

Impact of US-Tariff Policy on the Economic Growth of Pakistan

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Abstract

The key objective of this study is to find the Impact of US Tariffs on the Economic growth of Pakistan using key variables (Pakistan US Export Rate, Gross Capital Formation (GCF), Tariff Rate and Inflation) which are key factors for identification of the economy. As, the country specific research isn't available for such analysis of Long-run and Short-run purposes. This research is based on the annual Time-series data from 2003 to 2024. For analysis, ARDL Model was used. The data was mix of stationary at 0 Level I(0) and at first level difference I(1), so the ARDL model best supported the analysis. To further support and analysis, Serial Correlation, and Heteroskedasticity tests were applied. Inflation's impact on Economic Growth was found negative in the long-run with p-value = 0.036. Where 1% increase in Inflation will lead to the negative impact on growth of 0.13%. And for other variables, long-run relation is insignificant. GCF and Tariff rate have positive and significant impact on short-run with $p < 0.05$. The Error Correction Term (ECT = -1.49), that represents the high-speed adjustment to the equilibrium with 149%. ARDL Bounds Test (F=7.10) showed the Long-run Relation. This research provides the fundamental impacts on Economical situations of Pakistan, in Short-run Policies (Investments (GCF), and Tariffs) and in Long-run Policies (Inflation Control). For better results in small sample size, ARDL Model was used, that is the best fit for such circumstances.

Keywords: Economic Growth, ARDL Cointegration, Inflation, GCF, GDP Growth, Error Correction Model, Trade Circumvention, Aggregate Demand.

INTRODUCTION

Background of Study

Tariff is a tax imposed on goods imported from other countries. Tariff is imposed for two major reasons; the first one is to generate revenue for the government and the second is to protect the domestic industries from foreign competition by making imported goods more expensive than local goods.

Tariffs influence business decisions, consumer preferences, and balance of trade in a country. Tariffs provide a competitive advantage to the local producers by creating a price difference between the local goods and the imported goods. The variation in the patterns of production and consumption due to this wedge has an ultimate effect on the economic growth in the long term.

The effect of tariffs, however, is not uniform across countries. A study revealed that in Pakistan, tariffs, along with the smart investment and import substitution policies, promoted the long-term growth. Another point that they made is that there is no standard policy to tariffs and development,

how they relate is complex. For example, (Abilio, 2025) revealed in Angola, domestic investment was promoted by the use of tariffs, which promoted growth in the country. Moreover, in research on G20 countries (Sowrov, 2024) discovered that an increase in tariffs give rise to economic growth in the long run. Interestingly (Sowrov, 2024), also mentioned that there are few negative effects on the implementation of tariffs in the countries which have stronger institutions. (Asif, Amjad, Nazir, Saeed, & Jan, 2022)

Nowadays, manufacturing does not take place most often in one country. An example of that can be a car or a smartphone which can contain components of five or six nations. Thus, tariffs do not only influence the final product, but every production phase is interrupted. This argues that such indirect effects hype costs and put investment off, even in other unrelated sectors. Although protectionist policies might be effective in the short-run to cushion the local industries, over-protection will suppress innovativeness and competitiveness. This is a trade-off that policymakers have to strike. (Eugster, Jaumotte, Macdonald, & Piazza, 2022)

Tariffs are an important economic tool being used in the United States, the largest economy in the world and a major trading partner to the developing nations. The effects of the U.S tariff policy have extended far beyond the immediate trading partners of the United States, namely China and the European Union, to the developing economies like Pakistan, whose exports and imports are affected indirectly by the changes in tariff policy in the United States especially beginning in 2016. Economy of Pakistan is very dependent on trade particularly in textile sector, agriculture and manufactured products. The openness to trade, foreign investment and stability in the global market have a strong correlation with its economic performance in the form of growth of the GDP. Previously, a lack of supply chains that influence the demand of the Pakistan exports, exchange rates, inflation and capital formation is the answer to the U.S increasing tariffs. In that way, the policy implications to the U.S. tariff policies regarding the long-term economic development of Pakistan are significant both to the policy-makers and economists.

Over the last two decades, the GDP rate, exchange rate and inflation in Pakistan have been fluctuating in line with the world trade relations. Therefore, the examination of the influence of U.S tariff policy on the economy development of Pakistan may make a good source of information on the effect of the external trade restrictions on economic development of the developing countries in the globalized world.

Problem Statement

There are a lot of studies focused on the international trade wars or the general tariffs and not on how it has affected the developing nations like Pakistan. The correlation between U.S. tariffs, Pakistan exchange rate, inflation and growth in GDP is not obvious. To analyse this gap in this research paper we have used ARDL (Autoregressive Distributed Lag) econometric model to analyse the short-term and long-term dynamics.

The Trump Administration (2017-2021) has changed the U.S. trade policy, redefining the world trade. These changes in the export rate also affected growth, inflation and stability of Pakistan. Nevertheless, limited research has been carried out to compare the effects of U.S tariffs on the Pakistani economy.

Research Objectives

General Objective:

The general objective of the study is that how the US tariff policy has impacted the Pakistani economic growth in terms of export rate, inflation rates, growth rates and tariff rates.

Specific Objectives:

To identify the long-run cointegrating relationship between U.S tariff policy and economic growth of Pakistan considering the Pakistan's GDP growth rate.

