Efficiency of date marketing system in Sistan & Bluchestan of Iran; a marketing margin approach

Efektivnost marketingu datlí v provincii Sistan a Bluchestan v Íránu: přístup marketingového marginu

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Abstract: As Sistan and Blouchistan province is one of the most important date producers in Iran, an attempt is made to estimate the economic function of factors affecting the date marketing margin in the province. The data required in this research have been collected through the field survey and document analysis. The results of the estimation of marketing margin functions was obtained through utilizing of the combination of models including the Price Increase Model, Relative Price and Marketing Margin. The data analysis indicates that the farm-gate price and the harvest margin of dates are among the highly influential factors on the entire marketing margin. The retail-margin function is influenced by the retail price and the retailer cost and the wholesale margin function is affected by the wholesale price and the wholesaler cost. Calculation of the market transparency determination criteria shows that due to the fact that the total of the farm-gate price and marketing costs are less than the retail sale, there is a lack of transparency in the studied marketing channels which in turn resulted in the declining market efficiency.

Key words: date, marketing margin, wholesale, retailing, exporter

Abstrakt: Provincie Sistan a Blouchistan je jednou z nejvýznamnějších oblastí produkce datlí v Íránu. Autoři se pokusili o odhad ekonomické funkce zahrnující faktory, jež ovlivňují marketing datlí v této provincii. Potřebné údaje byly získány formou průzkumu a analýzy dokumentů. Výsledky odhadu funkcí marketingového marginu byly získány s použitím kombinace modelů zahrnujících Model růstu cen, Model relativní ceny a Model marketingového marginu. Analýza dat ukazuje, že mezi nejvýznamnější faktory ovlivňující marketingový margin patří cena na výstupu z farmy a produkční margin sklizně datlí. Funkce maloobchodního marginu je ovlivněna maloobchodní cenou a náklady v maloobchodu a funkce velkoobchodního marginu je ovlivněna velkoobchodní cenou a náklady ve velkoobchodu. Výpočet kritérií determinujících tržní transparentnost ukazuje, že vzhledem ke skutečnosti, že celkový souhrn ceny na výstupu z farmy a marketingových nákladů je nižší než tržby v maloobchodě, existuje ve studovaných marketingových kanálech nedostatečná transparentnost, důsledkem čehož následně je klesající tržní efektivnost.

Klíčová slova: datle, marketingový margin, velkoobchod, maloobchod, export

Market and marketing has long been the focus of investigation by the experts who have qualitatively studied it where in general the producers have been the focus of attention. In other words, they have solely attempted to scrutinize and estimate the supply and demand function individually based upon which the price elasticity of factors and the responsiveness of producers and consumers to changes in price of factors and products have been determined and the impressibility and susceptibility of each group (producers and consumers) to market price have been pored over. In some cases, both demand and supply function have been systematically estimated and by solving the equations, the experts have determined the equilibrium price in the market. Moreover, in some studies the effects of the general policies and

factors affecting the producers and consumers are presented and accordingly strategies to improve and organize the market have been advised and suggested. However, the most important section of market lying between the producers and consumers, referred to as 'the marketing margin,' has been totally ignored.

Marketing margin is an equilibrium entity that is a function of the difference between the equilibrium of retail and farm prices (Wohlgenant 2001), or between export and farm prices (Carambas 2005). Marketing margins provide neither a measure of farmers' well-being nor of the marketing firms' performance. However, they give an indication of the performance of a particular industry (Tomek, Robinson 1990), or an indication of the market structure and efficiency. For instance, Gordon and Hazledine (1996) have argued and revealed in their study that the form of the market power is likely to manifest in larger marketing margins than would otherwise be the case. Marketing margins are the result of the demand and supply factors, marketing costs, and the degree of the marketing channel competition (Marsh, Brester 2004). Thus, margins reflect the aggregate processing and retailing firm behavior which influence the level and variability of farm prices and may influence the farmer's share of the consumer food dollar (Gardner 1975; Wohlgenant, Haidaicher 1989; Tomek, Robinson 1990).

