2014), Food and Agriculture Organization of United Nation (FAO),Food and Agriculture Organization of the United NationsStatistics Division, *http://faostat.fao.org.*

Anonymous (2014), Life Expectancy at Birth vs. GDP per Capita with Current Prices,The Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRIC), *http://www.sesric.org/smc-report-demography.php.*

Balassa, B. (1965), Trade liberalization and revealed comparative advantage,*Manchester School of Economics and social Studies*, 33: 99-123.

Balassa, B. (1979), The changing pattern of comparative advantage in manufactured goods,*Review of Economics and Statistics*, 61(2): 259–266.

Bender, S, and L. K. Wai (2002), The gain and loss in export advantage among world regions, Economic Growth Center, *Yale University*, Discussion Paper No. 853.

Bojnec, S. (2001), Trade and Revealed Comparative Advantage Measures: Regional and Central and East European Agricultural Trade. *Eastern European Economics*, 39: 72-98.

Cantwell, J. (1989), Technological Innovation and Multinational Corporations, *Oxford: Basil*, Blackwell.

Cole, M. A, R. J. R. Elliott and K.Shimamoto (2005), Industrial characteristics, environmental regulations and air pollution: an analysis of the UK manufacturing sector,*Journal of Environmental Economics and Management*.

Creedy, J. (1985), Dynamics of Income Distribution,*Oxford: Basil*, Blackwell.

Dalum, B, K. Laursen, and G. Villimsen, (1998), Structural change in the OECD export specialization patterns: De-specialization and stickiness,*International Review of Applied Economics*, 12(3): 423-443.

Doganer, G. F. (2000), The revealed comparative advantages in Textiles of Turkey in trade with European Union (1990-1997), Working Paper, *Yildiz Technical University Press*, Turkey.

Dumitrescu, E. I, andC.Hurlin (2012), Testing for Granger Non-causality in Heterogeneous Panels, *Economic Modeling*, 29, 1450-1460.

Ferto, I, and L. J. Hubbard (2003), The dynamics of agri-food trade patterns – the Hungarian case. *Conference paper for the 25th International Conference of Agricultural Economists*, 16–22 August 2003. Durban, South Africa.

Geweke, J. (1982), Measurement of linear dependence and feedback between multiple time series, *Journal of the American Statistical Association*, 77: 304-313.

Granger, C. W. J. (1969), Investigating Causal Relations by Econometric Models and Crossspectral Methods, *Econometrica*, 37(3): 424–438.

Grubel, H, and P. Lloyd (1975), Intra-Industry Trade. London. Macmillan.

Hart, P. E. (1976), The dynamics of earnings, 1963–1973, *Economic Journal*, 86(3): 551–565.

Hart, P. E, and S. J. Prais (1956), The analysis of businessconcentration: a statistical approach, *Journal of the Royal Statistical Society*, Series A, Part II.

Hillman, A. L. (1980), Observations on the relation between 'revealed comparative advantage' and comparative advantage as indicated by pre-trade relative prices, *WeltwirtschaftlichesArchiv*, 116: 315–21.

Hinloopen, J, and C. V. Marrewijk (2001), On The Empirical Distribution of The Balassa Index, *Weltwirtschaftliches Archive*, 137: 1-35.

Hinloopen, J, and C. V. Marrewijk (2008), Empirical relevance of the Hillman condition for revealed comparative advantage: 10 stylized facts,*Applied Economics*. 40: 2313–2328.

Kol, J. and L. B. M. Mennes (1985), Intra-Industry specializations: Some observations on concepts and measurement, *International Journal of Economics*, 21: 173-181.

Laursen, K. (1998), Revealed comparative advantage and the alternatives as measures of international specialization, DRUTD Working Paper No. 98-30.

Liesner, H. H. (1958), The European Common Market and British Industry, *Economic Journal*, 68: 302-316.

Marchese, S. and F. N.de Simone (1989), Monotonicity of indices of 'revealed' comparative advantage: empirical evidence on Hillman's condition, *Weltwirtschaftliches Archiv*, 125(1): 158–167.

Michaely, M. (1962), Concentration in international trade, Contributions economic analysis Amesterdam, *North-Holland Publishing Company*.

Pavitt, K. (1987), International patterns of technological accumulation, in Neil Hood & Jan-Erik Vahlne (eds), Strategies in Global Competition, London: Croom Helm.

Schwartz, G. (1978), Estimating the dimension of a model,*The Annals of Statistics 5*, 461-464.

Seth, A. (2007). Granger causality. *Scholarpedia*, 2(7): 1667.

Sharma, A. and M. Dietrich (2007), The Structure and Composition of India's Exports and Industrial Transformation (1980-2000), *International Economic Journal*, 21(2): 207-231.

Sutcliffe, C. M. S. and M. T. Sinclair (1980), The measurement of seasonality within the tourist industry: an application to tourist arrivals in Spain,*Applied Economics*, 12(4): 429-441.

Svaleryd, H. and J.Vlachos (2005), Financial Markets, The Pattern of Industrial Specialisation and Comparative Advantage: Evidence From OECD Countries, *European Economic Review*, 49: 113-144.

Utkulu, U. and D. Seymen (2004), Revealed Comparative Advantage and Competitiveness: Evidence for Turkey vis-à-vis the EU/15,*6th Conf. of European Trade Study Group*, Nottingham.

Wai, L. K. andS.Bender (2003), Relative Advantage of Manufacture Exports among World Regions: (1981-1999), Working Paper, Economic Growth Center. Yale University.