Research Article

Pakistani Basmati Competitiveness in International Markets and its Macroeconomic Factors

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Abstract | Competitiveness is defined as the ability of a country to offer commodities that encounter domestic and worldwide quality standards and provide satisfactory returns on the resources which is used in production of a commodity. Nominal protection coefficient (NPC) is projected for the time period of 2003 to 2016 for using as a dependent variable in the current study. To estimate the impact of different macroeconomic variables on basmati export competitiveness panel data set is used following Park's Feasible Generalized Least Square (FGLS). According to the results of the study about the impact of macroeconomic variable on basmati competitiveness, inflation has negative and significant effect on export competitiveness of Pakistani basmati. Inflation in trading partner has positive and significant effect on basmati export competitiveness of Pakistan. Exchange rate of Pakistan is negatively affecting the basmati export but exchange rate of trading countries is positively affecting the basmati export of Pakistan. Dummy for Muslims and joint boarder is also positively affecting the basmati export of Pakistan. Basmati markets are categorized into three types. First category of high potential markets include UK, Canada, and USA. The 2nd category include middle potential markets which include Oman, Saudi Arabia, Iran, Turkey and United Arab Emirates. Third category include the low potential markets which has low competitiveness are Yemen, Poland and Qatar. It is recommended that Pakistan basmati exporter must concentrate to enlarge the basmati export share to UK, Canada and USA because these markets has strong potential and competitiveness. It is further recommended that the basmati exporters must try to find out the way to export to Oman, Saudi Arabia, Iran Turkey and United Arab Emirates instead of Yemen, Poland and Qatar.

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Introduction

In Pakistan economy agriculture sector play an important role and contribution of this sector was 19.5 percent of the GDP in 2016 and it provides the employment to 42.3 percent of labor force of the country. This sector plays a very important role for the development of country and for food security and

poverty elimination. In Pakistan the export value was US $24.2 billion in 2016. Export of Pakistan have decline from US$29.18 in the year 2011 to US$24.2 billion in the year 2016. Pakistani exports have declined at an annual rate of -4.1% during the last five years. Pakistan is the 3rd largest leading exporter and 12th largest rice producer in the world (GOP, 2018). Import value was US$ 48.1 billion in 2016 and making the Pakistan 49th largest importer in the world. Import of Pakistan have increased from US$ 44.6 billion in 2011 to 48.1billion in 2016.Pakistan import have increased at an annual rate of 1.3% in 2016 (GOP, 2017).

The top export terminus of Pakistan are the United States, China, Germany, Afghanistan, and the United Kingdom and share of these countries in Pakistan export was 8.0, 7.0, 7.0, 5.9, and 15 percent in 2016. The top import market of Islamic Republic of Pakistan are Peoples republic of China, UAE, USA, Indonesia and Japan. In Pakistan trade share with China was 30 percent, 12 percent with United Arab Emirates, 3.9 percent with Saudi Arabia, 3.5 percent with India and 4.3 percent with United States respectively (GOP, 2017). Major Export item of Pakistan are Linen, Rice, Non-Knit Suit, cotton yarn and pure woven cotton and major import item of Pakistan are Refined petroleum, palm oil, petroleum gas and scrap iron. In net imports Pakistan had a negative trade balance in 2016 (GOP, 2017). Due to flavor and fragrance and its long varieties basmati rice is being liked in the world market. A few rice exporters has been controlled the rice market such as India, Pakistan, Vietnam and Thailand which are contributing 60 to 70 percent in the rice world market. In 2013 rice export of Pakistan 19 percent decline. After Iran and Saudi Arabia, United Arab Emirates is a major rice importer with 13 percent market share and Iran and Saudi Arabia with the 7 or 6 percent market share contribute in the rice world market as an importer (ITC, 2017).