The quantified direction and magnitude of the impact of raising tariff rates on the GDP growth of Pakistan.

Analyzing the impact of mediating variables, Pak-US Export Rate, Inflation and Gross Capital Formation in transferring the effects of US tariff policy on the Pakistan's real economy.

Research Questions and Hypotheses

1. Is there a the long-run relationship between U.S tariff policy and economic growth of Pakistan considering the Pakistan?
2. What is the of the impact of raising tariff rates on the GDP growth of Pakistan?
3. What is the impact of mediating variables like Pak-US Export Rate, Inflation and Gross Capital Formation in transmitting the effects of US tariff policy on the Pakistan's real economy?

Hypotheses

H₁: There is long-run relationship between US-Tariff Rate on the Economic growth of Pakistan.

H₂: There is long-run relationship between Pak-US Export Rate on the Economic growth of Pakistan.

H₃: There is long-run relationship between Gross Capital Formation on the Economic growth of Pakistan.

H₄: There is long-run relationship between Inflation on the Economic growth of Pakistan.

Importance of the Study

This research is useful due to several reasons. It highlights the objective facts in the effect of the U.S. tariff policies on the macroeconomic performance of a developing nation which is understudied in literature. It is also significant in a way that it considers tariff effects in a macroeconomic model using ARDL. Also, the research results will enable investors and the business executives to understand how external trade shocks have effects on domestic development. And it will help them make more suitable strategic and investment decisions.

Scope of the Study

This research focuses on Pakistan's macroeconomic indicators only for the period which has available and consistent data on the independent variables used in study. The study utilizes the annual time-series data and apply ARDL bounds testing procedure because the study method is suitable when data is limited, in terms of specific tariff measures between U.S. and Pakistan.

Limitations of the Study

The study is based on the rates of tariffs implemented and the proxy variables of the changes in global trade in Pakistan compared to bilateral data. It also excludes the influence of other variables that define the increase in the GDP i.e. political stability and foreign aid.

LITERATURE REVIEW

In this chapter we'll analyse and understand the past studies and theories that make a base of such topics. The work available for the analysis. This chapter will assist in understanding the relationship between US Tariff Policy and Pakistan's Economic Growth.

Empirical Review

Global Tariff Studies

In this paper, author use macro-economic regression model and investigate how tariff grows imported raw material cost. And furthermore, Tariffs imposed over the period of 2018-19, also known as President Trump's Trade Policy. The paper finds that the Tariffs were implemented to protect the American industries and reduce trade imbalances, but it caused creating several negative consequences for both U.S. consumers and businesses. (Daniel, 2019)

The study shows that Tariffs increased the cost of imported goods, which showed inflationary results. Since, the major part of U.S. industries in dependent on the imported raw materials and intermediate goods that raised the prices of American households and production costs. As a result, some U.S. firms lost competitiveness in both local and international markets. The retaliatory tariffs imposed on U.S. especially by China hurt U.S. importers, including farmers and manufacturers, who faced reduced access to foreign markets. (Daniel, 2019)

Further the tariffs were supposed to raise revenue and protect the home industries, and it raised the revenue but it harmed more than the generated revenue, means the overall impact was negative as the costs to consumers and industries reduced the benefits. In short, the study concluded that tariffs functioned like the hidden tax shifting the burden onto the household and reducing the overall economic efficiency. (Daniel, 2019)

Pakistan Specific Studies

In this study (Nasir, 2020) analyse Pakistan's tariff policy (tariff rate) with the help of descriptive policy analysis approach. Further, demonstrates the implications of tariff policy, as tariffs were introduced for three main causes, "Protection of Domestic Industry", "Export Promotion and "Revenue Generation", these causes are called "Tariff Tripod". The study shows the protection has been granted through high tariffs, to the home industries particularly for automotive and textile industries. However, despite the high tariffs for decades these industries have remained under protection of Government and so these industries can easily make innovations and create a quality but despite that these industries have remained weak and low exports have made them inefficient for the innovation and making the cost-effective products. But there are other reasons too! Like, Pakistan has presented different schemes to facilitate the industries and raise the export, schemes like Duty and Tax Remission of Exports (DTRE), Manufacturing Bonds, Export-oriented units and Export processing zones to help exporters to get raw material and machinery cheaper and without paying import duties. These are schemes are supposed to make export cheaper and competitive but the problem is that it is too complicated and require too much paper work, so it get hard for Small and Medium Enterprises (SMEs) to get this facilitation so they get the material from the middle men, that costs them a lot to make the manufacturing cost effective.

(Nasir, 2020) also argues that the tariffs are also levied for the revenue generation purpose, as nearly half of the Pakistan's Federal Board of Revenue (FBR) collections come from imports, mainly in form of sales tax and withholding tax but this also encourage the under-invoicing, misdeclaration and smuggling, especially along the Pakistan-China trade corridor and the porous

Afghan border. One of the best findings in the study shows that when Pakistan lowered its average most-favoured nation (MFN) tariff rates from 25% in 2000 to around 12% in 2019, both trade volumes and revenues increased, contradicting the prevailing policy mindset.

