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MARGINS AND DETERMINANTS OF RICE EXPORT FROM PAKISTAN TO UAE MARKET

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This paper attempts to analyze the impact of the major determinants of rice export from Pakistan to UAE market. Two rice varieties, namely Super Basmati and PK-386 were taken for this study. Primary data were collected through a survey of 40 rice exporters out of 120 (those rice exporters who exported to UAE), selected purposively from the list obtained from Rice Exporters Association of Pakistan. The data collected from these exporters was thus analyzed using descriptive statistics and double log form of regression analysis. Net export margin of Super Basmati and PK-386 for UAE market was Rs. 19259 and Rs. 11739 per ton respectively. The results of model for Super Basmati exports to UAE market showed that education, the average purchase price and average sale price significantly affected its export. The coefficient of determination was found to be 0.69 and F-value was also significant. Results of model for PK-386 exports showed that age, average purchase prices and average marketing cost were significant variables. Coefficient of determination was 0.62 and F value was found significant. The findings suggested that proactive management should be adopted in rice export policy by extending domestic production base, stabilizing domestic prices and targeting high value markets.
Keywords: Super Basmati, export margin, Double Log Regression, export policy

INTRODUCTION

Rice is an important cereal crop in the world. China is the leading rice producing country in the world. Pakistan's share in world rice production is 1.20 percent and it stands at number twelve among rice producing countries. Rice holds a predominant position in Pakistan by feeding a considerable proportion of the country's population. Pakistan grows enough high quality rice to meet both domestic demand and for export purpose. For the year 2014-15, area sown for rice was estimated at 2891 thousand hectares, which was 3.6 percent more than 2013-14, with a production of 7005 thousand tonnes showing a growth of 3 percent over the last year (Ministry of Finance, 2015). In case of rice, domestic prices have been rising in tandem with international prices as sizeable quantities of rice is being exported from the country. Pakistan produced approximately 5.5 million tonnes of rice against 2.5 million tonnes of local demand, thereby leaving about 3 million tonnes available for exports during 2013. Since there were no export restrictions in place, the domestic consumer had to pay the same price as the international consumer did for Pakistani rice. The weakening rupee further intensified that impact (MCB, 2011).

Rice is amongst the major export items of Pakistan. Pakistan enjoys 4th position in major rice exporting countries in the world. World total export of rice is estimated at 41.3 million tonnes, out of which Pakistan shares 3.7 million tonnes, 11 percent of the world rice exports. It holds almost monopoly in export of aromatic Basmati rice, which fetches three to four times higher prices than other rice varieties of the world (FAO, 2015).

In order to generate quality exportable surplus, the domestic marketing system should be in line with export sector. Most of the exporters of rice are strongly linked with market agents who supply them the rice for export purposes. However, contribution shared by producer in this process is nominal. This is perhaps due to the many problems inherent in the domestic marketing system of rice in the country. Inappropriate storage capacity forces the producer to bring their produce to the market which creates glut in the market and price goes down. A delayed payment to the producer by the commission agents or other buyers of the produce is another problem (Bilal and Rizvi, 2013). Although export of rice is increasing from Pakistan yet facing many challenges due to the absence of appropriate long term policy. The Rice Exporters Association of Pakistan (REAP) members, emphasized on the need that government should announce long-term policy (with the clear vision and goals for boosting rice exports from the country) so that Pakistani exporters could survive in the tough competition, particularly with India, which is facilitating its exporters by giving them heavy subsidy (AMIS, 2006). This also means that govt. in Pakistan should come ahead to control input and utility prices. There are also other factors which affect export of rice from Pakistan. These include increasing cost of utilities in the country, stringent standards of importing countries, lack of brands and labels in the rice sector of Pakistan.

