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**THE ECONOMIC ANALYSIS OF MARKETING MARGIN OF
MAZAFATI DATE: A CASE STUDY OF SISTAN AND
BLOUCHESTAN**

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ABSTRACT

Marketing margin is defined as the difference between the producer price and the consumer price and it can be affected by various factors. In this article, noting the fact that 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 has been collected through field survey and document analysis. The results of estimation of marketing margin functions obtained through utilizing a combination of models including the Price Increase Model, Relative Price and Marketing Margin. Data analysis indicates that farm-gate price and harvest margin of dates are among the highly influential factors on the entire marketing margin. The retail-margin function is influenced by retail price and retailer cost and the wholesale margin function is affected by wholesale price and wholesaler cost. Calculation of market transparency determination criteria shows that due to the fact that the total of farm-gate price and marketing costs are less than the retail sale, there is lack of transparency in studied marketing channels, which in turn resulted in the declining market efficiency.

Key words: *Date, Marketing Margin, Wholesale, Retailing, Exporter*

Introduction

Marketing cost form the major share of staple food costs paid by consumer throughout the world. (Traub and Jayne, 2006). 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 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 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 equilibrium 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 marketing firms' performance. However, they give an indication of the performance of a particular industry (Tomek and Robinson, 1990), or an indication of the market's 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 demand and supply factors, marketing costs, and the degree of marketing channel competition (Marsh and Brester, 2004). Thus, margins reflect 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; Tomek and Robinson, 1990; Wohlgenant, 1989).

Sistan and Blouchistan province in Iran is one of the most fertile areas to grow date palms. 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 S & B province has second largest area under cultivation of Palm trees. Different types of dates such as Mazafati, Robi, Shahani, Ardan, Pio, Halilee, Sarg Shekan, Sekari, Ashee Dozki are produced in the province. Mazafati and Robi enjoy a special consumer attraction due to their superior quality. The province of Sistan and Blouchistan is one of the biggest producers of Mazafati dates and is unique and exclusive producer of Robi dates in Iran. The area under plantation in the gardens allocated to dates is in turn an indicator of high economic priority and importance of this product for farmers of the province. Out of 36369.5 hectares under the date cultivation in the province, 31224 hectares are at present productive and 5145.5 hectares are the bed for young dates that are not yielding yet (Jihad Agricultural Organization of Sistan and Blouchistan, 2007).

Table 1 shows the surface under the plantation and production of dates in the agricultural year 2007.

Table 1: Area under the Plantation and Production of Dates in the Agricultural Year 2007.

	<i>Area (Hectares)</i>				<i>Production (tons)</i>		<i>Yield (kg/hectare)</i>	
	<i>Spalding</i>		<i>Prolific</i>					
	<i>Irrigated</i>	<i>Rain-fed</i>	<i>Irrigated</i>	<i>Rain-fed</i>	<i>Irrigated</i>	<i>Rain-fed</i>	<i>Irrigated</i>	<i>Rain-fed</i>
Iranshahr	1200	0	6780	350	44070	700	6500	2000
Sarbaz	125	0	2617	0	16330	0	6240	0
Chabahar	263/5	0	579/5	257	3013/4	771	5200	3000
Khash	240	200	497	3300	3976	8250	8000	2500
Zahedan	902	0	241/5	0	148/5	0	615	0
Zabol	20	0	12	0	24	0	200	0
Saravan	1670	100	5510	7900	33060	7900	6000	1000
Nikshahr	425	-	3180	-	19080	-	6000	-
Province Total	4845/5	300	19417	11807	119701/9	17621	6164/9	1492/5

Source: Jihad Agricultural Organization of Sistan and Blouchistan

In this study noting to the importance of dates production in Sistan and Baluchestan and effect of marketing margins on well being of farmers and its simultaneous and direct impact on farmers' saving and capital formation ability, which in turn means development of agriculture sector and due to the marketing problems of Mazafati dates, an endeavor is made to estimate marketing margins of Mazafati date along with degree of market transparency of dates and factors affecting dates marketing margins in Sistan and Baluchestan province of Iran.

Review of Literature:

There are quite a number of studies that had been undertaken to investigate the retail-farm price spreads. Most of these were studies in the US, e.g. Reed *et al.* (2002), Sartwelle *et al.* (2000), Richards *et al.* (1996), Holloway and Hertel (1996), Parker and Zilberman (1993), Schroeter and Azzam (1991), Kinnucan and Forker (1987), and Wohlgenant and Mullen (1987). In fact, in the US, retail-farm price spreads for individual foods are regularly computed and published as 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., 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 farm-retail margin (in percentage difference) that related margin with 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, retail, and input market equilibria, he also discussed other possible explanatory variables that had been included in studies that used reduced-form models instead of a complete structural model.¹ From the studies he reviewed, the primary

factors that were commonly included in the analysis of reduced-form models were retail price, demand shifters like population and income, and marketing input costs.

