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Factors Affecting the Exports of Pakistan to United Arab Emirates: A Time Series Analysis

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Abstract

The UAE is one of Pakistan's largest trading partners in the Middle East region. The trade between the two countries is characterized by a significant volume of imports and exports and substantial investment flows. The research goal was to analyze the factors affecting Pakistan's exports to the United Arab Emirates. Various variables were chosen, and time series data from 1975 to 2022 was used for the analysis. Information on these indicators was sourced from the World Bank, the Federal Bureau of Statistics in Islamabad, Pakistan, the State Bank of Pakistan, the Pakistan Economic Survey, International Financial Statistics, and the International Monetary Fund. For this purpose, the Pooled OLS model was used to estimate the impact of different factors. According to the results of the study for determining the factors of exports of Pakistan to United Arab Emirates, The GDP of both Pakistan and the UAE, along with the inflation rate in Pakistan and the exchange rate in Pakistan, are significant predictors for the dependent variable. The effects of population in both countries and inflation in UAE are not statistically significant, indicating that they may not be as crucial for understanding the variation in the dependent variable. As such, any policy or strategy should focus on the significant variables for effective outcomes.

Keywords: Factors, Exports, Pakistan, United Arab Emirates, Time series analysis

Introduction

Both classical and modern economists agree that trade helps economies grow. Changes in trade happen on both a country level and between countries, mostly because the world is becoming more connected. Making trade easier is a big part of bringing economies together. Free trade deals are common ways to help this happen. Many nations are now focusing on working closely with their neighbors to boost their economies (Irshad & Xin 2014). Economic efficiency in making products relies on several things: having up-to-date technology, being in the right place, having money to invest, having natural resources, and having skilled workers. Also, certain rules and goals matter. Thanks to trade between countries, people can get the things they need at a lower cost. This also lets countries focus on what they're best at production (Majeed, 2006). Trading with other countries is important for making money from abroad and helping the economy grow. Both older and newer experts agree that this kind of trade is crucial for any country's financial health. When a country sells its products to another country, that's called exporting. Exporting is good because it helps both the world and the country doing it, but there's also a risk that it could hurt some local businesses. Overall, being able to export is key to a country's economic well-being (Ahmad et al., 2017).

Zada et al. (2011) looked at what influences exports from Pakistan. They used data from 1975 to 2008 and a specific model to understand supply and demand. They took a close look at Pakistan's trade with its main partners. The results showed that international prices and demand really affect what Pakistan exports. They

found that global economic conditions, world prices, and exchange rates were key factors in exports. On the supply side, the most important things were price and income. Their study showed that countries like those in the Middle East, NAFTA, and the European Union wanted more exports from Pakistan. The study suggested paying more attention to these regions to boost exports from Pakistan. Ghafoor et al. (2013) delved into the mango export market from Pakistan to the United Arab Emirates. They used data from a random sample of 40 mango exporters, collected through in-depth interviews with a pre-tested questionnaire. Their analysis looked at various factors such as purchase prices, marketing costs, and selling prices to assess the profitability of exporting mangoes to the UAE. The study found that the gross margin per ton of mango was Rs. 31,333, with net export margins of Rs. 11,228 per ton and a percentage margin of 52.3%. Their regression analysis showed that key factors affecting mango exports included the exporter's education level, professional experience, average marketing costs, and possession of an ISO certificate. The study concluded that to secure better prices in the UAE market, Pakistan needs to cut down on marketing costs and focus on quality improvement.

Mohmand and Wang (2013) analyzed the persistent trade deficit facing Pakistan's trading landscape. The core reasons they identified were Pakistan's focus on specific trade partners and a lack of export diversity. Their research employed a gravity model and used panel data from 1995 to 2011, encompassing 142 countries. Unlike other studies that focused solely on traditional variables, they also explored additional factors that could impact Pakistan's export performance. Their analysis showed that Pakistan's exports were influenced by both the economic size and GDP of trading partners. The study found that trading with larger economies yielded positive results, confirmed by a highly significant GDP coefficient. Dummy variables for language, religion, and WTO membership also had significant and positive impacts on trade. However, the non-significant value for a common border revealed limited trade with neighboring countries like India, Iran, and Bangladesh. To tackle its trade deficit, the study recommended that Pakistan reevaluate its export strategies and focus on diversifying its product range. It also suggested targeting new markets, especially those close by and more open to international trade. The authors advocated for bilateral trade agreements with bordering countries as a viable solution to improve Pakistan's trade imbalance.