The Sistan and Blouchistan province in Iran is one of the most fertile areas to grow date palms. The number of dates palm in the province accounts for one fifth of the total date palms in Iran. As far as the area under cultivation is concerned, the S & B province has the second largest area under cultivation of palm trees. Different types of dates such as Mazafati, Robi, Shahani, Ardan, Pio, Halilee, Sarg Shekan, Sekari and Ashee Dozki are produced in the province. Mazafati and Robi enjoy a special consumer attraction due to their high quality, the province of Sistan and Blouchistan is one of the biggest producers of the Mazafati dates and it is the unique and exclusive producer of the Robi dates in Iran. The area under plantation of dates is in turn an indicator of the high economic priority and importance of this product for farmers of the province. Out of 42 623.5 hectares under the date cultivation in the province, 35 180.5 hectares are productive and 7 443 hectares are the bed for young dates that are not yielding yet (Agricultural Organization of Sistan and Blouchistan 2006). In this study, regarding the importance of the dates production in Sistan and Baluchestan and effect of marketing margins on the well being of farmers and its simultaneous and direct impact on farmers saving and capital formation ability, which in turn means the development of agriculture

sector, an endeavor is made to estimates marketing margins of the Mazafeti date along with the degree of market transparency of dates and the factors affecting dates marketing margins in the Sistan and Baluchestan province of Iran.

LITERATURE REVIEW

Quite a number of studies have been undertaken to investigate the retail-farm price spreads. Most of these were studies in the US, e.g. Wohlgenant (1985), Kinnucan and Forker (1987), Wohlgenant and Mullen (1987), Schroeter and Azzam (1991), Parker and Zilberman (1993), Reed et al. (2002), Richards et al. (1996), Holloway and Hertel (1996) and Sartwelle et al. (2000). In fact, in the US, the retail-farm price spreads for the individual foods are regularly computed and published as the measures of marketing costs and marketing margins.

The study by Gardner (1975) provided a basic framework for analyzing marketing margins. It defined the major sources of variation in the retail-farm price spread, i.e., the shifts in the retail food demand, in the farm product supply, or in the supply of marketing services. Similarly, Heien (1977) came up with an analysis of the farm-retail margin (in percentage difference) that related the margin with the farm output and the ratio of retail price and marketing costs. Using the Cobb-Douglas production function, his analysis showed that an increase in the marketing costs and in the level of farm output reduces the percentage marketing margin.

Wohlgenant (2001) reviewed the studies on marketing margins and the development of empirical models. Aside from the variables that come in when using a structural model that looks at the farm, the retail, and the input market equilibria, he also discussed other possible explanatory variables that had been included in studies that used the reduced-form models instead of a complete structural model. From the studies he reviewed, the primary factors that were commonly included in the analysis of the reduced-form models were the retail price, the demand shifters like population and income, and the marketing input costs. In addition to the aforementioned variables, there is also a number of other relevant variables that can influence the size of marketing margins. These have been shown in a number of studies that looked at the impact of other marketing shifters, e.g. price risk (Brorsen et al. 1985; Schroeter, Azzam 1991), product quality (Parker and Zilberman 1993), and market power (Schroeter, Azzam 1991; Holloway, Hertel 1996). The analysis of marketing margins

has to consider the interaction of all these variables as they may be relevant for a particular commodity being analyzed. For example, Richards et al. (1996) applied the marketing margin model that expanded the relative price spread model of Wohlgenant and Mullen (1987) to include a number of other relevant factors (i.e., market share as a proxy variable for the market departure from perfect competition, the trend for quality and technological changes over time, and the price risk); it was found that all of them were, with the exception of the risk variable, significant in explaining the price spread. It should be noted that the Wohlgenant's analysis provided an explanation of the expected relationship between marketing margins and these variables, as well as the explanations on the discrepancies among the past studies. He showed, for example, that with an assumption of the fixed input proportions, marketing margins and quantity have a positive relationship. However, the empirical evidence from the studies of Buse and Brandow (1960), Waugh (1964), George and King (1971) and Tomek and Robinson (1990) showed a negative relationship, which is consistent with the assumption of the variable input proportions. Bambang (2007), studied the marketing margin of vegetables in Indonesia and compared the marketing margin of vegetables with that of fruits, paddy and secondary crops. He found that the marketing margin of vegetables is relatively higher than that of other products.

Iranian researchers also studied marketing margins of different agricultural crops. Among them, we can mention (Kazemnezhad, Sadrol-esharfi 2000; Hassanpour, Sadrol-esharfi 1996; Shajari 2002; Samsami 2004), who in their studies concluded that the existence of an efficient market, especially in the agricultural sector, is of immense importance.

