STUDY ON COMPETITIVENESS OF CEREALS AND THEIR PRODUCTS EXPORTS FROM PAKISTAN

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ABSTRACT

Present study is an attempt to measure the competitiveness of cereals and their products exports from Pakistan in global market. The main purpose was to assess the trade performance of cereal products export in the form of comparative advantage and to understand the factors limiting possibility of further exploiting that advantage. This study was carried out to examine actual cereal export flow and measure the degree of revealed comparative advantage (RCA) for a five years period (2008-13). It was revealed that the RCA index for rice and corn (37.63 and 99.4 respectively in 2012) remained reasonably high while for wheat and mille, it generally remained below the break even point during the period under study. For the overall cereals case RCA remained higher than the break even point showing that Pakistan enjoys an RCA for cereals in general. Urgent efforts are required to further improve the RCA in rice through brand name marketing, improved quality control, and economic dialogue aimed at increasing market access for Pakistan's Basmati rice in markets of Europe and north America. There is a need to revisit not only export strategy but also production of Basmati for international marketing to maintain and increase RCA in Basmati rice. Measures are proposed for standardized, normalized and scientific administration track in production and marketing of Basmati rice of Pakistan.

KEYWORKDS: Cereal; Basmati rice; wheat; barley; milletss; trade performance; revealed comparative advantage; exports; Pakistan.

INTRODUCTION

Pakistan is generally believed to be under developing as far as its agricultural exports potential is concerned. Salam (8) reported that rice is a major export commodity while wheat is an import one and their performance in the past has affected both the food security situation and the balance-of-trade in

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Pakistan. Rizwan ul Hassan (7) alerted that quickly changing international trade scenario due to WTO regulations and emergence of new players like Vietnam and Thailand the competition in the international market is getting tougher.

Many economists have argued that Pakistan has a comparative advantage in a considerable number of agricultural commodities but it is required to exploit this advantage to its best in international markets. However, few studies have been carried out on this issue, specifying commodities where Pakistan has higher comparative advantage (7).

Main purpose of research to find out comparative advantage of cereal exports products from Pakistan in global market. The main purpose of this study is to assess the trade performance of cereal products export in the form for comparative advantage and to understand the factors that limit possibility of further exploiting that advantage. This study analyzes actual cereal export flow and revealed comparative advantage (RCA) with special focus on cereal trade using data from trade map.

METHODOLOGY

Present study was an attempt to measure the competitiveness of cereals and their products exports from Pakistan in global market. The main purpose was to assess the trade performance of cereal products export in the form of comparative advantage and to understand the factors limiting possibility of further exploiting that advantage. This study was carried out to examine actual cereal export flow and measure the degree of revealed comparative advantage (RCA) for a five years period (2008-13). The competitiveness of cereals export from Pakistan was assessed by using RCA index. Originally RCA index was developed by Balasa (5). This index provides a very good method for studying country's comparative advantage based on demonstrated (i.e. actual) export performance (7). This index helps in identification of industries where the country in focus has a demonstrable advantage in international competition. This is specially important for promoting trade of potentially competitive products. RCA is the ratio of the industry's share in the country's exports relative to its share in world trade.

The RCA index of products J exported from country I (RCA_{ji}) can be shown as under:

$$RCA_{ji} = (X_{ji}/X_{jw}) / (X_i/X_w) \ldots\ldots\ldots\ldots (1)$$

Where;

X_{ji} = product j's export by country i
X_{jw} = product j's export by the world
X_i = exports of country i
X_w = exports of world

RCA takes values between 0 and ∞ with 1 being the break even point. If it takes a value of less than one, the country in focus is not specialized in exporting selected products and vice versa (3). This index may be used in industries where there is no trade distortion due to export incentives and trade barriers, which are likely to make it ambiguous whether a country has a real comparative advantage or disadvantage in these goods. The analysis in this study spans a five year period from 2007-08 to 2012-13 and data were obtained from Trade Map, ITC, (3). For assessing the competitiveness of cereal exports, the status of cereals in Pakistan is discussed in following section:

DISCUSSION

RCA in rice exports from Pakistan

For computing RCA, the quantity of rice exported from Pakistan, total export of Pakistan, world rice export and world total export is required. The RCA index is used to assess the competitiveness of rice export from Pakistan.

