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UNLOCKING THE POTENTIAL: FACTORS DRIVING THE COMPETITIVENESS OF CITRUS EXPORTS FROM PAKISTAN

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ABSTRACT

Pakistan's agriculture industry is vital to the country's economy since it has confined exportation goods and markets and struggles with a lingering trade imbalance. This study shed light on the modern economic notion of competitiveness by attempting to assess and pinpoint factors affecting citrus exports, which account for 2.48% of the agricultural GDP. In trade theory, competitive edge is a better phrase to use instead of "competitive profit." Panel data and time series data were also employed in this study. The UN-FAO, AMIS, WDI, and WITS were the primary sites from which the secondary sources of data were gathered. The factors that generated an estimate of exports among Pakistan and other nations were identified using a gravity model. The export number, the variables that varied between Pakistan and its top exporters included the value of exports and exporting price examined in this study. RCA indices and their expansions were used in conjunction with suitable statistical techniques to examine the collected data. The study's conclusions were anticipated to be useful in formulating some plans to boost Pakistan's citrus exports. The nominal GDP of Pakistan and the importing nations, their exchange rate, and the region under evaluation for citrus were important drivers. The findings of this study demonstrated that while Pakistan's citrus output is fairly steady, much more work is required to guarantee and optimize gains in the export of citrus crop types.

Keywords: Citrus; Export; Competitiveness; RCA; Gravity model.
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INTRODUCTION

Evaluating a nation's competitive edge and structure of specialization is essential to allocating resources efficiently and boosting financial wellbeing. Understanding comparative advantage is useful for assessing the effects of economic shifts and defining economic wellbeing. According to Cai et al. (2008), empirical estimates of comparative advantage can help determine how a nation's capital and exports should be orientated to take benefit of disparities in worldwide demand and supply for agricultural products and effective inputs. The comparative edge of a nation's industries determines lengthy period advantages of trading within the World Trade Organization (WTO) framework (Quddus & Mustafa, 2011). Competitive edge are based on comparative advantages, but a country's competitiveness may also be influenced by a number of other variables (Rahmaddi & Ichihashi, 2012). Upgrading operations, processes, products, and intersections (chains) are critical strategies for increasing Competence within global value chains (GVCs). In the context of economics, competence is defined as an individual's ability to compete in a certain business or state setting and provide a product or service by utilizing it is assets at a reasonable price.

Performance and comparative edge differ in two respects (Lafay, 1992). Firstly, competitiveness usually means comparing a product's competitors across national borders, whereas productive capacity compares products inside a country. Secondly, even though the comparative advantage is systemic, changes in the macroeconomic climate can affect competitiveness. Therefore, studies concentrating on competitiveness metrics and comparative advantage may provide contradictory results. Modifications in the macroeconomic circumstances can influence productivity (Hay et al., 2011).

Agricultural products make up a significant portion of Pakistan's trade exports (Zafar, 2020). Exports of fruits are worth $12759716, out of which Pakistan exports 0.3% (ITC, 2020). As a result of the increasing demand for domestic consumption, Pakistan imports a wide variety of fruits from international market worth $227,399 (ITC, 2020). However, Pakistan still has higher exports than its imports despite importing agricultural products from the international market. Pakistan's horticulture produces to discern its comparative advantage. In the growing of some fruits and vegetables, Pakistan has a relative advantage (Riaz et al., 2012). Many fruits, such as kinnow, dates, mango and pine nuts, thrive in climate of Pakistan. Pakistan is well-known for its cultivation of Kinnow, a paired orange cultivar. Pakistan produces the best Kinnow in worldwide due to good weather conditions, primarily in the Punjab province. Kinnow is produced in Pakistan, the sixth-largest cultivator in the world, and is mostly sold in the Middle East, the Netherlands, Indonesia, Asia, and Europe (Akhtar et al., 2013).

