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The competitiveness of the Saudi Arabian date palm: An analytical study

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The Kingdom's date production has not kept pace with export activities, where the demand of foreigners as workers or visitors in KSA is increased from year to other, so as the percentage of exports is about 6.8% of the domestic production, which is equivalent to 8.7% of the global exports, moreover, the average price of export reached 1065 US$/ton. The low export price of Saudi dates is attributed to the lack of focus on the production of high quality varieties of dates. Only 6.8% of the production is marketed externally, this indicates that the Kingdom's exports to the world markets is very low although the Kingdom is the second largest producer of dates worldwide producing 14.1% of world production in 2010. The outcome of excess production of dates, low consumption and weak export activities and processing of Saudi dates, resulted in a large surplus of dates of about 400 thousand tons in 2010, and it is expected to exceed 600 thousand tons by the year 2022. This is considered as a waste of water resources as well as the financial resources of the Kingdom. To evaluate the level of competitiveness of dates in the Gulf Cooperation Council (GCC) countries, the study used 3 main measures, that is, revealed comparative advantage (RCA), revealed trade advantage (RTA) and The trade entropy index (TEI), for the period 2000-2009. All the results showed that The KSA had revealed comparative advantage for export of dates.

Key words: Gulf cooperation council (GCC), revealed comparative advantage, revealed trade advantage, trade entropy index.

INTRODUCTION

Kingdom of Saudi Arabia (KSA) is a major dates producing country and is ranked the second in the world as per FAO statistics 2010 in terms of quantities produced (14.4%), where the per capita consumption of dates is the highest in the world (36 kg/year). Dates occupies a special place in the economic structure of Saudi agriculture with respect to production, consumption and marketing due to the Kingdom's supportin order to increase production while improving quality. The area planted with palm trees had increased by 152% during the period from 1997 to 2009, and the production increased by 153% during the same period. The total

planted area with date palm trees in the Kingdom during 2009 was about 162 thousand hectares, while the number of palm trees had reached nearly 23 million trees; with more than about 400 varieties. The best of these varieties being Khalas, Sukkary, Helwah, Ajwah, Ruthana, Segae, Barhi and Rushodia. Palm trees are grown in the various regions of the Kingdom, which are characterized by the diversity of climate; the most important palm growing regions are Riyadh, Qassim, Eastern Province and Medina. Despite the increase in the area planted, the productivity per hectare has declined in recent years, due to the fact that a large number of newly

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planted palms did not enter the production phase yet. This is likely to increase the production of the Kingdom of dates significantly in the coming years.

Dates production in Saudi Arabia had reached about 1.078 million tons in 2010, which is equivalent to 14.4% of world production, and is ranked second in the world in the production after Egypt, which produced about 1.353 million tons in the same year.

This research consists of 6 sections viz: Introduction, justification and objectives of the study followed by the literature cited, and methodology. Then results and discussion and conclusion

Justifications and objectives of the study

Competitiveness is now crucial to developing countries. Competitiveness is a process of change. It involves, private sector initiative, government initiative and effective dialogue between the two. A competitive advantage is an advantage over competitors gained by offering consumers greater value, either by means of lower prices or by providing greater benefits and service that justifies higher prices.

The Kingdom's date production has not kept pace with export activities, as the percentage of exports is about 6.8% of the domestic production, which is equivalent to 8.7% of the global exports, and the average price of export reached 1065 US$/ton. The low export price of Saudi dates is attributed to the lack of focus on the production of high quality varieties of dates.

The major problem of the production of dates in the KSA is related to dates processing, where only about 6.1% of the production is processed, using unspecialized equipment in the field of date processing sector. Only 6.8% of the production is marketed externally, this indicates that the Kingdom's exports to the world's markets are very low compared to its level of production.

The outcome of excess production of dates, low consumption and weak export activities and processing of Saudi dates, resulted in a large surplus of dates at about 400 thousand tons in 2010, and it is expected to exceed 600 thousand tons by the year 2022. This is considered as a waste of water resources as well as the financial resources of the state.

This research aims at assessing the competitiveness of the Saudi Arabian dates in the world with special emphasis on the Gulf States (GCC).

