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THE PREDICTION OF COMPETITIVE BENEFITS ABOUT DATE EXPORTING IN IRAN

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ABSTRACT

The purpose of this study is to consider the comparative advantage of date exporting in Iran and to predict this advantage among four date exporters such as, United Arabic Emirates, Pakistan, Tunisia and Saudi Arabia. Since date exporting is really important, special plans were codified to improve the agronomy management. This paper was measured for Iran and its antagonists by exporting benefit scales in 1992 until 2012. The scales were predicted by applying the time series prediction approach as well as Auto Regressive Integrated Moving Average approach (ARIMA) from 2013 until 2017. The results indicated that (RCA) the revealed comparative advantage and (RSCA) revealed symmetrical comparative advantage had downtrend and they are going to be 0.925 and 49.32 until 2017. However RCA and RSCA were stable in United Arabic Emirates and Saudi Arabia and they are increasing with a gentle slope in Pakistan and Tunisia. Therefore planners and specialists adopt some policies in order to prevent the comparative advantage reduction and export position loss.

Keywords: Export Comparative Advantage, Time Series Models, Prediction Of Time Series, Date

INTRODUCTION

Date is the main agronomy production whose cultivation increased after Islamic revolution and imposed war because of Iran comparative advantage. Iran's grade in date production promoted from 4 to 3in 2010 (1023130 tones production). But unfortunately it was not so successful in date exporting. However Iran had the second grade in date exporting (54319

tones) in 1979, its grade fell down to fourth in 2010 (106760 tones). Today Iran has the third grade in date production in the world after Egypt and Saudi Arabia, but it has fourth grad in date exporting after Arabic Emirates, Pakistan and Iraq (FAO, 2013).

This fact doesn't represent the Iran's weakness in date exporting, but it shows the strong management performance and correct long-term planning of antagonist countries. Economic Developments in international markets has had significance effects on status of exporter countries as well. Although Iran has been one of the main date exporters in the world, its competitive power decreased for international marketing evolution. Therefore, it is necessary to consider the present and future international markets carefully as well as having the correct long-term plans. In order to predict the future advantages, date exporting advantages should be calculated in Iran and its antagonist countries. This method can clarify the success path and success reasons of antagonist countries exactly (Peikani et al., 2009).

To measure the export advantage scales, Hilner (1990) applied revealed comparative advantage (RCA) to evaluate export business strategies of some merchandises. He also believes that the changes in the process of (RCA) show the merchandise export strategies during the time.

Imerfortor et al. (2003) used the revealed comparative advantage scales (RCA) and revealed symmetrical comparative advantage (RSCA) in Hungary agronomy section in 1998-1992. The results indicated that Hungary has comparative advantage in some food and agricultural productions such as meat, trap and grain. RCA was stable on the test period.

Paskal et al (2012) demonstrated date production is really profitable for Italian internal Manufacturer however its export comparative advantage was not as many as other European antagonist.

Maghzi et al (2012) considered export capacities of Iranian agricultural production to CIS (commonwealth independent countries). The results of revealed comparative advantage scales (RCA) among Iran and other CID countries indicated Iran has the highest comparative advantage in some productions such as date, pistachio, dried grape and chickpea.

Karimifard et at (2011) perused date marketing and date exporting in Khuzestan. The results obtained from 5 different kinds of dates indicated exporting incomes are not stable since producers do not get enough

benefit from total price along with the instability in demands. Mohammadi et al (2011) searched about the effect of international economic slump on Iran agricultural exporting in his article named "An analysis on the effect of international economic slump on Iran agriculture". He concluded there is a long-term relation between export demand and effective variables at the time series data. Sadeghi et al (2011) identified the comparative advantage of saffron in Iran in 2004- 2006 as well as its structure in importing and exporting markets. He concluded that only Iran, Spain and Greece had comparative advantage of saffron among other exporters, but this comparative advantage was decreasing during study period.