In addition to the aforementioned variables, there are 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 (Schroeter and Azzam, 1991; Brorsen *et al.*, 1985), product quality (Parker and Zilberman, 1993), and market power (Holloway and Hertel, 1996; Schroeter and Azzam, 1991). The analysis of marketing margins has to consider the interaction of all these variables as may be relevant for a particular commodity being analyzed. For example, Richards *et al.* (1996) applied a 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 proxy variable for market departure from perfect competition, trend for quality and technological changes over time, and price risk); it was found that all of them were, with the exception of a risk variable, significant in explaining the price spread. It should be noted that Wohlgenant's analysis provided an explanation of the expected relationship between marketing margins and these variables, as well as explanations on discrepancies among past studies. He showed, for example, that with an assumption of fixed input proportions, marketing margins and quantity have a positive relationship. However, empirical evidence from the studies of Buse and Brandow (1960), Waugh (1964), George and King (1971), and Tomek and Robinson (1990) nonetheless showed a negative relationship, which is consistent with the assumption of variable input proportions.

Iranian researchers who have studied marketing margins of different produces, we can mention Kazemnezhad and Sadrol-esharghi (2000), Hassanpour (2000), Shajari (2002) and Samsami (2004), who in their studies concluded that the existence of an efficient market especially in the agricultural sector has an immense importance.

Research Methodology

For the purpose of this study both primary and secondary sources of data were utilized. Secondary data was collected from various publication of Sistan and Blouchistan

Management and Planning Organization, Jihad Agricultural Organization of Sistan and Blouchistan, the Customs Office, Rural Cooperative Organization, Trade Organization of Sistan and Blouchistan and the FAO website, primary data were gathered from questionnaires that distributed were among retailers, whole-sellers, producers, and exporters in 2007, and interviewing the date farmers, producers, whole-sellers and retailers of Saravan, Iranshahr, Sarbaz, and Nikshahr districts of Sistan and Baluchestan. 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.

In this study Market Transparency Determination Criterion (MTDC) is used to study the structure of market. On the basis of this criterion if retail price equals to the sum of 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).

One of the responsibilities to be performed in marketing is to offer a proper price for the item under consideration based on its quality. The important point in this discussion or any other discussion on pricing is to offer a reasonable price which is acceptable for both the consumer and the producer. This is usually carried out by wholesaler's increasing the producers price to certain amount (to a limited percentage) selling the product to the retailers where they also add a limited percentage to the wholesale price and sell the product to the customers (Kupae, 1997).

In economic and marketing literature, marketing margin refers to the difference between the price paid by the customers and the price paid to the farmer. Therefore, the criterion to determine the marketing margin is the difference between the prices of customers paying and farmers/producers receiving (Kazemnezhad and Sadrol-eshraghi, 2000).

To investigate the marketing margin thoroughly and exactly, it is better to divide it into two smaller portions of 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 factor effecting marketing margin the Mark-up Model, Relative price Model, Marketing Cost Model and Rational Expectation Model, which are generally utilized in researches and studies, are used in this research work (Kazemnezhad and Sadrol-eshraghi, 2000).

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 retail price and marketing cost:

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

Where MM is 'Marketing Margin', 'RP' Retail Price, and 'Z' is 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 percentage.

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

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

Where 'MM' refers to Marketing Margin, 'RP' refers to the Retail Price, 'TR' to the Traded Product Value and 'Z' to the marketing costs.

Another model which is used in this study is Marketing Cost Model. This model is a complement to the Relative Price Model that was, too, suggested by Wohlgenant, and Mullen 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 marketing cost:

$$MM = (Q, Z)$$

Where 'MM' refers to Marketing Margin, 'Q' refers to the quantity of farm product and 'Z' to the marketing costs.

The Mark-up Model, Relation Price Model, and Marketing Cost Model are all the static models where marketing margin is a function of retail price, marketing cost, and other variables. Using the Rational Expectation Model, Wohlgenant proved that at hand retail price compared to the wholesale price or farm gate price is demur or delay. Accordingly, by using 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 is presented as follow:

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

Where 'PF_t' refers to farm price at the defined time, 'E_t (PF_{t+1})' to the expected farm price in the future, 'r' to the interest, 'g' to the ratio of inventory to sale and 'Z_t' to the 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 Autoregressive Moving Average (ARMA) Model by using the retail and farm price.

Each of the four mentioned models enjoys special characteristics that have been used in different studies. Choosing an appropriate model depends upon availability of the data, software accessibility, the type of the data to be used, the structure of market etc. (Samsami, 2004).

Results and Discussion

There are two major marketing channels for marketing the Mazafati date:

1. Producer ----- Whole-seller ----- Retailer ----- consumer
2. Producer ----- Retailer ----- Consumer

The data in Table 2 indicates 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 transparency that in turn causes the marketing efficiency decline.

Table 2: The Comparison of Farm Price, Marketing Cost, and Retail Price of 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	2500	1220	3720	7000
	2	2500	850	3350	6500

Source: Research Findings

The price of dates on the farm and in the village is determined by both the parties' concurrence. As observed in Table 3, the average price paid to the farmer, through channel 1, by the local buyers, dealers, wholesale agents and other brokers is 2500 Rials where they sell the product to the retailers at 5000 Rials, and the retailers sell their dates at 7000 Rials per Kg to the customers.