Through examining all significant facets of their supply chains, Sandeela (2015) assessed the efficiency and possibilities of Pakistan are exporting of Citrus. The study's findings had potential for raising Pakistan's kinnow exports. Furthermore, he found constraints in the supply chain of Kinnow that hindered the growth of their exports. He offered proof that the Kinnow area had grown more than the Citrus Region. Pakistan produces the most citrus reticulate varieties worldwide (Kinnow). In Pakistan, the Mandarin (Kinnow) language is important. Kinnow is a Citrus Fruit cross between the 'King' and 'Willow leaf' species that was effectively tried in 1951 at the Citrus Research Centre, University of California, USA. Citrus fruits are produced on an area of roughly 192832 hectares in Pakistan, with a production of 2344 thousand tones and exports of 440 thousand tones worth Rs. 34,088 million (GOP, 2017). Pakistani Kinnow has a distinct flavor and is sought after all over the world for its juicy, soft, and fragrant qualities. The overall global export of fresh tangerines/Mandarins is anticipated to be 4404.8 million tones (FAO, 2016), with Pakistan exporting 294.359 million tones.

By using primary data the value chain and examined the factors of citrus fruit export in Pakistan (Ahmed et al. 2018). It was discovered that the majority of the large, recognized producers of citrus, whose viability was predicated on an increasing, reduced market, it was suggested that enhancing product quality would help Pakistani Kinnow exports. Akhtar et al. (2009) investigated the fruit industry in Pakistan's ability to compete internationally. The revealed comparative advantage method has been applied to analyze regional patterns of consumption and evaluate competition (RCA). Citrus has minimal RCA indicators compared to other regions, indicating that there is space for development. The cultivation and the sale of perfectly ripe Kinnow cultivars, which are highly sought-after on the world market, is one major aspect in this regard. Seedless cultivars are said to have been developed in Pakistan. They have commercialized yet to be, though. As a result, both the government and companies should develop and implement marketing plans for seedless Kinnow cultivars (Riaz et al., 2012).

The primary objective of this research is to evaluate the competitiveness of citrus exports and various factors affecting these exports. Additionally, the study aims to identify and recommend specific actions that can enhance the competitiveness and export volume of major fruits from Pakistan, ensuring sustainable growth and improved market presence in the global agricultural sector.

METHODOLOGY

This study set out to determine the primary factors influencing citrus fruit exports from Pakistan by evaluating the product's competitiveness. A methodical and theoretical examination of the techniques employed in a field of study is called methodology. It comprises a set of procedures relevant to a topic of research as well as a theoretical examination of guiding ideas. According to Ishak and Alias (2005), it typically uses terms like paradigm, stages, theoretical model, and qualitative and quantitative approaches. In this study, panel data and time series were both employed. This study employed statistical techniques to analyze the data that were gathered.

Revealed Comparative Advantage

The pattern of trade, according to Ricardian trade theory, was to determine by the benefit of comparative nature. When a nation enjoys a competitive edge, it probably exports goods and import things that's where it has been an unfair advantage. The notion of (RCA) "revealed comparative advantage" was initially established by Balassa (1965) as a result of the labor-intensive and complicated production cost calculation.

This theory contends that the trading patterns of commodities reflect variations in costs and non-monetary factors, which thus "expose" the country's competitive advantage. Numerous studies have focused on RCA, and different modifications of this index have been developed to discover this pattern of relative benefit of these commodities, the current research employs the fundamental Balassa's RCA index and its numerous addition to Pakistan's principal of citrus fruit over the years 2001 through 2020. Equation I shows the Balassa RCA index (BI) as follows:

$$RCAij = (Xij / Xi) / (Xwj/Xw) = (Xij / Xwj) / (Xi /Xw) \quad (1)$$

Where, i stand for the Pakistan

J for a particular agriculture item

W for the world

In equation 1, RCAij stands for Pakistan's shown a competitive edge for commodity j, while Xij and Xi indicate the both the nation's overall exports as well as the exports of a particular commodity, correspondingly. In equation 1, Xwj and Xw are used to stand it for the world's total exports of a single commodity, a 'j' commodity, and the overall world exports.

A ratio of RCA > 1 denotes the presence of indicated competitive benifit, or a region wherein the country is considerably further specific, conversely a number of RCA 1 denotes revealed competitive benefits, or a sector in which the nation is less specific. As the export of goods of is included in the overall exports each specific product, the indicator has twice report problem.