This article aims to compute the revealed comparative advantage (RCA) and revealed symmetrical comparative advantage (RSCA) of date in Iran and four other countries such as , United Arabic Emirates, Pakistan, Tunisia and Saudi Arabia for twenty years(since 1992 to 2012). To predict the advantages during the next five years, first Generalized Diky Fuller was used to identify the static variables then Auto Regressive Integrated Moving Average approach (ARIMA) to foreseen the patterns.

METHODOLOGY

The present study performs in two sections. In the first section, the amount of advantages between Iran and other antagonist countries are calculated. In the second section, these advantages are calculated for future position.

Layzner (1958) measured the RCA as an important scale for international business. A full-fledged version was represented by Balasa (1965, 1979, and 1986). Actually he followed Layzner methodology but he concentrated only on the production and exporting of developed countries (Rafiei, Aghapoor, Sabbaghi, 2010). Finally, Tomas Valars (1991) criticized the Balasa calculation. He believed a perfect scale should be able to compare one country with other world countries. Therefore he corrected Balasa scale like this:

$$RCA = \frac{X_{ij}/\sum_j X_{ij}}{\sum_i X_{ij}/\sum_i \sum_j X_{ij}}$$

In this RCA, numerator shows the amount of exporting merchandise out of total amount of country exports while the denominator shows the amount of exporting merchandise out of total amount of world export (Rafiei, Aghapoor, Sabbaghi, 2010). RCA scale is between zeros to the infinite. A larger scale indicates that country has comparative advantage and it moves toward specialization.

Smaller scales show the lack of comparative advantage of the exporting merchandise. Therefore, scale amounts represent the comparative advantage of the exporting merchandise in a regional and international market. RCA is not efficient for one year and no judge can be done according that (Ashrafi et al, 2007). Considering the changes of RCA by Larseno shows that there is no symmetry between comparative advantages. In order to solve the problem, a symmetrical form presented (Sadeghi et al, 2011):

$$RSCA_{ij} = \frac{RCA_{ij} - 1}{RCA_{ij} + 1} \qquad (2)$$

The variables are exactly similar to RCA. RCA scales are between 0 to the infinite but there is no symmetry. Therefore, another scale calls RSCA whose changes are between -1 to +1.Positive scales shows the existence of exporting comparative advantage while negative scales show the lack of it (Nasabbian et al, 2011).

After calculating the export advantages with one variable, its amount is measured for the future. The prediction is according to pervious amount in a time series. To get this aim, ARIMA was utilized:

$$y_t = a_0 + \sum_{i=1}^{p} a_i y_{t-i} + \sum_{i=1}^{q} \beta_i \varepsilon_{t-i} \qquad (3)$$

$\sum_{i=1}^{p} a_i y_{t-i}$ $\sum_{i=1}^{q} \beta_i \varepsilon_{t-i}$

Shows the auto regression and shows the model moving average. In this model, p shows the stop of auto regression while q shows the stop of moving average and d shows the difference to provide static condition in time series (Inderis, 1984).

In order to identify the variables of ARC and ASRC, Diky Fuller Generalized method is applied. To predict the time series, the Jenkin's Box method is. This method has 4 steps:

1. **Identifying the patterns:** in y=this step, statistic of data average and data variance is assessed by samples of autocorrelation function (ACF) and Partial autocorrelation function samples (PACF). In order to choose the best model of ARIMA, first of all d (The degree of co-integration), p (number of explanatory sentences) and q (moving average) should be clarified. By regarding the meaningful steps of the charts, autocorrelation function (ACF) and Partial autocorrelation function samples are obtained. Best models are gained in the next step. After that, AIC scales are calculated according to according

to below formula. Any AIC model can be selected as the best one.

$$AIC = -2\text{Log } L + 2m \quad (4)$$

[5-3]

m=(P+q+d) are estimated phrases and L shows the correcting samples of the model (Ghahreman & Ghrekhani, 2011).