Area, production, yield and exports of rice from Pakistan

Rice is an important cash crop. It is second largest staple food grain in the country. It comprises of 40 percent Basmati (fine grain) and 60 percent course type. Rice accounts for 2.7 percent of the value added in agriculture and 0.6 percent of GDP (1). The area under rice is 2.311 million hectare, which is 10.1 percent less than the previous year 2012-13. The production of rice was 5.541 million tons in 2012-13 against the target of 6.9 million tons showing a 19.7 percent shortfall. Rice production has decreased due to a drop in area under cultivation caused by late monsoon rains. The yield per hectare of rice in 2012-13 stood at 2398 kg per hectare showing a negative growth of 0.1 percent as compared to positive growth of 17.5 percent in 2011-12 (Table 1). For the year 2013-14 rice production was estimated to be 6.2 million tons, which was 3 percent higher than 2012-13.

The exports of rice were 3.05 million tons in 2007-08, which gradually rose to 3.19 in 2008-09 and 4.21 million tons in 2009-10. Afterwards the export of

rice declined in 2010-11 by 19 percent. There was slight increase in the export of rice during 2011-12 but that again declined in 2012-13 by 5 percent.

Table 1. Area, production, yield and exports of rice from Pakistan.

Year	Area (000 hectare)	Production (000 tons)	Yield (kg/ha)	Exports**	
				(000 tons)	(US $ Million)
2007-08	2,515	5,563	2,212	3050.4	2439.6
2008-09	2,963	6,952	2,347	3189.6	1774.5
2019-10	2,883	6,883	2,387	4205.1	2277.1
2010-11	2,365	4,523	1,912	3414.0	2062.1
2011-12	2,571	6,160	2,396	3423.7	1882.1
2013*	2,311	5,541	2,398	3246.7	1608.2

Sources: GOP, (4). * July – March, 2012-13, **Trade Map (2013). www.trademap.org

Comparative advantage for rice exports of Pakistan

Three key cereals in Pakistan are rice, wheat and maize. Wheat is the staple food in Pakistan while rice is consumed mainly in rice growing districts, but mostly rice is exported. Pakistan rice is of two types which are premium Basmati rice and regular IRRI rice. Pakistani rice exhibited a strong export performance during 2007-2011 where RCA index fluctuated between 64 to 98 (Table 2). Rice demonstrated a good export performance during 2012 and 2013 where RCA index was 38 and 53. The export performance of rice was particularly very strong during 2008 helped by the huge price increases of rice in the global market (4). A significant feature of 2008 was the restriction of rice export by many exporting countries to protect domestic consumer (6). The export performance of rice was relatively poor during 2012 and 2013 as compared to previous four years which was mainly attributed to decreased rice production.

Table 2. RCA index for rice exports of Pakistan.

Year	Rice exports of Pakistan	Total exports of Pakistan	Rice exports of world	Total exports of world	RCA index
	(US $ Million)				
2007-08	2440	19052	21156	16139996	97.71
2008-09	1775	17688	18616	12541566	67.61
2009-10	2277	19290	20232	15273749	89.11
2010-11	2062	24810	23850	18254161	63.61
2011-12	1882	23641	22160	10475734	37.63
2013*	1608	20841	21203	14537041	52.90

Source: Trade Map (2013). www.trademap.org and GOP, (2013b). *July – March, 2012-13.

RCA index of Pakistan's Basmati and Indian Basmati rice exports

The results of the RCA ratio for Pak Basmati and Indian Basmati rice are presented in Table 3. The ratio for Pakistani Basmati rice is extremely high

revealing that it is a dominant export commodity. The analysis of RCA index showed that Pakistan has RCA in Basmati rice export, implying revealed competitiveness as Basmati remained a dominant commodity of Pakistan's export earnings. The results showed that Pakistan hold higher RCA value than India but the share of Pakistan Basmati in global Basmati export is declining as compared to that of India**.** The RCA index for Pakistani Basmati has declined four times where RCA index for Indian Basmati has declined two times.