Relative Export Advantage

By eliminating the exports of the product being studied from the overall exports, potential benefit of exports (RXA), a further index created by Vollrath (1985), resolves the issue of duplicate counting. This index is shown in equation II.

$$RXAij = (Xij / Xir) / (Xwj/Xwr) \quad (2)$$

While "r" represents Pakistani culture trade of all items products besides "j,"

"wr" The remainder of the the globe's exports of "j" commodities, omitting Pakistan's "j" commodity exports With the exception of Pakistan, the global total of exports is represented by the symbol "ws." The results of this index can be interpreted in the same way as the initial rating of Balassa.

Advantages of Comparative Imports

Three further indices were created by Vollrath (1985) and are listed below: relative trade advantage (RTA), potential benefit of imports (RMA), and relative competitiveness index (RC).

Equations III, IV and V respectively:

$$RMAij = (Mij / Mir) / (Mwj/Mws) \quad (3)$$

Mwj signifies all imports from countries other than Pakistan, Mws represents all exports beyond of Pakistan, and I stands for Pakistan, j for a particular good, and r for the remaining items.

Similar to RXA ranking, except using imports rather than exports. RXA and RMA are separated by the RTA index.

$$RTA = RXA – RMA \quad (4)$$

The comparative effectiveness factor is automatically exponentially converted from the RTA.

$$RC = lnRXA – lnRMA \quad (5)$$

RTA and RXA numbers that are positive reflect comparative advantage, whereas those that are negative reveal comparative disadvantage. Export competition is indicated by favorable lack of efficiency in exports is by having the opposite RC level. Vollrath (1985) recommended RTA because it shows both supply and demand conditions. However, there are a number of disadvantages, particularly when there are not any imports or exports (Gunawardana et al., 1995).

Additive Revealed Comparative Advantage

Additive revealed the comparative advantage index (AI), which was developed by Hoen and Oosterhaven (2006), can be demonstrated as follows:

$$AI = (Xij / Xi) – (Xwj/Xw) \quad (6)$$

The values of AI are divided between +1 and -1, and Xs are as previously described. Given that across the country research is better suited than cross-sector studies, AI is meant to be calculated in the current study. The Balassa's index's Value is asymmetrical, extending from one to infinite for items in which an entire nation has an apparent competitive benefit for goods where there is a competitive drawbacks but only from zero to one. Dalum et al. (1998) employed declare symmetric competitive benefits (RSCA) in the regression that is generated to address the skewness issue. Distribution of Balassa's index will be skewed to the right as a result of this feature. The following is the RSCA formula used in this study:

$$RSCA = (B-1) / (B+1) \quad (7)$$

The possible rank of RSCA range from +1 to -1, with zero representing moderation in terms of comparative advantage, and B denotes the standard Balassa's expose competitive benefits index. Yu et al. (2009) developed and assessed the standardized expose competitive benefits (NRCA) index, which measures how far a country's real exports vary from its competitive benefits -neutral value in relation to the international market for exports. The NRCA index's symmetrical distribution is one of its most distinguishing properties. The NRCA index may be expressed in the following manner:

$$NRCAij = (Xij/Xj) – (XiXJ/XwXw) \quad (8)$$

Where Xij is export of product j in the Pakistan

Xj represents total world exports of commodity j;

Xi stands for total exports of the Pakistan

Xw identify the total world exports

Comparative advantage is represented by NRCAij > 0 and comparative disadvantage by NRCAij 0. Additionally, a greater NRCA value represents a bigger competitive benefit, and vice versa (Hassan & Ahmad, 2018). For the period 2001–2020, information on significant fruit exports is culled from online databases maintained by the United Nations Food and Agricultural Organization (UNFAO, 2019) and International Trade in Statistics (ITC, 2020).