Akhtar et al. (2007) has been suggest that it is necessary to identify markets in which Pakistan basmati rice have comparative advantage and therefore they have projections for future development to deal with new opportunities and fears lie in marketing at domestic and foreign market in basmati rice. The Pakistan's economy is based on agriculture sector and export of agriculture produces is a major source of foreign exchange earnings. Rice export played an energetic role in country economy. Pakistan has vanished its more than 30 percent contributions from gulf market through rice export during earlier three decades. The operation cost to import is considerably lower than exportation which is inversely affecting the competitiveness of nation export (Jafar et al., 2015). Akmal et al. (2014) examined that basmati rice share has reduced 15 percent in world market because Pakistan relying only on few important markets. The main cause of this reduction is that Pakistan did not maintain its comparative advantage position of basmati rice export in market and Pakistan did not discover new markets. Pakistani basmati has more competitiveness as compared to non- basmati and exports from Pakistan to UAE market has less profitable with a value of 24 percent net export margin (Javed et al., 2015) as compared to United Kingdom which has a value of 36 percent net export margin (Javed and Ghafoor, 2013). Javed et al. (2017) has conducted a study to observe the export of major agriculture products from Pakistan to a single market of United Arab Emirates with emphasis on comparative advantage. Nabi et al. (2019) also conducted a research study on factors of meat (mutton) exports from Pakistan. He concluded that Pakistan has comparative advantage in basmati exports to United Arab Emirates. Adhikari et al. (2016) identified the determinants of growth performance of rice export from India with special reference to Basmati rice. The estimated regression of this study has been showed that export price, international price, lagged production, domestic consumption and exchange rate are the major factors of rice export from India and this study has been suggested that in order to maintain in the international market, Indian export price need to competitive as well improvement in quality and standard. Javed et al. (2016) examined the factor which affecting the trade between Pakistan and UAE and in this study the impact of various factors were determined by using the gravity model using the panel data. The result of this study showed that Pakistan have less trade with combined border countries as compared to countries which have no combined border and space between the countries have an inverse impact but this was not considerable. Fatima et al. (2019) estimated the impact of different factors affecting bilateral trade of Pakistan with its major trading partners by using panel data set and found that trade to GDP ratio and population of Pakistan have positive and significant impact on trade of Pakistan.

The current study under hand included 11 basmati importing countries on basis of data availability which are Unite kingdom, Turkey, United States, United Arab Emirates, Canada, Yemen, Oman, Saudi Arabia, Poland, Qatar, and Iran. This study aims to estimate the competitiveness of basmati export to major basmati trading partners and to analyze the impact of different factor on competitiveness of basmati export.

Materials and Methods

Time series data is collected from period 2003 to 2016 from the international trading center about the export values and export quantities of basmati rice from Pakistan to all major trading partner of Pakistan. The data about international prices and domestic prices were collected from international trading Centre and statistical year book of Pakistan respectively. The data about exchange rate are taken from stat bank of Pakistan. In current study dummy variable for boarder and for Muslim are used in the models.

Different test was used in this study in order to examine the existence of unit root in panel data. These are Levin, Lin and Chu t*, Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square, PP-Fisher Chi-square. The null hypothesis of these test are data has unit root and alternative is data doesn't have unit root.

The current study underhand used nominal protection coefficient (NPC) for analyzing the export competitiveness of basmati from Pakistan. Practically, competitiveness is defined as the ability of a country to provide commodities that encounter domestic and foreign quality standards and provide satisfactory returns on the resources which is used in producing the commodity (Javed et al., 2018). Competitiveness can also be distinct as the ability to be successful when fronting competition (Latruffe, 2010). Among different techniques are realistic to measures competitiveness, Nominal Protection Coefficient (NPC) is extensively used (Balassa and Achydlowsky, 1972; Gulati et al., 1990; Taylor and Philips, 1991; Javed et al., 2018; Chand, 1999; Kumar et al., 2001; Rakotoarisoa and Gulati, 2006; Sardar et al., 2019). NPC is defined as the ratio of local price of a commodity to its global price. NPC can be calculated as:

$$NPCi = Pid / Pib * Exchange\ rate \quad ...(1)$$

NPCi show the ith commodity nominal protection coefficient and Pid is used for the domestic price of commodity and Pib is used for the border or international price of commodity. NPC measures the incentive or disincentive provided to the domestically produced commodities. The value of NPC less than one indicates that commodity is competitive and the value of NPC greater than one indicates that the commodity is not competitive or non-competitive.