United Arab Emirates (UAE) is a potential market for Pakistani products. Having strong linkages with Pakistan due to a large number of Pakistani inhabitants working in UAE, this market is often preferred by Pakistani exporters. This is equally true for rice exports from Pakistan to UAE market. However, Pakistani rice sector is facing tough competition in this market, particularly from Indian exporters. So in this background, the study in hand was designed to explore practices of rice exporter from Pakistan to UAE market. In this context, this study aims at investigating the costs and margins of exporting basmati and non-basmati rice to UAE market. In addition, an effort was also made to delineate the impact of major variables affecting the export of rice from Pakistan to UAE market.

MATERIALS AND METHODS

Universe for the present study was the rice exporters from the rice producing area (Hafizabad, Gujranwala and Shekhupura). The exporters of rice were selected on the specific criteria (purposive sampling technique). The criteria for selection of exporters were the market and varieties they export. The population of the present study was REAP registered exporters (1200 rice exporters) and sampling frame was 120 rice exporters who were exporting rice (Super Basmati and PK-386) from Pakistan to UAE market. Out of these 120 rice exporters, 40 exporters were selected as a sample. A Pre-tested questionnaire was used to collect the data from selected exporters through personal interviews. Data were collected from 1st April to 1st August, 2010. To analyze the result of the present study the descriptive statistics were used to find out the percentage and frequencies of different determinants of rice export from Pakistan.

The average was calculated by using following formula given for basic concepts.

$$AM = \Sigma X / N \quad (1)$$

Where; AM = Arithmetic mean, N = Total number of observations, ΣX = Total sum of variables

Percentage was calculated using following formula

$$P = F / N * 100 \quad (2)$$

Percentages were calculated in a simple table for the purpose of comparison.

Where; F= Frequency of a class, N= Total number of observations

For calculating the margins of rice exporters, following notation was used.

$$MM = Ps/Sp * 100 \quad (3)$$

Where Ps = Price spread, Sp = Sale price,

Price spread = Sale price – Purchase price

Gross margin of rice exports was calculated as;

$$GM=Sp–Pp \quad (4)$$

Where GM = Gross Margin, Sp = Sale price, Pp = Purchase price

Net margin in export of rice was calculated as;

$$NM=GM–TC \quad (5)$$

Where NM = Net Margin, GM = Gross Margin, TC =Total marketing cost

Further, an effort was made to quantify impact of the major determinants on export of basmati and non-basmati rice. After checking data properties, it was decided to adopt a double log form of regression analysis. In this context, the relationship between dependent and independent variables is given as;

$$Yi = f(Xi) \quad (6)$$

Where; Y_i = Export quantity of Super Basmati and PK-386 in tons, X_i = Vector of quantitative variables i = 6

This functional form of the regression model was chosen because the scatter plot of selected variables suggested such relationship. Ghafoor *et al.* (2013) also used such form of regression analysis while estimating export model of mango from Pakistan.

In more specific form, eq. 6 was written as;

$$Y_i = \beta o\, X_i^{\beta i}\, e^{\mu} \quad (7)$$

The eq. 7 can be further explained as;

$$Yi = \beta o\, X_1^{\beta 1} X_2^{\beta 2} X_3^{\beta 3} X_4^{\beta 4} X_5^{\beta 5} X_6^{\beta 6} e^{\mu} \quad (8)$$

By taking natural log on both sides, eq. 8 can be written as;

$$lnYi = \beta o + \beta 1 lnX_1 + \beta_2 lnX_2 + \beta_3 lnX_3 + \beta_4 lnX_4 + \beta_5 lnX_5 + \beta_6 lnX_6 + {}_{+}\mu \quad (9)$$

Where X_1= Age of rice exporters (years), X_2= Education of rice exporters (Years of schooling), X_3= Average purchase price of Super Basmati and PK-386 (Rs. per ton), X_4 = Average sale price of Super Basmati and PK-386 in UAE (Rs. per ton), X_5 = Total marketing cost of Super Basmati and PK-386 (Rs. per ton), X_6 = Freight charges of Super Basmati and PK-386 for UAE (Rs. Per ton), βo is the intercept, βs are the elasticities, and μ is the random error, ln = Natural log

Statistical Package for Social Scientists (SPSS) was used for data analysis.

