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Assessing the Role of Exports and Imports with the OECD in Pakistan's Economic Performance

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ABSTRACT

This study examines the impact of imports from the OECD and exports to the OECD on Pakistan's economic growth using annual data from 1976 to 2023. The Autoregressive Distributed Lag (ARDL) model is employed to analyse both long-run and short-run relationships. The long-run findings indicate that exports to the OECD positively contribute to economic growth, supporting the export-led growth hypothesis, while imports from the OECD negatively affect GDP, likely due to trade imbalances and import dependency. Exchange rate depreciation is found to have an adverse impact on growth by increasing import costs and inflationary pressures. Moderate inflation fosters economic expansion, but prolonged inflation hinders growth, while financial sector development supports GDP, though inefficiencies in credit allocation reduce its effectiveness. Gross fixed capital formation does not exhibit a strong long-run impact, suggesting a need for improved investment efficiency. The error correction term is negative and significant, confirming he presence of a stable long-run equilibrium. The CUSUM and CUSUMSQ tests confirm the model stability, reinforcing the reliability of the findings. Based on these results, policy recommendations include export diversification, strategic import substitution, exchange rate stabilization, inflation management, financial sector reforms, and efficient investment planning. These measures will enhance economic resilience, foster industrial development, and support sustainable growth in Pakistan.

Keywords: *Pakistan, Economic Growth, OECD trade, Exports, Imports, ARDL Model, Exchange Rate, Inflation, Financial Sector, Investment Efficiency, Trade imbalances.*

JEL Codes: F14, F43, E31, E44, C32, O11.

INTRODUCTION

Economic theory has long established the fundamental pathways through which trade influences economic growth. International trade is widely acknowledged as a catalyst for economic expansion by enhancing resource allocation efficiently, accelerating the diffusion of knowledge, fostering technological advancements, and stimulating competition in both domestic and global markets. These mechanisms lead to optimized production process, improved industrial productivity, and the development of innovative products and service (Busse & Koeniger, 2012). The expansion of exports, as emphasized in classical and modern trade theories, contributes to economic growth by channeling technological knowledge across borders, facilitating specialization, and improving economics of scale (Krugman & Obstfeld, 2009). This

phenomenon is particularly significant for developing economies, where trade plays a crucial role in augmenting industrial output and driving macroeconomic stability (Saleem et al., 2023).

Over the years, extensive research has investigated the Export-Led Growth (ELG) and Import0Led Growth (ILG) hypothesis, which explore the causal relationship between trade and economic growth. Several empirical studies suggest that export drive long-term economic expansion by generating foreign exchange reserves, increasing investment in productive sectors, and enhancing industrial competitiveness (Bibi et al., 2014; Jawaid, 2014; Shirazi et al., 2004). Conversely, imports, particularly of capital goods and intermediate inputs, facilitate growth by integrating advanced technology and improving production efficiency (Abbas, 2012; Ahmad et al., 2017; Ullah et al., 2009). However, in the case of Pakistan, persistent trade imbalances and external shocks have created structural constraints, limiting the country's ability to harness the full potential of trade-driven growth.

Pakistan's economic performance has been marked by volatility, with growth rates fluctuating due to various internal and external pressures. According to Economic Survey of Pakistan (2023), real GDP growth declined from 3.6 percent in FY2013 to just 0.29 percent in FY2023, reflecting structural weaknesses in the economy. This declaration can be attributed to several factors, including low export diversification, reliance on primarily goods, high import dependency, and external financial vulnerabilities (Rehman et al., 2023). Trade deficits have persisted due to an imbalance between high expenditure and lower export revenues, leading to external debt accumulation and exchange rate pressures (Hussain, 2014). Addressing these challenges require a deeper understanding of Pakistan's trade patterns, particularly its engagement with major trading blocs.

The Organization for Economic Cooperation and Development (OECD) represents a crucial trade partner for Pakistan. According to Economic Survey of Pakistan (2023), the OECD accounted for 15.2 percent of Pakistan's total imports, making it the second-largest regional importing partner after Organization of Islamic Cooperation (OIC). Simultaneously, the OECD emerged as Pakistan's top regional export destination, constituting 56.8 percent of total exports. This highlights the significant of Pakistan's trade relations with OECD nations, which includes major economies such as the United States, Germany, the United Kingdom and Japan. While trade with OECD countries offers access to high-value markets, advanced technology, and foreign investment opportunities, it also exposes Pakistan to external shocks, regulatory challenges, and demand fluctuation in developed economies (Sultan & Zainal Abidin, 2019).