The declining competitiveness of Basmati production at farm level and declining trend in revealed comparative advantage position require the attention by policy makers and other stakeholders of Basmati rice industry as a strategic export commodity in foreign exchange earnings for Pakistan. Improvement in competitiveness is necessary to take the advantage of growing Basmati markets at global level. To maintain and increase RCA index in Basmati rice, there is a need to revisit not only export strategy but also its production and international marketing. Measures are proposed for standardized, normalized and scientific administration in production and marketing of Basmati rice of Pakistan. Since, the main staple food in Pakistan is wheat so increased domestic rice prices did not quite have the same implications. Pakistan as rice exporter was not able to increase its share in the thin international Basmati rice market after 2008 due to increased supplies from competitors i.e. India and Veitnam.

Table 3. Revealed comparative advantage for Basmati exports of Pakistan.

Year	Basmati exports of Pakistan	Basmati exports of India	Total exports of Pakistan	Total exports of India	Basmati exports of world	Total exports of world	RCA in Basmati for Pakistan	RCA Basmati for India
	(US $ Million)							
2007-08	1069	1608	19052	163132	2165	16139996	418.29	73.48
2008-09	1070	2030	17688	185295	3121	12541566	243.09	44.02
2009-10	856	2093	19290	178751	3154	15273749	214.89	56.70
2010-11	963	2597	24810	251136	3454	18254161	205.13	54.65
2011-12	820	3094	23641	305964	4057	10475734	89.56	26.11
2012-13	517	3150	20841	319546	3756	14537041	82.67	38.15

Source: Trade Map (2013). www.trademap.org and GOP, (2013b). * July-March, 2012-13.

RCA in wheat exports from Pakistan

For computing RCA, the information on the quantity of wheat exported from Pakistan, total exports of Pakistan, world wheat export and world total exports is required. The RCA index is used to assess the competitiveness of wheat export from Pakistan.

Area, production, yield and exports of wheat from Pakistan

Wheat is the largest crop in term of area which has been grown on an area of 8.47 million hectares (average of last 18 years, 1995-96 to 2012-13) (Table 4). Wheat is sown under both irrigated and rainfed conditions throughout the country. During 2011-12 and 2012-13 its average annual production was 24.31 million tons. Which was 24.23 million tons during 2012-13, against the target of 25.5 million tons that is 5.1 percent less, but showed an increase of 3.2 percent over the previous year's production of 23.47 million tons (Table 4). The wheat yield per hectare was recorded as 2787 kg per ha during 2012-13 showing a positive growth of 2.7 percent as compared to 4.2 percent negative growth during the last year. Area under wheat increased due to increase in support price from Rs.1050 to 1200 and a further support by favorable temperature and healthy grain formation. For the year 2013-14 wheat production is 25.3 million tons, which is 4.4 percent higher than that of 2012-13.

Table 4. Area, production, yield and exports of wheat and meslin from Pakistan.

Year	Area (000 ha)	Production (000 tons	Yield (kg/ha)	Exports**	
				(000 tons)	(US $ million)
2007-08	8,550	20,959	2,451	160.0	47.4
2008-09	9,046	24,033	2,657	14.8	2.7
2009-10	9,132	23,311	2,553	0.9	0.2
2010-11	8,901	25,214	2,833	2087.4	674.4
2011-12	8,650	23,473	2,714	137.1	45.3
2013*	8,693	24,231	2,787	159.4	52.67

**Trade Map (2013). www.trademap.org and GOP, (2013). *July-March, 2012-13.

RCA in wheat and meslin exports from Pakistan

Compared with rice, the export performance of wheat and meslin are more complex during the period under study, Pakistan was neither net wheat importer nor exporter as Pakistan has exported as well as imported wheat during the reference period. The huge increase in the value of wheat import in 2008 was due to tripling of international wheat prices (4). The RCA index for erratic export of wheat is given in Table 5. The value of RCA significantly below 1 for five years during 2008 to 2013 implied that the export performance of wheat was very poor.