To estimate the impact of different macroeconomic variables on the export competitiveness of basmati from Pakistan to international markets FGLS method is used the current study underhand. Dependent variable of NPC of basmati export from Pakistan to different parting countries are used in the panel data set for eleven major basmati markets. Panel data can be considered by complex error structures. The existence of non-spherical errors, if not properly addressed, can generate inadequacy in coefficient estimation and biasedness in the estimation of standard error. Autocorrelation has long been accepted as a potential problem for panel data, because most common panel data estimators are unable to simultaneously handle both autocorrelation and cross sectional dependence (Reed and Ye, 2011). One estimator that is Parks' Feasible Generalized Least Squares (FGLS) estimator (Parks, 1967). However, it can only be used when the time periods (T) is greater than or equal to the number of cross-sections (N) (Reed and Ye, 2011). The equation used in the study are given as under.

$$NPC = \beta 0 + \beta 1 EXCHit + \beta 2 EXCHjt + \beta 3 CPit + \beta 4 CPjt + \beta 5 JBijt + \beta 6 DMijt + Uijt \quad ...(2)$$

Where;
i = Pakistan; j=Trading partner of Pakistan; NPC = National protection coefficient (which is used in this study for measuring the Pakistan rice competitiveness in international markets.

EXCHi = Currency exchange rate in Pakistan; EXCHj= Currency exchange rate in trading countries; CPit= Inflation in Pakistan; CPjt= Inflation in trade partner countries; JBij= Dummy variable for joint boarder between Pakistan and trade partner; DMj= Dummy variable for whether population of Pakistan trade partner Muslims or non- Muslims; Uij=Error term; t= Time period; βS =Coefficient.

Panel data is used to estimate the impact of different macroeconomic variables on the export competitiveness of basmati exports.

Results and Discussion

According to the objectives of the current study the competitiveness of Pakistani Basmati rice was calculated by NPC. The value of NPC of Pakistani basmati rice which shows the estimates about the competitiveness of Pakistani basmati export to international markets. Under the exportable and importable hypothesis NPC value estimate the incentive and disincentive provided to domestic commodity. NPC value help to estimate how much domestic price of any commodity is diverge from foreign price. A greater ratio point out that more government charges and taxes added to the border price, which increases the price which is paid by consumer which import the commodity. If the value of nominal protection coefficient is close to 1, indicated that indicated that commodity is low competitiveness and close to 0 mean more competitiveness. The estimated values of NPC for the markets of United Arab Emirates, United Kingdom, Yemen, and Oman are shown in Figure 1 (data shown in Table 5).

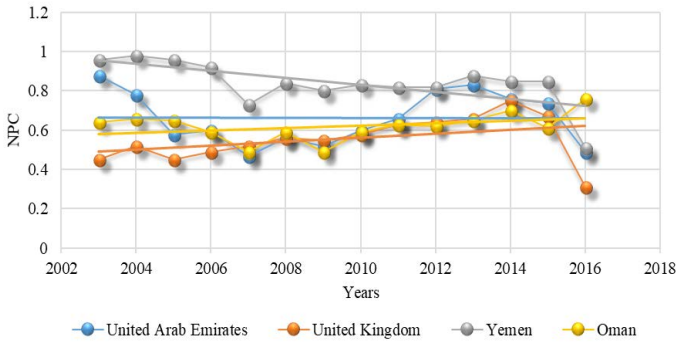

Figure 1: Basmati competitiveness for UAE, UK, Yamen and Oman.

NPC value of Pakistani rice in 2013 for United Arab Emirates, United Kingdom, Yemen, Oman was 0.88, 0.45, 0.96, 0.64 is showing that in 2013 Pakistani rice become more competitive in United Kingdom and Oman than United Arab Emirates and Yemen. Pakistani basmati rice has more competitiveness in UK than UAE, Oman and Yemen for the period 2003-2016. In United Arab Emirates Pakistani rice competitiveness has increased from 2005 to 2011 but after 2011 rice competiveness has decreased and again increased in 2016 and the value of NPC was 0.49. NPC value of Pakistani rice has decreased in 2016 in United Arab Emirates, United Kingdom and Yemen which is showing that Pakistani rice is more competitive in 2016 than 2015 but in Oman Pakistani rice competitiveness decreased in 2016.