A considerable body of literature has examined the relationship between external sector dynamics and Pakistan's economic growth. Several studies have analysed Granger Causality to determine the direction of causality between exports, imports and GDP growth (Jawaid, 2014; Shirazi et al., 2004; Ullah et al., 2009). Other have employed co-integration techniques and regression analysis to assess the long-run effects of trade on economic performance (Abbas, 2012; Ahmad et al., 2017; Bibi et al., 2014). Recent studies, such as (Saleem et al., 2023) and (Rehman et al., 2023), have leveraged advanced econometric methods, including Non-Linear ARDL models, to examine asymmetric trade-growth relationships. Despite these contributions, a crucial gap remains in understanding the specific impact of Pakistan's trade with the OECD and how it shapes the country's economic trajectory.

This study aims to fulfil that gap by analyzing how Pakistan's exports and imports with the OECD influence economic growth. Using annual data from 1976 to 2023, the study employs the Auto-regressive Distributed Lag (ARDL) model to estimate long-run and short-run relationships. The results of this study will provide valuable insights for policymakers to design targeted trade policies that optimize Pakistan's economic gains from its OECD partnerships.

The remainder of this paper is structured as follows: Section 2 presents a detailed literature review, synthesizing existing research on trade and economic growth in Pakistan. Section 3 outlines the econometric

model, data sources, and methodology. Section 4 discusses the empirical findings, while Section 5 concludes with policy recommendations aimed at enhancing Pakistan's trade effectiveness with the OECD.

LITERATURE REVIEW

The Export-Led Growth (ELG) hypothesis is widely regarded as a key driver of economic expansion and job creation. It is based on four main arguments: (1) Export growth boosts economic output and employment through the foreign trade multiplier effect; foreign exchange earnings from exports allow countries to import capital goods, improving production capacity; (3) Access to international markets leads to economies of scale and technological advancements; and (4) the strong link between export growth and production expansion supports the ELG theory. While these arguments provide a strong foundation, they are not without criticism. The first two points rely on short-term Keynesian models, which may not fully explain the long-term economic growth. Furthermore, while international trade fosters technological progress, neoclassical growth models assume a fixed labour supply and technological change, which may not reflect real-world dynamics. Recent studies incorporating endogenous growth theories into trade models offer a more comprehensive perspective on the trade-growth relationship (Lucas, 1988; Romer, 1986).

One of the key advancements in economic theory is the integration of growth models into the trade framework. An argument was presented by (Romer, 1986) that economies of scale exist beyond individual firms and extend to the industry level, making growth self-sustaining. Similarly, (Lucas, 1988) highlighted the role of human capital accumulation in driving economic growth, replacing the traditional assumption of an exogenous labor supply. These models help explain why trade impacts long-term economic performance and provide a theoretical foundation for studies assessing the role of trade, exports, and foreign direct investment (FDI) in economic development.

Several studies have empirically tested the relationship between trade openness, exports, imports, and economic growth. Makki & Somwaru, (2004) analysed 66 developing countries from 1971 to 2000, using Two-Stage Least Squares (2SLS) and Three-Stage Least Squares (3SLS). Their findings indicated that both trade and FDI significantly contribute to economic growth in developing nations. Similarly, (Ali & Abdullah, 2015) examined the impact of trade openness on Pakistan's economy from 1980 to 2010, using the Vector Error Correction Model (VECM). Their results showed a negative relationship between globalization and Pakistan's economic growth. This contrast with (Tahir & Azid, 2015), who found that trade openness positively influenced economic growth in 50 developing countries (1990-2009) using fixed effects, random effect, and 2SLSL models. These mixed results suggest that the impact of trade openness may be country-specific and influenced by factors such as institutional quality, industrial structure and trade policies.

Some studies focus on exports, imports, and overall trade as determinants of economic growth. Busse & Koeniger, (2012) examined the effects of trade, exports, and imports on the economic growth of 108 countries from 19971 to 2005 using the System Generalized Method of Moments (GMM). Their findings supported the idea that trade facilities, technology transfer, and enhance economic growth, especially in developing nations. Similar conclusions were drawn by (Azeez et al., 2014), who used the Ordinary Least Square (OLS) method to analyse Nigeria using data from 2000 to 2012. They found that exports and imports had a positive impact, while trade openness had a negative impact on economic growth. This suggests that while trade is essential, the way a country engages with international markets matters. A similar study was conducted on Bangladesh, using data from 1981 to 2012 by (Uddin & Khanam, 2017). It found that exports had a positive effect, but imports negatively affected economic growth. Likewise, (Ms et al., 2012) found that comparable results for Iran using annual data from 1962 to 2011, using VECM analysis.