It means that Pakistan does not have comparative advantage in wheat export. Only during 2011 the value of RCA was recorded about 10 indicating the strong export performance when Pakistan has a record wheat production of 25 million tons. The reason for unstable RCA in wheat being large and

rapidly growing population of Pakistan (180 million) which require 24 million tons of wheat for own consumption. The other reasons relates to largely un-documented wheat export to Afghanistan. In the scenario of declining wheat prices after 2008, sustainable increase in wheat yield would be required to enhance the RCA index in wheat export from Pakistan.

Table 5. RCA index for wheat exports of Pakistan.

Year	Wheat exports of Pakistan	Total exports of Pakistan	Wheat exports of world	Total exports of world	RCA index
	(US $ Million)				
2007-08	47.40	19052	44918	16139996	0.89
2008-09	2.70	17688	31913	12541566	0.06
2009-10	0.20	19290	32871	15273749	0.00
2010-11	674.40	24810	47446	18254161	10.46
2011-12	45.30	23641	48745	10475734	0.41
2013*	52.67	20841	41179	14537041	0.89

** Trade Map (2013). www.trademap.org and GOP, (2013b). * July – March, 2012-13.

RCA in maize exports from Pakistan

For computing RCA, the information on the quantity of maize (corn) exported from Pakistan, total export of Pakistan, world maize (corn) exports and world total export is required. The RCA index is used to assess the competitiveness of maize (corn) export from Pakistan.

Area, production, yield and exports of maize (corn) from Pakistan

Maize is another important cereal crop contributing 2.2 percent to the value added in agriculture and 0.5 percent to GDP (2). Maize was grown on an area of 1.085 million hectares in 2012-13 which is 1 percent higher than last year's area (1.078 m ha). However, the production was 4.631 million tons during 2012-13 against last year production 4.338 million tons suggesting an increase of 6.8 percent over the last year. The yield per hectare in 2012-13 stood at 4268 kg per hectare showing a positive growth of 6.9 percent compared to 4.9 percent growth in 2011-12 (Table 6). This increase in production is attributed to the conversion of a considerable area from conventional to hybrid varieties. The export of maize from Pakistan increased throughout the referred period except for 2009-10.

RCA in maize (corn) exports from Pakistan

The information on the RCA for maize export from Pakistan is presented in Table 7. Despite maize erratic export performance, RCA index for maize is significantly above 1 for 4 out of 6 years during 2008 to 2013 with the highest

value of 1.5 in the year 2011. The main reason for Pakistan's RCA in maize being significant while unstable at the same time, is that although Pakistan is a maize producer (maize production was 4.3 million tons during 2012), it also has huge consumption due to rapidly growing human and animal population particularly poultry which is the major consumer of maize (corn). As a result even small discrepancies in supply and demand not only change the value of RCA index but reverse trade flow also.

Table 6. Area, production, yield and exports of maize from Pakistan.

Year	Area (000 ha)	Production (000 tons)	Yield (kg/ha)	Exports	
				(000 tons)	(US $ million)
2007-08	1,052	3,605	3,427	69.00	20.5
2008-09	1,052	3,593	3,415	234.40	45.8
2009-10	935	3,262	3,488	10.50	2.1
2010-11	974	3,707	3,806	249.40	70.0
2011-12	1,087	4,338	3,991	365.20	99.4

Source: GOP, (2013b) and Trade Map (2013). www.trademap.org

Table 7. RCA index for maize exports of Pakistan.