The estimated value of NPC value of Pakistani Basmati rice for Saudi Arabia, United State, Poland, Qatar from the period 2003 to 2016 as shown in Figure 2 (data shown in Table 5).

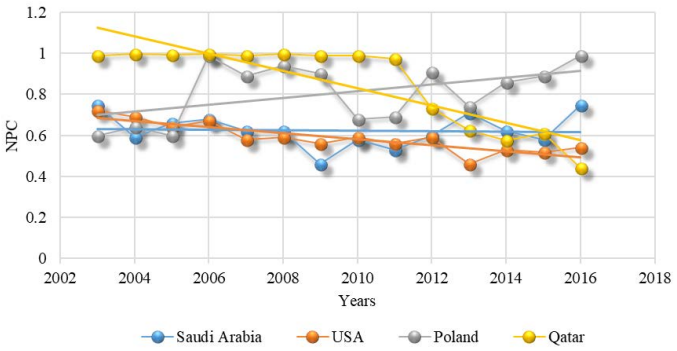

Figure 2: Basmati competitiveness for Saudi Arabia, USA, Poland and Qatar.

According to the results of estimated values of Nominal protection coefficient (NPC), It is shown that Pakistan rice is less competitive in Qatar from the period 2003 to 2009 because the value of NPC was close to 1, after the 2009 the NPC value of Pakistani Basmati rice start declining. In Poland Pakistani basmati rice has less competitiveness in 2006 and 2016 but in Saudi Arabia and United States Pakistani basmati rice has more competitiveness for the period of 2003–2016. Linear trend of NPC value for USA market throughout the time period under consideration show that it has strong competitiveness as compared to Saudi Arabia, Poland and Qatar.

The estimated value of NPC value of Pakistani Basmati rice for Canada, Iran and turkey for the period of 2003 to 2016 is shown in Figure 3 (data shown in Table 5). It is shown that Pakistani basmati rice has competitiveness from the period 2003 to 2016 in Canada, Iran and turkey because the NPC value is less than 1.

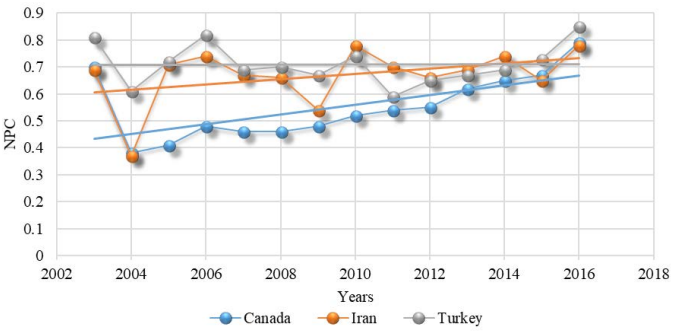

Figure 3: Basmati competitiveness for Canada, Iran and Turkey

The linear trend shows that Pakistani basmati is losing

its competitiveness in each market of Canada, Iran and Turkey. However, the market of Canada remained more competitiveness as compared to Iran and Turkey throughout the time period under consideration from 2003 to 2016.

The decreasing trend in the graphical presentations of the estimated results of NPC throughout the time under consideration given in Figure 4 has shown that there is increase in the competitiveness of basmati exports in the markets of Yemen, Qatar, USA with respect to time but on the other side the Increasing linear trend of NPC of United Arab Emirates, United Kingdom, Oman, Saudi Arabia, Poland, Canada, Iran and Turkey has shown that competitiveness is decreasing every year. The graphical presentation of average values of NPC as given in figure 5 shows that Pakistan has strong competitiveness of 0.55 in markets of United Kingdom and Canada and 0.59 in USA while Pakistani basmati exports has low competitiveness in Yemen, Poland and Qatar with a value of 0.83, 0.80 and 0.85 respectively.