2. **Selecting the best pattern:** every pattern contains some parameters, the amount of these parameters should be identified to select the best pattern. The less mistakes predicted in this pattern, the more reliable this pattern is. In order to select the best predictive approach through Chi-square error, RMSE average is used. Any approach with less mistake is selected the best one.

3.

$$MSE = \sum_{i=1}^{n} \frac{(y_i - \hat{y}_i)^2}{n} \quad (5)$$

$$RMSE = \sqrt{MSE}$$

n,ŷ,y are the number of observation, predictive amount and real amount in order(Rafiei, Aghapoor, Sabbaghi, 2010).

4. **Identifying the accuracy of the pattern:** the accuracy of the pattern depends on its analytical quality. To identify the accuracy, the normality and stagnation of charts are assessed. Identification methods help researcher to decide on pattern improvement.

5. **Prediction:** after selecting the final pattern, this pattern can be used to predict the future events in a time series. This model is more useful when we do not have enough information (Khasheiee et al, 2011).

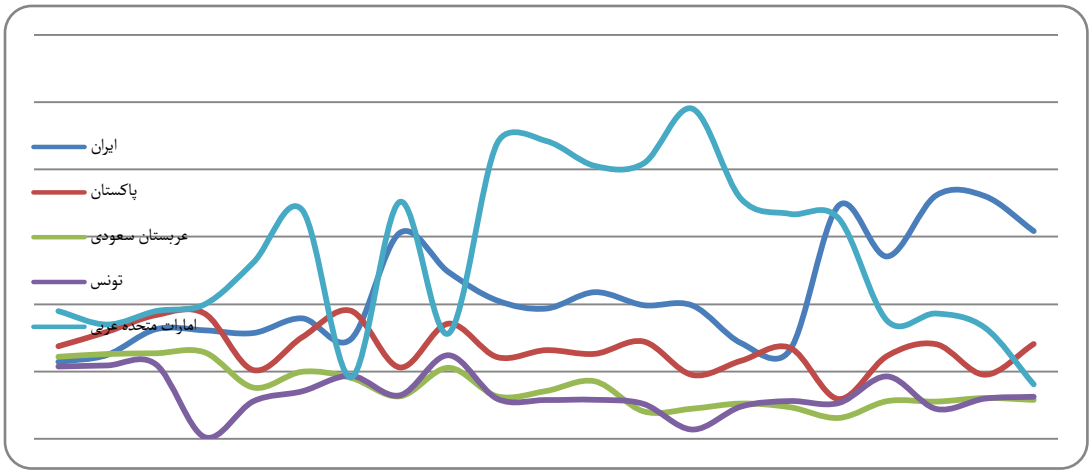
Data of this article was drived from The Food and Agriculture Organization of the United Nations website (FAO, 2013), Bank and Ministry of Agriculture (2013), Customs Statistics Center of Iran (2013) and Research Institute dates and tropical fruit (2013).

RESULTS

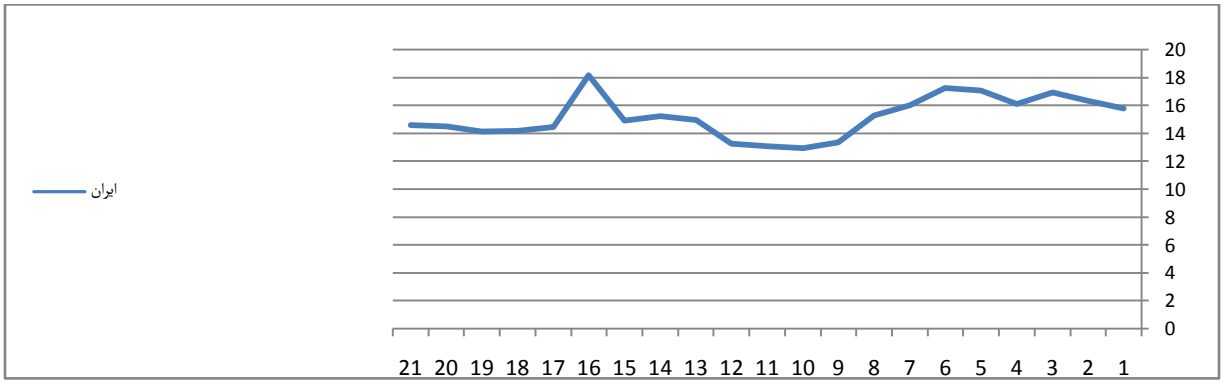
According to **Graph 1**, the amount of date exporting had downtrend in the international markets from 1992 until 2012 although United Arabic Emirates had uptrend during these years. Other exporters were almost the same.