LITERATURE REVIEW

Al-Abbad et al. (2011) conducted a study on the economic feasibility of date palm cultivation in the Al-Hassa oasis of the Kingdom and estimated the average annual yield of dates to be 48.0 kg per palm with a selling price estimated at SR 4.00 per kg. The net income from date palm cultivation in the oasis was found to be

SR5800.00 / ha (SR 38.67 / palm). Significant number of farmers (23%) sells their produce in the farm itself, of which 57% is to known customers indicating sizeable "farmer-consumer" loyalty. Date palm farmers of Al-Hassa were also found to be quality conscious, as they adopt diverse measures (pre topost harvest) to ensure quality production of dates. SWOT analysis indicated spiritual attachment to the land by the farmers as a strength of the system, however; bureaucratic hurdles to obtain subsidies and lack of exploitation of facilities by traditional farmers, is a major threat to date farming in the oasis. There also exists a good possibility to develop logistics that support marketing of dates, especially through agricultural cooperatives, besides further enhancing exploitation of state subsidies for date palm cultivation.

A country market study of Saudi Arabia examining the trade flows between South Africa (SA) and Saudi Arabia was conducted by Rensburg and Letswalo, 2010. The major objective of the study was to identify agricultural products that have the potential to be exported to Saudi Arabia. A trade potential index (TPI) was drawn up in this study and it was noted that there are opportunities for deepening trade with Saudi Arabia. The "trade chilling" analysis was also conducted.

Liu and Pascal (2004) studied the marketing potential of date palm fruits in the European market. The purpose of the study was to evaluate the potential of various date varieties (including "non-traditional" ones) in the EU market. The study found that there was room for increased imports of Deglet Nour dates (or other varieties with similar taste and texture) provided high standards of quality (including low infestation rate), packaging and traceability could be met. However, prices were not expected to increase substantially from their present level. Medjool has attracted major interest in the United Kingdom and France and fetched high prices. It appeared to have good market prospects but some logistical constraints due to the low supply volume and retailer hesitations still needed to be solved. Conversely, the potential for Hayani and Bahri seemed limited to a small ethnic market.

MATERIALS AND METHODS

Secondary data was used in achieving the study objectives. Thedata covers quantities and values of dates traded from Saudi Arabia during the last decade between the GCC, as collected from local, national and international sources.

The following Modules were used to evaluate the competitiveness of the dates in the selected countries: (Türkekul et al., 2007).

Revealed comparative advantage (RCA)

A country's comparative advantage is determined by its relative factor scarcity. However, it is well known that measuring

comparative advantage and testing the Hecksher-Ohlin (H-O) theory have some difficulties (Balassa, 1989) since relative prices under autarky are not observable. Given this fact, Balassa (1965) proposed that it may not be necessary to include all constituents effecting country's comparative advantage. Instead, he suggested that comparative advantage is revealed by observed trade patterns, and in line with the theory, one needs pre-trade relative prices which are not observable. Thus, inferring comparative advantage from observed data is named "revealed" comparative advantage (RCA). In practice, this is a commonly accepted method to analyzing trade data.

Revealed Comparative Advantage can be written as:

$$RCA1 = (X_{ij} / X_{it}) / (X_{wj} / X_{wt}) = (X_{ij} / X_{wj}) / (X_{it} / X_{wt})$$

Where: X_{ij} = Country i's export of goods j, X_i = Country i's exports of all goods ,X_{wk} = World exports of good k ,X_w = World exports of all goods, t = is a set of commodities, n = is a set of countries. If RCA1 > 1, Comparative Advantage revealed., RCA1 < 1, No Comparative Advantage revealed.

One problem with the basic Balassa index is that it is not symmetrically distributed around the neutral value 1.0, ranging from 0 to 1 for comparative disadvantage and indefinitely upward from 1.0 for comparative advantage products. This problem is easily corrected by taking natural logarithms of the ratios with the index defined as follows: [Poramacom and Nongnooch (2002)].

$$RCA2 = \ln (X_{ij} / X_{it}) / \ln (X_{wj} / X_{wt})$$

The revised index is now symmetric around 0. This form is particularly useful for econometric studies.