Gravity model estimation

From the beginning of the 1960s, the gravity models have worked well when applied to examine global trade patterns, but solid theoretical underpinnings were not developed until the end of the 1970s. The classic Newtonian gravity equation was modified as a result of numerous studies. The theory underpinnings of the gravity model was defined, between other individuals, by Anderson (1979), who derived the gravity model from an spending structure by considering Armington inclinations and taking items that differed by the nation of origin into account. Bergstrand (1985) used the same Armington hypotheses to derive the gravity model as a partial adjustment sub-system of a general equilibrium model. Bergstrand produced an imaginary gravity model in 1989 that included per capita profits for importing and exporter. Deardorff (1998) utilized the Heckscher-Ohlin equation to develop the gravity model.

Equation 1 depicts how the range across the states and the earnings components of the importing and exporting country are included in the standard gravity model for mango

$$\ln X_{ij} = \beta_0 + \beta_1 Aij + \beta_1 \ln Y_j + \beta_2 Y_i + \beta_3 \ln E_{ij} + \beta_4 P_{ij} + \beta_5 \ln P^e_{ij} + \beta_6 \ln D_{ij} \quad (9)$$

Here the terms Yi and Yj represent the nominal GDPs of the exporting and importing countries, and Aij represents the area of mangoes, respectively, and stand in for income variables; Dij is an incorrect phrase used to describe the distance among the different countries or their corresponding commercial hubs in place of actual transit costs. Xij represents export from nation I to nation j.

The current research explores the elements using a gravity model inside a panel data structure impacting export competitiveness at the product perfect phase, i.e., Pakistan's sale of citrus is key partners. Panel data implementations of the gravity model are preferred over cross-sectional and time-series descriptions due to the possibility of misspecification in both approaches (Egger & Pfaffermayr, 2003; Martinez-Zarzoso & Nowak-Lehmann, 2003). The cross-sectional specification of a gravity model does not take time-variant effects into account and restricts the study to a single point in time. On the other hand, the time-series constraints make it impossible to study the fixed-country combination impacts.

In addition, the cross-sectional and time-series factors might impact the strength and direction of the explaining variables' effect. The issues with the inaccurate parameters are the basis for the description of the gravity model panel (Egger, 2002). Egger (2002), Eita (2008), Martinez Zarzoso and Nowak-Lehman (2003), Filippini and Molini (2003), and Mátyás (1997) used panel data to calculate gravity equations and argued that panel data standards are more appropriate and useful than cross-sectional and time-series data in terms of elucidating the export the diversity flows and assessing factors supplying to these export profits.

Equation 2 show how the distance among the nations and the income components of the importing and exporting country are included in the standard gravity model for citrus.

$$\ln X_{ij} = \beta_0 + \beta_1 \ln Y_j + \beta_2 Y_i + \beta_3 \ln E_{ij} + \beta_4 P_{ij} + \beta_5 \ln P^e_{ij} + \beta_6 \ln D_{ij} \quad (10)$$

Where Yi and Yj represent the nominal GDPs of the importing and exporting countries, respectively, and act as stand-ins for income variables; Xij stands for export from nation I to nation j; the word "Dij" is incorrect since it refers to the distance among the two nations or their corresponding financial centers in substitute for mobility costs. In contrast, "Eij" denotes the exporting country's exchange rate, "Pij" denotes crop output, and "Peij" denotes the commodity's unit value price. The values of the error term are sigma (μ, e). All other terms are changeable, while factor B is fixed.

Data Sources

The World Integrated Trade Solution (WITS) agricultural trading website (UNFAO, 2012) is the source of every single trade volume and value statistics. Unit costs are calculated using the value and dimensions information. All area, production, export value and export quantity data for these variables was collected from the data service for agricultural marketing (AMIS). Data on imports and exports worldwide was sourced from the World Bank (WDI).

RESULTS AND DISCUSSION

The current research, which includes citrus, uses multiple revealed comparative advantage indices for main fruits. In terms of horticulture crop producers and exporters, these fruits account for a significant portion. Table illustrates production patterns for citrus. Comparatively, the average citrus productivity from 2001 to 2020 was 2077 thousand tonnes, ranging from 1472.5 to 2458.4 thousand tones, with a 13 percent coefficient of variation. The World Integration Trade Strategy (WITS) agricultural trading website (UNFAO, 2012) is the source of every single trade worth and quantity statistics. Unit costs are calculated using the value and dimensions information. Pakistani fruit export markets are examined (RC).