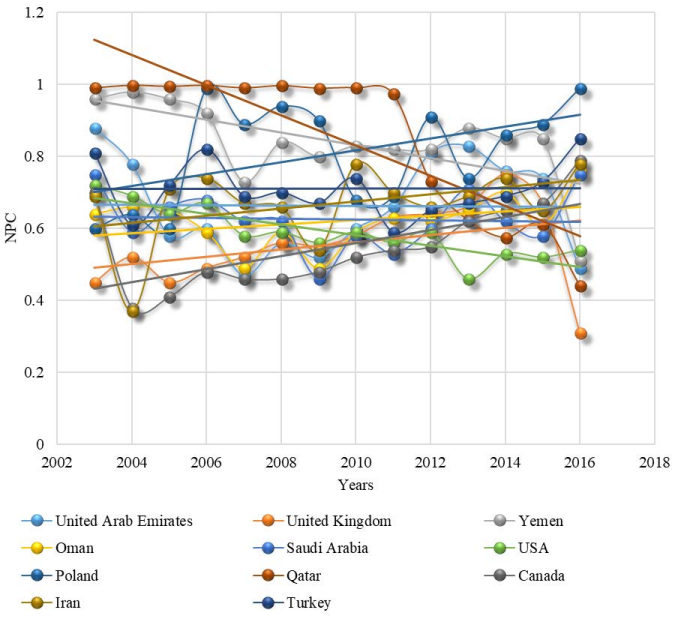

Figure 4: *NPC values of Pakistani Basmati to its major markets.*

According to the results of the study the basmati markets are categorized into three types. First category of high potential markets includes UK, Canada, and USA. The 2nd category include middle potential markets which include Oman, Saudi Arabia, Iran, Turkey and United Arab Emirates. Third category include the low potential markets which has low competitiveness are Yemen, Poland and Qatar. It is recommended that Pakistan basmati exporters and the government must concentrate to expand the basmati export share to UK, Canada and USA because these markets has strong potential and competitiveness. It is further recommended that the basmati exporters must try to find out the way to export to Oman, Saudi Arabia, Iran Turkey and United Arab Emirates instead of Yemen, Poland and Qatar.

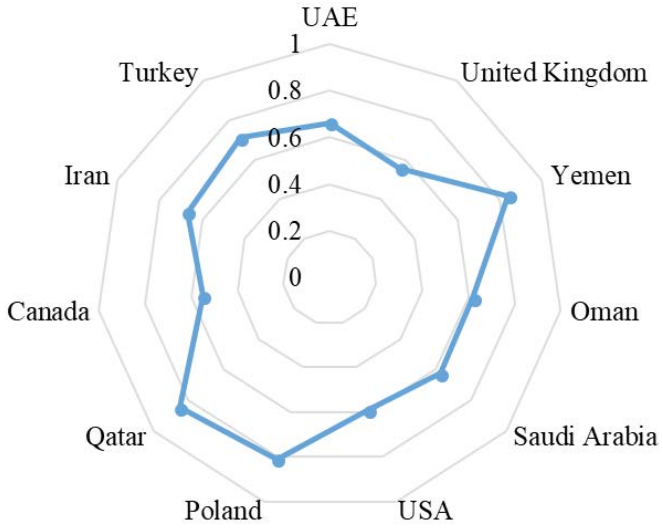

Figure 5: *Average value of NPC for Basmati exports.*

To estimate the impact of different macroeconomic factors on the basmati export competitiveness FGLS is used in the current study by following the panel data set for eleven major markets of Pakistani basmati. The summary statistics of the variables used in the study is given in Table 1.

Table 1: *Descriptive statistics of panel data.*

Variables	N	Minimum	Maximum	Mean	Std. Deviation
BEij	154	0.41	302544	44622.31	58145.86
NPC	154	0.31	1.44	0.6886494	0.17751
CPi	154	2.539516	20.286	9.016759	4.5950
CPj	154	0.050020	39.266	6.421039	7.2092
EXCHi	154	57.752	104.77	80.27	18.053
EXCHj	154	0.3845	30914.85	1325.93	4771.63
Dmij	154	0	1	0.642	0.48072
Jbij	154	0	1	0.090	0.28841

Source: *Author calculation.*

Statistic of four method used which is (Levin Lin and Chu, Im, Pesaran and Shin W-stat, ADF-Fisher Chi-square, PP-Fisher Chi-square) shows that EXCHi and CPi are non- stationary at level data and insignificant, and both variables are significant and stationary when transferring the data into first difference. Statistics of four test shows that EXCHJ and CPj are significant at level and data of these variables are stationary at level form as shown in Table 2.