Different research studies were conducted on Pakistan's trade with other countries to estimate the impact of different factors on trade (Javed & Ghafoor, 2013; Meijers, 2014; Javed et al., 2015; Javed et al., 2016; Ambreen et al., 2017; Javed et al., 2017; Hanif, 2018; Javed et al., 2018; Fatima et al., 2019; Nazeer et al., 2019; Javed et al., 2020; Ali et al., 2021; Nazir et al., 2022). Gonzales et al. (1994) had their eyes on five big crops: rice, corn, soybean, sugar, and cassava. What they were really curious about was how the government's rules and giveaways were shaping what gets grown and how well. They put these crops through the wringer, comparing how they stack up in different trading scenarios. We are talking about "import substitution," global trade, and pumping up exports. They even got all mathy with it, using a bunch of rates to measure how much economic oomph these policies were providing. Rice in Indonesia is a slam dunk if you are looking to replace imports but falls flat when it comes to exports—blame it on not-so-great quality and a pretty skimpy global market. Corn came out as the head honcho among these five, especially if it keeps getting better; it could even turn into an export superstar. Soybean and sugar, though? Not so hot. Despite growing like there is no tomorrow, they just are not cutting the mustard in the efficiency department.

Prasad (2000) worked on Fiji's exports. He cooked up a pretty nifty equation model that put a spotlight on two big players: how much dough Fiji's trading partners have and what the going rates for goods are. Prasad didn't just use any old model; he used one that assumes Fiji's exports aren't a perfect swap for what other countries can make themselves. That's what you call an "imperfect substitution model. Prasad added a little twist by factoring in the curveballs that agriculture can throw into the export game—think bad weather or labor strikes. In the grand scheme of things, how much money Fiji's trade buddies have is the big kahuna driving long-term exports. Ruiz and Vilarrubia (2007) told that dummy variables can be smartly used in gravity models to understand export potential, focusing on the Euromed region. They discovered that if you ignore certain time-sensitive factors, like a country's willingness or resistance to trade at a particular time, you might have skewed results. They did not just use the raw data as is; they took the predicted export shares and compared them

with the actual ones. This helped correct any inaccuracies and provided a clearer picture. Most European countries—except for Algeria, Jordan, and Lebanon—were exporting a bit more to the European Union than what the model had predicted. On the flip side, their exports to some EU nations were falling short of what was expected. Plus, apart from the three exceptions mentioned, there seemed to be untapped opportunities for these countries to grow their exports to the United States. Using the gravity model correctly can give us some solid insights into a country's export potential. And, it turns out, there might be some missed opportunities to explore.

Kumar and Mathura (2007) worked on India's tomato exports are doing. They looked at everything from how many tomatoes India produces and exports to where these tomatoes are going. They also wanted to know how changes in trade rules have affected this business. To measure how well India competes in the tomato export market, they used something called an Export Performance Ratio (EPR). They also crunched some numbers to see how the business has changed since the World Trade Organization (WTO) came into play. This helped them figure out the impact of trade rule changes on tomato exports. By using good ol' statistical methods, they pinpointed the key factors that influence India's tomato exports. The results? Well, they found that there is a lot of ups and downs in this market, which is something the decision-makers need to focus on to keep India's game strong in the international tomato scene. Kishore (2009) conducted a research study on India's rice market, spotlighting its significance both as a major producer and exporter. Food shortages led to India tightening its grip on rice exports. On the surface, this move looked like a win-win, protecting Indian consumers from skyrocketing global prices. But there's a twist: this protectionist stance had its downsides. The heavy use of export restrictions, instead of export tariffs, along with monopoly power in rice production, blunted some of the benefits that could have come from lower prices. He delved into the nitty-gritty, evaluating the economic impacts of these trade policies. Using what's called a comparative static model, he weighed the pros and cons of tariffs and subsidies. He found that the overall economic well-being took a hit, even though consumers got a temporary break by confining rice sales to domestic markets.

