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IMPORTS- LED TAX GROWTH STRATEGY AND ITS IMPACT ON EXCHANGE RATE AND TRADE DEFICIT: A CASE OF PAKISTAN

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Abstract

This study aims to analyze the impacts of an imports-led tax growth strategy on the trade deficit and exchange rate in Pakistan, utilizing secondary data spanning over the period from 2001 to 2019, The study employed Auto-regressive Distributed Lag (ARDL) approach to determine both short-run and long-run relationships between independent and dependent variables. The independent variables include Tax Revenue, Exchange rate, Imports, Inflation, Money supply and Exports while dependent variable was Trade Deficit. The findings reveal a positive relationship between trade deficit and tax revenue with exchange rate and trade deficit, while money supply and imports exhibit a positive relationship with trade deficit. Conversely, exports and exchange rate display a negative association with trade deficit. The study suggests that Pakistan should curtail its import volume and enhance tax revenue to mitigate trade deficit and achieve exchange rate stability.

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1. Introduction

1. 1. Background of study:

In the realm of economic dynamics, the relationship between tax strategies, imports, exports, trade deficits, and exchange rates holds a significant position. Among these intricate economic variables, the concept of an "Imports-led Tax growth strategy" emerges as a crucial issue that demands close scrutiny and policy consideration. As economies strive for equilibrium and sustainable growth, understanding the impact of such a strategy on trade deficits and exchange rates becomes paramount.

While the concept of an import-led Tax growth strategy has garnered attention in academic and policy circles, the focus has predominantly centered on its implications for tax revenue and economic development. However, a notable gap persists in the existing body of knowledge—a lack of exploration into how this strategy influences exchange rates and trade deficits. This study recognizes this gap and aims to fill it by shedding light on the previously unaddressed linkages between the import-led Tax growth strategy, exchange rates, and trade deficits.

A core motivation for this research is the pressing need to enhance policy frameworks and mechanisms that can effectively balance the import and export dynamics in economies. The strategic use of tax policies emerges as a potent tool in influencing economic behavior, steering consumption patterns, and shaping the flow of imports and exports. The intricate interaction between imports, exports, and taxation becomes increasingly crucial as these factors collectively impact a

nation's Gross Domestic Product (GDP), currency exchange rates, and inflationary expectations.

The impact of imports and exports extends beyond the economic realm, as it reverberates throughout various facets of a nation's functioning. The manipulation of tax policies can influence the imports and exports process, thereby influencing the GDP, exchange rates, and inflationary trends. Notably, an escalation in imports can create instability in trade deficits, prompting fluctuations in exchange rates. This scenario is further compounded by the interaction between currency strength and export competitiveness. A weaker domestic currency can stimulate exports by rendering products more competitively priced, while a stronger currency may limit the export potential by making imports more appealing. Moreover, inflation, as an important economic variable, has a direct bearing on exports. Fluctuations in inflation can directly impact input costs like raw materials and labor, subsequently influencing the export landscape. It becomes evident that the intricate connections between imports, exports, taxation, and currency values form a complex web that necessitates comprehensive investigation.

The significance of this study is rooted in the fundamental importance of achieving a harmonious equilibrium between imports and exports within an economy. As both imports and exports play a pivotal role in determining a nation's GDP, exchange rates, and overall price levels, a nuanced understanding of their interactions is imperative. By exploring the implications of an import-led Tax growth strategy on trade

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deficits and exchange rates, this study endeavors to contribute to the refinement of economic policy frameworks that can steer economies toward balanced growth and stability.

The objectives of this study are to understand the concept of an import-led Tax growth strategy and its implications for tax revenue and economic development and to explore previously unaddressed relationship between the import-led Tax growth strategy and its influence on exchange rates and trade deficits, besides examining how strategic use of tax policies can affect economic behavior, guiding consumption patterns, and influencing the flow of imports and exports. Moreover, the study has intended to comprehend the interplay between currency strength, export competitiveness, and import patterns, and how these factors collectively impact trade balances. The study will also focus on the question of achieving a balance between imports and exports within an economy, emphasizing their pivotal role in shaping a nation's GDP, exchange rates, and overall price levels.

2. Review of Literature

A literature review is an essential component of research, providing a comprehensive understanding of the existing body of knowledge relevant to the research problem. This section synthesizes and evaluates the key findings of various studies, helping to establish a foundation for the current study and identify gaps that warrant further investigation.