Further studies have investigated the causal relationships between exports, imports, and economic growth. Evidence of growth-driven trade in Portugal was found by (Ramos, 2001), using data from 1985 to 1998.

It suggested that economic expansion led to increased exports and imports. Similar findings were reported for Pakistan by (Ullah et al., 2009). However, some studies found export-led growth rather than growth-driven exports. For example, a study by (Joshi, 2022), found that exports fuelled economic growth in Nepal, reinforcing the ELG hypothesis. Similar results were reported in (Çetintaş & Barişik, 2009) for several transitional economies, indicating that enhanced production capacity leads to greater international competitiveness and sustained economic growth.

Conversely, some studies emphasized import-led growth rather than export-driven expansion. Evidence of import-led growth in Peru was found by (Awokuse, 2008), highlighting the role of imported technology and capital goods in driving industrial development. Other studies have found mixed results. For example, (Bakari & Mabrouki, 2017) identified both export-led and import-led growth patterns in Argentina, Peru and Panama, while (Okyere & Jilu, 2020) found similar dynamics in Ghana. These findings suggest that imports can be just as important as exports for economic growth, particularly when they contribute to technological diffusion and production efficiency.

While existing literature provides valuable insights into the relationship between trade and economic growth, several gaps remain. One key issue is the mixed evidence on trade openness. While some studies, such as (Tahir & Azid, 2015), suggest that trade liberalization positively influences economic growth, others, like (Ali & Abdullah, 2015), argue that globalization has a negative impact on Pakistan's economy. These conflicting results indicate that the effects of trade openness may be highly country-specific, influenced by factors such as institutional quality, industrial composition, and macroeconomic stability. Additionally, there is limited research on Pakistan's trade with OECD countries, despite the fact that the OECD is Pakistan's largest export market, accounting for 56.8% of total exports (Economic Survey of Pakistan, 2023). While extensive research has been conducted on Pakistan's trade relations with developing economies and regional partners, there is a lack of studies specifically focusing on how trade with advanced economies in the OECD impacts Pakistan's long-term growth trajectory. Given that OECD nations represent technologically advanced markets with high-income consumers, understanding this trade relationship is crucial for designing effective policies.

Another critical gap in the literature is the limited focus on the role of imports in economic growth. While export-led growth (ELG) has been widely studied, fewer studies have explored whether import-led growth is also a significant driver of economic performance. Research by (Awokuse, 2008) suggests that imported capital goods and advanced technology play a fundamental role in enhancing productivity and industrial efficiency. However, Pakistan's import dependency, particularly on capital-intensive goods from OECD countries, requires deeper investigation to determine whether these imports contribute positively to long-term growth or exacerbate trade deficit. Furthermore, many other studies rely on traditional econometric methods, such as Ordinary Least Square (OLS) and Vector Error Correction Models (VECM), which may not fully capture non-linear relationships and asymmetrical effects of trade on economic performance. More recent studies, like (Saleem et al., 2023), have employed Non-Linear ARDL models, while (Busse & Koeniger, 2012) utilized System GMM, offering more robust insights. Therefore, there is a pressing need to apply advanced econometric techniques that can better assess the short-run and long-run dynamics of trade with OECD countries.

Given these research gaps, this study aims to fill the void by examining how Pakistan's trade with OECD nations affects economic growth, considering both exports and imports. By employing advanced econometric methodologies, such as Auto-regressive Distributed Lag (ARDL) model, this research will prove a more comprehensive understanding of the trade-growth relationship, offering valuable insights for policymakers to optimize trade strategies with OECD economies.

METHODOLOGY AND MODEL

Understanding the impact of trade on economic growth requires a well-structured analytical approach. In this study, we aim to examine how Pakistan's trade with the OECD influences its economic growth, using an econometric framework that captures both short-run and long-run dynamics. Our model builds on the foundational work of (Ramos, 2001) and incorporates key economic variables relevant to international trade and macroeconomic stability. To analyse the relationship between Pakistan's economic growth and its trade with the OECD, we define the following econometric model:

$$\log RGDP_t = \alpha + \beta_1 \log OECDX_t + \beta_2 \log OECDM_t + \beta_3 \log NER_t + \beta_4 \log INF_t + \beta_5 \log DCPS_t + \beta_6 \log GFCF_t + \mu_t$$

Here is what each variable represents:

- Real Gross Domestic Product (RGDP) is the real GDP of Pakistan. The dependent variable, serving as a proxy for Pakistan's economic growth.
- Exports to the OECD (OECDX) are the values of Pakistan's exports to the OECD,
- Imports from the OECD (OECDM) are the value of Pakistan's imports from the OECD,
- Nominal exchange rate (NER) is the nominal exchange rate, and represents currency fluctuations that influence trade and competitiveness[1],
- Inflation (INF) which has been measured through the Consumer Price Index (CPI)[2],
- Domestic Credit to Private Sector (DCPS) is an indicator of credit availability for business and economic activities[3],
- Gross Fixed Capital Formation (GFCF) is the measure of investment in physical assets, such as infrastructure and machinery[4].