MATERIALS AND METHODS

For the purpose of this study, both primary and secondary sources of data are utilized. Secondary data were gathered from various publications of the Sistan and Blouchistan Management and Planning Organization, the Jihad Agricultural Organization of Sistan and Blouchistan, the Customs Office, the Rural Cooperative Organization, the Trade Organization of Sistan and Blouchistan and the FAO Interment Site. The primary data were gathered from questionnaires that were distributed among retailers, whole-sellers, producers, and exporters in 2007, and interviewing the date farmers, producers, whole-sellers and retailers of the Saravan, Iranshahr, Sarbaz, and Nikshahr districts (date producing districts of the province)

of Sistan and Baluchestan. In total, 180 producers, 35 retailers, 25 wholesalers and 20 exporters were interviewed.

The sample population for this study was selected from the date producer population in four cities of Sistan and Blouchistan through the two-stage cluster sampling. In each city, based on the number of date farmers, some villages were selected through random sampling. In the second stage, the date farmers in each village were randomly selected and interviewed. As the number of wholesalers and exporters in the area were limited to 25 and 20 respectively, a sampling census was conducted to gather the information and data about the wholesale and export markets.

In this study, the Market Transparency Determination Criterion (MTDC) is used to study the structure of the market. On the basis of this criterion, if the retail price equals the sum of the farm gate price and marketing cost at a certain point of time or during a special time period, it can be concluded that the market enjoys transparency and is competitive (Samsami 2003).

To investigate the marketing margin thoroughly and exactly, it is better to divide it into two smaller portions of the Retailer Margin and Wholesaler Margin. The Wholesale Margin is the difference of the price at which wholesalers sell their product and the price which they pay to the farmers as they buy the product from them, and the Retailer Margin refers to the difference of the price at which the retailers sell the acquired products to the consumer and the price they pay to the wholesalers. In the export market; the total margin refers to the price at which the producer sells the item and the price at which the product is sold in the export market.

Marketing margin can be affected by various factors, where, by the virtue of the degree of influence each factor has over time, it can fluctuate. Therefore, it is essential that the factors that bring about changes in the marketing margin function be determined and the degree to which each factor effects marketing margin be measured. Thus, in order to quantify the factor affecting the marketing margin, the Mark-up Model, the Relative price Model, the Marketing Cost Model and the Rational Expectation Model, which are generally utilized in researches and studies, are used in this research work.

The Mark-up Pricing Model was designed and suggested by Waugh (1964) where he specifies that the consumer-price is the determining factor in concluding the difference between the retail price and farm price. The price of food products, for example, at the level of farm price is simply the retail price minus the marketing agent cost; therefore, the marketing

margin is defined as a function of the retail price and marketing cost:

$$MM = f(RP, Z)$$

where:
MM = marketing margin
RP = retail price
Z = the vector of all the other variables such as marketing costs

In this model, the marketing margin can be expressed as an absolute value or in percentage.

The Retail Price model was designed and suggested by Wohlgenant and Mullen (1987) where the marketing margin is defined as a function of the retail price, the quantity of the goods and the marketing agent cost:

$$MM = f(RP, TR, Z)$$

where:
MM = marketing margin
RP = retail price
TR = traded product value
Z = marketing costs

Another model, which is used in this study, is the Marketing Cost Model. This model is a complement to the Relative Price Model that was also suggested by Wohlgenant and Mullen (1987). In this model, it is assumed that the ground is all readily paved for the competition of economic enterprises rendering marketing services in such a way that the final costs equal the final income. In this model, marketing margin is a function of the quantity of the farm product and the marketing cost:

$$MM = (Q, Z)$$

where:
MM = marketing margin
Q = quantity of farm product
Z = marketing costs

The Mark-up Model, the Relation Price Model, and the Marketing Cost Model are all the static models where the marketing margin is a function of the retail price, the marketing cost, and other variables. Using the Rational Expectation Model, Wohlgenant proved that at the end the retail price compared to the wholesale price or farm gate price is demur or delay. Accordingly, by using the FOC (First Order Condition) to maximize the net income expected, one can extract the marketing margin equation. This equation is known as the Rational Expectation Model, which is presented as follows:

$$M_t = f[PF_t, E_t(PF_{t+1}), Z_t, r, g]$$

where:
PF_t = farm price at the defined time
$E_t(PF_{t+1})$ = expected farm price in the future, 'r' to the interest
g = ratio of inventory to sale
Z_t = vector of marketing cost.

This model requires an auxiliary equation to determine $E_t(PF_{t+1})$, i.e., the determination of rational expectations.

The rational expectation may also be determined through the ARMA Model by using the retail and farm price.

ARMA (p, q):
$$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \alpha_2 y_{t-2} + \dots + \alpha_p y_{t-p} + \varepsilon_t + \beta_1 \varepsilon_{t-1} + \dots + \beta_q \varepsilon_{t-q}$$

Each of the four mentioned models enjoys special characteristics that have been used in different studies. Choosing an appropriate model depends upon the availability of the data, the software accessibility, the type of the data to be used, the structure of market etc.

