External Debt or Tax Revenue: Reason for Inflation in Pakistan during Economic Downturn

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Abstract

Purpose: The study has intended to determine that either external debt or tax revenue is the reason for inflation in Pakistan.

Method: Annual time-series balanced data from the year 2002 to 2021 have been analysed using unit root, cointegration, and OLS analyses. The study was carried out in Pakistan.

Results: The research identified that external debt has an insignificant and negative relationship with inflation, while, tax revenue has a significant and positive relationship with inflation. In order to successfully develop the economy and reduce inflation, the government should consistently take steps to enhance the performance of each economic sector. As a result, it is essential to design policies and strategies to develop these sectors since they serve as the foundation for driving the economy and maximizing TR opportunities.

Novelty: Data on Pakistan's external debt, tax revenues, and inflation are inconsistent, change over time, and vary by location. Further in-depth information is required to fully comprehend the link between these factors.

Keywords: *External Debt, Tax Revenue, Inflation, Pakistan, Time-Series.*
JEL Codes: *H2, A1, F0, E6*

1. Introduction

Global inflation can have several causes, although external debt is not always one of them or even the main one. A country may need to borrow more money to pay off its high level of foreign debt, raising the demand for credit across the global financial system (Ha et al., 2022). The money that governments receive from various sources, including income taxes, corporation taxes, value-added taxes (VAT), and customs charges, is known as tax revenue. Governments depend on this money for infrastructure, social services, and public goods (Markus & Muchtar, 2023). Moreover, tax revenue's impact on government expenditure has the potential to affect inflation indirectly. A government may turn to money creation, which can cause inflation if it cannot raise enough tax revenue to pay its expenses. South Asian economies, especially their foreign debt and tax collections, have been significantly impacted by the COVID-19 epidemic. While governments had to borrow money to respond to the problem, the COVID-19 epidemic has caused a dramatic rise in the region's foreign debt levels. The external debt-to-GDP ratio for South Asian nations rose from 29.3% in 2019 to 36.3% in 2020, according to the World Bank (El Mahdy et al., 2022).

Pakistan is a developing nation in South Asia that has long struggled with its external debt. Pakistan's external debt as of June 2021 was $115.7 billion, a considerable rise from June

2020's figure of $99.6 billion. Moreover, Pakistan's high level of external debt has a substantial effect on inflation. The fundamental cause of this is that when a nation takes on large amounts of debt from foreign lenders, it puts pressure on its currency and causes it to depreciate (Salman & Ali, 2022). At an average rate of about 8.5% in the fiscal year 2020–2021, Pakistan's inflation rate has been high over the previous several years (Munir & Batool, 2022). Moreover, it is anticipated that Pakistan's substantial external debt will continue to push the country's inflation rate. To lessen currency pressure, the government must reduce reliance on foreign borrowing and boost exports (Munir & Batool, 2022).

High indebtedness has remained one of the significant policy concerns in Pakistan since the beginning of the 21st century. Government regulations that do not encourage the use of borrowed funds for investment-oriented projects or those used for non-profit endeavours will harm economic growth (Baqir, 2023; Naveed & Islam, 2022). This means that when fund-raisers fail to invest borrowed money in revenue-generating and other productive projects, excessive borrowing not only reduces the ability of the indebted country to service its debt and pay off its loans but also puts obstacles in the way of long-term, sustainable economic growth and development (Baqir, 2023; Naveed & Islam, 2022).

When tax revenue is low, the government may borrow money or create money to cover its expenses, which will increase the amount of money in circulation. A rise in money supply can lead to inflation if the economy's productive capacity cannot keep up with the demand for goods and services (Malik, 2022; Shabbir et al., 2023; Yaru & Raji, 2022). When the government spends less on public goods and services owing to low tax collection, it might lead to a drop in the supply of those goods and services. However, if demand for these products and services stays the same, there would be demand-pull inflation as prices rise due to shortage (Shabbir et al., 2023). Cost-push inflation, in which companies raise prices to compensate for their increased production costs, may result from this decline in productivity (Mondjeli & Nomo-Beyala, 2023; Sultan et al., 2022). The black-market economy might grow as a result of low tax revenues. People in this situation engage in unlawful activity to avoid paying taxes, which lowers government revenue. This can lead to inflation when the money supply expands due to unlawful activity (Malik, 2022).

Despite the efforts of the government to stabilise the economy, Pakistan has been enduring chronic inflation throughout economic downturns. The main reason for inflation in these times is not universally agreed upon by economists; some argue that foreign debt is to blame, while others blame a lack of tax collection (Salman & Ali, 2022).