DATA SOURCE

To ensure accuracy, all variables are measured in US dollars at constant 2015 prices. Data sources include the Economic Survey of Pakistan for trade figures, inflation, and labor force statistics, while World Development Indicators (WDI) provide GDP and investment data. Covering the period 1976 to 2023, this study leverages long-term data to capture structural trends in Pakistan's trade relationship with the OECD.

METHODOLGY

To analyse the impact of Pakistan's trade with the OECD on economic growth, this study employs the Auto-regressive Distributed Lag (ARDL) model, developed by (Pesaran & Shin, 1999). The ARDL approach is particularly suitable for this analysis because it allows for the estimation of both short-run and long-run relationships, even when variables exhibit different integration orders, i.e. I(0) and I(1). Unlike traditional co-integration techniques that require all variables to be integrated at the same order, ARDL provides more flexibility in handling economic data with mixed stationarity properties.

Before applying the ARDL model, it is essential to examine the stationarity of the variables to ensure that no variable is integrated at order I(2), or higher, as ARDL cannot be applied in such cases. To achieve this, the Augmented Dickey-Fuller (ADF) test, introduced by (Dickey & Fuller, 1979), is conducted. The ADF test enhances the standard Dickey-Fuller test by incorporating additional lag terms to account for auto-correlation and heteroscedasticity. The results of the ADF test determine whether the variables are

[1] As used in (Chu et al., 2019)
[2] As used in (Ahmad et al., 2017)
[3] As used in (Bui, 2020)
[4] As used in (Aslan & Altinoz, 2021)

stationary at the level or become stationary after the first differencing. If any variable is found to be I (2), alternative estimation techniques must be considered.

To examine whether a long-run equilibrium relationship exists among the variables, this study applies the Bound Test for Co-integration, developed by (Pesaran et al., 2001). The test compares the F-statistics to the upper bound, and if it exceeds the upper bound, a long-run relationship is confirmed. If it falls below the lower bound, no co-integration is present. If the statistics lie between the two, the results are inconclusive, requiring further investigation.

Once co-integration is confirmed, both long-run and short-run estimates are calculated. The long-run equation is captured through the ARDL model specification, while short-run dynamics are analyzed using the Error Correction Model (ECM). The Error Correction Term (ECT), introduced by (Engle & Granger, 1987), measures the speed of adjustment towards equilibrium following a short-term shock. A negative and statistically significant ECT coefficient indicates that deviations from equilibrium are corrected over time, reinforcing economic stability.

By employing the ADF test, ARDL model, Bound Test, and ECM framework, this study provides a comprehensive methodological approach to understanding the trade-growth relationship between Pakistan and the OECD. These techniques ensure a robust analysis of both short-term fluctuations and long-term trends, offering valuable insights for policymakers seeking to optimize Pakistan's trade strategy with OECD nations.

EMPIRICAL RESULTS

This study aims to examine the impact of imports and exports between Pakistan and the OECD on Pakistan's economic growth, using annual time series data from 1976 to 2023. To determine the presence of a long-term relationship, the Augmented Dickey-Fuller (ADF) test and the Bounds test for Co-integration are applied. The Auto-regressive Distributed Lag (ARDL) model is used to estimate long-run elasticities, while short-run dynamics are assessed through the Error Correction Model (ECM). Additionally, the stability of the model is evaluated using the Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) tests to ensure the reliability of the findings.

Descriptive Analysis

Table 1: Descriptive Analysis

Variables	*Mean*	*Median*	*Maximum*	*Minimum*	*Std. Dev.*	*Obs.*
LOG(RGDP)	11.956	11.978	12.899	10.753	0.628	48
LOG(OECDX)	8.936	9.093	10.137	7.095	0.880	48
LOG(OECDM)	9.536	9.555	9.944	9.130	0.228	48
LOG(NER)	3.724	3.942	5.322	2.293	0.922	48
LOG(INF)	3.333	3.376	5.197	1.496	1.097	48
LOG(DCPS)	3.023	3.114	3.394	2.630	0.226	48
LOG(GFCF)	10.157	10.135	10.915	9.180	0.488	48

Source: Authors Estimation

The descriptive analysis provides key insights into Pakistan's trade and economic trends with the OECD from 1976 to 2023, focusing on average values to highlight overall trends. As we look in table 1, we found that the real GDP has an average value of 11.956, indicating steady economic growth over the study period.