RESULTS AND DISCUSSION

***Socioeconomic profile of exporters*:** The rice exporters were classified with respect to the export quantity of rice (Super Basmati and PK-386) to UAE market. More quantity of rice is exported to UAE from Pakistan due to the fact that UAE is a traditional trading partner and has low standard requirements as compared to other high value markets. Out of 40 exporters 23 exporters exported the rice (Super Basmati and PK-386) to this market in less than 10000 tons during the year 2009-2010, constituting 57 percent of total exporters. There were 8 exporters who exported the Super Basmati rice to both markets in range of 10000-20000 tons. Among them 7 exporters had exported in range of 20000-30000 tons to both markets. Only 2 exporters exported the quantity more than 30000 tons.

More educated rice exporters performed well while exporting rice and in dealing with the parties in the rice importing countries. This perhaps due to the fact that a lengthy and complex procedure is required for exporting rice to other countries and education enables you to perform these tasks efficiently (Javed and Ghafoor, 2013). It is also said that if exporter is educated then he makes batter business deals and decisions. That is why, if a rice exporter is not educated, he hires a well educated person on the post of export manager who can handle all export functions efficiently. According to findings 3 rice exporters were having 12 years of schoolings constituting 7.5 percent, 13 were educated up to 14 years of schooling constituting 32.50 percent, and 16 got qualifications up to masters or above, respectively. So in our sample, the majority of the exporters were highly qualified.

Regarding average purchase prices of Super Basmati rice, out of 40 exporters 3 exporters purchased rice at a price range between Rs. 50000-52000 per ton constituting 7.5 percent, 8 exporters purchased at a price range Rs. 52000-54000 constituting 20 percent, 15 rice exporters purchased at a price range Rs. 54000-56000 per ton constituting 37.5 percent, and 11 exporters purchased at a price range Rs. 56000-58000 per ton constituting 27.5 percent and 3 exporters purchased rice at a price more than Rs. 58000 per ton constituting 7.5 percent, respectively. A large number of exporters purchased Super Basmati rice at a price range Rs. 54000-56000 per ton constituting 37.5 percent. The average purchase price of Super Basmati rice is estimated at Rs. 55094 per ton.

Average purchase prices of Non-Basmati rice (PK-386) was estimated as Rs. 35266 per ton. It was also found that out of 40 exporters, 32 exporters purchased PK-386 at a price between Rs. 30000-35000 per ton constituting 80 percent, 6 exporters purchased at a price range of Rs. 35000-40000 constituting 15 percent and 2 rice exporters purchased at a price more than Rs. 40000 per ton constituting 5 percent of the total sample. A large number of exporters purchased at price range of Rs. 30000-35000 per ton constituting 80 percent. Average marketing cost of rice includes processing charges, storage, packaging, transportation, custom clearance charges, clearing agent charges and others which are being paid during the export process of rice. Out of 40 exporters, 15 paid in the range of Rs. 3400-5000 per ton constituting 37.5 percent, 22 exporters paid marketing cost in the range of Rs. 5000-7000 per ton constituting 55 percent. Only 3 exporters paid in the range of Rs. 7000-8500 per ton. So the average marketing cost was estimated to be Rs. 5430 per ton.

Average sale price in the export market is another important determinant of rice export from Pakistan. Super Basmati fetch higher prices as compared to other varieties of rice in UAE market (FAO, 2007). Out of 40 rice exporters who exported the Super Basmati rice to UAE, 3 exporters received price in the range of Rs. 70000-75000 per ton. Among them, 14 rice exporters received the price in the range of Rs.75000-80000 per ton. Thirteen exporters constituting 32.5 percent received a price with range of Rs. 80000-85000 per ton. Twenty five percent exporters received the price more than Rs.85000 per ton. So the average sale price of Super Basmati in UAE is estimated at Rs.79749 per ton.