One of the top ten global growers and exporters of citrus is Pakistan. However, there is a lot of diversity in its exports. About 95% of Pakistan's mandarin exports are citrus, with kinnow being the primary exportable component (Mahmood, 2004; Ahmad et al., 2018; UNFAO, 2019). While production and exports have expanded over the previous ten years, market share in high-priced countries like the EU has dramatically decreased. These findings demonstrate the presence of comparative advantage across the whole study period of 2001–2020. The enhancement of the supply chain and the implementation of of better procedures for harvesting and processing may be the reason why the degree of competitive advantage has increased since 2010. The Balassa index values fluctuated between 2.2 and 11, with a mean value of 2.2, while the RXA and LNRXA mean values are 6.43 and 1.17, respectively, with ranges of 2.2 to 11.10 and 0.80 to 2.41, showing export competitiveness. The RSCA, AI, and NRCA indices have mean values of 0.67, 0.004, and 0.0008 respectively.

Citrus has lower RCA index scores than other industries, suggesting more potential for enhancement. The cultivation and commercialization of seedless kinnow varieties is a significant component in this regard due to their more value in the global firm. It is said that Pakistan is developing seedless variants. According to Ahmad et al. (2018), the citrus export business is dominated by large, well-established exporters, and their profit is explained by higher sales at lower prices. Due to Pakistan's inability to meet the quality requirements connected to the Sanitary and Phytosanitary (SPS) accord of the WTO, exports of kinnow are predominantly targeted at low-priced markets.

They recommended increasing expenditure in research and innovation based on the empirical data. They went on to explain that research should concentrate on enhancing quality, yield per hectare, seedless kinnow manufacturing and sales, and lowering post-harvest wastage in the citrus distribution chain.

Table 1. RCA indices for Citrus.

Year	RCA	RXA	RMA	RTsA	LNRXA	LNRMA	RC	AI	NRCA
2001	2.53	2.53	0.00	2.53	0.93	0.00	0.93	0.00	0.003
2002	3.15	3.15	0.00	3.15	1.14	0.00	1.14	0.00	0.004
2003	2.74	2.74	0.01	2.73	1.01	-4.33	5.34	0.00	0.004
2004	3.50	3.51	0.00	3.51	1.25	0.00	1.25	0.00	0.004
2005	2.30	2.30	0.00	2.30	0.83	0.00	0.83	0.00	0.003
2006	4.07	4.08	0.00	4.08	1.40	0.00	1.40	0.00	0.005
2007	3.70	3.70	0.00	3.70	1.31	-5.39	6.70	0.00	0.004
2008	4.93	4.94	0.00	4.94	1.59	0.00	1.59	0.00	0.005

2009	3.08	3.09	0.00	3.09	1.13	0.00	1.13	0.00	0.003
2010	7.48	7.51	0.01	7.49	2.01	-4.07	6.09	0.00	0.009
2011	0.79	0.79	0.01	0.77	-0.23	-4.34	4.11	-0.00	0.001
2012	0.99	0.99	0.03	0.95	-0.00	-3.42	3.41	-4.62	0.001
2013	0.95	0.95	0.01	0.94	-0.04	-4.41	4.36	-2.41	0.001
2014	0.97	0.97	0.00	0.96	-0.02	-4.93	4.91	-1.45	0.001
2015	0.95	0.95	0.03	0.92	-0.04	-3.50	3.45	-3.04	0.001
2016	0.94	0.94	0.04	0.89	-0.06	-3.07	3.01	-3.60	0.001
2017	0.73	0.73	0.00	0.738	-0.31	0.00	-0.31	-0.00	0.000
2018	0.88	0.88	0.00	0.88	-0.12	0.00	-0.12	-6.57	0.001
2019	0.80	0.80	0.00	0.80	-0.22	0.00	-0.22	-0.00	0.000
2020	0.54	0.54	0.00	0.54	-0.59	0.00	-0.59	-0.00	0.001

RCA values for citrus from 2001-2020 indicate that there is mean increase in comparative advantage in production of citrus with few fluctuations due to climate change or global market rate. The results indicate that there is abrupt increase in RCA index since 2010 and last before corona pandemic. Pakistan being a developing country had to pass through number of challenges but now economic growth is retaining back period of production.