Relative trade advantage (RTA)

Vollrath (1991) offered mainly 3 alternative ways of measurement of a country's RCA. These alternative specifications of RCA are called the relative trade advantage (RTA), the logarithm of the relative export advantage (ln RXA), and the revealed competitiveness (RC). In this study, for the sake of being systematic, we call them as RTA1, RTA2, and RTA3 respectively. It is clear that the advantage of presenting latter two indices (that is RTA2 and RTA3) is that they become symmetric through the origin. Positive values of Vollrath's 3 alternative measures of revealed comparative advantage reveal a comparative/competitive advantage whereas negative values indicate comparative /competitive disadvantage. This measure is the relative trade advantage (RTA), which accounts for imports as well as exports. It is calculated as the difference between relative export advantage (RXA, and its counterpart, relative import advantage (RMA): Thomas (1991).

$$RTA1 = RXA - RMP$$

Revealed Relative Comparative Advantage Export Index is defined as a country's export share relative to all other countries export of the specific product category), which equates to the Balassa index,

$$RXA = RCA (B)$$

Revealed relative import penetration index is defined as a country's import share relative to all other countries imports of the specific product category (Suleiman, 2011).

$$RMA = (M_{ij} / M_{it}) / (M_{nj} / M_{nt})$$

Where, M represents the imports.

Vollrath's second RCA measure is the logarithm of the relative export advantage (here as VRC2):

$$RTA2 = \ln RXA = \ln RCA1$$

The third measure of Vollrath is the revealed competitiveness (RC) (here as VRC3), expressed as:

$$RTA3 = RTA2 - \ln RMA$$

If RTA > 0 the goods have certain competitive advantages; RTA < 0 the goods has not competitive advantages.

The trade entropy index (TEI)

The third measure used to evaluate the competitiveness of trade in this research is the Trade entropy index (TEI). It is used in trade analysis for measuring the concentration or dispersion of trade. These trade flows can be either in terms of imports or exports (Arzolnal, 2003). The higher the index the more dispersed is the export (import) pattern of that country. The validity of the index derives from weighting each component of share (bij) by its relevance ln(1/bij). That means if the value of bij for a country is very high, it will be scaled down by the ln (1/bij) term and the maximum value is achieved when all shares are equal.

In this research the first equation (that is, the export equation) will be used

$$I_{xi} = a_{ij} \ln(1/a_{ij}) \text{ with } 0 < a_{ij} < 1 \text{ and } \Sigma a_{ij} = 1$$
$$I_{mi} = b \ln(1/b_{ij}) \text{ with } 0 < b_{ij} < 1 \text{ and } \Sigma b_{ij} = 1$$

where: Ixi: Entropy index of export. Imi: Entropy index of import. aij: Export share of country i to country j. bij: Import share of country i from country j.

In the formula each entity (share of a commodity) is weighted by its relevance and very high export (or import) share is weighted with correspondingly low weights and the very low ones are weighted with higher weights, consequently the higher values (in sum) are obtained for approximately equally distributed shares. In brief, the higher the index the more dispersed is the export (or import) pattern of that country.

RESULTS AND DISCUSSION

Date palm trade in the Kingdom of Saudi Arabia

The Central Department of Statistics and Information (CDSI) in the KSA publish annual trade statistic for all the commodities traded in the Kingdom (CDSI, 2011). The date palm fruit traded data was grouped according to country groups, the GCC, Non GCC Arab, Non-Arab Islamic Countries, Non-Arab Non-Islamic Asian Countries, Non-Arab Non-Islamic African Countries, Australia and Pacific Islands, North America Countries, EU countries, Western Europe Countries, and Other Countries.

Table 1 shows that about half the date exports from the KSA were mainly directed to Non-GCC Arab Countries, while about 23% was directed to Islamic Non-Arab Countries and about 12% were directed to the GCC.