Non-Basmati rice (PK-386) fetched low price as compared to basmati, but demand is same as for Super Basmati. Out of 40 rice exporters who exported the Non-Basmati PK-386 rice to UAE, 18 exporters received price in the range of Rs. 34000-40000 per ton. Among them, 10 rice exporters received a price in the range of Rs. 40000-45000 per ton for Non-Basmati. Six exporters constituting 15 percent received price of Non-Basmati in the range of Rs. 45000-50000 per ton. Six percent exporters received a price in the range of Rs. 85000. So the average export price of PK-386 in UAE is

Table 1.Export margin analysis of Super Basmati and Non-Basmati (PK-386) rice for UAE market.

Activity	Average charges of Super Basmati (Rs/ Ton)	Average charges of Non-Basmati (PK-386) (Rs/ Ton)
Purchase price	55094	35266
Processing charges	1043	1043
Packaging charges	2447	2447
Transportation charges	1209	1209
Custom clearance charges	73	73
Clearing agent charges	535	535
Other marketing charges	90	90
All marketing cost	5396	5396
Sale price	79748	52401
Gross export margin	24655	17135
Export margin (%)	31	33
Net export margin	19259	11739
Net Export Margin (%)	24	23

Source: Author Own calculation's

estimated Rs. 52401 per ton.

***Business profile and margins*:** Export of agricultural commodities is a difficult but an attractive business activity. The attraction in this business is due to high profit margin in export markets as compared to local markets. This is particularly true for developing countries where price differentials between national and export markets often attract the exporters to expand their business beyond the national border. Marketing margin or price spread is a commonly used measure of the performance of a marketing system (Abbott and Makeham, 1990). Table 1 shows that average purchase prices for UAE market for basmati rice were Rs. 55094 per ton and average marketing cost for UAE market was Rs. 5396 per ton. According to the findings of this study average sale prices were calculated as Rs. 79748 per ton. These prices are converted into local currency by using exchange rate during the study period (1 US$ = 96 Pak. Rupees). As far as the gross export margin for this market was concerned, it was found Rs. 24655 per ton and percent export margin was 31 percent whereas net export margin was Rs. 19259 per ton which accounts for 24 percent of sale prices (Table 1).

***Export margin analysis of Non-Basmati (PK-386) for UAE Market*:** The average purchase prices for UAE market for Non-Basmati rice (PK-386) was Rs. 35266 per ton. The average marketing cost for UAE market was Rs. 5396 per ton. According to the findings of this study, average sale price was calculated at Rs 52401 per ton. As far as the gross export margin for this market was concerned, it was found Rs. 17135 per ton and percent export margin was 33 percent, whereas the net export margin was Rs. 11739 per ton which accounts for 23 percent of the sale price.

***Regression model for export of Super Basmati*:** Collinearity (or multicollinearity) is the undesirable situation where the correlations among the independent variables are strong. Tolerance is a statistic used to determine how much the independent variables are linearly related to one another. Variance Inflation Factor (VIF) is the reciprocal of the tolerance. As the VIF increases, so does the variance of the regression coefficient, making it an unstable estimate. Large VIF values are indicator of multicollinearity. If the value of VIF is greater than 10 then there exists the problem of multicollinearity (Gujrati, 1995). In the analysis, all values of VIF shown in Table 2 and these values were less than 10 which show that no multicollinearity existed in the data set.

A commonly used measure for the goodness of fit of a regression model is R^2 called coefficient of determination. If all the observations fall on the regression line R^2 is 1 and if no linear relationship between dependent and independent variables, then R^2 is 0 (Chaudhry and Shahid, 1996). The co-efficient of determination gives us information about the proportion of variation in the dependent variable, explained by the independent variables. The value of R^2 in the analysis was 0.69 which stated that all independent variables jointly explained 69 percent change in dependent variable i.e. export of Super Basmati to UAE. F-ratio implies that all independent variables are significant or non-significant factors for causing variation in the dependent variable. The

Table 2. Collinearity Statistics of the variables used in the model.