This suggests that, despite external challenges, Pakistan's economy has maintained a relatively stable upward trajectory. Regarding trade, exports to the OECD have an average value of 8.936, while imports from OECD show a higher mean of 9.536. this indicates that Pakistan has consistently imported more from the OECD than it has exported, reinforcing the country's dependence on OECD goods and services. The exchange rate has an average value of 3.724, reflecting currency fluctuations over the years, which could have influenced trade competitiveness and the cost of imports and exports.

Inflation, measured through the Consumer Price Index (CPI), has a mean value of 3.333, suggesting moderate inflationary trends that may have impacted purchasing power and trade costs. Financial indicators, such as domestic credit to the private sector, have an average value of 3.023, indicating that credit availability has remained fairly stable. Similarly, gross fixed capital formation, representing consistent investment levels over time. Overall, the mean values indicate steady economic growth, sustained investment, and stable credit availability, while the persistent trade imbalance suggests a continued reliance on imports from the OECD.

Stationary Analysis

The Augmented Dickey-Fuller (ADF) test is applied to determine the stationarity of the variables, which is essential for selecting an appropriate econometric model. Stationary variables exhibit constant mean and variance over time, ensuring valid regression results. The ADF test is conducted at both the level and first difference, considering only a constant (C) and both a constant and a trend (C+T), as shown in Table 2. The significance levels indicate whether the null hypothesis of unit root is rejected. The results show that real GDP is non-stationary at level, but becomes stationary after first differencing, confirming its integration at order I(1). Similarly, exports to the OECD and the nominal exchange rate are also I(1), implying that these variables require first differencing before estimation. This suggests that economic output, exports, and exchange rates exhibit long-term trends and are affected by past values. In contrast, imports from the OECD, inflation, gross fixed capital formation and domestic credit to the private sector are stationary at a level, indicating that these variables fluctuate around a stable mean and do not require differencing.

Since the dataset contains a mix of I(0) and I(1) variables, the Auto-regressive Distributed Lag (ARDL) model is the appropriate methodology, as it accommodates variables integrated at different levels. These findings confirm the validity of using ADL for long-run and short-run estimations and highlight the necessity of differencing certain variables to avoid spurious regression results. The next step involves conducting the Bound Test for Co-integration to determine whether a long-run relationship exists among the variables.

Table 2: Results of Augmented Dickey-Fuller Test

	I(0)		*I(1)*		
Variables	***C***	***C+T***	***C***	***C+T***	***Result***
LOG(RGDP)	-3.610*	-1.506	-3.706*	-5.072*	I(1)
LOG(EOECD)	-2.623***	-3.055	-5.633*	-6.014*	I(1)
LOG(MOECD)	-3.331**	-3.528**	-4.951*	-4.919*	I(0)
LOG(NER)	-0.520	-2.230	-5.813*	-5.649*	I(1)
LOG(INF)	-1.063	-3.639**	-4.111*	-3.988*	I(0)
LOG(GFCF)	-1.679	-3.648**	-4.041*	-4.219*	I(0)
LOG(DCPS)	-1.135	-3.894**	-6.081*	-6.022*	I(0)

* 1% Significant, ** 5% Significant, *** 10% Significant
Source: Authors Estimation

Long-Run Association

The Bound Test for Cointegration, developed by (Pesaran et al., 2001), is conducted to determine whether a long-run relationship exists between Pakistan's economic growth and its key trade and macroeconomic indicators, including exports to the OECD, imports from the OECD, nominal exchange rate, inflation, domestic credit to the private sector, and gross fixed capital formation, and results are illustrated in Table 3.

The F-statistics of 10.618 is well above the upper bound [I(1)] critical value at all significance levels, including the 1% threshold (3.99). since the computed F-statistic exceeds the upper bound, we reject the null hypothesis of no cointegration and confirm the existence of the long-run relationship between Pakistan's GDP and the selected independent variables. Given the confirmed long-run relationship, the next step is to estimate the long-run elasticities using the ARDL model and assess the short-run dynamics using the Error Correction Model (ECM). The presence of cointegration suggests that short-term deviations from equilibrium will eventually adjust back to the long-run path, reinforcing the stability of the economic relationships under investigation.