Bahmani Oskooee (1994) conducted a study focusing on Australia's external accounts and their reaction to macroeconomic policies. Utilizing a concise model, the study revealed a long-term relationship between Australian imports and exports. The study suggested that Australia's macroeconomic policies demonstrated effectiveness in the long run. The

integration technique, specifically the Engle-Granger approach, demonstrated co-integration between Australian imports and exports, indicating a lasting relationship. This outcome held despite challenges in maintaining equilibrium due to trade balance and current account deficits. Easterly and Kraay (2000) explored the dynamics between smaller and larger states in terms of economic gains. The study indicated that smaller states, despite possessing higher median GDPs, struggled to achieve optimal returns to scale. Smaller states exhibited higher stability in annual growth, attributed to increased business uncertainty. This uncertainty, unique to smaller states, was found to enhance development stability. The study implied that the positive correlation between sincerity and development stability could be a key factor in smaller states' economic performance. Tang and Alias (2005) investigated the relationship between exports, imports, and external market dynamics in 27 member countries, highlighting specific cases such as Benin, Fasco, Cameroon, and Guyana. The study emphasized the influence of exchange rates, macroeconomic policies, and deficit financing on trade balances. The research indicated that some countries violated international budget constraints and exchange rates, potentially due to unfavorable macroeconomic policies. These findings emphasized the significance of strategic policy decisions in maintaining trade equilibrium. Riazuddin (2006) emphasized the importance of capital goods exports for a country's economic health, with a specific focus on Pakistan. The study investigated short-term and long-term relationships between intermediate and capital goods, highlighting

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shifts in export and import dynamics. The research introduced a semi-reduced export equation accounting for the impact of imports on exports. The study found a long-run elasticity of exports with respect to imports at 37 percent, with a lag effect. Raw materials and capital goods contributed significantly to export performance. However, the study noted concerns regarding the contribution of imports to the trade balance, indicating challenges in maintaining equilibrium. Felipe et al (2009) explored the sufficiency of Pakistan's growth in maintaining the nation's balance of payments (BOP). They asserted that the BOP acts as a constraint to growth, especially in economies emphasizing both demand and supply-oriented development. Empirical evidence suggests that Pakistan's average growth rate stabilizes around 5% annually, significantly below the long-term target rate of 7-8%. The study argued that the BOP-constrained growth model has profound policy implications for Pakistan, highlighting the ineffectiveness of devaluing the exchange rate to improve the current account. They stressed the importance of diversifying exports, focusing on goods with high-demand elasticity and complexity, and enhancing supply-side measures to stimulate exports. Abbas and Raza (2013) aimed to understand the influence of Pakistan's trade deficit on its fiscal structure, with trade balance as the independent variable and GDP, foreign direct investment (FDI), and exchange rate as dependent variables. Utilizing a dataset from 1988 to 2011, various analytical techniques depicted the rupee's depreciation and inadequate FDI, highlighting high imports versus low exports. An interesting correlation emerged between the trade deficit and variables like GDP, foreign investment, and the exchange rate, barring the trade volume. The study's results underscored that effective governance, proper utilization of natural

resources, and fostering domestic investment can potentially curb imports and enhance exports. They also highlighted previous instances where exports exceeded imports, signaling the potential for positive change with appropriate policies. Fiaz et al (2021) delved into the effects of exchange rate fluctuations on the agricultural sector, employing a nonlinear auto-regressive distributed lag model. Sourcing data from 1970 to 2019 from state institutions, they leveraged the ARDL technique, specifically its non-linear version, to account for asymmetric effects. Their analysis revealed both stationary and non-stationary variables. Significantly, they found that positive shifts in the exchange rate had a lesser impact on the agricultural sector than negative shifts, both in the short and long run.

This review has found a significant gap in the literature by focusing on the implications of the import-led Tax growth strategy on exchange rates and trade deficits, which has been an overlooked by prior studies. The study's findings can potentially guide policymakers in refining tax policy frameworks. By understanding the intricate dynamics between imports, exports, and taxation, policies can be developed that balance economic interests and promote sustainable growth. The study offers a comprehensive examination of the interplay between various economic variables, such as inflation, currency values, and trade dynamics, thus contributing to a holistic understanding of the nation's economic ecosystem. Through its nuanced exploration of imports, exports, and taxation, the study contributes to the discourse on how economies can be steered toward balanced growth and stability.

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The Novelty of current study lies in its focus on the import-led Tax growth strategy, which aims at amplifying tax revenue via increased import volume. This approach contrasts with existing literature that primarily examines the implications of imports on trade deficits or exchange rates. This research's novelty stems from its unique angle on the import-led Tax growth strategy and its repercussions, offering a fresh perspective in academic literature. As far as the knowledge of author, no study has so far been conducted on this issue in Pakistan and all previous studies focused on the role of exports in tax revenue, foreign exchange reserves and economic growth.