Figure 1 shows that the annual trade of dates to the GCC during 2001 to 2010 fluctuated from year to year, it increased from 2.8 thousand tons in 2001 to 8.4 thousand tons in 2003 then dropped to about 1.7

Table 1. Quantity and Price of Exported Dates From the KSA to the World Markets During 2004 to 2011.

Year		The GCC	Other Arab Countries	Islamic Non-Arab Countries	Asian Non-Arab Non-Islamic Countries	African Non-Arab Non-Islamic Countries	Australia and Pacific Islands	North America Countries	EU Countries	West Europe Countries	Other Countries
2004	Q	5753	6980	337						128	54
	P	3.60	1.58	2.53						5.11	3.61
2005	Q	5707	9860	396						129	91
	P	4.29	1.49	3.18						4.36	4.05
2006	Q	2525	3139	131						133	
	P	4.83	2.07	5.18							2.07
2007	Q	4031	6983	3105	788	478	12	73	380	98	8
	P	5.63	1.50	1.34	2.02	0.95	13.33	3.38	8.29	3.50	7.13
2008	Q	9209	9135	3716	1215	267	42	19	400		2
	P	8.32	1.86	1.91	1.74	5.39	11.45	18.58	3.82		1.50
2010	Q	2639	8866	4748	1837	521		140	383	25	
	P	7.91	2.49	2.93	4.46	5.15		5.67	4.95	10.92	
2011	Q	2242	8835	4243	1719	462		151	823		19
	P	10.70	2.49	3.30	2.33	6.49		6.62	8.51		
Share in 2011	%	12.12	47.77	22.94	9.29	2.50		0.82	4.45		0.10

Q: Tons; P: RS/kg.

thousand ton in 2005. The highest exports were in 2008 (About 16.2 thousand tons) and the lowest were in 2009 (about 705 tons).

Date palm price analysis in the Kingdome of Saudi Arabia

The Ministry of Agriculture in the KSA publishes annual average wholesale prices of the different varieties of dates in the main wholesale markets in the main producing regions (MOA, 2011).

The average wholesale price for dates in the kingdom in 2010 was SR 8.75/kg for all the varieties. The highest wholesale prices were for Sukkary (RS 13.74 /kg), Naboot Saif (RS 13.37 /kg), Khlass (RS 13.17 /kg) and Seqe'e (RS 12.54/kg). The lowest prices were for Nabtet Rashed (RS 3.53 /kg) and Al-Helweh (RS 5.50 /kg) (Figure 2).

It is worth mentioning here that the average export prices for fresh, dried and stuffed dates in the year 2010 were RS 4.55 /kg, RS 4.12 /kg, and RS 4.15 /kg respectively, with a weighted average of RS 4.14 /kg for the three types of dates. From this, it is noticed that the local wholesale prices of dates is almost double the export prices in the
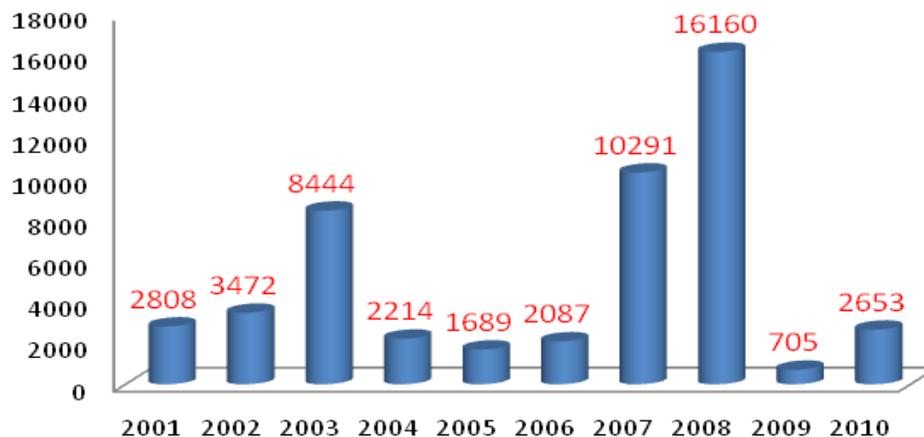
Figure 1. Date Palm Exports to the GCC during 2001-2010
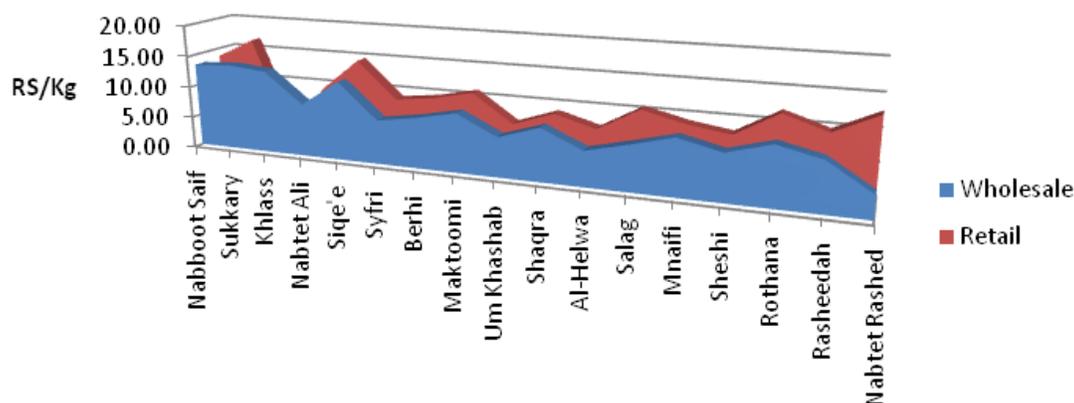
Figure 2. Average Wholesale and Retail Prices for the Different Varieties in the KSA in 2010.