Hatab et al. (2010) made a study on Egypt's agricultural exports. Using data from 1994 to 2008, they applied a gravity model to get the lowdown on what really makes these exports tick. An uptick of one percent in Egypt's GDP made agricultural exports jump by a whopping 5.42%. Sounds like a win, right? But hold your horses. When they looked at GDP per capita, things got interesting. A rise there actually put a dent in exports. Why? Well, it seems like when people have more money, they buy more stuff—like food. So, the local demand went up, leaving fewer goods to ship out. A weaker Egyptian Pound was like putting rocket fuel in the country's agricultural exports. On the flip side, shipping costs and distance? Yeah, not so much. They put the brakes on sending goods abroad. So, for the folks who make trade policies, these findings are solid gold. If Egypt wants to ship more fruits, grains, and all that good stuff to the world, they've got some serious food for thought right here. Kumar (2010) delved into the ever-changing world of livestock exports, aiming to figure out what's driving the competitiveness of these products. Using the NPC indices as his go-to tool, he explored what was boosting livestock exports' growth and improvement. Post-1991—when trade got a lot more liberal—livestock exports shot up. Specifically, India found its groove in meat exports, although poultry didn't quite make the cut. Buffalo meat was on the rise, partly because not many folks in India were craving it—meaning more for the export market. What really amped up livestock exports were increases in production and productivity, as well as some smart domestic policies. Kumar's big takeaway? If you want to boost exports, ramp up your export supply capacity. It's basically the secret sauce for export growth.

The objective of the study was to estimate the impact of different factors on the exports of Pakistan to the United Arab Emirates and to suggest policy measures for the promotion of exports.

Methodology

The research goal was to investigate the factors influencing trade between Pakistan and United Arab Emirates, as well as imports from the UAE to Pakistan and exports from Pakistan to United Arab Emirate. The study also evaluates the competitiveness and comparative advantages of key agricultural products traded between the

two countries using various methodologies. Clearly defining these variables adds scientific rigor to the study. This section of the research outlines the various data sources and analytical techniques employed to enhance the study's clarity and scientific validity.

Data Collection and Sources

To analyze the factors affecting Pakistan's exports and imports with the United Arab Emirates, various variables were chosen, and time series data from 1975 to 2022 was used for the study. Information on these indicators was sourced from the World Bank, the Federal Bureau of Statistics in Islamabad, Pakistan, the State Bank of Pakistan, the Pakistan Economic Survey, International Financial Statistics, and the International Monetary Fund.

Variables of the Models for Trade with the United Arab Emirates

For the evaluation, time series data is employed to estimate exports and imports. The variables under consideration include Pakistan's total trade with the United Arab Emirates, total imports from the UAE, total exports to UAE, populations of both nations, Inflation in both countries and the exchange rates of both countries.

Exports of Pakistan to UAE

To gauge Pakistan's exports to the United Arab Emirates, the total value of these exports serves as the dependent variable, measured against various independent variables. Time series data, expressed in US dollars in millions, covers the time span from 1975 to 2022.

GDP of Pakistan

The yearly GDP figures are dynamic variables, sourced from World Bank statistical records. These GDP values represent the total economic output for each nation and are denominated in U.S. dollars for easy comparison. As GDP indicates a country's economic size, it's generally assumed that nations with higher GDPs are more likely to engage in greater trade activities with each other. For the study, the GDP data for Pakistan, measured in billions of U.S. dollars, spans from 1975 to 2022.

GDP of United Arab Emirates

The GDP of the United Arab Emirates is a fluctuating variable, represented in billions of U.S. dollars. Data for the UAE's GDP, covering the years 1975 to 2022, is sourced from the World Bank database. Generally, GDP is believed to positively influence trade. The graph showcasing this time series data reveals a non-stationary upward trend. Prior to analysis, it's necessary to stabilize the data series.

Population of Pakistan

Statistics regarding Pakistan's population are obtained from the country's annual statistical yearbook. Population figures, which change over time, are generally expected to have a positive relationship with trade volumes. Essentially, larger markets are likely to engage in more expansive trade activities. However, a counterpoint to consider is that a sizable economy can produce a more diverse range of goods, potentially reducing its dependence on imports from abroad.

Population of United Arab Emirates

Data concerning the population of the United Arab Emirates, sourced from the World Bank, is expressed in millions of people per year. It's generally believed that a larger population positively influences trade. This variable could impact exports in either a positive or negative way but is largely expected to positively affect imports as well. The dataset spans from 1975 to 2022 and serves as an independent variable in the analysis.

Inflation in Pakistan

Consumer price index data, with 2005 as the base year, comes from the International Financial Statistics database managed by the International Monetary Fund. Rising inflation rates within a nation are generally

thought to dampen exports while potentially boosting imports. The CPI data for Pakistan, covering the years 1975 to 2022, is utilized in the study.

Inflation in United Arab Emirates

Data for the consumer price index, benchmarked to the year 2005, is sourced from the International Financial Statistics provided by the International Monetary Fund. It's commonly believed that rising inflation in a country can adversely affect its exports while potentially encouraging imports. This data set for the United Arab Emirates spans from 1975 to 2022 and is used in the analysis.

