

# The Impact of Foreign Trade on Employment in Pakistan

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**Abstract.** This study investigates the relationship between foreign trade and employment in Pakistan from 2000 to 2022, employing the Johansen co-integration approach and vector error correction model (VECM) as econometric methods. The variables examined include employment in industry, services, and agriculture (EMP), along with exports (EX) and imports (IM). The results indicate a long-term connection among these variables, showing that higher exports positively affect employment in Pakistan, while increasing imports have a negative impact, leading to reduced production and labour displacement. The study recommends the government to prioritize export promotion as a strategy to tackle unemployment, as it is expected to have a significant positive effect on employment in the long run. Additionally, measures to curb excessive imports, which have adverse implications for employment, can contribute to improving the employment situation in the country.

**Keywords:** Employment; Exports; Imports; Vector Error Correction Model.

## 1. Introduction

Pakistan's economy heavily relies on foreign trade, facilitating the exchange of goods, services, and capital with other nations. Trade relations play a crucial role in the country's economic development and employment scenario. However, unemployment remains a pressing concern that requires effective policies to be addressed. According to World Bank data from 2022, Pakistan's total working-age population was around 121.01 million, with a labour force participation rate of 43.17% and 96.6 million people either employed or actively seeking employment. Despite this, the unemployment rate declined slightly at 5.55%, indicating a significant number of jobless individuals. In terms of foreign trade, Pakistan's trade activities are dominated by imports and exports across various sectors. In the year 2022, total imports were recorded at US\$84.32 billion, while exports amounted to US\$38.6 billion. This resulted in a trade deficit of US\$44.80 billion. The major exports included textiles and garments, rice, leather products, and sports goods, while the main imports consisted of petroleum, machinery, electrical equipment, and iron and steel products.

Despite the substantial trade deficit, foreign trade remains an integral part of Pakistan's economic growth strategy. The country aims to enhance trade relations and capitalise on products with comparative advantages to boost exports and create employment opportunities. However, addressing unemployment requires a comprehensive approach that encompasses not only trade but also investments in education, skills development, and infrastructure. Therefore, this study focuses on investigating Pakistan's foreign trade and its impact on employment. The research aims to identify the major causes of unemployment and assess whether increasing foreign trade can help address this issue. The objectives of this thesis are to analyse Pakistan's general trade situation and investigate the effects of changes in foreign trade on employment. By considering updated data and the factors mentioned, the research aims to explore whether changes in Pakistan's foreign trade have implications for its employment situation.

## 2. Literature Review

The field of study on foreign trade and employment is well-supported by various relevant literatures. Dewitt and Navalur [1] proposed that trade, mechanical cycle, foreign investment, and economic



development phases can enhance a country's foreign trade. According to Chand [2], international trade plays a vital role in the global economy, as it constitutes a substantial portion of GDP in many countries. Tandoğan [3] explored the impact of exports on regional employment in Turkey, revealing a positive correlation between regional exports and employment; an increase in regional export activity boosts job creation. However, Sasidharan [4], in his study on the Indian manufacturing sector, found limited evidence of export orientation significantly impacting employment, while import penetration negatively affected employment generation. Morawczynski and Wach [5] suggested that countries with a relative abundance of certain production factors could benefit and gain higher inflows from trade, especially with products possessing high labour endowment. Akcoraoglu and Acikgoz [6] used the ARDL technique to find a strong and positive association between foreign commerce and employment. Polat and Enes Ertad [7] produced evidence showing exports have a beneficial impact on employment, meaning that boosting a country's exports can lead to increased job possibilities.

Furthermore, Hoekman and Winters [8] admit that the long-term trading system produces better-paying employment and wage responses but it does not eliminate wage disparity completely. According to Gocer and Mercan [9], implementing an export and foreign direct investment system may successfully combat unemployment in a country. AKKU [10] proved that an increase in export demand leads to a larger requirement for labour, which leads to more employment. On the other hand, Kletzer [11] asserts that the rise of imports is strongly associated with a decline in employment. Magyari [12] conducted a study on imports and employment, concluding that imports have negative effects on employment. In conclusion, foreign trade, especially exports, positively impacts employment by creating more job opportunities through comparative advantages. However, imports may lead to employment challenges in certain sectors, emphasizing the need for strategic trade policies to optimize employment outcomes.