RESULTS AND DISCUSSION

There are two major marketing channels for marketing the Mazafati date including:
1. Producer – Whole-seller – Retailer – Consumer
2. Producer – Retailer – Consumer

The data in Table 1 indicate that as in the Mazafati date marketing channels in Sistan and Blouchistan the sum of farm price and marketing cost is less than the retail price, and because there is a large difference between the farm price and retail price, the investigated channels of marketing do not enjoy the transparency that in turn causes the marketing efficiency decline.

The price of dates on the farm and in the village is determined by both the parties' concurrence. As observed in Table 2, the average price paid to the farmer, through channel 1, by the local buyers, dealers, the wholesale agents and other brokers is 2 500 Rials where they sell the product to the retailers at 5 000 Rials, and the retailers sell their dates at 7 000 Rials per kg to the customers.

Through the second channel of date marketing, based on the farmers financial stability, the farmer carries the product to different cities and retail markets where he can easily sell his product at a much higher price. The average price at which the farmer sells his product is 4 500 Rials per kg, and the retail-

ers can sell the acquired item at 6 500 Rials to the consumers.

As specified earlier, there are different models for estimation and studying the factors influencing the margin. In the present research, depending on the available data and information, a combination of the mark-up pricing model, the relative price model, and the marketing cost model, has been applied.

The total marketing margin function of the Mazafati date of Sistan and Blouchistan has been determined through the Ordinary Least Squares (OLS). This function is in the logarithm form. Table 3 shows the results of estimating the mentioned function. The results of calculating the function in Table 3 indicates that there is a negative relationship between the farm price of the date and the total marketing margin. With 1% increase in the farm price of date, the total marketing margin drops by 0.3231%.

Theoretically, the above results are acceptable. Since the marketing margin is calculated by subtracting

Table 1. The comparison of farm price, marketing cost, and retail price of the Mazafati date in marketing channels in Sistan and Blouchistan (in Iranian Rials)

Product	Channels	Farm price	Marketing margin costs	The sum of farm price and marketing margin costs	Retail price
Date	1	2 500	1 220	3 720	7 000
	2	2 500	850	3 350	6 500

Source: Research findings

Table 2. The farm price, wholesale price, and retail price of the Mazafati date per kg through the date marketing channels in Sistan and Blouchistan

Product	Marketing channel	Farm price	Wholesale price	Retail price
Date	1	2 500	5 000	7 000
	2	2 500	4 500	6 500

Source: Research findings

Table 3. The results of estimating the Mazafati Date marketing margin

Variables	Coefficient		T-statistics	Level of significance
	value	significance		
Constant value (α)	7.906	+	171/02	***
Farm gate price (PF) of date	10.323	−	36/538	***
Significance at level of 1% $\quad$ $n = 180$ $\quad$ $F = 1206/514$ $\quad$ D.W. = 2/02 $R^2 = 0.98$ $\quad\quad$ $\bar{R}^2 = 0.98$				

Source: Research findings

Table 4. The results of estimating the wholesale margin function of the Mazafati date

Variables	Coefficient		T-statistics	Level of significance
	value	significance		
Constant value (α)	2.6459	−	− 8.695	***
Wholesale price (WP)	2.458	+	3.7134	***
Cost of wholesale marketing service	0.101	+	2.17	***
Significance at level of 1% $\quad$ $n = 20$ $\quad$ $F = 13.15$ $\quad$ D.W. = 1.83 $R^2 = 0.83$ $\quad\quad$ $\bar{R}^2 = 0.80$				

Source: Research findings

the retail price from the farm price, the garden price has a negative relationship with the total marketing margin and, therefore, an increase in the farm price is equal to the decrease in the marketing margin. The F-statistic illustrates that the regression is statistically significant. R^2 explain that the independent variables account for 89% of the changes of the total marketing margin. The DW (1.89) statistics demonstrates that the disturbance term of the above model does not show any sign of autocorrelation.

The wholesale marketing margin function is calculated by applying the Ordinary Least Squares (OLS). Table 4 displays the results of the approximation of the above function

Table 4 denotes that the wholesale price of date and cost of marketing services spent by wholesalers has a significant and positive relationship with the wholesale marketing margin. An increase of 1% in wholesale price and marketing service costs brings about an increase in the marketing margin by 2.5485 and 0.101%.