Table 3: Results of Bound Test

Model	***F-statistic***	***k***
Log(rgdp) =f [Log(oecdx) Log(oecdm) Log(ner) Log(inf) Log(dcps) Log(gfcf)]	10.618*	6
Significance Level	***I(0)***	***I(1)***
10%	1.99	2.94
5%	2.27	3.28
2.50%	2.55	3.61
1%	2.88	3.99

* 1% Significant, ** 5% Significant, *** 10% Significant
Source: Authors Estimation

Long and Short Run Estimates

The Autoregressive Distributed Lag (ARDL) model reveals important insights into Pakistan's economic growth and its relationship with trade, exchange rates, inflation, financial sector development, and investment. The findings show that exports to the OECD play a crucial role in driving economic expansion, as indicated by its statistically significant coefficient. This aligns with the Export-Led Growth (ELG) hypothesis, emphasizing that greater access to foreign markets fuels industrial output, job creation, and foreign exchange earnings; ultimately strengthening the economy (Bakari & Krit, 2017; Saleem et al., 2023; H. Uddin & Khanam, 2017). On the other hand, imports from the OECD present a challenging dynamic, as reflected by its negative coefficient. While imports serve as a gateway to advanced technology and essential inputs, an excessive reliance on OECD imports may worsen trade deficit, heighten dependency on foreign goods, and place domestic industries at a disadvantage. This underscores the importance of balancing import policies to safeguard local production while leveraging external resources for growth (Kartikasari, 2017).

The nominal exchange rate emerges as another key factor, with its negative coefficient signalling that currency depreciation comes with economic hurdles, opposite results are presented in (Chu et al., 2019; Okyere & Jilu, 2020). Although a weaker exchange rate can boost export competitiveness, it simultaneously raises the cost of imported goods, fuels inflationary pressures, and amplifies external debt obligations, making exchange rate stability a critical policy consideration. Inflation adds another dimension to the

analysis as its coefficients suggest that moderate price increases can serve as a catalyst for economic activity by encouraging consumption and investment (Uddin, 2021). However, when inflation persists over time, it can erode purchasing power, inflate production cost, and undermine investor confidence, stressing the need for effective monetary policies to keep inflation at sustainable levels.

The role of domestic credit to the private sector is equally noteworthy, with its coefficient showing the accessible credit channels create an enabling environment for businesses to expand, invest in innovation, and drive productivity. A well-functioning financial sector can act as a backbone for economic resilience, ensuring that businesses have the liquidity needed to foster sustainable growth (Olannye et al., 2025). Meanwhile, gross fixed capital formation presents a complex picture, as its negative but statistically insignificant coefficient suggests that investment in infrastructure and capital goods alone is not enough to generate immediate economic gains. This could be due to inefficiencies in resource allocation, project delays, or weak linkages between investment and productivity. For investment to translate into long-term economic prosperity, improvements in governance, strategic planning, and execution efficiency are essential.

The R-squares (0.9999) and Adjusted R-Squared (0.9997) demonstrate the model's strong explanatory power, indicating that the included variables account for nearly all variations in GDP. The Durbin-Watson statistics with the value of 2.289 suggests that autocorrelation is not a concern, while the highly significant F-statistics confirms the overall statistical significance of the model. Further validation from the diagnostic tests – including the Breusch-Godfrey LM test, White test for heteroscedasticity and Ramsay RESET test. The insignificant results of these three results indicate that the model is free from serial correlation, heteroscedasticity and specification errors. Additionally, the results of normality test confirm that residuals are normally distributed, reinforcing the reliability of the findings. Moving forward, the Error Correction model (ECM) will provide further insights into short-run fluctuations and the economy's speed of adjustment towards long-run stability.

Table 4: Results of ARDL (1, 3, 3, 0, 4, 3, 4)

Variable	***Coefficient***	***T Statistic***
LOG(OECDX)	0.261*	4.224
LOG(OECDM)	-0.130**	-2.251
LOG(NER)	-0.226**	-2.214
LOG(INF)	0.648*	4.082
LOG(DCPS)	0.253***	2.063
LOG(GFCF)	-0.163	-0.567
C	10.616*	5.207
R-squared	0.9999	
Adjusted R-squared	0.9997	
Durbin-Watson stat	2.289	
F Statistics [Prob.]	6660.63* [0.0000]	
Normality Test	1.945 [0.3780]	
Breusch-Godfrey LM Test	0.557294 [0.465]	
White Test	0.498138 [0.9461]	
Ramsay RESET Test	2.299805 [0.1468]	

* 1% Significant, ** 5% Significant, *** 10% Significant
Note: [ ] includes the Probability Values

Source: Authors Estimation

The Error Correction Model (ECM) provides a deeper understanding of Pakistan's economic growth and how various macroeconomic factors influence it. the most critical result is the Error Correction term (ECT), which carries a negative coefficient and is highly significant. This finding confirms that short-run deviations from the long-run equilibrium are gradually corrected, with about 35.6% of the disequilibrium being adjusted each year. This suggests that while Pakistan's economy experiences short-term fluctuations, it steadily converges back to its long-run growth path, reinforcing the stability of the economic system.