The paper says that giving protection to the local industries should only be temporary, with a clear end date so that companies don't rely in protection for always. Any tax exemptions or concessions should be part of the official tariff system, and not given through special orders (SROs) with often benefit only powerful groups. It also recommends bit of removing import duties on raw materials and machinery, because cheaper puts would make local industries more competitive. Instead of raising tariffs again and again to raise revenue and for protection purpose, the government should focus on making customs more efficient and reliable through automation and risk-based checks. (Nasir, 2020)

The study on CPEC use quantitative approach to examine long-run growth model and macro-economic forecasting framework. The framework recommends Chinese investment and technology will support Pakistan's economic development. The China-Pakistan Economic Corridor (CPEC) has attracted worthwhile scholarly attention as one of the most game changing effort for Pakistan's economy. The study highlights CPEC as a mutually beneficial alliance that not only consolidate bilateral connections between Pakistan and China but also creates wider local consequences. Researchers researches that the scheme can boost Pakistan's economy by rising trade, efficient energy supply and increasing industries. With Chinese investment and transfer of technology, Pakistan's will update its infrastructure that caned to long term economic stability and high growth in GNP and GDP. (khan, Iftikhar, Shakir, & Marri, 2021)

Previous studies shows that the CPEC scheme can significantly and efficiently improves Pakistan's industrial process. Before CPEC, industries face a wide range of issues due to low productivity and poor exports. Nevertheless, with the help of new energy projects and far better transport infrastructure, industries are expected to grow more efficiently, by reducing cost and become more competitive globally. This industrial growth is closely linked to employment opportunities. Scholars highlight that as CPEC projects are accomplished, new industries will lead to more jobs, declining unemployment and helping to reduce poverty in underdeveloped areas. This can cause results as more efficient economic opportunities and improve livelihoods for all communities. (khan, Iftikhar, Shakir, & Marri, 2021)

CPEC Can help us to control inflation by rising supply and providing more options in the market, which can cause better living standards. Nevertheless, some scholars worry that overlying on Chinese firms might affect local small and domestic businesses. Most researchers assume that CPEC can lead to the transformation of Pakistan's economy by expanding and improving trades, businesses and connectivity. It's a difficult plan that can increase Pakistan's GDP by providing jobs and benefits consumers, making it more crucial for Pakistan's future growth. (khan, Iftikhar, Shakir, & Marri, 2021)

In this paper author use review policy and differentiation tariff analysis to estimate Pakistan's earning-huge tariff system and further discuss that unplanned tariff increase manufacturing cost and business competitiveness. And discussed more Pakistan's tariff policy has prioritized creating profit over encouraging strategic trade goals, which has negatively affected the economy. This approach has crumble industrial competitiveness, increased production costs, and created a strong anti-export bias. Pakistan's difficult tariff system has caused problems like incorrect invoicing and smuggling which can lead to various revenue losses. To solve this, the authority has highlighted a new policy designed at breaking down tariffs and supporting trade. The policy aims to decline tariffs over the next 5 years, with the higher custom duty finished at 15%. This transfer is expected to increase export, motivate domestic value addition, and boost competitiveness. Nevertheless, some scholars and researchers warn that breaking down tariffs could high input costs for particular sectors and negatively affect consumer welfare. Furthermore, previous attempts to defend infant industries have had a combined result, with sectors like automotive struggling to become

competitive. Rather than these concerns the authority highlights that the rectify will drive economic growth and attract investment. (Qadir, 2020)

This research investigates implications of tariff, exchange rate, and investment efficiency on Pakistan's economic growth using secondary data 1980 to 2020 and Johansen cointegration was applied in this study to investigate economic growth as dependent variable and exchange rate, tariff, investment efficiency as independent variables. The results of this study support long term growth when strong exchange rate help and diminish tariff. And also investigate impact of currency fluctuation on economic development negative consequences of exchange rate unpredictability also consequences of poor managed currency rate. Fixed and variable exchange rate is explored and the relationship between GDP and real currency value and highlighted supply and demand. (Khan, Nasim, & Khan, 2024)

In this research currency devaluation explored its potential to make import more expensive and export more profitable influence economic growth. The main target of this research is understood how investment, exchange rate, and tariff influence Pakistan's economic growth and also give idea to mitigate negative effects. (Khan, Nasim, & Khan, 2024)

The research discovered that Pakistan's economy grows more effectively when it maintains a stable exchange rate and sensibly use of capital and the report suggests Pakistan to reduce tariff, increase investment efficiency and keep stable exchange rate. (Khan, Nasim, & Khan, 2024)

US-Pakistan Relations

The paper based on quantitative approach author use GARCH volatility model to find out relationship between tariff, financial uncertainty, and market stability. The Trump administration's tariff policies have gained a great deal of intellectual credibility due to their devastating impact on global trade and financial markets. It is previously recorded that when countries charge tariff rate on imports it can create big reactions in stock exchange and currency market. By overviewing previous studies that shows that stock prices usually drop after tariffs are announced, and currency value can't be predicted. This cause uncertain environment and make investor unsure. These findings confirm that protectionist trade measures have translated into immediate financial costs, with market value fluctuations reported to be in the trillions of dollars. Tariffs not only affect the economy in negative way directly but also create uncertain environment, making investors nervous and increasing the risk. (Ayatollahi, 2025)