3. Theoretical Framework

In order to trace the foundation of this study we have selected the following relevant theories:

3.1 Theory of Mercantilism:

Mercantilism, emerging prominently during the Sixteenth century, represents one of the earliest endeavors in the sphere of economic thought. Rooted in the paradigm of state-controlled economies, the theory prioritized the augmentation of a nation's wealth as primarily gauged by its gold and silver reserves. The essence of mercantilism revolved around the accumulation of precious metals, specifically gold and silver. A nation's affluence was perceived in direct relation to these reserves. Central to mercantilism is the idea that a nation should aim for a trade surplus. This is achieved by maximizing exports and minimizing imports. When other countries purchased more from a nation than what they sold to it, the balance was paid in precious metals, thus augmenting the nation's wealth. In the context of mercantilism, it was considered beneficial for a country to have its imports value less than its exports, leading to protective

measures to prevent trade deficits. For instance, the British Empire exemplified this approach, extracting raw materials from its colonies like America and India to bolster its own wealth. Other European powers like France, Spain, Portugal, and the Netherlands followed suit, erecting vast colonial empires that funneled wealth back to the home countries.

3.2 Absolute Advantage Theory:

In 1776, Adam Smith, a prominent Scottish economist and philosopher, challenged the prevailing theory of mercantilism with his seminal work, "The Wealth of Nations." In this groundbreaking treatise, Smith introduced the concept of "absolute advantage," which marked a departure from the prevailing notions surrounding international trade. His theory of absolute advantage centered on a nation's inherent ability to produce a particular good more efficiently than another nation. In other words, if a country can produce a certain product using fewer resources (such as labor, time, and capital) compared to another country, it possesses an absolute advantage in producing that good. In this theory, Smith argued that nations should specialize in producing goods for which they have an absolute advantage. By concentrating on what they can produce most efficiently, countries could maximize their output and overall economic well-being. According to this theory, international trade between countries with differing absolute advantages is mutually beneficial. Even if one nation is more efficient in producing all goods, trade can still be advantageous, as each country can focus on what it does best and then exchange those goods. Perhaps the most radical departure

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from mercantilism, Smith advocated for free trade – a hands-off approach to government intervention in international commerce.

3.3 Comparative Advantage:

In 1817, David Ricardo, an influential English economist, expanded upon the concept of trade introduced by Adam Smith with his theory of "comparative advantage." This theory built upon the foundation of absolute advantage and introduced a more nuanced understanding of how countries could benefit from international trade. Ricardo's theory posited that even if one country is more efficient in producing all goods compared to another, there are still gains to be obtained from specialization and trade. He argued that Nations should specialize in producing goods for which they have the lowest opportunity cost, even if their absolute efficiencies are lower. Comparative advantage acknowledges that countries differ in their relative productivity for producing different goods. The distinction between absolute and comparative advantage is crucial. Absolute advantage emphasizes a country's overall efficiency in producing specific goods, while comparative advantage delves into the efficiency differences between producing two goods within a country and between countries. Comparative advantage remains a cornerstone of modern trade theory and has played a crucial role in shaping international trade policies.

3.4 Heckscher-Ohlin Theory of Comparative Advantage:

In the early 20th century, Swedish economists Eli Heckscher and Bertil Ohlin extended the concept of comparative advantage by introducing the Heckscher-Ohlin theory. This theory focused on how a nation could attain comparative advantage in producing specific goods based on its relative abundance of production factors—land, labor, and

capital. This theory is rooted in the relative abundance of production factors within a country. These factors determine the country's potential to produce certain goods efficiently. The theory contends that the prices of factors—such as labor, land, and capital—are determined by their supply and demand. Abundant factors relative to demand would be cheaper, while factors in short supply relative to demand would be more expensive. According to this theory, countries tend to specialize in export goods that intensively use their abundant and thus cheaper factors of production. It offers insights into how countries can excel in producing specific goods based on their available resources.

3.5 Classical Theory of Taxation:

Adam Smith, recognized as a pioneer of the classical theory of taxation, expounded on its fundamental principles. In his work "An Inquiry into the Nature and Causes of the Wealth of Nations," he laid out key features and conditions for an effective taxation system. Smith's four main principles of taxation were suitability, proportionality, justice, and economy. Smith's contributions paved the way for subsequent economists to build upon and refine the classical theory. Scholars like David Ricardo, William Petty, and John Stuart Mill further developed and expanded the concepts related to taxation. Over time, the role of taxation underwent changes as economic relationships grew more complex. The need for state regulation and increased governmental intervention necessitated alterations in taxation policies. However, this remains relevant in contemporary discussions of fiscal policy and revenue generation. Its

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principles, including fairness, proportionality, and efficient resource allocation, continue to inform taxation policies in various nations.