same year. On the other hand, the highest price of sukkary was in Al-Qassim (RS 23.6 /kg) and in Hael for NabbootSaif (RS 35 /kg). The average wholesale prices of all the varieties were RS 15.74 /kg in Hael, RS 13.05 /kg in Najran, RS 12.91 /kg in Aseer, and 11.44 /kg in Al-Baha. Moreover, Figure 2 shows that the marketing margins were relatively high in all dates varieties (RS 2.2 /kg) which comprises 34% of the average wholesale prices compared to the services rendered by the middlemen in the dates markets.

Competitiveness measures for the Date Palm in Saudi Arabia

Revealed comparative advantage

Balassa revealed comparative advantage indices: Two RCA indices were evaluated here, that is, RCA1 and RCA2. The first index (RCA1) was evaluated for the 6 GCC, while the second was evaluated for the KSA only.

Tables 2, 3 and Figure 3 show that Bahrain and Kuwait have revealed comparative disadvantage during the studied period, while the rest of the GCC have revealed comparative advantage in Dates trade. Moreover, UAE show a stronger revealed comparative advantage during the period 2000 to 2009.

The revised Revealed Comparative Advantage index (RCA2) shows that KSA and the UAE still have higher level of comparative advantage in dates, since the UAE have a stronger RCA than the KSA. The rest of the GCC countries have comparative disadvantage during the studied period (Figure 4).

Relative trade advantage

The first relative trade index (RTA1), calculated as (RXA-RMA) emphasizes the results found in calculating of the RCA for the GCC. The UAE have the strongest comparative advantage in these countries then comes the KSA (Figure 5). According to this indicator, it was

Table 2. The Revealed Comparative Advantage Indices for Date in the GCC

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average
KSA	27.7	68.0	50.2	30.8	47.6	28.6	34.4	16.7	24.1	1.1	32.9
UAE	106.9	122.6	109.6	91.1	39.0	86.4	24.4	69.0	73.9	94.0	81.7
Bahrain	0.11	0.00	0.13	0.00	0.09	0.03	0.00	0.03	0.00	0.08	0.0
Kuwait	0.5	0.0	0.4	0.9	0.1	1.8	0.4	0.2	1.3	0.6	0.6
Oman	0.0	30.5	9.9	8.1	18.5	8.7	14.5	19.2	10.9	13.9	13.4
Qatar	3.0	0.0	1.6	4.3	8.9	3.2	5.8	8.0	3.5	30.6	6.9