This uncertain environment not only affect decision making but also affect investors mindset about investing or not. Behavioural finance perspectives suggest that this uncertainty makes investors nervous, leading to overreaction and increased volatility. Some businesses and enterprises were affected negatively more due to tariffs, on the other hand while other industries found some ways to adapt or even survive in these critical situations. For example, domestic businesses or trade sectors me face challenges, while multinational businesses stay adapt and agile according to current situation and reduce their losses. The US-China dispute had major political and economic effects. It created revenge, disrupted supply chains and caused financial instability. By facing these issues consumer faced high prices and international market became no more efficient. By combining all, the tariffs imposed during the trump government negatively affect the financial condition and caused uncertainty, which can impact the economy long-lasting. This combination underscores the importance of predictable trade policy and transparent communication to protect financial markets and limit economic shocks. (Ayatollahi, 2025)

This study analyses that Pakistan-US economic relation during Trump's first-time presidency (2017-2021). The theory of realism has been applied to the research for better understanding of the topic. This research based on secondary data. (Bilal, Anwar, & Ali, 2025)

The relations make worse because US blamed Pakistan of give shelter to hostile, postponed help and used international organizations (FATF and IMF) as pressure tools. Trump's first policy to

pressurized other countries at same time rejected. USA's "Do More" demands fights against terrorism and replied with "No More". (Bilal, Anwar, & Ali, 2025)

The major changes between Pakistan and America's relationship when Trump's request Pakistan for assistance in a safe exit from Afghanistan. P.M Imran Khan also Favor peaceful conclusion USA and Afghanistan matter but there is a condition that Afghanistan demand that first release Mullah Abdul Ghani's brother's key player in peace process in Afghanistan. (Bilal, Anwar, & Ali, 2025)

On the report of this research there is many highs and lows in relation between Pakistan and USA. The author suggests reducing dependency on US aid closing the trust gap, and create an independent export-oriented economy as ways to build-up future two-sided relation. (Bilal, Anwar, & Ali, 2025)

Exchange rate and growth

This research is focuses on trade balance, GDP, inflation, foreign investment, and exchange rate changes impact on Pakistan's economy and also find characteristics and give advises about how policymakers address exchange rate issues and the study use. (Meraj, Ahmed, & Abbas, 2024)

The paper says that exchange rate extremely important for Pakistan. If currency becomes weak, imports get overpriced, inflation, and gradual development. If the currency strong, export grows and economic growth improves rapidly. (Meraj, Ahmed, & Abbas, 2024)

The paper includes both theories and empirical information to describe changes in the exchange rates link to Pakistan economic growth. In this paper author use ARDL (auto-regressive distributive lag) to explore how GDP, Exchange rate, and Inflation influence economic development. The result of the study economic development decrease and inflation increase. Further, Considering the significance aspects are been investigated future studies and regulations must be flexible adapt to new global economy. The research established foundation for the future. (Meraj, Ahmed, & Abbas, 2024)

According to the research, legislator must take priority to boost up export, avoid unnecessary imports and constantly monitor the inflation and for exchange rate policies to promote stable growth, stability and flexibility should be managed. This paper gives essential suggestions controlling currency related risk opportunities for scholars, decision makers, and businesses. (Meraj, Ahmed, & Abbas, 2024)

According to (Fatemah & Abdul, 2018) When inflation rises, people's purchasing power goes down, manufacturing expenses rises, and industries or organizations struggle to plan and invest whenever inflation grow. Economic development becomes slower. In this way, inflation may affect the economic growth or development of any country.

All in all, investments, exports, and macro-economic environment are key factors that influence Pakistan's economic development, the existing researches demonstrated. Recent investigations further verified that there is positive long-run relationship between trade openness and GDP. However, there is lack of new researches that particularly focus on consequences of tariff policies on Pakistan economic development imposed by US. Nor any research about to describe insignificant long-run affects for trade or export related within the framework of Pakistan's economic with other countries. In the empirical evidences there is a clear gap reveals that absence of partner specific tariff analysis. So, by analysing changes in US tariff, in combination with PAK-US Exports, Inflation, Gross Capital Formation (GFC), Tariff rates that affect economic development, and the current study provides a unique perspective.

This study includes new information to the body of knowledge and highlights need for more understanding how international or external trade policies impact on economic development of developing nations like Pakistan by using ARDL and Johansen cointegration method recording insignificant long-run result.

In this study (Zafar, 2025) applied ARDL (Auto-Regressive Distributed Lag) model to examine the long-run and short-run impacts of tariff and economic growth. The consequences of the study revealed that unreasonable tariff is harmful for export and quench the economic development. Furthermore, International trade literature broadly suggests the effect of import tariffs on export performance, with most scholars spotlight a negative relationship. Earlier studies proclaim that tariffs increase the cost of imported raw materials and intermediate goods, raising production costs and reducing global competitiveness. Study explained that the burden of tariffs is shared between exporters and importers depending on demand and supply elasticity, which often results in decreased trade volumes. Similarly, it showed that higher tariffs discourage exports by raising input prices and disturbing supply chains. More recent works, such as reaffirm that tariff wars, like the US–China conflict, have significantly restricted exports. (Zafar, 2025)

Some scholars assume that in particular cases, tariffs can really help to boost exports. For instance, tariffs might promote domestic industries to produce goods that are imported in the past, allowing them to expand and ultimately give a competition in foreign markets. There are few examples where this has happened, like in some Chinese industries once they implemented tariffs. Nevertheless, these cases are rare and don't provide an authentic outcome. Different studies highlight that over relying on high tariffs can affect exports in long term time duration by making domestic industries less competitive, limiting their access to technology. In short, while tariffs didn't provide permanent protection for domestic industries, they end up usually by affecting export potential by expanding cost and declining efficiency. (Zafar, 2025)

Ultimately, the policy's success rest on a decisive break from past practices. Academic consensus emphasizes the necessity for a simplified, low, and uniform tariff structure, the elimination of SROs, and a credible commitment to phasing out protections within strict, transparent timelines to avoid the policy capture that has torture previous reforms. (Qadir, 2020)

Other countries' study

(Hong, 2025) shows in his study the impact of sudden tariff policy announcements that how they affected the financial markets, especially stock market return. The paper highlights that tariff shock announced in trump-era can create immediate and significant drops in the equity markets due to uncertainty, higher manufacturing costs and trade war.