3.6 Keynesian Theory of Taxation:

The Keynesian theory of taxation emerged as a response to evolving economic circumstances and a departure from the classical theory. Named after economist John Maynard Keynes, this theory introduced new perspectives on the role of taxation within the context of economic management and government intervention. Unlike the classical emphasis on revenue generation, the Keynesian theory viewed taxation as a tool for demand management within the economy. Taxation was seen as a means to influence aggregate demand and stabilize economic fluctuations. Keynesian economists believed that during periods of economic downturn, governments could use tax policy to inject demand into the economy. Tax cuts could increase disposable income, encouraging consumption and boosting overall economic activity. The Keynesian approach advocated for active fiscal policies, including taxation changes, as a way to counter recessions and stimulate economic growth. By adjusting tax rates, governments could influence spending patterns and create a multiplier effect. This theory marked a significant departure from the laissez-faire economic approach of the classical era. It emphasized the role of government intervention in stabilizing economies, especially during times of economic distress. It had a profound impact on economic policy, particularly during the mid-20th century.

In the light of above discussed theoretical frame work the following hypothesis have been developed for this study: -

H_0: The import-led Tax growth strategy has no significant implications for tax revenue and economic development.

H₁: The import-led Tax growth strategy has significant implications for tax revenue and economic development.

Ho: The import-led Tax growth strategy has no influence on exchange rates and trade deficits.

H₁: The import-led Tax growth strategy does influence exchange rates and trade deficits.

Ho: There is no relationship between strong currency, export competitiveness, and import patterns and trade balances.

H₁: There is a relationship between strong currency, export competitiveness, and import patterns and trade balances.

4. Data and Methodology

The secondary data was used in this study which was collected from World Development indicators, Pakistan Economic Survey, IMF and Asian Development Bank for the period spanning from 2001 to 2021 to analyze relationship between import-led tax growth strategy with exchange rate and trade deficit in Pakistan. The sample of study was Pakistan's international trade. The independent variables were Tax Revenue, Exchange rate, Imports, Inflation, Money supply and Exports while dependent variable was Trade Deficit. The conceptual model containing independent and dependent variable are shown in Figure 1
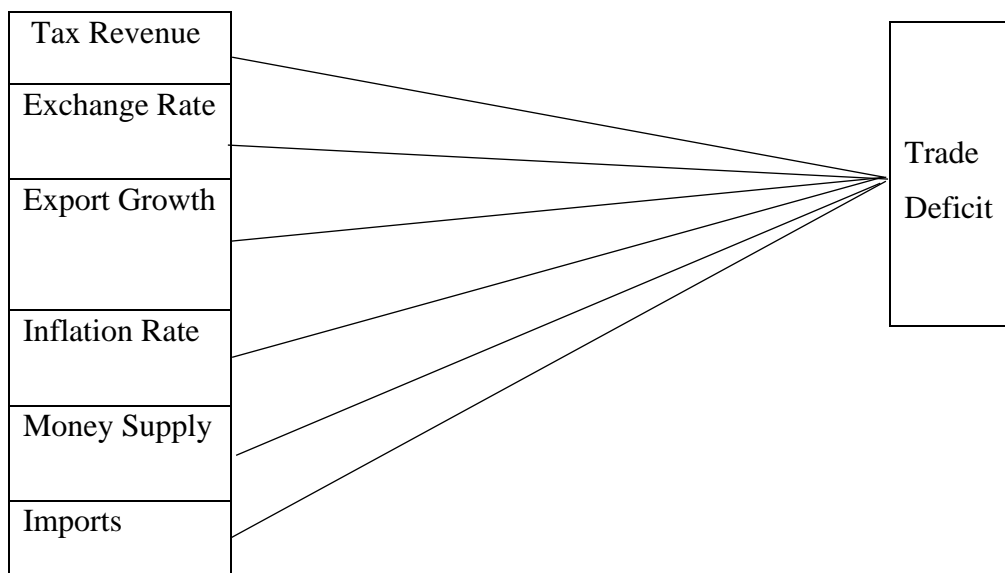
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Fig 1: Conceptual Model

The analytical techniques applied to analyzed the data include descriptive statistics, ADF test, Correlation Matrix, Bound Test, ARDL Model and diagnostic test. Descriptive statistics analysis used to check normal distribution of data during the study period while Augmented Dicky Fuller (ADF) test was applied to check stationary among variables. Correlation Matrix was used to determine degree of relationships between variables while Bound Test and ARDL model was applied to estimate long run relationship between independent and dependent variable. Diagnostic test has been used to check Auto correlation and Heteroscedastic among variables in the model.