Table 2: *Results of panel unit root.*

Variables	Data type/probability	Levin, Lin and Chu t*	Im, Pesaran and Shin W-stat	ADF-Fisher Chi-square	PP-Fisher Chi-quare
EXCHi	Probability of level data	0.518	0.6461	0.868	0.439
	Probability of first difference	0.000	0.000	0.000	0.000
EXCHj	Probability of level data	0.000	0.000	0.0002	0.0001
CPi	Probability of level data	0.0467	0.1309	0.3758	0.384
	Probability of first difference	0.000	0.000	0.000	0.000
CPj	Probability of level data	0.000	0.0005	0.0019	0.0006

Source: *Author calculation.*

The problem of multicollinearity is detected with the estimated values of VIF for all the variable used in the current study as independent variables. The values less than 10 shows that the model is free from multicollinearity as shown in Table 3. It is concluded that there is no problem of multi collinearity exist in the data.

Table 3: *Statistics of correlation of variables.*

Variables	VIF
Currency exchange rate in Pakistan	6.12
Currency exchange rate in trading countries	4.40
Inflation in Pakistan	3.89
Inflation in trade partner countries	2.13
Dummy variable for Muslims	1.27
Dummy for joint border between Pakistan and trade partner	4.55

Source: *Author calculation.*

The current study underhand is conducted to estimate the impact of factors on basmati export competitiveness the FGLS model is used by following the Equation 2 by using panel data set for major basmati trading partners of Pakistan. According to the study of impact of macroeconomic variable on basmati competitiveness, inflation has negative and significant effect on export competitiveness of Pakistani basmati. Inflation in trading partner has positive and significant effect on basmati export competitiveness of Pakistan.

According to the results of the impact of macroeconomic factors on competitiveness as shown in Table 4, exchange rate of Pakistan is negatively affecting the competitiveness of basmati export but exchange rate of trading countries is positively affecting the basmati export of Pakistan. Dummy for Muslims and joint boarder is also positively affecting the competitiveness of basmati export of Pakistan. It is recommended that the policies must be prepared to enhance and maintain the competitiveness of basmati exports in international markets the given factors must be considered important.

Table 4: *Macroeconomic factors affecting the basmati export competitiveness.*

Variable	Coefficient	S.E	Z values	p>|z|
D.CPi	-0.0072	0.0030082	0.02	0.004
Cpj	0.0047495	0.0024088	1.97	0.04
D.EXCHi	-0.002944	0.0035432	0.83	0.406
EXCHj	4.90	5.55324	0.88	0.377
Dmij	0.0651751	0.0313681	2.08	0.038
Jbij	-0.171781	0.0982917	1.75	0.081
cons	0.6548322	0.0193701	33.81	0.000
Panel: Homoscedastic				
Correlation: No Autocorrelation				

Source: *Author's calculation.*

Conclusions and Recommendations

The linear trend shows that Pakistani basmati is losing its competitiveness in each market of Canada, Iran and Turkey. However, the market of Canada remained more competitiveness as compared to Iran and Turkey throughout the time period under consideration. The decreasing trend in the graphical presentations of the estimated results of NPC throughout the time under consideration has shown that there is increase in the competitiveness of basmati exports in the markets of Yemen, Qatar, USA with respect to time but on the other side the increasing linear trend of NPC of United Arab Emirates, United Kingdom, Oman, Saudi Arabia, Poland, Canada, Iran and Turkey has shown that competitiveness is decreasing every year. The results about the average values of NPC shows that Pakistan has strong competitiveness of 0.55 in markets of United Kingdom and Canada and 0.59 in USA while Pakistani basmati exports has low competitiveness in Yemen, Poland and Qatar with a value of 0.83, 0.80 and 0.85 respectively. According to the results of the study the basmati markets are categorized into three types. First category of high