The study uses a Multivariate Ordinary Least Square (OLS) Regression Model to measure how different factors like tariff rate, the number of country targeted, overall market conditions and volatility index influence stock market reactions. Considering the broader range of countries and levying high tariffs on them causes higher levels amplify negative stock market responses. On the other hand, stronger economic fundamentals can soften these effects. (Hong, 2025)

The study represents the coefficient of Determinant (R-squared “ R^2 ”) shows 0.98 which is the strong fit, that was achieved by using OLS Regression Model through analysing from the tariff increase to full-scale global trade-wars that has consistently harm investor confidence and reduce stock returns. Tan also emphasizes that even small tariff changes can destabilize markets and sudden announcements without clear communication often lead worse panics. (Hong, 2025).

Research Gap Identification

The collected researchers and reviewed literature review provides a clear demonstration regarding the impact of trade, exports, investments and inflation on the economic growth of a country. However, considering the Pakistani economy a clear gap exist as there is no significant study that demonstrates the impact of US tariff's impact on the economic growth of Pakistan. Our motive is to check whether there is significant impact of US tariffs on the economic growth of Pakistan or not!

Using the Autoregressive Distributed Lag (ARDL) Model, we have analysed the impact of US tariff, with the supporting variables to fully understand the economical perspective. This gap provides the solid need for this research, so we may understand the trade policies for any decisions.

Conceptual Framework

Fig. 1 Conceptual Framework



RESEARCH METHODOLOGY

This chapter shows the methodological framework for the research that has been conducted using the empirical data, quantitative technique, research design, data sources, variables, model specification and analytical techniques used to examine the *“Impact of US-tariff policy on the economic growth of Pakistan.”* The methodology provides the clear aspects and description for the choose of statistical models, data collection processes and statistical procedures.

Research design

The current research shows the empirical analysis using quantitative technique with the help of time-series data collected from (United Nations, n.d.), (World Bank, n.d) and (World Integrated Trade Solution, n.d.) using the ARDL model. (N., A., N., E., & A.A.M, 2024)

The aim is to test the econometric approach that explains the fluctuations in the Pakistan’s economic growth due to change in US Tariff Rate, Pak-US Export Rate, Inflation and Gross Capital Formation to examine whether the data is stationary or non-stationary the unit root test by Augmented Dickey-Fuller (ADF) test has been conducted. (Khan, Nasim, & Khan, 2024)

Time series research design

This paper analyses the data from 2003 to 2024 that provides the fluctuations among these variables. That shows the temporal dynamics of these variables.

Justification of chosen models: A

ARDL that was created in 2001 by Pesaran, Shin and Smith. Some of the key justification of using this model are here:

- This model analyses the order of integration among variables. Even though the variables are stationary at 0 Level I(0) or First Level Difference I(1) or the mixture of both.
- This model provides the Estimate for short-run and long-run Cointegrating Coefficients in a Unified Framework with simultaneously and efficiently.
- Considering the small sample size $n = 22$, this model provides the efficient and more reliable results compared to Johansen Cointegration Model.

Population and sample

Population:

The population of this research is based on the annual data point of all the economic data available for Pakistan.

Sampling Technique:

To choose the sampling years, the Purposive Technique has been used. The period 2003 to 2024 is an important era of Pakistan's Economical Era. This period is surrounded by many important polices, and because of the availability of data for all the chosen variables.

Sample size and justification:

The data consist of 22 observations. Even though, the sample size is small, but the ARDL model is specially designed for such circumstances, the essential point in ARDL is to choose the Lag Structure that is the key point for identifying the estimation in an effective way. And the reason behind choosing the period 2003 to 2024 is, first we intended to observe from 1965 then while collecting the data we didn't find Tariff Data before 1995, so we considered 1995 to 2024. Then another problem occurred that Export Rate wasn't available before 2003, that made us limited to the sample of 22 years.

Reasons of Data Period Limitations:

In fact, the data was intended to collect from 1965, but the data for Tariff Rate was available from 1995 and was not available before that. And the data of Pak-US Export rate was not available before 2003, that made us restricted to choose the data from 2003 to 2024. To ensure the consistency of all variables, the data was restricted to this period.

Data collection methods

As the research is based on time-series so the Secondary Data have been collected from world bank's website of World Development Indicators (WDI) and World Integrated Trade Solutions (WITS) which was developed by World Bank with the collaboration of United Nations Conference on Trade and Development (UNCTAD). Which provides a comprehensive data on

- Tariffs and Trade Barriers
- Import and Export Values
- Trade flows between countries
- Applied and bound Tariff Rates

Such datasets ensure the validity, reliability, comparability and accuracy for the variables used in Econometric Analysis. (World Bank, n.d) (United Nations, n.d.) (World Integrated Trade Solution, n.d.)