4.1 Econometric model:

The specified model of this research study is engraved as under

Tradedeficit=β_0+β_1(TaxRevenue)+β_2(Moneysupply)+β_3(Inflation)+β_4(Imports)+β_5(Exports)+β_6 (Exchange Rate) + U

This model is shown in equation form in the following: -

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$$Y= (TR+ MS+ INF+ ICP+EGR+ER) +e \qquad (1)$$

Where:

Y=Trade deficit

TR=Tax Revenue

MS=Money Supply

Inf=Inflation

Imp=Imports

Exp=Exports

ER=Exchange Rate

$$TD=\beta0+\beta1(TR)+\beta2(MS)+\beta3(Inf)+\beta4(Imp)+\beta5(Exp)+\beta6(ER)+U \quad (2)$$

Based on econometrics techniques, we have short Run and Long Run ARDL model, which is engraved as under: -

$$TD1=\beta0+\sum_{i=1}^{p} B1i\, TRt\text{-}i+\sum_{i=1}^{p} B2i\ MSt\text{-}i +\sum_{i=1}^{p} B3i\ INFt\text{-}i+\sum_{i=1}^{p} B4i$$

$$IMPt\text{-}i +\sum_{i=1}^{p} B5i\ \ EXPt\text{-}i +\sum_{i=1}^{p} B6i\ ERt\text{-}i \qquad (3)$$

5.Results

5.1 Descriptive Statistics of Variables:

Descriptive analysis is used to check Skewness, Standard deviation, J.Bera and kurtosis. Table 1 shows the results of this analysis.

Table 1:

Results of descriptive statistics.

	TD	TR	MS	Inf	Imp	Exp	ER
Mean	6.7885	1039.70	14.8105	7.96043	32228.	11.3331	87.93186
Median	6.632	801.400	14.8000	7.77234	2910975.	15.3100	85.50170

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Maximum	9.9123	247.000	19.6000	17.0123	7443253.	31.1200	158.0253
Minimum	4.0123	261.6000	9.60000	2.987650	627000.0	-9.62000	57.57450
Std. Dev	1.6732	726.8094	3.05157	3.879783	2073537.	10.73840	28.22177
Skewness	0.2539	0.71450	0.01151	0.594325	0.398966	0.366194	0.829967
Kurtosis	2.4953	2.2374	2.14409	2.676616	2.188375	2.443710	3.174936
Jarque-Bera	0.4059	2.07695	0.58037	1.201329	1.025550	0.669632	2.205568
Probability	0.8163	0.353994	0.74812	0.548447	0.598831	0.715470	0.331946
Sum	128.98	19754.30	281.400	151.2483	6123204 0	215.3300	1670.705
Sum Sq.Dev	50.3929	950853 4.	167.617	270.9489	7.74E+13	2075.638	14336.43
Observations	19	19	19	19	19	19	19

Table 1 shows the average value of the trade deficit, Tax revenue, money supply, inflation, imports, exports growth rate, exports current prices and exchange rate is 6.7885,1039.700, 14.81053, 7.96043, 3222739, 11.33316, 87.93186. The maximum value of trade deficit 9.9123 and minimum value is 4.012340 and std dev is 1.673203 and skewness is 0.25 0 mean symmetric appropriation if kurtosis is grater, then 3 data is highly

peaked if less than 3 data is normally distributed. Then Trade deficit value is 2.49 kurtosis there is normally distributed. Jarque- Bera combine result of skewness and Kurtosis. that is trade deficit value is 0.405939. The probability value show that data is normally distributed. Export growth rate Skewness is -0.366194.and another variable is positive then those are symmetric. Kurtosis all variable is less than 3 there is normally distributed and exchange rate is 3.1749 there is highly peaked due to greater than 3.

5.2 Correlation Matrix:

The Correlation matrix explain the association between pair of variables and their value lie between +1 to -1. The sign shows positive and negative association between variables. If the sign is positive then the relation between variables is positive and if the sign is negative relation is negative. If value is zero then there is no relationship between variables. Table 2 shows the results of Correlation matrix.