The values of RXA, RMA, RTA, LNRXA, LNRMA, RC, AI, SI, NRCA factors also indicate in figure-1 that Pakistan has become a progressive grower in citrus production especially kinnow. Efforts are being made by researchers and scientists to develop varieties that are globally demanded. Coefficient of variation CV implies that there is significant increase in production of citrus with the passing years.

Citrus production

Many varieties of citrus are grown in countries with tropical or subtropical temperatures. Citrus is the most productive tree fruit globally, both geographically and in terms of output. The most important citrus crops, producing 1.5 MMT annually, are citrus fruits, which are farmed over 160,000 hectares in Pakistan as well. Citrus fruit is grown in all four areas of Pakistan, although Punjab yields the largest crop because of its larger population, better climate, and abundant water supply. Citrus produced on industrial farms is divided into many varieties, such as sweet oranges, mandarins, grapefruit, lemons, and limes.

Table 2. An overview of Citrus production.

Province	District					
Punjab	Sahiwal	Sargodha	Sialkot	Jhang	Mianwali	Multan
NWFP	Peshawar	Swat	Swabi	Noshera	Hazzara	Mardan
Sindh	Khairpur	Nawabshah	Sukkar	Sanghar	Feroze	Naushero
Baluchistan	Sibi	Kech	Mekran	Gwadar	Dolan	Lasbela

Assessment of results of gravity model

Panel data is employed to assess the acceptability of this formulation in relation to cross-sectional and time-series descriptions. The elements that were examined included fruit exports in international units, citrus exports in standard units, bilateral distances between Pakistan's major cities and main exporters, contiguity—a map that shows boundaries that coincide with neighboring countries—main factors that the countries share, imports of the respective nations, and the exchange rates—both in international and local currency—between major exporters and Pakistan.

Interpretation of Hausman-Taylor Assesment

A Hausman particulars test is performed to investigate this association (Egger, 2000). The Hausman test is mostly used to determine differences in predictions between the random effects model and the fixed effects model. The Hausman-Taylor model, which integrates the fixed and random effects models, is employed for evaluating endogenous (e.g., unit value pricing variables and distance) and time-invariant components (e.g., the Nominal GDP of Pakistan).

Panel data with cross-sectional and time-series identification are used to enhance the effectiveness of this description. The results of the gravity model for the Hausman-Taylor model estimation are shown in the table. Reliable average variances are used for the estimate.

Table 3. Hausman-Taylor calculation of Citrus.

Quantity (Xij)	Coefficient	Standard Error	z	P>|z|
Nominal GDP importing country (Yj)	0.691***	0.180	3.83	0.000
Exchange rate Pak (Eij)	0.586***	0.242	2.42	0.01
Nominal GDP Pak (Yi)	0.400	0.294	1.36	0.175
Unit value price (Peij)	-0.912***	0.073	-12.38	0.000
Citrus production Pak (Eij)	1.253*	0.747	1.68	0.094
Distance km (Dij)	0.206	0.635	0.33	0.745
Constant	-22.790**	10.841	-2.1	0.036
Sigma- u	4.037			
Sigma- e	0.959			
rho	0.946			

Note: ***, **, * symbolize statistically significant at 1%, 5%, and 10% level, respectively.

The findings of the Hausman Taylor model's coefficients were presented along with a description of their significance levels, which shows that the relationship between the Both the dependent as well as independent variables are constant. Based on Hausman-Taylor calculations, the exchange rate has a significant impact on Pakistan's nominal per capita GDP, while Pakistan's nominal GDP is negligible. All significant statistical factors have the predicted signals, despite significant variance in the degree of importance. The Hausman-Taylor model has the benefit of directly estimating time-invariant quantities, such as distance, which the FE model is unable to calculate. Furthermore, Pakistan's nominal GDP is probably intrinsic since unit value and exports both influence it.