Table 3. Revised RCA2 for the Dates in the GCC

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
KSA	1.14	1.22	1.19	1.15	1.20	1.15	1.16	1.10	1.13	0.79
UAE	1.30	1.31	1.30	1.28	1.18	1.27	1.13	1.25	1.26	1.28
Bahrain	0.25	0.00	0.35	0.00	0.20	0.10	0.00	0.15	0.00	0.29
Kuwait	0.51	0.00	0.44	0.52	0.00	0.66	0.42	0.36	0.57	0.57
Oman	0.00	1.12	0.99	0.98	1.04	0.97	1.01	1.07	1.01	1.03
Qatar	0.63	0.00	0.44	0.61	0.65	0.59	0.56	0.68	0.66	0.97

Give Average for RCA2 in this table as in Table 3.
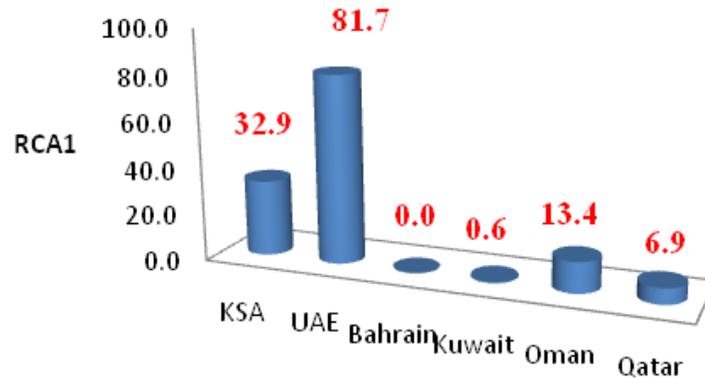
Figure 3. Revealed Comparative Advantage (RCA1) for the GCC Dates as an Average of 2000-2009

found that Oman has also revealed comparative advantage in dates trade.Moreover, the RTA2, calculated as (ln RXA = lnRCA1) values followed the same patterns as RTA. The RTA3, which is calculated as the difference between the RTA2 and the natural logarithm of RMA, showed that the KSA have higher Comparative advantage than the UAE (Figure 6).

The trade entropy index (TEI)

Table 5 presents the absolute trade entropy indices (TEI) calculated for dates exports and imports in KSA with respect to the world. The values of these indices were small, which means that the share of trade for dates in the world market is small, that is, export (or import) pattern of that country are less dispersed. Moreover, it is noticed here that the Export Entropy Index fluctuated during the period, but taking a decreasing pattern. The Import Entropy Index, on the other hand showed very low values but more constant.