Through the second channel of date marketing, based on his 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 4500 Rials per Kg, and the retailers can sell the acquired item at 6500 Rials to the consumers.

Table 3: The Farm Price, Wholesale Price, and Retail Price of Mazafati Date per Kg through the Date Marketing channel in Sistan and Blouchistan

product	Marketing Channel	Farm Price	Wholesale Price	Retail Price
Date	1	2500	5000	7000
	2	2500	4500	6500

Source: Research Findings

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

Total marketing margin function of Mazafati date of Sistan and Blouchistan has been determined through Ordinary Least Squares (OLS) this function is in logarithm form of. Table 4 shows results of estimating the mentioned function.

Table 4: The Results of Estimating the Mazafati Date Marketing Margin

Variable	t	Coefficients		Level of Significance
		Quantity	Sign	
Constant Value (α)		7.9061	+	
Farm Gate Price (PF) of Date		0.323	-	***
36/538				

Significance at level of 1%	Sample=180	F=1206.514	D.W=2.02	$R^2=0.98$ $\bar{R}^2=0$

Source: Research Findings.

The results of calculating the function in Table 4 indicates that there is a negative relationship between the farm price of the date and 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 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 a decrease in the marketing margin.

'F' statistic illustrates that the regression is statistically significant. R^2 explain that independent variables account for 89 % of the changes of total marketing margin. DW (1.89) statistics demonstrates that disturbance term of above model doesn't show any sign of autocorrelation.

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

Table 5: The Results of Estimating Wholesale Margin Function of Mazafati Date

Variables	Coefficient		T statistics	Level of Significance
	Value	Sign		
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% n=20 F=13.15 D.W=1.83 $R^2=0.83$ $\bar{R}^2=0.80$				

Source: Research Findings

Table 5 denotes that the wholesale price of date and cost of marketing services spent by wholesalers has significant and positive relationship with wholesale marketing margin. An increase of 1 % in wholesale price and marketing service costs brings about an increase of 2.5485% and 0.101 % in the wholesale marketing margin.

The result from theoretical point of view is acceptable, as the wholesale marketing margin is derived from subtracting the wholesale price from farm-gate price. There is a direct relationship between wholesale price and marketing margin, and the increase in wholesale price results in increase in wholesale marketing margin. Moreover,

an increase in costs of marketing service corroborates increase in the wholesale price that eventually raises the wholesale marketing margin.

F statistic, clearly show that the above regression is statistically significant and R^2 indicates that the independent variables account for an explanation for 83 % of the changes in the wholesale marketing margin, D.W.statistic, equals to 1.83 and is indicator of the fact that disturbance term of the above model doesn't show any sign of autocorrelation.

After elimination of the independent variables that were not significant, Retail Marketing Margin function estimated using the Ordinary Least Squares (OLS) method this function is in logarithm form (table 6).

Table 6: The Results of the Retail Marketing Margin Function of Mazafati Date

Variables	Coefficient		T statistics	Level of Significance
	Value	Sign		
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% n=20 F=24.33 D.W=1.89 $R^2=0.89$ $\bar{R}^2=0.86$				

Source: The present research

The results of estimated function in Table 6 indicate that the retail price of date and cost of marketing services of retailers has positive significant relationship with the retail marketing margin.

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

As retail marketing margin is obtained by subtracting the retail price from the whole sale price of the date, theoretically the above results are 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 service cost causes the retail price to increase that eventually makes the marketing margin boost.

F statistic shows that the regression is statistically significant and R^2 confirms that in general the independent variables are responsible for 89 % of changes in retail marketing margin. The D.W. statistic equal to 1.89 and is sign of the fact that there is no sign of autocorrelation in disturbance term of above model.

The Exporting Margin Function of Mazafati date was obtained by applying OLS (Ordinary Least Squares) method in a regular mode. The results of the calculated function in Table 7 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 of 0.7838 %.

Table 7: The Results of the Estimation of the Exporting Margin of Mazafati Date

Variables	Coefficient		T statistics	Level of Significance
	Value	Sign		
Constant Value (α)	413.97	-	-9.7198	***
Expot price(EP)	81 0.7838	+	13.7566	***
Significance at level of 1% n=15 F=83.42 D.W=2.1 $R^2=0.96$ $\bar{R}^2=0.95$				

Source: The Present Research Findings

Conclusion

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

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

Considering the fact that under present marketing system, wholesalers and retailers take the good portion of profit and little goes into the date producers' pockets. Since the price of date is much more than the cost of services paid on the date and its marketing by wholesalers and retailers, hence in order to reduce retail and wholesale prices government shall take measures to establish date marketing and distribution cooperative societies run and managed by the Sistan and Blouchistan date producers.

In order to shorten marketing chain and transfer portion of benefit, which is reaped by 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 fees and dues be paid in time to eliminate the dealers and profit seekers from the marketing chain.

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