Graph 2 indicates the process of date production in Iran from 1992 until 2012. However it had various swing, it did not have any downtrend. This fact proves that Iran export behavior is the main reason of its reduction.

Then, RCA and RSCA were calculated from 1992 until 2012. According to table 1, Iran has a good situation in exporting at international markets. The process had uptrend in 1990s however it had serious downtrend after 2000. As you see, during the last 5 years the revelation was 2%.



Graph 1: the process of date exporting in Iran and its antagonists from 1992 until 2012.



Graph 2: the process of date production in Iran from 1992 until 2012.

Table 1: RCA in five date exporter countries from 1992 until 2012

year	United Arabic Emirates	Pakistan	Tunisia	Iran	Saudi Arabia
1992	61.94	27.99	93.96	1561.29	21.29
1993	114.81	25.32	88.02	1313.22	15.5
1994	188.29	30.92	50.65	889.32	17.12
1995	146.1	19.35	93.59	395.49	51.08
1996	184.89	12.25	91.72	620.23	86.28
1997	384.24	28.84	47.61	266.51	81.93
1998	255.32	16.75	69.04	191.3	63.97
1999	218.22	13.97	45.81	273.85	23.56
2000	173.56	27.23	44.61	284.76	60.43
2001	207.88	16.84	120.67	312.09	132.99

2002	**161.71**	**18.8**	**121.13**	**243.41**	**95.77**
2003	**135.73**	**16.66**	**122.11**	**243.75**	**61.92**
2004	**49.55**	**31**	**92.24**	**300.11**	**81.39**
2005	**100.44**	**14.91**	**73.76**	**172.69**	**34.58**
2006	**29.52**	**26.16**	**80.63**	**324.44**	**46.48**
2007	**90.94**	**23.16**	**87.83**	**109.44**	**29.58**
2008	**70.49**	**18.01**	**75.14**	**117.48**	**24.77**
2009	**27.99**	**37.62**	**160.5**	**237.74**	**27.29**
2010	**19.69**	**29.18**	**187.49**	**111.44**	**38.91**
2011	**29.88**	**16.55**	**134.69**	**112.67**	**39.09**
2012	**45.34**	**9.39**	**126.85**	**110.90**	**39**

As you see according to RSCA, the advantage had reduction for Iran and increase in Saudi Arabia during the last five years

Table 2: the RSCA in 5 countries during the last 5 years

year	United Arabic Emirates	Pakistan	Tunisia	Iran	Saudi Arabia
1992	**0.968**	**0.931**	**0.978**	**0.998**	**0.910**
1993	**0.982**	**0.924**	**0.977**	**0.998**	**0.878**
1994	**0.989**	**0.937**	**0.961**	**0.997**	**0.889**
1995	**0.986**	**0.901**	**0.978**	**0.994**	**0.691**
1996	**0.989**	**0.849**	**0.978**	**0.996**	**0.977**
1997	**0.994**	**0.932**	**0.958**	**0.992**	**0.975**
1998	**0.992**	**0.887**	**0.971**	**0.989**	**0.969**
1999	**0.990**	**0.866**	**0.957**	**0.992**	**0.940**
2000	**0.988**	**0.929**	**0.956**	**0.993**	**0.967**
2001	**0.990**	**0.887**	**0.983**	**0.993**	**0.985**
2002	**0.987**	**0.899**	**0.983**	**0.991**	**0.979**
2003	**0.985**	**0.886**	**0.983**	**0.991**	**0.968**
2004	**0.960**	**0.937**	**0.978**	**0.993**	**0.975**
2005	**0.980**	**0.874**	**0.973**	**0.988**	**0.943**
2006	**0.934**	**0.926**	**0.975**	**0.993**	**0.957**
2007	**0.978**	**0.917**	**0.977**	**0.983**	**0.934**
2008	**0.972**	**0.894**	**0.973**	**0.982**	**0.922**
2009	**0.931**	**0.948**	**0.987**	**0.991**	**0.929**
2010	**0.903**	**0.933**	**0.989**	**0.982**	**0.949**
2011	**0.935**	**0.886**	**0.985**	**0.982**	**0.950**
2012	**0.956**	**0.807**	**0.984**	**0.981**	**0.951**