Table 5: *NPC value of Pakistani basmati exports.*

Years	UAE	UK	Yemen	Oman
2003	0.88	0.45	0.96	0.64
2004	0.78	0.52	0.98	0.66
2005	0.58	0.45	0.96	0.65
2006	0.6	0.49	0.92	0.59
2007	0.47	0.52	0.73	0.49
2008	0.56	0.56	0.84	0.59
2009	0.52	0.55	0.80	0.49
2010	0.6	0.58	0.83	0.59
2011	0.66	0.63	0.82	0.63
2012	0.81	0.64	0.82	0.62
2013	0.83	0.66	0.88	0.65
2014	0.76	0.75	0.85	0.7
2015	0.74	0.67	0.85	0.61
2016	0.49	0.31	0.51	0.76
Years	Saudi Arabia	USA	Poland	Qatar
2003	0.75	0.72	0.6	0.991
2004	0.59	0.69	0.64	0.998
2005	0.66	0.64	0.6	0.995
2006	0.68	0.67	0.990	0.998
2007	0.62	0.58	0.89	0.991
2008	0.62	0.59	0.94	0.997
2009	0.46	0.56	0.9	0.990
2010	0.58	0.59	0.68	0.991
2011	0.53	0.56	0.69	0.974
2012	0.6	0.59	0.91	0.731
2013	0.71	0.46	0.74	0.624
2014	0.62	0.53	0.86	0.575
2015	0.58	0.52	0.89	0.612
2016	0.75	0.54	0.99	0.442
Years	Canada	Iran	Turkey	
2003	0.7	0.69	0.81	
2004	0.38	0.37	0.61	
2005	0.41	0.71	0.72	
2006	0.48	0.74	0.82	
2007	0.46	0.67	0.69	
2008	0.46	0.66	0.7	
2009	0.48	0.54	0.67	
2010	0.52	0.78	0.74	
2011	0.54	0.7	0.59	
2012	0.55	0.66	0.65	
2013	0.62	0.69	0.67	
2014	0.65	0.74	0.69	
2015	0.67	0.65	0.73	
2016	0.79	0.78	0.85	

Source: *author's Calculations based on* Equation 1.

potential markets includes UK, Canada, and USA. The 2nd category include middle potential markets which include Oman, Saudi Arabia, Iran, Turkey and United Arab Emirates. Third category include the low potential markets which has low competitiveness are Yemen, Poland and Qatar. It is recommended that Pakistan basmati exporter must concentrate to enlarge the basmati export share to UK, Canada and USA because these markets has strong potential and competitiveness. It is further recommended that the basmati exporters must try to find out the way to export to Oman, Saudi Arabia, Iran Turkey and United Arab Emirates instead of Yemen, Poland and Qatar. According to the study of impact of macroeconomic variable on basmati competitiveness, inflation has negative and significant effect on export competitiveness of Pakistani basmati. Inflation in trading partner has positive and significant effect on basmati export competitiveness of Pakistan. According to the results exchange rate of Pakistan is negatively affecting the competitiveness of basmati export but exchange rate of trading countries is positively affecting the basmati export of Pakistan. Dummy for Muslims and joint boarder is also positively affecting the competitiveness of basmati export of Pakistan. It is recommended that the policies must be prepared to enhance and maintain the competitiveness of basmati exports in international markets the given factors must be considered important.

Novelty Statement

There was no single study conducted by keeping only one product for better analysis which is exported from Pakistan to the different poten-tial markets. The current study underhand is the first study in which an attempt was made to identify the potential markets among existing and to find future potential markets to increase the export of basmati form Pakistan.

Author's Contribution

Iqbal Javed: Conceptualization, writing of original draft and technical input at every step.
Abdur Rehman: Methodology and review of literature.
Farhana Khaliq: Data analysis and preparation of first draft.
Amar Razzaq: Data formatting and analysis
Mudassar Yasin: Results and discussion
Ghulam Mustafa: Reviewed and minor revisions.
Allah Bakhsh: Wrote introduction and Conclusion.
Raheel Saqib: Data collection and writing.

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