Research instrument

The economic model that is developed is:

Economic growth of Pakistan is the function of Exports of Pakistan to US, Gross Capital Formation (GCF) of Pakistan, Tariff rates imposed by US on Pakistan, and Inflation of Pakistan.

$$GDP_GR_t = \beta_0 + \beta_1 EXP_t + \beta_2 GCF_t + \beta_3 TAR_t + \beta_4 INF_t + \varepsilon_t$$

Where:

- **GDP_GR_t**: GDP Growth rate (Dependent Variable)
- **EXP_t**: Pakistan's Exports to US rate (Export Competitiveness)
- **GCF_t**: Gross Capital formation (GCF) (Total Value of Assets)
- **TAR_t**: Tariff Rate (Trade Policy)
- **INF_t**: Inflation (Price Stability)
- **ε_t** : Error Term
- **β_0** : Constant
- **β_1** : Export Rate Coefficient
- **β_2** : GCF Coefficient
- **β_3** : Tariff Rate Coefficient
- **β_4** : Inflation Coefficient

Validity and Reliability

The validity and reliability of Econometric Model has been verified via following ways:

Stationarity Testing:

To test the stationarity of the variables, Augmented Dickey-Fuller (ADF) Unit Root Test has been applied. The results showed that, the variables were stationary with the mixture of I(0) and I(1) difference. In this regard, the Pre-condition for ARDL Bounds Test justified.

Cointegration Test:

The long-run relation was tested via Bound Test of ARDL. The computed F-Statistics **7.1006** at 1% significance level was greater than the upper bound test's value, that proved and justified the long-run relation.

Selection of Model:

- **Serial Correlation**: To check the Autocorrelation, the Breusch-Godfrey LM Test was tested, with the P-Value 0.8239 proved that, the residuals have no serial or Autocorrelation
- **Heteroskedasticity**: To check the Error terms whether they are constant or vary with different variables, this test was tested. And with the P-value 0.8471 justifies that the variables are not Heteroskedastic.

This diagnosis proves that the consistent Standard Error with the estimators are efficient. That make the statistical inference more reliable. (Pesaran, Shin, & Smith, 2001)

Data analysis techniques

For the analysis of Data, “EViews 12” has been used, which is specially designed for the econometric purpose. Following is the sequential way of analysis:

Descriptive Statistics

To understand the nature of data, Explanatory Data Analysis was conducted to test the multi-collinearity.

Table 1. Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
GDP Growth Rate	4.06	4.29	7.83	-1.27	2.29
Pak-US Exp Rate	18.58	17.36	25.65	14.75	3.3
GCF	15.76	15.61	18.28	12.94	1.32
Tariff Rate	9.33	9.27	10.7	8.58	0.52
Inflation	10.31	9.28	30.77	2.53	6.55

Unit Root Testing:

To test the stationarity of each variable, this test was conducted.

Procedure of ARDL Cointegration:

Following are the steps of ARDL test:

1. **Lag length selection:** By using Akaike Information Criterion (AIC) test the best lag length (2,0,2,2,1) was selected, that is the core of running an ARDL Model.
2. **Bounds Testing:** To test the cointegration, the F-Bounds Test was used.
3. **Estimation:** To test the short-run Error Correction Model and Long-run Coefficients the ARDL Model was tested.

Ethical consideration

Due to use of secondary data, the moral concerns have reduced to focus on the moral considerations:

- Confidentiality and Anonymity: As the data is secondary and has been collected from official sources so no individual hold the ownership of this data.
- Transparency and Reproducibility: Considering the secondary data with the clear steps, it can easily be repeated by anyone, who is willing to test these results or further proceed with this paper.
- Academic Integrity: The proper procedures have been followed, as per the requirements. Proper citations have been places, population and sample has been justified to avoid any plagiarism.

DATA PRESENTATION AND ANALYSIS

This chapter presents the relation between Pakistan’s Economic Growth considering the variables (Export Rate, GCF, Tariff and Inflation). In this chapter the long-run and short-run relation has been analysed based on the Descriptive Statistics, Unit root test results, Cointegration results and ARDL model.

Data Presentation

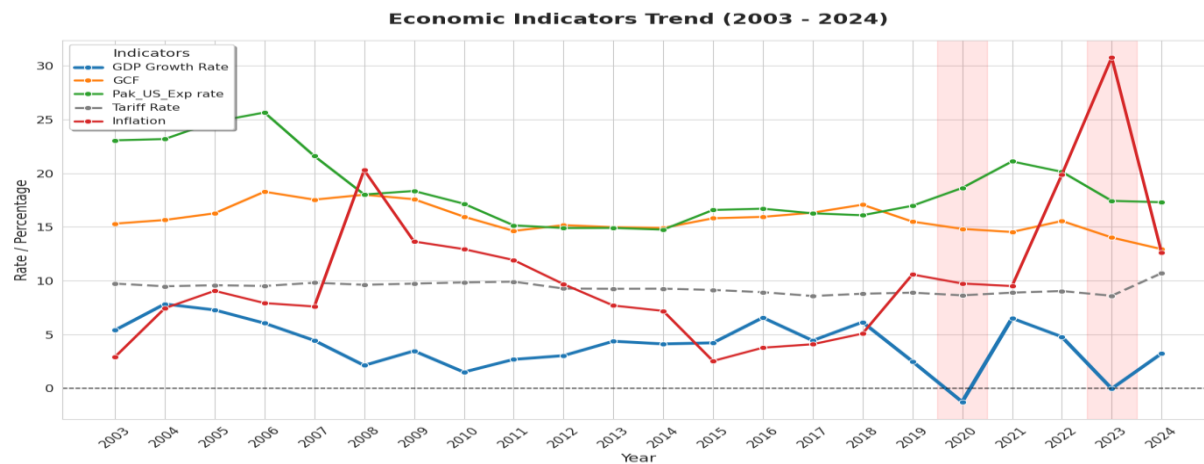
Table 2.