Year	Maize exports of Pakistan	Total exports of Pakistan	Maize exports of world	Total exports of world	RCA index
	(US $ Million)				
2007-08	20.5	19052	27175	16139996	0.64
2008-09	45.8	17688	18839	12541566	1.72
2009-10	2.1	19290	23326	15273749	0.07
2010-11	70.0	24810	34447	18254161	1.50
2011-12	99.4	23641	35497	10475734	1.24

Source: Trade Map (2013b). www.trademap.org

RCA for barley exports from Pakistan

For computing RCA, the information on the quantity of barley exported from Pakistan, total exports of Pakistan, world barley exports and world total exports is required. The RCA index is used to assess the competitiveness of barley export from Pakistan.

Area, production, yield and exports of barley from Pakistan

Pakistan grows barley to meet domestic and export demands. Area under barley is 71 thousand hectares which is 1.41 percent less than last year (72000 ha). Pakistan produced 62 thousand tons of barley in 2012-13 compared to 66 thousand tons in 2011-12 which was 6 percent less than previous year. The yield per hectare of barley in 2012-13 was 918 kg posted a negligible change over 917 kg of the previous year (Table 8).

Table 8. Area, production, yield and export of barley from Pakistan.

Year	Area (000 hectare)	Production (000 tons)	Yield (kg/ha)	Export	
				(000 tons)	(US $ million)
2007-08	91.0	87.0	956.0	3.0	0.30
2008-09	86.0	82.0	953.0	0.0	0.00
2009-10	84.0	71.0	845.0	0.3	0.04
2010-11	77.0	71.0	922.0	2.8	0.60
2011-12	72.0	66.0	917.0	0.0	0.00
2012-13	73.0	67.0	918.0	0.0	0.00

Sources: GOP, (2013b) and Trade Map (2013). www.trademap.org

RCA in barley exports from Pakistan

The information on the RCA for barley exports given in Table 9 shows that the export performance of barley is very poor as the barley is only consumed for domestic purpose.

Table 9. RCA index for barley exports of Pakistan.

Year	Barley exports of Pakistan	Total exports of Pakistan	Barley exports of world	Total exports of world	RCA index
	(US $ Million)				
2007-08	0.30	19052	7441	16139996	0.03
2008-09	0.00	17688	4539	12541566	0.00
2009-10	0.04	19290	4987	15273749	0.01
2010-11	0.60	24810	7428	18254161	0.06
2011-12	0.00	23641	7870	10475734	0.00

Source: Trade map (2013). www.trademap.org

RCA in millets and canary seed exports from Pakistan

For computing RCA, the information on the quantity of millets and canary seed exports from Pakistan, total exports of Pakistan, world millets and canary seed exports and world total exports is required. The RCA index is used to assess the competitiveness of millets and canary seed exports from Pakistan.

Area, production, yield and exports of millets and canary seed from Pakistan

Area under millets in Pakistan is 461 thousand hectares which is 0.6 percent more than the last year (458000 ha). The production of the millets is 310 thousand tons in 2012-13 against the production of 304 thousand tons in 2011-12 exhibiting an improvement of 2 percent. The increase in production is attributed to increase in area. The yield per hectare of millets in 2012-13

stood at 672 kg per hectare which showed a positive growth of 1.2 percent as compared to 2011-12. The export of millets and canary seed is also minor (Table 10).

Table 10. Area, production, yield and export of millet & canary seed from Pakistan.

Year	Area (000 ha)	Production (000 tons)	Yield (kg/ha)	Exports	
				(000 tons)	(US $ Million)
2007-08	531	305	574	0.4	0.10
2008-09	470	296	630	0.9	0.20
2009-10	476	293	616	0.2	0.05
2010-11	548	346	631	0.5	0.20
2011-12	458	304	664	4.5	1.50

Sources: GOP, (2013b) and Trade Map (2013). www.trademap.org

RCA in millets and canary seed exports from Pakistan

The information on the RCA of millets and canary seed export is given in Table 11. The export performance of millets and canary seed is good for the year 2009 where the value of RCA was above 1 which was far below 1 for other four years (2008, 2010, 2011 & 2012), indicating poor export performance of millets and canary seed as this commodity was only used for domestic consumption during these 4 years.