Variables	Tolerance	Variance Inflation factor (VIF)
Age of exporters (Years)	0.60	1.67
Education of rice exporters (years of Schooling)	0.50	1.99
Purchase price of Super Basmati(Rs./Ton)	0.46	2.17
Sale price of Super Basmati(Rs./Ton)	0.44	2.29
Total Marketing cost (Rs./Ton)	0.72	1.39
Freight charges for UAE (Rs./Ton)	0.71	1.42

Source: Author's own estimations.

Table 3.Regression results of export model of Super Basmati for UAE market.

Variables	Coefficient	Standard Error	T-Value	Significance (P-value)
(Constant)	12.36	1.38	8.98	0.000***
Education of exporters (schooling years)	0.56	0.22	2.61	0.014*
Age of exporters (years)	0.13	0.10	1.37	0.179 ns
Purchase price of Super Basmati(Rs./Ton)	-0.22	0.06	-3.58	0.001***
Sale price of Super Basmati(Rs./Ton)	0.33	0.04	7.75	0.000***
Total marketing cost (Rs./Ton)	-0.004	0.05	-0.09	0.932 ns
Freight charges (Rs./Ton)	-0.03	0.03	-0.85	0.402 ns
R^2			0.69	
Adjusted R^2			0.63	
F- Value			10.72	

Source: Author's own calculations. *,**, *** indicates significances level at 10 percent, 5 percent and 1 percent, espectively; ns denotes the non-significances of the coefficients.

F-value in the analysis 10.72 ($p<0.05$) which was highly significant explained the overall appropriateness of the model.

Education is considered an important socioeconomic variable as it increases the ability of exporters to conduct export business in a more efficient manner, thus enabling him to export large amounts of Super Basmati to UAE. The coefficient of education was 0.56 ($p<0.05$), which showed positive sign and was significant. The coefficient of this variable explained that for every one percent increase in education (Years of Schooling) there would be an increase of 0.56 percent in export quantity of Super Basmati to UAE market, keeping all other factors constant. Age of exporter also has an effect on rice export. The coefficient of age of the exporter was 0.13 ($p>0.05$) that is insignificant. The coefficient of this variable explained that for every one percent increase in age, there would be an increase of 0.13 percent in export quantity of Super Basmati to the UAE Market, keeping all other factors constant. As the purchase price decreases, the export quantity to UAE increases. Average purchase prices affect the amount of export of that commodity. The coefficient of purchase price showed negative sign and was highly significant (-0.22 ($p<0.05$). The coefficient of this variable explained that for every one percent increase in purchase price there might be a decrease of 0.22 percent in export quantity of Super Basmati to UAE. These results are in line with Chen *et al.* (2002), Anjum (2003), Rasool (2006), Donnet *et al*. (2007), Chauhan and Ramesh (2002), Clarkson and Kishore (2003), Kang *et al.* (2009) and Abolagda *et al.* (2010).

Average sale price is another factor affecting the export of Super Basmati to UAE. With the increase in export prices of Super Basmati rice, exporters tend to export more and more rice to the UAE market. This result is also supported by Nosheen and Iqbal (2008). The coefficient of export price of Super Basmati was 0.33 ($p<0.05$) which showed positive sign and is highly significant. The coefficient of freight charges to UAE is 0-.03 which explained that with increase of one percent of freight charges, export quantity of Super Basmati to UAE market decreased by 0.03 percent.

***Regression model for the export of Non-Basmati rice (PK-386)*:** Regarding multicollinearity in the data set, all values of VIF were less than 10 which showed no multicollinearity existed in the data set. The results are presented in Table 4.

The value of R^2 in this model was 0.62 which stated that all independent variables jointly explained 62 percent change in dependent variable i.e. export of Non-Basmati rice to UAE. The F-value in the analysis was 9.19 ($p<0.05$) which was highly significant explained the overall appropriateness of the model**.** The coefficient ofeducation 0.36 ($p >0.05$) showed positive sign and was insignificant. The coefficient of this variable explained that for every one percent increase in education (Years of Schooling) there would be an increase of 0.36 percent in export quantity of Non-Basmati rice to

Table 4. Collinearity statistics of variables used in the model.