In the short run, exports to the OECD play a key role in boosting economic activity, as shown by its statistically significant coefficient. Increased exports stimulate industrial production and foreign exchange earnings, yet the second lag turns negative, suggesting that export-driven gains may not always be sustained. This could be due to trade shocks, price fluctuations or shifting global demands. Similarly, imports from the OECD contribute positively, particularly through capital goods and technology imports. The second lag remains significant with beneficial impact, reinforcing the idea that imported inputs enhance productivity over time by improving industrial efficiency and technological adaptation.

Table 5: Results of Error Correction Model

Variable	*Coefficient*	*T Statistic*
DLOG(OECDX)	0.053*	3.663
DLOG(OECDX(-1))	-0.009	-0.579
DLOG(OECDX(-2))	-0.036**	-2.289
DLOG(OECDM)	0.050*	3.501
DLOG(OECDM(-1))	0.003	0.246
DLOG(OECDM(-2))	0.048*	3.301
DLOG(INF)	0.312*	13.728
DLOG(INF(-1))	-0.155*	-3.240
DLOG(INF(-2))	-0.134***	-1.966
DLOG(INF(-3))	-0.255*	-3.792
DLOG(DCPS)	-0.016	-0.929
DLOG(DCPS(-1))	-0.038**	-2.367
DLOG(DCPS(-2))	-0.023	-1.507
DLOG(GFCF)	0.052***	1.867
DLOG(GFCF(-1))	0.101*	4.154
DLOG(GFCF(-2))	-0.091*	-3.738
DLOG(GFCF(-3))	0.081*	3.258
ECT	-0.356*	-10.781

* 1% Significant, ** 5% Significant, *** 10% Significant
Source: Authors Estimation

Inflation has a dual effect on economic performance. Initially, moderate inflation boosts spending and investment, but inflation persists, as its first, second, and third lags turn negative, showing that prolonged inflation erodes real income, raises production costs, and creates macroeconomic imbalances. This underscores the need for effective inflation management to maintain economic stability. The effect of

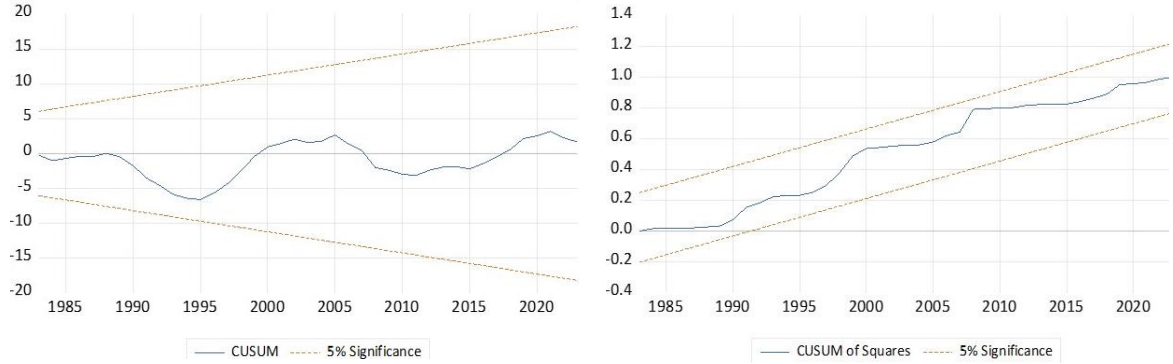
domestic credit to the private sector is insignificant in the short run, but its first lag is negative, suggesting that credit expansion does not immediately translate into economic benefits. This may be due to inefficient loan allocation, high borrowing costs, or delays in investment utilization, emphasizing the ned for improved credit accessibility.

Investment, represented by gross fixed capital formation, shows a delayed impact. While its initial effect is weakly positive, the first lag significantly boosts GDP. However, the second lag turns negative, likely due to inefficiencies in capital allocation, before returning positive in the third lag. This cyclical pattern suggests that investment policies should focus on long-term efficiency rather than short-term capital injections.