Conclusions

Although the KSA is considered the second date producing country, but its exports of this product are weak. The Competitiveness Analysis shows that the KSA had Revealed Comparative Advantage in dates trade, but second to the UAE.
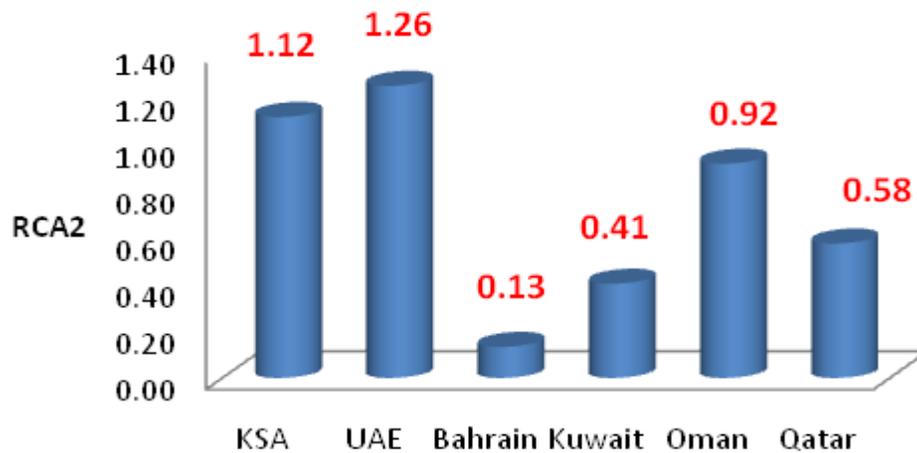
Figure 4. Revealed Comparative Advantage (RCA2) for the GCC Dates as an Average of 2000-2009.
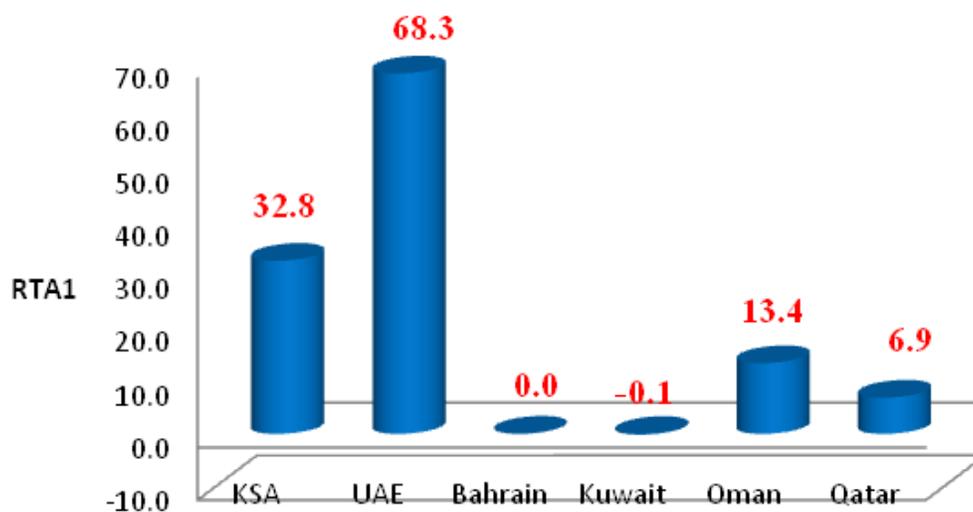
Figure 5. Relative Trade Advantage for Dates (RTA1) in the GCC as an average of the period 2000-2009
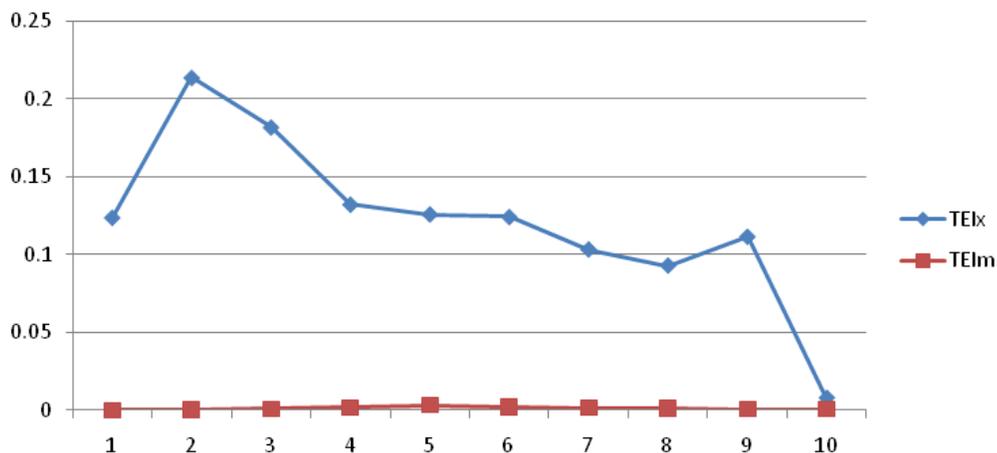
Figure 6. Trade Entropy Index for Exports and Imports of Dates in the KSA and the World

To enhance the level of competitiveness of KSA dates trade it is necessary to increase the promotion campaigns in the external markets after implementing the export markets standards and requirements.

ABBREVIATIONS

CMS, Constant market share; **DRC,** domestic resources cost; **KSA**, Kingdom of Saudi Arabia, **RCA,** revealed comparative advantage; **RTA,** revealed trade advantage; **SCB,** social cost benefit; **TEI,** trade entropy index **TPI,** trade potential index

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