Table 2

Results of Correlation of Matrix

	TD	TR	MS	Inf	Imp	Exp	ER
TD	1	0.71506	-0.6203	0.15430	0.69023	-0.246	0.5913
TR	0.71506	1	-0.4453	-0.1280	0.9760	-0.211	0.9599
MS	-0.6203	-0.4453	1	-0.1679	-0.4856	0.096	-0.414
Inf	0.15430	-0.12805	-0.1679	1	-0.00070	0.436	0.0089
Imp	0.69023	0.976017	-0.485	-0.0007	1	-0.013	0.9808
Exp	-0.2468	-0.21157	0.0962	0.4362	-0.1336	1	-0.0467

| ER | 0.5913 | 0.959995 | -0.4147 | 0.0089 | 0.9808 | -0.04 | 1 |

The Correlation matrix shows the pair wise relationship between the variables. The association between trade deficit and tax revenue is positive as the coefficients value is 0.7150 is positive, showing positive relationship between the two variables. The correlation between money supply and trade deficit is negative as coefficients -0.620, the sign is negative, showing negative relationship .The correlation between inflation and trade deficit is positive as the coefficient value is 0.1543.The correlation between import and trade deficit is positive and its value is o.69 .The correlation between export and trade deficit is also negative because coefficients value is -0.2468 showing negative relationship .The correlation between exchange rate and Trade deficit is positive as the coefficient is 0.5913 showing positive relationship between these two variables.

5.3 ADF Test:

This approach is used to check the stationarity among variables. If the variable is stationer at level, then we will use OLS. If variable is stationer at level and first difference, we can use ARDL approach for data analysis. The results of ADF Test are shown in table 3.

Table 3

Results ADF Test:

variables	level		First difference		2nd difference		Remarks
	Intercept	Trend and intercept	Intercept	Trend intercept	Intercept	Trend intercept	
MS	4.073631						1(0)
		-4.217284	-4.085083	-3.430553	-4.548487	-4.225?	
	0.0069	0.0205	0.0073	0.0876	0.0044	0.0274	
Inf							1(1)
	2.799931	-3.279703	-7.201015	0.0002	-5.339753		
	0.0780	0.1012	0.0000	- 6.793627	0.0008		
TR	---	---	----	7.962783* 0.0000	----		1(1)
TD			3.869648 *0.0103	----	-----	----	1(1)

EXP	3.205630* 00365						1(0)
IMP			4.616757 *0.0024				1(1)
	---	---		-----	----	---	
ER					4.527856 *0.0031	---	2(1)
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The results of ADF test are discussed one by one. The t-value of money supply is -4.073631 and its p-value is 0.0069 in the first level. In the first difference, the t-value is -4.085083, with a p-value of 0.0073. The variable

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is stationary at level 1 (0). In the first level of inflation (INF), the ADF test resulted in a t-value of -2.799931 and a p-value of 0.078. In the first difference, the t-value is -3.279703, with a p-value of 0.1012. The variable is not stationary at level 1 (1). In the same way, in the first difference of tax revenue (TR), the ADF test resulted in a t-value of -3.869648 and a p-value of 0.0103. The variable is stationary at level 1 (1). The variable export growth rate (EXP): has a t-value of 3.205630 with a p-value of 0.00365. The variable is stationary at level 1 (0). In the first difference of Imports (IMP), the ADF test resulted in a t-value of -4.616757 with a p-value of 0.0024. The variable is stationary at level 1 (1). In the level of Exchange rate (ER), the ADF test resulted in a t-value of 4.527856 with a p-value of 0. 0031.The variable is stationary at level 2 (1).

Based on the above results, it's clear that the stationarity of variables varies. Variables like Money Supply, Tax Revenue, Export Growth Rate, Imports, and Exchange Rate are stationary, while Inflation is not stationary in its level but becomes stationary after differencing. As the results of stationarity are mixed, we can used ARDL approach to analyze data.

5.4 Bound Test:

This test is applied to check long run association between variables. This test reveals if f-statistics calculated value is larger than critical value then null hypothesis rejected and alternate hypothesis is accepted. If f-statistics value is less then critical value then we can accept null hypothesis. The hypotheses are given below: -

Null hypothesis (Ho): No long run relationship exists between variables.

Alternative hypothesis(H_1): Long run relationship exists between variables. Table 4 exhibits the results of Bound test.

Table 4

Results of Bound Test

F- Statistics   6.572787

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======== Critical values of Bound Test

SIGNIFICANCE Y	I 0 BOUNDS	I1 BOUNDS
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26

From the above results, we noted that if f-test value 6.572787 is greater than bound value and it mean lower bound or greater 5% or all values are greater than 10%, 5%, 2.5%, 1%. and f- statistics value is lower than bound value, which suggests that there are long run association between variables. Thus, Ho hypothesis is rejected and alternate hypothesis, which states that there are positive and significant relationship between variables in the long run, is accepted. Thus, these results allow us to use ARDL model to determine long run and short run relationship between independent and dependent variables.