Variable	Average (Mean)	Standard Deviation	Minimum	Maximum
GDP Growth Rate	4.06%	2.29%	-1.27%	7.83%
Pak-US Exp Rate	18.58	3.3	14.75	25.65
GCF (Investment)	15.76%	1.32%	12.94%	18.28%
Tariff Rate	9.33%	0.52%	8.58%	10.70%
Inflation	10.31%	6.55%	2.53%	30.77%

Interpretation:

- The average of GDP growth has an average of 4.06 but with the standard deviation of 2.29.
- Inflation has too much fluctuations with the standard deviation of 6.55
- Jarque-Bera Test revealed that the Inflation is too inconsistent and data is not normal distributed with the p-value = 0.0006.

Fig. 2



Data Analysis

This section presents all the tests that were conducted to analyse the results from the gathered data, to analyse the long-run and short-run results.

Unit Root Test results

Table 3. Unit root test

Variables	At Level Difference		At 1st Difference		Level of Stationary
	t-statistics	Level	t-statistics	1st level	
GDP Growth Rate	-4.130283	0.0033	-6.861669	0.0000	I(0)
GCF	-1.645894	0.4470	-5.224467	0.0002	I(1)
Inflation	-2.625410	0.1038	-4.502622	0.0023	I(1)
Tariff Rate	-2.378686	0.1562	-3.997419	0.0048	I(1)
Pak_US_Exp rate	-4.135499	0.0057	-3.073217	0.0451	I(0)

Variables are the mix of I(0) and I(1) differences. Resulted **ARDL Model** is suitable.

Cointegration results

Bounds Test Results

**Table 4. Cointegration Test
Levels Equation**

Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PAK_US_EXP_RATE	0.116881	0.082336	1.419561	0.1935
GCF	-0.240527	0.289396	-0.831134	0.4300
TARIFF_RATE	0.942526	0.726880	1.296675	0.2309
INFLATION	-0.132266	0.052571	-2.515971	0.0360
C	-1.731361	5.264802	-0.328856	0.7507

$$EC = GDP_GROWTH_RATE - (0.1169 * PAK_US_EXP_RATE - 0.2405 * GCF + 0.9425 * TARIFF_RATE - 0.1323 * INFLATION - 1.7314)$$

F-Bounds Test

Null Hypothesis: No Levels Relationship

Test Statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n = 1000				
F-statistic	7.100600	10%	2.2	2.525
k	4	5%	2.56	3.058
		2.5%	2.88	4.422
		1%	3.29	4.84
Finite Sample: n = 30				
Actual Sample Size	20	10%	2.525	3.56
		5%	3.058	4.223
		1%	4.28	5.84

Impact of US-Tariff Policy on the Economic Growth of Pakistan

Test Statistic	Value	Significance	I(0)	I(1)	Decision
F-statistic	7.1006	10%	2.2	3.09	Cointegration
		5%	2.56	3.49	Cointegration
		1%	3.29	4.37	Cointegration

- **F-Statistics** = 7.1006
- **1% significance level:** I(0) = 3.29, I(1) = 4.37
- **Decision:** F-Statistic > Upper Bound 7.10 > 4.37
- **Result:** Long-run Relation exist

As the bounds test's value is higher from all the critical values, that presents a strong long-run relation with GDP Growth Rate and the independent variables (Exchange Rate, Tariff Rate, GCF and Inflation).

ARDL Model Result:

Long-run Levels Equation

Table 5. ARDL Long-run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Probability
PAK_US_EXP_RATE	0.1169	0.08234	1.4196	0.1935
GCF	-0.2405	0.2894	-0.8311	0.43
TARIFF_RATE	0.9425	0.72688	1.2967	0.2309
INFLATION	-0.1323	0.05257	-2.516	0.036
Constant	-1.7314	5.2648	-0.3289	0.7507

The above results show the long-run relation of each variable. Only the inflation is significant that shows the direct inverse relation with the GDP and other variables don't have significant effects.

ARDL short-run results (Error Correction Model):

Table 6. ARDL Short-run Results

Variable	Coefficient	Std. Error	t-Statistic	Probability
CointEq(-1)	-1.4907	0.17917	-8.3205	0
D(GCF)	0.8631	0.25399	3.3982	0.0094
D(GCF(-1))	1.0595	0.32958	3.2147	0.0123
D(TARIFF_RATE)	2.2091	0.60015	3.6809	0.0062
D(INFLATION)	0.0131	0.05378	0.2441	0.8133

R-squared = 0.9162 | Adj. R-squared = 0.8775 | DW = 2.2235

The above tables show the impact of each variable on the economy. ECT shows the speed adjustment of economy back to equilibrium in long-run when the equilibrium level shifts that is 149%. D(GCF) and D(Tariff Rate) shows the short-run impact on the GDP Growth rate. Means, 1% increase in the variables will lead to 0.86% and 2.21% increase in GDP respectively. D(GCF (-1)) shows the last years impact in the current year. And D(Inflation) has no significant impact in the short-run.