### 3. Research Methodology

This study analyses the impact of foreign trade on employment in Pakistan from 2000 to 2022. Data from the World Bank, Pakistan Bureau of Statistics, and State Bank of Pakistan were used for employment in industry, services, agriculture, and imports and exports with key trading partners (United States, China, Germany, Saudi Arabia, UAE, and UK). Meanwhile, The Panel Vector Error Correction Model (VECM) was employed to examine the long-term and short-term relationships between these variables.

#### 3.1. Unit Root Test

Stationarity is a crucial requirement when working with time series data because non-stationarity can lead to spurious regression results and inaccurate forecasts. Stationarity refers to the property of a time series whose statistical properties remain constant over time. To check stationarity, the Augmented Dickey-Fuller (ADF) test is utilized. The ADF test involves regressing the first difference of the time series data on lagged values and a trend component with an econometric model represented as:

$$\Delta y_t = \alpha + \beta_t + \gamma y_{t-1} + \sum_j^p \gamma_j y_{t-1} + \varepsilon_t \quad (1)$$

Where  $\Delta y_t$  is the first difference of the time series data,  $\alpha$  is the intercept term,  $\beta_t$  represents the trend component allowing for a linear time trend,  $\gamma y_{t-1}$  is the coefficient of the lagged value of the original time series ( $y_{t-1}$  and  $\varepsilon_t$  is the error term). To evaluate the ADF test results, if the t-statistics are less than the critical value or the p-value is greater than 5%, the null hypothesis of a unit root (non-stationarity) cannot be rejected. Conversely, if the t-statistics are greater than the critical value or the p-value is less than 5%, the null hypothesis is rejected, indicating that the time series is stationary and suitable for reliable analysis and forecasting.

$H_0: \gamma = 0$ , it indicates that  $y$  has a unit root or is non-stationary

$H_1: \gamma = 0$ , this suggests that  $y$  does not have a unit root or is stationary

### 3.2. Johansen Co-integration Test

The Johansen Co-integration Test is used to test the long-run relationship of variables and to determine if they can form a co-integrating relationship. This test is particularly valuable in quantitative trading for forming portfolios in mean reversion trading strategies. By estimating linear combination values, the Johansen test examines whether the variables are stationary together, implying co-integration even if they were not stationary individually. One advantage of this test is that it can yield valid results about co-integration regardless of whether the variables are integrated at order one  $I(1)$ , order zero  $I(0)$ , or a combination of both, making it a versatile tool for identifying co-integration between variables.

### 3.3. Vector Error Correction Model (VECM)

The vector autoregressive (VAR) model is a general framework used to describe the dynamic interrelationship among stationary variables. Before applying the VAR model, it is essential to determine if the data levels are stationary. If not, taking the first differences of the series can usually make them stationary. The vector error correction (VEC) model is a special case of VAR for variables that are stationary in their differences  $I(1)$ , and it can also consider co-integrating relationships among the variables. VECM incorporates an error correction term into the regression model, making it suitable for testing the long-term stable causality between co-integrated variables and measuring movements that positively cause long-term stable causality. If a set of variables has co-integration with each other, VECM is an appropriate technique for estimating the relationships and adjusting changes in the variables.

### 3.4. Research Hypothesis

Two hypotheses are included in the underlying study.

$H_0$ : Imports has no significant effect on employment of Pakistan.  $H_1$ : Imports has a considerable effect on employment of Pakistan.

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## 4. Results and Discussion

### 4.1. Stationarity

The ADF test was conducted for stationary testing, using lags of 5 by Schwarz's criterion and 4 by Final Prediction Error (FPE). Results indicated that all variables, except for exports at the level, were not stationary as their p-values were greater than the critical value of 0.05. Therefore, the ADF test was applied at the first difference to achieve stationarity. The p-value at the first difference level was less than the critical value, allowing us to reject the null hypothesis ( $H_0$ ). Table I shows the probability values of the variables.

### 4.2. Johansen Co-integration Test

Using the selected optimal lag order of 1, the test results in Table I show that we reject the null hypothesis  $H_0$  for none\* and at most one\* because their p-values are less than 0.05. However, we accept the null hypothesis  $H_0$  for at most 2 as its p-value is 0.5553, which is higher than 0.05, indicating the presence of two co-integrating equations in the model. Based on the results from Table II, we reject the null hypothesis  $H_0$  for none\* and at most 1\* due to their p-values being less than 0.05. Based on the results from Table II, we reject the null hypothesis  $H_0$  for none\* and at most 1\* due to their p-values being less than 0.05.