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5.5 ARDL Model

In this model, the dependent variable is trade deficit, and independent variable are money supply, inflation, imports, exports and tax revenue. The results of ARDL model are given in Table 5.

Table 5

Long Run outcomes of ARDL Model:

Dependency of Variable Trade Deficit: TD ARDL (0,1,1,1,1,0,1,2,2)				
Variables	Coefficients	Std. Errors	T-Statistics	Probs
Tax Revenue	0.003797	0.001185	3.205298	0.0491
Money Supply	0.184115	0.058733	3.134779	0.0519
Inflation	0.170158	0.038670	4.400309	0.0218
Imports	0.000003	0.000001	4.983163	0.0155
Exports growth rate	-0.102344	0.042297	-2.419638	0.0942
Exchange Rate	-0.194330	0.027503	7.065708	0.0058
C	11.951840	1.395597	8.563965	0.0033

The results in Table 5 show that tax revenue ,money supply, imports and inflation have positive relationship with trade deficit while exports and exchange rate have negative association with trade deficit .If one unit of tax revenue is increased the trade the deficit will likely to be increased by 3% .However, if one unit of money supply is increased the trade deficit will likely to be increased by 18%.If one unit increases in inflation rate, the trade the deficit will likely to be increased by 17%.If one unit of import

is increased the trade deficit will likely to be to be increased by 3%.If one unit of exports is increased trade deficit will likely to be decreased by 10.23%.If one unit of exchange rate is increased trade deficit will likely to be decreased by 11% in the long run. Surprisingly, exports have negative relationship with trade deficit while imports have positive association with trade deficit which are contrary to economic theory. This is the reason that the policy should makers give more attention to imports than exports because imports increased volume of Tax levies while imports are subsidized through Tax money and contribute very low in Tax revenue. It means that import-led Tax growth strategy is not effective to enhance Tax revenue. Table 6 exhibits the summary of the model: -

Table 6:

Model Summary

R-Squared	0.996561	Mean dependent var	6.9427
Adjusted R-squared	0.980510	S.D Dependent Var	1.576620
S.E of regression	0.220106	Akaike info Criterion	-0.314512
Sum of Squared Resi	0.145339	Schwarz Criterion	0.427464
Log Likelihood	17.83061	Hannan- Quinn Crite	-0.212204
F test-Statistics	62.08932	Durbin- Watson Stat	2.013773
Prob test(F-statistic)	0.0029		

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The results show that. R-Squared and adjusted R-square values are 0.996 and 98.05, respectively, showing that independent variables caused more than 98% variation in dependent variable. The probability value of F test -statistics is below 5% which shows overall significance of that model. Durban Watson value is 2.01 that is near 2. Thus, the model is goodness of fit because it reveals significant impact of independent variables on dependent variable and has strong predicting power.

5.6 Auto-correlation and Heteroscedasticity tests:

The application of these tests is necessary because R-squared value is more than 98 percent. These tests enable us to check whether independent variables are correlated with one another and the distribution of error term is not normal. These tests are also used to check the null and alternate hypotheses. The null hypotheses for the two tests is that there is no problem of auto-correlation and Heteroscedasticity in the model while alternate hypothesis is that there is a problem of auto-correlation and Heteroscedasticity in the model. The calculated results of LM test and f-statistics are presented in Table 7.

Table 7

Serial Correlation and Heteroscedasticity Tests

Test statistics	LM Version	*F version*
Serial correlation	0.9375	F(2,3) 0.48
Heteroscedasticity	1.5785	F(12,5) 0.3216

The test statistic of serial correlation is 0.9375 and the p-value is 0.48. Both are larger than their respective thresholds (the critical value depends on the sample size and degrees of freedom). Therefore, null hypothesis cannot be rejected as there is no serial correlation in the model. As regard

to Heteroscedasticity: The value of test statistic is 1.5785 and the p-value is 0.3216 and both are larger than their respective thresholds (the critical value depends on the sample size and degrees of freedom). Therefore, null hypothesis is accepted as there is no problem of heteroscedasticity in the model. Thus, there are no auto-correlation and Heteroscedasticity problems in the model.

6. Discussion

The objective of this study was to analyze the impact of imports-led tax growth strategy on trade deficit and exchange rate in Pakistan. The independent variables were Tax Revenue, Exchange rate, Imports, Inflation, Money supply and Exports while dependent variable was Trade Deficit. Different statistical techniques such descriptive statistics, correlation Matrix, ADF Test, Bound Test, ARDL model and Auto-correlation and   Heteroscedasticity tests were applied to draw the results. The descriptive analysis shows that the data is normally distributed. The correlation Matrix results show positive association between tax revenue and trade deficit, between inflation and trade deficit, between import and trade deficit whereas negative correlation was found between money supply and trade deficit, between exports and trade deficit. The results of ADF showed mixed results and the selected variables were found to be stationers at different levels, which allowed us to apply ARDL approach. The long run results were determined through Bound Test and ARDL model.