The R-squared value 91.6% shows the explanatory power, that shows the reliability of variables in the model, and shows the variation in short-run economic growth by the explained variables. And the Durbin-Watson (DW) confirms the absence of Serial Correlation.

Checking the model:

- **R-Squared:** 0.9162 (variation of 91.6%)
- **Serial Correlation:** No (LM Test p-value = 0.8239)
- **Heteroskedasticity:** No (BPG Test p-value = 0.8471)

Serial Correction and Heteroskedasticity

Table 7. Serial Correction and Heteroskedasticity Results

Test	F-statistic	p-value	Chi-square	p-value2	Decision
Serial Correlation	0.2001	0.8239	1.2507	0.5351	No SC
Heteroskedasticity	0.5159	0.8471	8.3	0.6862	No Het

(Bahmani-Oskooee & Gelan, 2018)

The serial correlation test shows the pattern of mistakes and errors in the model, and the p-value (0.8239) shows the no predictable pattern in the model and support the reliability of the model. Heteroskedasticity Test measure the spread or level of errors for all the predictions. This means there is no standard and constant errors during the periods and supports the model.

Model of Study

$$GDP_GR = 0.1169 * Exp - 0.2405 * GCF + 0.9425 * Tar - 0.1323 * Inf - 1.7314$$

- **Inflation** has a negative impact in long-run (p=0.036). 1% increase in inflation causes the 0.13% negative impact on growth. (khan, Iftikhar, Shakir, & Marri, 2021)
- **Pak-US-Export Rate** have positive impact in long-run.
- **GCF** have negative impact in long-run. (Not significant) (Asif, Amjad, Nazir, Saeed, & Jan, 2022)
- **Tariff Rate** have positive impact in long-run. (Nasir, 2020)
- Other variables have not significant impact, due to many reasons:
 - There had been several structural breaks in Pakistan, like War on Terror, Energy Crises, Political Instability.
 - Political instability
 - Structural breaks (Zafar, 2025)

Justifications:

- **Inflation:** The negative impact of inflation is because the growth of GDP is directly linked with the production and consumption, and the increase in inflation will to the decrease in Aggregate Demand (AD) it will cause the decrease in production.
- **Pakistan US Export Rate:** Its positive impact on GDP Growth is completely understandable, as this directly link to the Mercantilist View. A country’s wealth is dependent on the assets. And if a country wants to get strong, it should export more and import less.

- **GCF:** This contradictory result is the impact of the inconsistent economic condition of Pakistan. As we have faced too much inconsistency in our political condition. This shows negative impact because the capital that is sanctioned for one purpose, it is either dissolved into corruption or delays, and only small portion gets into development.
- **Tariff Rate:** This contradictory result is likely because, when the US raises the tariff, the firms may shift to the other countries like (EU, China) or they may increase domestic products. A major reason can be, the economy of Pakistan is not much reliable on exports to US so the tariff hikes may not affect the Pakistan's economy in that way. Another reason can be "*Transshipment*" also known as "*Trade Circumvention*" that is done to avoid high tariffs.

Results of Shor-run:

- **Error Correction Term (ECT)** -1.29 highly significant -149% adjustment speed
- **GCF** have positive impact on the growth (Barro, 1991)
- **Tariff Rate** have positive impact on growth
- **Export Rate** have not impact probably due to global powers

CONCLUSION AND RECOMMENDATION

Conclusion

Overall Tariff Rate, Pakistan US export rate, Gross Capital Formation and Inflation has the positive impact on the economic growth Pakistan. Whereas, inflation has negative and significant impact with 0.13% that shows that the inflation raises by 1% the GDP will decline by 0.13%.

Gross Capital Formation and Tariff rate has positive impact in short run, even though the sudden hike in tariff may cause in the decline in GDP Growth, but it will soon revert to positive impact. Whereas, in long run the GCF has negative impact and Tariff rate has positive impact. The reasons can be multiple for such results, the main reason can be instability of political condition for GCF and Tarde Circumvention for Tariff Rates. The Export Rate's impact is not clear. The reason can be Tarde Circumvention or Pakistan's economy may not be too dependent on US exports.

Recommendations & Implications of study

The policy makers should control the inflation for long-term economic growth. And for short-run growth investment should be priorities. Political conditions should be stabilized to get the constant growth for the investments.

Trade policies should be properly and strategically applied to raise the exports and which will result in the growth in economy. To flourish the business, the inflation must be kept in control.

Government should apply trade policies in a way, people may get involve in the trade, rather than just relying on aids and other subsidies of the government. And instead of short-run jumps government should focus on the long-run growth.

This research provides concise impacts of tariff and trade policies on the economic growth of Pakistan, that shows the structural economic feature for policy making. And this paper provides the implications of other variables in short-run and long-run dynamics using the time-series data, with the help of ARDL Model that best supports such data set.

In short, this paper provides the better use of economic indications in Business Strategy Development that will assist in the growth of economy.

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