Pakistani Exchange Rate

In the research, the exchange rate (ER) is a variable that changes over time and is expected to play a crucial role in affecting Pakistan's exports. The exchange rate data, expressed in terms of Pakistani Rupees per US dollar, is obtained from the State Bank of Pakistan and covers the years 1975 through 2022.

Model for Exports from Pakistan to United Arab Emirates

The equation for a Pooled OLS model used for the analysis is shown as follows:

$$Pakexporttouae = \beta_0 + \beta_1(Gdppak) + \beta_2 (Gdpuae) + \beta_3 (Poppak) + \beta_4 (Popuae) + \beta_5 (Infpak) + \beta_6 (Infuae) + \beta_7 (Exchpak) + \beta_8 (Exchuae) + \varepsilon \quad (1)$$

Here's what each component represents:

pakexporttouae: The dependent variable is the exports from Pakistan to the UAE.

gdppak: The independent variable representing Pakistan's GDP.

Gdpuae: The independent variable representing the UAE's GDP.

Poppak: The independent variable representing Pakistan's population.

Popuae: The independent variable representing the UAE's population.

Infpak: The independent variable representing inflation in Pakistan.

Infuae: The independent variable representing inflation in the UAE.

Exchpak: The independent variable representing the exchange rate of Pakistan's currency.

Exchuae: The independent variable representing the exchange rate of the UAE's currency.

β_0, β_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8: These are the coefficients (parameters) to be estimated by the Pooled OLS regression model. Each coefficient represents the impact of the corresponding independent variable on the dependent variable, controlling for the other variables.

ε (epsilon): The error term, representing the unexplained variation in the dependent variable.

In a Pooled OLS model, all observations from different time periods are pooled together to estimate the coefficients, assuming that the relationship between the independent variables and the dependent variable is constant over time. This model does not consider time-series dynamics or individual effects, which may be relevant depending on the nature of your data and research question.

Results and Discussion

Table 1 shows the variable of exports from Pakistan to the UAE has a minimum value of 26.51 suggests relatively low exports at times, while the maximum of 2872.80 indicates significant export volumes during certain periods. On average, exports seem to be around 767.20, with a standard deviation of 674.30626, indicating notable variability in export levels. This variable represents Pakistan's GDP (Gross Domestic Product). The minimum value of 11.23 indicates a lower economic point, while the maximum of 376.53 suggests more prosperous times. On average, Pakistan's GDP appears to be around 121.87, with a standard deviation of 112.31855, indicating some economic volatility. This variable stands for the UAE's GDP. The minimum value of 14.72 reflects a lower economic point, while the maximum of 507.53 suggests a more prosperous time for the UAE. On average, the UAE's GDP appears to be around 168.38, with a standard

deviation of 153.50394, indicating economic fluctuations. This variable deals with Pakistan's population. The minimum value of 68.13 represents a lower population point, while the maximum of 235.82 suggests a larger population at times.

Table 1. Descriptive statistics for exports from Pakistan to the United Arab Emirates.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
pakexporttouae	48	26.51	2872.80	7.6720E2	674.30626
gdppak	48	11.23	376.53	1.2187E2	112.31855
gdpuae	48	14.72	507.53	1.6838E2	153.50394
poppak	48	68.13	235.82	1.4902E2	51.93439
popuae	48	.54	9.44	4.3040	3.25790
infpak	48	10.85	361.62	1.0856E2	100.78288
infuae	48	35.53	157.54	90.6568	43.10160
exchpak	48	9.90	204.87	56.9908	47.70079
exchuae	48	3.67	3.96	3.6965	.07278

On average, Pakistan's population seems to be around 149.02, with a standard deviation of 51.93439, indicating some variation in population numbers. Now, let's turn our attention to the population of the UAE. The minimum value of 0.54 represents a smaller population point, while the maximum of 9.44 suggests a larger population at times. On average, the UAE's population appears to be around 4.3040, with a standard deviation of 3.25790, indicating some population variability. This variable is all about inflation in Pakistan. The minimum value of 10.85 represents a period of relatively low inflation, while the maximum of 361.62 suggests a time of higher inflation. On average, inflation in Pakistan appears to be around 108.56, with a standard deviation of 100.78288, indicating significant variation in inflation rates. Lastly, we've got inflation in the UAE. The minimum value of 35.53 shows a period of relatively low inflation, while the maximum of 157.54 suggests a time of higher inflation. On average, inflation in the UAE seems to be around 90.6568, with a standard deviation of 43.10160, indicating some fluctuation in inflation rates. This variable deals with the exchange rate of Pakistan's currency. The minimum value of 9.90 represents a lower exchange rate, while the maximum of 204.87 suggests a stronger exchange rate. On average, the exchange rate in Pakistan appears to be around 56.9908, with a standard deviation of 47.70079, indicating some volatility in exchange rates. Finally, we've got the exchange rate of the UAE's currency. The minimum value of 3.67 represents a lower exchange rate, while the maximum of 3.96 suggests a stronger exchange rate. On average, the UAE's exchange rate seems to be around 3.6965, with a very low standard deviation of 0.07278, indicating a high degree of stability in their exchange rate.