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   The ARDL results demonstrated significant associations between the trade deficit and its determinants. Tax revenue, money supply, imports, and inflation showed positive relationships with the trade deficit. In contrast, exports and exchange rate exhibited negative associations. For instance, an increase of one unit in tax revenue was associated with a 3% increase in the trade deficit. Similar relationships were identified for other variables. The analysis provided valuable insights into the relationships between the trade deficit and various economic indicators. These results are consistent with the findings of Kumar and Seema (2005) who have studied exports and imports for 22 Economies. If one unit of exchange rate is increased trade deficit will likely to be decreased by 19.43%. These results also support the findings of Ahmad et al (2010) who found that Pakistan's export performance during the last three decades were not good. The R^2 value is 0.996 represents independent variable has caused 99% variations in dependent variable. f-statistical value is less than five percent which shows the goodness of fit of the model. Durban Watson's value is 2.01 that is near to 2, we can say that there is no auto correlations between independent variable in the model. Tax revenue has positive association with Trade deficit in the long run.

7. Conclusions

   We can conclude from the above discussion that import-led tax collection strategy is not workable in the long run because it leads the country to imports more than exports and spends more than earns, resulting in high import bill, trade deficit and external debt burden. For example, in 2021 Pakistan's imported goods and services worth US$80 billion and exported goods and services to the tune of US$63 billion, generating trade deficit of US$17 billion, which was too much.

International Monetary Fund and even friendly countries refused to lend further loans util trade deficit is reduced to sustainable level. Consequently, Pakistan restricted imports for about one year to reduce the level of imports.

7.1 Practical implications

The finding of study highlights practical implications which can guide policymakers in formulating strategies to manage the trade deficit. For instance, the positive relationship between tax revenue and trade deficit suggests that increasing tax revenue may lead to an expansion of the trade deficit. This insight can inform decisions on tax policies. Understanding the relationships between economic indicators can help stabilize the economy. For example, recognizing the negative correlation between exchange rate and trade deficit implies that interventions to strengthen the exchange rate might positively impact the trade deficit. Policymakers can utilize the insights about variables like imports, exports, and exchange rate to devise strategies for balancing trade and enhancing export competitiveness. The ARDL model's outcomes can serve as a basis for forecasting the trade deficit under various scenarios, aiding in budgetary planning and resource allocation as well as forecasting. The study's insights into the relationship between trade deficit and economic indicators can be beneficial in negotiations and discussions with international trading partners, helping to create mutually beneficial trade agreements. The study's findings can be used to evaluate the effectiveness of past economic policies and interventions, shedding light on areas that

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might need further attention or modification. In short, this study provides valuable theoretical insights into the relationships between trade deficit and various economic indicators. These insights have practical implications for policy decisions, economic stability, trade management, and international trade relationships.

7.2 Limitations and suggestions for further research

There are certain limitations which restrict the scope of this study. For example, this study relies on secondary data for the period of 2001-2019, which might not capture recent developments or changes in economic dynamics. A more updated datasets could provide a more accurate representation of the relationships. The ARDL model provides valuable insights, it simplifies complex economic relationships. Other factors not considered in this model might contribute to trade deficit fluctuations. The study doesn't delve into external factors like geopolitical events, global economic conditions, or policy changes in trading partner countries that can significantly impact trade deficits. This study identifies associations between variables, it doesn't establish causal relationships. Further research, including causal analysis, is necessary to comprehend the underlying mechanisms. Similarly, the model doesn't account for all potential determinants of trade deficit, which could lead to omitted variable bias and impact the accuracy of findings. Therefore, it is suggested that including datasets of current years could provide a comprehensive understanding of how economic relationships have evolved over time and incorporating qualitative factors like trade policies, market conditions, and political factors could offer a deeper understanding of the trade deficit fluctuations. Utilizing panel data techniques to analyze a wider range of countries and their trade dynamics

could provide a more holistic perspective. Further research could focus on analyzing the effectiveness of specific policy interventions on trade deficit management and economic stability. In addition, conducting cross-country comparisons to understand how different economies' trade deficits respond to similar economic indicators could provide valuable insights.

Data statement

The data that supports the findings of this study will be made available by corresponding authors on strong request.

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