Variables	Tolerance	Variance inflation factor (VIF)
Age of exporters (Years)	0.78	1.29
Education of rice exporters (years of Schooling)	0.56	1.78
Purchase price of Non-Basmati (Rs./Ton)	0.76	1.32
Sale price of Non-Basmati (Rs./Ton)	0.89	1.13
Total Marketing cost (Rs./Ton)	0.48	2.07
Freight charges for UAE (Rs./Ton)	0.83	1.21

Source: Author's own estimations

Table 5. Regression results for export model of Non-Basmati rice for UAE market.

Variables	Coefficient	Standard Error	T-Value	Significance (P-value)
Constant	31.54	9.59	3.29	0.002***
Education of exporters (schooling years)	0.36	0.45	0.80	0.430^{ns}
Age of exporters (Years)	0.58	0.30	1.96	0.060*
Purchase price of Non-Basmati (PK-386) (Rs./Ton)	-2.76	0.80	-3.48	0.001***
Sale price of Non-Basmati (Rs./Ton)	0.38	0.48	0.80	0.430^{ns}
Total marketing cost (Rs./Ton)	-.41	0.17	-2.44	0.020*
Freight charges (Rs./Ton)	0.29	0.25	1.15	0.260^{ns}
R^2			0.62	
Adjusted R^2			0.55	
F- Value			9.19	

Source: Author's own calculations; *,**, *** indicates significances level at 10 percent, 5 percent and 1 percent, respectively; ns denotes the non-significances of the coefficients.

UAE market, keeping all other factors constant. The coefficient of age of the exporter is 0.58 and significant. The coefficient of this variable explained that for every one percent increase in age there will be an increase of 0.58 percent in export quantity of Non-Basmati rice to the UAE Market. Average purchase prices affect the amount of export of that commodity. The coefficient of purchase price -0.276 ($p<0.05$) showed negative sign and was highly significant which explained that for every one percent increase in purchase price there would be a decrease of 0.276 percent in export quantity of Non-Basmati rice to UAE. The coefficient of total marketing cost -0.414 ($p<0.05$) showed negative sign and was highly significant which explained that for every one percent increase in marketing cost there might be a decrease of 0.414 percent in export quantity of Non-Basmati rice to UAE market. The coefficient of freight charges to UAE is -0.29 indicating that for one percent increase in freight charges, export quantity of Non-Basmati to UAE decreased by 0.29 percent, keeping other factors constant.

***Conclusion and recommendations*:** The study was conducted to examine rice export process and its determinants from Pakistan considering UAE market as a case study. So keeping in view findings of the study, the following recommendations are proposed for improving export of rice from Pakistan to UAE market.

- Export margin analysis revealed that net margin was high in export of Super Basmati rice. So there is the need to increase production of Super Basmati at the same time managing and improving its export process.
- Empirical findings showed that export of rice decreased with the increase in the domestic price. So there is a need to control the domestic prices for increasing export because competition is high with other competitive countries. At the same time cost of production has increased in Pakistan over time due to inflation and the growers of rice are not getting their due margin. If this situation exists the farmers will leave growing rice, and if the prices increase, the export will be affected badly. So in this critical situation there is need of involvement of government to protect both sides. So the government should give attention to this matter and take suitable actions by making long term policies.
- It was noted during the survey that Pakistani rice was sold at cheaper prices in the international market, which was mainly due to the fact that the majority of exporters were dumping rice mainly in UAE market where the international middlemen repack the Pakistani rice under their brand names and selling at premium prices to high value markets like UK and USA. In this context, it is suggested that the Rice Exporters Association of Pakistan should come ahead and encourage the exporters to use their own brand names. In addition to this, it is also suggested that the exporters should be properly trained to comply with the requirements of importing countries particularly with high value markets to fetch higher prices.

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