Regression (Pooled OLS) results

Table 2 shows the value of R which is approximately 0.950, indicating a strong positive linear relationship between the independent variables and the dependent variable. The value of R Square is 0.903, suggesting that about 90.3% of the variance in the dependent variable is explained by the independent variables. This is a reasonably high level of explanatory power. The value of Adjusted R Square is 0.884, which accounts for the complexity of the model. Even after considering the number of predictors, it still explains about 88.4% of the variance in the dependent variable. This suggests a model that is relatively robust. The value of F-statistic is

45.59, indicating the overall significance of the regression model. While not extremely high, it suggests that the model is statistically significant. The value of Sig. (Significance level) associated with the F-statistic is very close to zero (0.000a), indicating high statistical significance. This means that the model's relationship between the independent and dependent variables is highly unlikely to be due to random chance.

Table 2. Factors of export of Pakistan to the United Arab Emirates.

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-2293.437	2604.408	-	-.881	.384
gdppak	-8.439	2.459	-1.406	-3.431	.001***
gdpuae	9.706	1.589	2.210	6.109	.000***
poppak	8.817	6.780	.679	1.300	.201
popuae	295.989	198.693	1.430	1.490	.144
infpak	-14.886	6.236	-2.225	-2.387	.022***
infuae	-11.542	18.071	-.738	-.639	.527
exchpak	12.424	5.755	.879	2.159	.037***
exchuae	492.740	663.748	.053	.742	.462
R			.950a		
R Square			0.903		
Adjusted R Square			0.884		
F			45.59		
Sig.			.000a		

Note: Dependent Variable: pakexporttouae; ***= significance at 5 percent level of confidence; **= significance at 10 percent level of confidence.

A one-unit increase in Pakistan's GDP corresponds to an 8.439 unit decrease in the dependent variable. This is statistically significant at the 0.05 level given the p-value of 0.001. A one-unit increase in UAE's GDP results in a 9.706 unit increase in the dependent variable. This is highly statistically significant, as indicated by a p-value of 0.000. A one-unit increase in Pakistan's population is associated with an 8.817 unit increase in the dependent variable. However, this is not statistically significant with a p-value of 0.201. A one-unit increase in the UAE's population increases the dependent variable by 295.989 units. This is not statistically significant at the 0.05 level, given the p-value of 0.144. A one-unit increase in inflation in Pakistan leads to a 14.886 unit decrease in the dependent variable. This is statistically significant at the 0.05 level, with a p-value of 0.022. A one-unit increase in UAE's inflation corresponds to an 11.542 unit decrease in the dependent variable. However, this is not statistically significant with a p-value of 0.527. A one-unit increase in Pakistan's exchange rate is associated with a 12.424 unit increase in the dependent variable. This effect is statistically significant at the 0.05 level, as indicated by a p-value of 0.037. A one-unit increase in UAE's exchange rate leads to a 492.740 unit increase in the dependent variable. However, this effect is not statistically significant with a p-value of 0.462. The GDP of both Pakistan and the UAE, along with the inflation rate in Pakistan and the exchange rate in Pakistan, are significant predictors for the dependent variable. The effects of population in both countries and inflation in UAE are not statistically significant, indicating that they may not be as crucial for understanding the variation in the dependent variable. As such, any policy or strategy should focus on the significant variables for effective outcomes.

Conclusions and Recommendation

Given the positive relationship between the variables of GDP of Pakistan and GDP of UAE with the dependent variable, policies should focus on promoting economic diversification and development in both regions. Encourage investment in various sectors to strengthen economic foundations. Acknowledging the negative impact of inflation of Pakistan on the dependent variable, implement targeted measures to control inflation in the relevant region. Consider monetary policies and interventions to stabilize prices and foster economic stability. Acknowledging the positive relationship between the exchange rate of Pakistan, implement policies that aim to maintain exchange rate stability. This could involve interventions to manage currency fluctuations and promote a favorable exchange rate environment.

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