Table 11. RCA index for millets and canary seed exports of Pakistan.

Year	Millet exports of Pakistan	Total exports of Pakistan	Millet exports of world	Total exports of world	RCA index
	(US $ Millions)				
2007-08	0.10	19052	620	16139996	0.14
2008-09	2.00	17688	557	12541566	2.55
2009-10	0.05	19290	655	15273749	0.06
2010-11	0.20	24810	789	18254161	0.19
2011-12	1.50	23641	756	10475734	0.88

Source: Trade Map (2013). www.trademap.org

RCA for overall cereals export from Pakistan

For computing RCA, the information on the quantity of overall cereals exported from Pakistan, total export of Pakistan, world cereal exports and world total exports is required. The RCA index is used to assess the competitiveness of overall cereals export from Pakistan.

Overall export of cereals

Overall export of cereals has witnessed a steady growth. Cereal exports were valued at US$ 2508 million in 2007-08 which declined to US$ 1823 million in 2008-09, and again rose to US$ 2807 million in 2010-11. Export of cereals

decreased from 3.930 million tons worth US$ 2028 million in 2011-12 to 3.753 million tons worth US$ 1899 million in 2012-13, showing decrease of 4.5 percent in terms of quantity and 6.4 percent in terms of value (Table 12).

Table 12. Cereals and cereal products export from Pakistan.

Year	Quantity exported (000 tons)	Export value (US $ Million)
2007-08	3282.8	2507.9
2008-09	3439.7	1823.2
2009-10	4216.9	2279.6
2010-11	5754.1	2807.3
2011-12	3930.5	2028.4
2013*	3753.00	1899.40

Source: Trade map (2013). www.trademap.org and GOP, (2013b). *July-March, 2012-13.

RCA index in cereals export from Pakistan

Pakistan enjoys significant revealed comparative advantage in the production of cereals during 2007-2013, Pakistan enjoyed a substantial comparative advantage in cereals exports from Pakistan. The RCA index for cereals fluctuated between 2 to 21 (Table 13).

Table 13. RCA index in cereal exports.

Years	Cereal exports of Pakistan	Total exports of Pakistan	Cereals exports of world	Total exports of world	RCA index
	(US $ Million)				
2007-08	2508	19052	104570	16139996	20.32
2008-09	1823	17688	771318	12541566	1.68
2009-10	2280	19290	85778	15273749	21.05
2010-11	2807	24810	116331	18254161	17.75
2011-12	2028	23641	119167	10475734	7.54
2013*	1899	24805	239433	14537041	4.65

Source: Trade map (2013). www.trademap.org and GOP, (2013b). *July- March, 2012-13.

The three key cereals in Pakistan are rice, wheat and maize as discussed above. Pakistan enjoyed comparative advantage in the export of rice in general and Basmati rice in particular. The share of cereal exports in the global cereal trade is declining overtime as evidenced in Table 13.

CONCLUSION

Relatively low yields of wheat, barley and millets as compared to rest of the world can be attributed to poor policies towards these crops, limiting their export volume. Pakistan has historically been an important player in the world rice market where, the share of basmati rice has declined since 2008.

Relatively high value of RCA index for rice is attributable to a good degree to rice being traded in a thin international export market. Urgent efforts are needed to strengthen the RCA in rice by brand marketing, enhanced quality control, and carefully worked out measures of economic diplomacy to increase market access for Pakistan's Basmati rice in Europe and North American markets.

To maintain and increase revealed comparative advantage in Basmati rice, there is need to revisit not only its export strategy but also its production and international marketing. Measures are proposed for standardized, normalized and scientific administration track in production and marketing of Basmati rice of Pakistan.

Moreover in-depth, market oriented and cereal products targeted research is required to determine the investment and policy measures required to enhance Pakistan's RCA in major cereals export markets and increase cereals' market shares in world cereal market.

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Received: March 24, 2014 ***Accepted: August 21, 2014***

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