The result from the theoretical point of view is acceptable, as the wholesale marketing margin is derived from subtracting the wholesale price from the farmgate price. There is a direct relationship between the wholesale price and the marketing margin, and the increase in the wholesale price results in the increase in the wholesale marketing margin. Moreover, an increase in costs of the marketing service corroborates

an increase in the wholesale price that eventually raises the wholesale marketing margin.

The F-statistics clearly shows that the above regression is statistically significant and R^2 indicates that the independent variables account for an explanation of 83% of the changes in the wholesale marketing margin. The DW-statistics equals to 1.83 and is an indicator of the fact that the disturbance term of the above model does not show any sign of autocorrelation.

After the elimination of the independent variables that were not significant, the Retail Marketing Margin function estimated using the Ordinary Least Squares (OLS) method. This function is in the logarithm form (Table 5). The results of the estimated function in Table 5 indicate that the retail price of date and the cost of marketing services of retailers have a positive significant relationship with the retail marketing margin.

The result also testifies that an increase of 1% in the retail price and the cost of marketing service initiate an increase of 2.895 and 0.203% in the retail marketing margin.

As the marketing margin is obtained by subtracting the retail price from the wholesale price of the date, theoretically the above results can be expected. Consequently, the retail price has a direct relationship with the retail marketing margin where an increase in the retail price causes an increase in the marketing margin. Moreover, an increase in the marketing

Table 5. The results of the retail marketing margin function of the Mazafati date

Variables	Coefficient		T-statistics	Level of significance
	value	significance		
Constant value (α)	4.02	–	–2.04	***
Wholesale price (WP)	2.895	+	4.321	***
Cost of wholesale marketing service	0.203	+	6.872	***
Significance at level of 1% $\quad$ n = 20 $\quad$ F = 24.33 $\quad$ D.W = 1.89 R^2 = 0.89 $\quad\quad$ $\bar{R}^2$ =0.86				

Source: Research findings

Table 6. The results of the estimation of the exporting margin of the Mazafati date

Variables	Coefficient		T-statistics	Level of significance
	value	significance		
Constant value (α)	413.9781	–	–9.7198	***
Export price (EP)	0.7838	+	13.7566	***
Significance at level of 1% $\quad$ n = 15 $\quad$ F = 83.42 $\quad$ D.W. = 2.1 R^2 = 0.96 $\quad\quad$ $\bar{R}^2$ =0.95				

Source: Research findings

service cost causes the retail price to increase what eventually makes the marketing margin boost. The F-statistic shows that the regression is statistically significant and R^2 confirms that in general the independent variables are responsible for 89% of the changes in the retail marketing margin. The D.W. statistic equals to 1.89 and it is the sign of the fact that there is no sign of autocorrelation in the disturbance term of the above model.

The Exporting Margin Function of the Mazafati date also was obtained by applying the OLS (Ordinary Least Squares) method in a regular mode. The results (Table 6) of the calculated function show that there is a positive and significant relationship between the export price and the exporting margin where with an increase of one unit in the export the exporting margin will an increase by 0.7838%.

CONCLUSION

Sistan and Blouchistan, with its suitable climatic conditions for the development and growing of dates, is one of the most pertinent and major centers for producing date in Iran. Different types of dates produced in this province qualitatively enjoy a high desirability and market preference and if the product is hygienically and properly packed, it can properly compete in the domestic as well as the international markets.

The results of the calculation of the total marketing margin, the wholesale margin, the retail margin, and the exporting margin of dates exhibit that the marketing margin of dates produced in the Sistan and Blouchistan province is affected by numerous factors such as the wholesale price, the retail price, the exporting price, the wholesale and retail marketing cost and the farm price. However, f the arm price is the most influential factor in the total marketing margin. The function of the retail marketing margin is influenced by the retail price and the marketing cost, the function of the wholesale marketing margin is affected by the wholesale price and the marketing cost, and the function of the exporting margin is under the impact of the exporting price.

Considering the fact that under the present marketing system, the wholesalers and retailers take a good portion of the profit and little is entered into the producers pockets, and since the price of dates is much higher than the cost of services paid on the date and its marketing by wholesalers and retailers, in order to reduce the retail and wholesale prices and to enhance the producer's market power, the government should take measures to establish the date marketing and distribution cooperative societies, which would be run and managed by the date producers.

In order to shorten the marketing chain, to transfer a portion of the benefit which is reaped by the middleman and dealers and to prevent the farm gate price from falling, it is necessary that the guaranteed purchase price of dates be announced and the fees and dues be paid in time to eliminate the dealers and profit seekers from the marketing chain.

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