ARIMA patterns were utilized to predict the Iran RSCA and RCA in the future. The best pattern was used according to least errors.

Table 3: selecting the best approach in order to predict RSCA and RCA in 5 date exporter countries from 1992 until 2012

Scale Variable		AR	(P)MA		(q)approach
ARIMA(3,1,3)	**1**	**3**	**3**	**RCA**	**United Arabic Emirate**
ARIMA(1,1,2)	**1**	**2**	**1**	**RSCA**	
ARIMA(3,0,3)	**0**	**3**	**3**	**RCA**	**Pakistan**
ARIMA(3,1,2)	**1**	**2**	**3**	**RSCA**	
ARIMA(1,1,2)	**1**	**1**	**2**	**RCA**	**Tunisia**
ARIMA(3,1,3)	**1**	**3**	**3**	**RSCA**	
ARIMA(3,0,3)	**0**	**3**	**3**	**RCA**	**Iran**
ARIMA(3,0,3)	**0**	**3**	**3**	**RSCA**	
ARIMA(2,1,2)	**1**	**2**	**2**	**RCA**	**Saudi Arabia**
ARIMA(3,1,2)	**1**	**2**	**3**	**RSCA**	

Table 4: Predicting RCA and RSCA in Iran and 4 other date exporting countries from 2013 till 2017

year	United Arabic Emirate		Tunisia		Saudi Arabia		Pakistan		Iran	
	RCA	RSCA	RCA	RSCA	RCA	RSCA	RCA	RSCA	RCA	RSCA
2013	41.92	0.981	118.50	0.977	50.83	0.956	23.36	0.897	103.95	0.938
2014	40.37	0.980	119.35	0.978	51.84	0.958	21.92	0.903	90.29	0.934
2015	39.06	0.979	120.12	0.979	53.04	0.959	20.00	0.901	76.61	0.931
2016	38.01	0.978	120.80	0.978	52.84	0.957	22.77	0.897	97.62	0.928
2017	37.33	0.977	121.41	0.979	51.96	0.957	22.29	0.901	49.32	0.925

DISCUSSION

The results of this study demonstrated RCA and RSCA of Iran is going to have downtrend during 2013 till 2017 and Iran's antagonists will devote large amount of date export.This situation weaken Iran at international markets. The results of comparative advantage scales between 1992-2012 shows Iran had comparative advantage in date export. Other researchers such as Hatef et al (2014), Shahrahi (2011), Mehrabi Basharabadi et al (2010), Akbari et al (2010), Azizi and Yazdani (2002) and Zad et al (2002) found the similar results.

The results also indicate that Iran has the first grade in international productions however it has the third grade in exporting. Therefore Iran has the potential of exporting. Moqaddasi et al (2011), Amjadi et al (2010) and Hosseini (2007) emphasized on that potential either.

It is suggested to country planners and politician to support and increase the country export.

The main result of this research is reduction of comparative advantages of date export in Iran in the future. This paper is a kind of warning for Non-oil product export especially in agricultural section. Thus, it is suggested to country planners and politicians to return Iran's grade in export.

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