Stability Analysis

Source: Author's Estimation

Figure 1: Results of CUSUM and CUSUMSQ



The results of the CUSUM and CUSUMSQ tests provide insights into the stability of the estimated model over time. The results of both are presented in Figure 1. The CUSUM test indicates that the model coefficient remains stable throughout the sample period, as the CUSUM statistics fluctuate within the 5% significance boundaries. Since the line does not cross these critical limits, there is no evidence of significant structural breaks, suggesting that the estimated relationships between the variables hold consistently over time. However, the CUSUM of Squares (CUSUMSQ) test presents some significance bounds, it moves closer to the upper boundary in later years. This pattern hints at a gradual increase in instability, implying that while the model remains largely reliable in the short run, long-term variations could be emerging. These potential fluctuations may be driven by external economic shocks, policy shifts, or structural changes in the economy.

CONCLUSION AND POLICY RECOMMENDATIONS

This study examined the impact of exports from the OECD and imports from the OECD on economic growth of Pakistan by employing the Auto-regressive Distributed Lag (ARDL) model and Error Correction Model (ECM). Using the time-series data from 1976 to 2023, the analysis aimed to determine the short-run and long-run relationships between these focus variables, along with selected macroeconomic indicators and GDP. The ARDL approach was chosen based on ADF test results, which indicated mixed results. Stability diagnostics included the CUSUM and CUSUMSQ test, and it confirmed the stability of the estimated model, reinforcing the reliability of the findings.

The long-run results reveal that exports to OECD countries play a crucial role in fostering economic growth, reinforcing the Export-Led Growth (ELG) hypothesis. Conversely, higher imports from the OECD have a negative long-run effect on economic growth, suggesting that excessive dependence on foreign goods could lead to trade imbalances and hinder domestic industrial development. The exchange rate demonstrates a significant negative impact on GDP, indicating that currency depreciation increases import costs and

external debt burdens, thereby constraining growth. Inflation, when moderate, stimulates economic activity, but its prolonged presence exerts adverse effects, confirming the importance of maintaining price stability. The financial sector, represented by domestic credit to private sector, contributes to economic expansion, though inefficiencies in credit allocation may limit its effectiveness. Interestingly, investment capital formation does not exhibit a statistically significant impact in the long run, implying structural inefficiencies, delays in project execution, or the need for complementary policy measures.

The error correction term (ECT) is negative and highly significant, indicating a stable long-run equilibrium relationship among the variables. The magnitude of the ECT suggests that deviations for the long-run equilibrium correct at a rate of 35.6% per period, meaning that any economic shocks to disturbances are gradually adjusted over time. This confirms the presence of a strong convergence process, highlighting that Pakistan's economy, despite short-run fluctuations, has a tendency to return to its long-run growth trajectory.

The study's findings highlight key policy measures to enhance Pakistan's economic growth and stability. The string positive impact of exports to the OECD on GDP underscores the need for an export-led growth strategy. Policymakers should focus on diversifying markets, improving trade infrastructure, and investing in value-added industries. Offering incentives like tax rebates and export financing, strengthening trade agreements, and reducing barriers will further boost exports. The negative long-run impact of imports from the OECD suggests reducing import dependence by encouraging domestic industries through import substitution policies, research and development incentives, and tariff adjustments on non-essential imports. Strengthening local production in key sectors such as manufacturing and agriculture will reduce reliance on imported raw materials and enhance industrial growth.

Exchange rate stability is crucial, as currency depreciation negatively affects GDP. Effective monetary policies should prevent excessive volatility, avoiding over-reliance on depreciation to boost exports, as it increased import costs and inflation. Encouraging foreign direct investment (FDI) and improving investor confidence will help stabilize the exchange rate and reduce external vulnerabilities. Inflation has a dual effect on economic growth, with moderate inflation stimulating activity but prolonged inflation eroding real incomes. The central bank should adopt inflation-targeting policies while addressing supply-side constraints, improved agricultural output, market efficiency, and energy cost management. Strengthening competition laws can further stabilize inflation.

Financial sector development is key, but inefficient credit allocation limits its impact. Expanding access to credit for SMEs, reducing borrowing costs, and promoting fintech solutions can enhance financial inclusion. Strengthening banking regulations and ensuring credit flows to productive sectors will maximize financial sector benefits. Investment efficiency must improve as gross fixed capital formation has a weak long-run impact on GDP. Streamlining procedures, enhancing transparency in infrastructure projects, and promoting public-private partnerships (PPPs) will ensure that capital investments translate into productivity gains.

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