As seen by the actual gross domestic product of the importing country, the positive factor on Yj nation, citrus is a typical agricultural crop. With a unit price coefficient of 0.69, a 1% drop in importer prices is equivalent to a 0.69% gain in citrus exports from Pakistan. The statistical results demonstrate the significance of a commodity's unit price value, which is 0.000 at the 1% level.
Yi, the nominal GDP of Pakistan, has a non-significant positive coefficient, as expected. Citrus exports are not significantly affected by a 1% increase in nominal GDP due to the variable's very flexible nature. Since citrus exports are not sensitive to local supply (production capacity), economic development and increased citrus output (which contributes 5.95 billion to GDP) can either sustain or deter citrus exports, according to this elastic-positive coefficient. On the other side, a supply shock such as citrus canker might hurt exports. There is a case to be made that Pakistan's citrus industry has a competitive edge abroad, and specific in producing to boost exports should lead to an effective distribution of resources (land and labour) to promote economic growth.

The value of the factor for the export value price is statistically significant and, as expected, negative at the 1% level of significance. Citrus exports from Pakistan to a certain nation decrease by around 1% for every 1% increase in the export price of citrus in that country, with a price elasticity of -0.91 (unitary elasticity). The exporter directly responds to price when selecting an export market, therefore more is sold to nations where a better price is obtained.

The positive factor for the component of exchange rates shows that a rise in citrus export of 0.58% results from a 1% decline in the value of the rupee. The government switched from a regulated exchange rate policy to a more varying scales throughout the research period, although the rupee appreciated by roughly 24%, which benefited the nation's exports of citrus. At the 1% level of significance, the distance and historical ties coefficients exhibit the anticipated signs and are statistically significant. The distance coefficient is positive, indicating that higher transportation costs have a positive impact on Pakistan's export.

The historical linkages variable is positive, which makes sense considering that citrus exports to nations like Australia, Argentina, the United States, and the United Kingdom should be encouraged by marketing and trade links with former British Empire states. The distance variable's coefficient has the predicted signs, and robust standard errors show that at the 5% significance stage, the coefficient's value is statistically important. At a 1% level of significance, the coefficient of citrus production was shown to be significant. The coefficient value improved by 1.25% with a 1% increase in citrus production. According to the statistical findings, increasing the production will enhance citrus exports to countries that import them.

The other dummy variables that were studied in the research work included language, membership of common wealth and landlocked countries. But the variables showed non-significant results and impact on other variables due to which they were dropped for further studies.

CONCLUSIONS

The key objective of this study is to examine the citrus export competitiveness for Pakistan and its major rivals from 2001 to 2020 was the main goal of this work. According to the findings, the US, the data also showed that Pakistan has the smallest comparative and competitive advantage compared to the other three main orange exporters in the world. For all of the commodities under investigation, Pakistan has, however, greatly expanded its comparative and competitive advantage over the analyzed period. Citrus is better for Pakistan than others fruits among these products. We discovered that Pakistan's external sector has undergone periodic and significant reforms after rigorously examining its overseas trade. Due to domestic economic growth, import demand has significantly increased. In contrast, the global economy expanded by almost 5% throughout the same period, with the exception of the year of the global economic crisis, and this resulted in a significant increase in global trade. Almost every nation in the globe has experienced prosperity thanks to the brisk expansion of global trade. Since 2000, Pakistan's economy has grown significantly, largely as a result of its moderate macroeconomic policies and institutional adjustment. The projections from 2001 to 2020 show a change in the structure that revealed Pakistan has a competitive advantage in all outward sectors at the HS-2 digit level when compared to a number of other nations, including China, India, Bangladesh, Thailand, Malaysia, Indonesia, Vietnam, South Korea, and Sri Lanka. Pakistan's competitive advantage in the textile and apparel industries is expanding, and it is followed by the hides and skins and vegetable industries. For Pakistan's top three product category, the competitive benefits score was disclosed is higher than that of other nations and has been essentially constant over time.

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