**Table 1.** Augmented Dickey Fuller Test

<i>Variables</i>	<i>ADF</i>	
	<i>At level</i>	<i>At first difference</i>
Employment	0.996	0.000

**Table 2.** Trace Statistics Test

Hypothesis no. of CE.	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
NONE	29.52	0.0000	17.88	0.0065
AT MOST 1	15.94	0.0141	17.70	0.0070
AT MOST 2	4.911	0.5553	4.911	0.5553

### 4.3. Vector Error Correction Model

The study examines the long-run and short-run relationships between employment and exports, as well as employment and imports in Pakistan. The results of the Vector Error Correction Model (VECM) in Table III show that exports have a significant positive impact on employment in Pakistan in the long run. The R-squared value of 0.868019 indicates that approximately 86.8% of employment fluctuations are influenced by exports and related variables over the long term. This high R-squared value suggests a strong relationship between exports and employment, supporting the notion that an increase in exports can lead to a corresponding increase in employment levels in the country. In contrast, the analysis of the long-run relationship between employment and imports reveals a negative relationship. The R-squared value of 0.198690 indicates that only around 19.8% of employment fluctuations are affected by imports and related factors in the long run. This finding suggests that imports do not have a significant impact on employment in Pakistan in the long-term.

**Table 3.** VECM for Exports and Employment

	<i>Co efficient</i>	<i>Std.Error</i>	<i>t-statistics</i>	<i>Prob.</i>
<b>C (1)</b>	0.000000107	0.0000264	0.004042	0.0468
R-squared	0.869019	Mean depend var		0.0000000424
Adjusted R-squared	0.095958	S.D dependent var		0.736941
S.E. regression	0.700692	Akaike info criteria		49.87237
Sum squared resid	19.14778	Schwarz criterion		50.43444
Log likelihood	-44.62653			
F-statistic	1.934062			
Prob (F-statistic)	2.732825			

**Table 4.** VECM for Imports and Employment

	<i>Coefficient</i>	<i>Std.Error</i>	<i>t-statistics</i>	<i>Prob.</i>
<b>C (1)</b>	-0.00000000463	0.0000036	-0.001287	0.999
R-squared	0.198690	Mean depend var		0.0000000424
Adjusted R-squared	0.095958	S.D dependent var		0.736941
S.E. regression	0.700692	Akaike info criteria		48.00007
Sum squared resid	19.14778	Schwarz criterion		48.56214
Log likelihood	-44.62653			
F-statistic	1.934059			
Prob (F-statistic)	3.014253			

In the short run, the study utilizes the Wald test to investigate the causality between employment and exports. The results of the Wald test show that the probability is high, indicating that the null hypothesis of no short-run relationship between employment and exports cannot be rejected. This

means that there is no significant short-term causality running from exports to employment. In other words, changes in exports do not immediately impact employment levels in the short term.

**Table 5.** Wald Test Results for Exports

<b>Wald Test</b>			
<b>Test Statistic</b>	Value	Df	Probability
<b>Chi-square</b>	4.81E-05	2	1.0000

**Table 6.** Wald Test Results for Imports

<b>Wald Test</b>			
<b>Test Statistic</b>	Value	Df	Probability
<b>Chi-square</b>	3.231948	2	0.1987

## 5. Summary

The study concludes that foreign trade has a significant effect on employment in Pakistan, with exports playing a crucial role in boosting employment in the long run. However, the impact of imports on employment is found to be negative. The results reject the null hypothesis that foreign trade has no significant effect on employment and support the alternative hypothesis that foreign trade indeed influences employment in the country. To take advantages of this positive relationship, the study recommends that effective policies are adopted to promote exports and enhance employment opportunities. By implementing precautionary measures and focusing on export-oriented strategies, the country can potentially increase its employment rate. It is important to note that the results are based on specific variables of employment, such as agriculture and services, and are specific to Pakistan as a developing country. The findings may vary for countries with different economic situations or underdeveloped economies. Future researches could explore other variables, different time periods, and different countries to gain a more comprehensive understanding of the relationship between foreign trade and employment.

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