Many researchers have been done regarding external debt, tax revenue, and the factors which cause inflation in Pakistan (Din et al., 2020; Jabeen & Naz, 2022; Kausar et al., 2022; Manzoor et al., 2019; Muhammad et al., 2022; Salman & Ali, 2022). Empirical data does not support the link between Pakistan's external debt, tax collections, and inflation during economic downturns. Instead of solid empirical data, most research in this field uses theoretical models and qualitative analysis (Awan & Qasim, 2020; Fatima & Olasunkanmi, 2023; Gul et al., 2021). While some studies contend that Pakistan's high levels of foreign debt or low tax revenues are the main causes of inflation during recessions (Asghar & Amjad, 2022; Hassan et al., 2021; Khan et al., 2021), it is unclear if there is a direct link between these factors. To determine the causality's direction, more investigation is required. Data on Pakistan's external debt, tax revenues, and inflation are inconsistent, change over time, and vary by location. Further in-depth information is required to fully comprehend the link between these factors (Asghar & Amjad, 2022). Although few policy recommendations are offered, most studies in this field concentrate on determining why inflation occurs in Pakistan during economic downturns (Ahmad, 2022; Din et al., 2020; Iqbal et al., 2022; Zakaria et al., 2021). Future studies should offer ideas for policies to aid Pakistani authorities in reducing inflation pressures during

economic downturns. In Pakistan during economic downturns, closing these gaps offers a better understanding of the link between these factors and guides policy measures to reduce inflationary pressures.

2. Literature Review

2.1 Neoclassical growth theory

Neoclassical growth theory was proposed by Solow (1999) as a response to Hagemann (2009), which suggested that growth was driven by investment and savings. According to the neoclassical growth theory, economies can expand indefinitely if they keep innovating and investing in new technology (Acemoglu & Dell, 2009). This is due to the increased effectiveness and yield that the development of technology enables, which raises levels of production and revenue. Moreover, the key constructs of neoclassical growth theory include the idea that markets are efficient and that individuals make rational decisions based on information and incentives (Crotty, 2011; Duan & Huang, 2017). The theory also emphasizes the importance of human capital, or workers' skills and knowledge, in promoting economic growth (Zhang, 2018). Neoclassical growth theory also stresses the importance of property rights and institutions in promoting innovation and technological progress (Law et al., 2020).

The fiscal theory of the price level

Carlstrom and Fuerst (2000) proposed the fiscal theory of the price level (FTPL). A macroeconomic theory attempts to explain how fiscal policy can influence an economy's price level (Bernanke & Mishkin, 1997). The theory suggests that the government's budgetary decisions, including its spending level and taxation, directly impact the nominal value of money (O'connor, 2017). In contrast to traditional monetarist theories, which centre on the effect of monetary policy on inflation, this theory emphasizes the effect of monetary policy on economic growth (Boskin, 2012). The FTPL posits that the value of money is determined by the government's budget constraints (Malmberg & Öberg, 2021). In other words, the budget deficit or surplus of the government affects both the price level and the real economy. If the government runs a budget deficit, it must finance it by issuing debt or creating money, increasing the money supply and inflation. Conversely, a budget surplus reduces the money supply and puts downward pressure on prices (Mussa, 2019). The characterization of the FTPL includes the government's budget constraint, which relates the government's spending and tax revenues to its debt issuance or money creation (Katagiri et al., 2020).

2.2 Inflation

Fiscal policy is the government's use of taxes and spending plans to affect the economy (Benmelech & Tzur-Ilan, 2020). Inflation is the rise in an economy's average price level of products and services (Ridwan, 2022). The price level theory asserts a direct connection between fiscal policy and inflation. According to the theory, increasing government spending or decreasing taxes can result in inflation by raising the total price level (Greenwood & Hanke, 2021). Another theoretical connection between inflation and fiscal policy is the concept of the "inflation tax." When the government needs to finance its spending, it can either raise taxes or borrow money (Peltier, 2020). If the government chooses to borrow, it increases the money supply, which can lead to inflation. This inflation, in turn, reduces the value of money held by individuals and firms, effectively acting as an inflation tax (Leclaire, 2022). In summary, the theoretical connectivity between inflation and fiscal policy of price level theory suggests that fiscal policy can impact the price level by influencing the money supply and that inflation can be considered a type of tax on money held by individuals and firms (Chugunov et al., 2021).

2.3 External debt

Neoclassical growth theory is a framework used to explain economic growth regarding capital accumulation, technological progress, and population growth (Rumanzi et al., 2021). According to this theory, sustained economic growth only occurs if the savings rate is high

enough to support investment in physical and human capital, which leads to increased productivity and higher incomes (Çakar et al., 2021). While external debt refers to the amount of money, a country owes to foreign lenders (Ogbonna et al., 2021). When a country borrows money from abroad, it can use the funds to invest in infrastructure, education, and other areas that can promote economic growth. However, if the country cannot repay its debt, it can lead to a financial crisis and economic instability. Neoclassical growth theory predicts that external debt can positively and negatively affect economic growth (Makun, 2021).

Additionally, external borrowing can provide a source of finance for investment, leading to higher productivity and growth. In contrast, if a country borrows too much, it may lead to a debt crisis and economic contraction (Ryder & Fu, 2021). Therefore, external debt and neoclassical growth theory are theoretically connected because external borrowing can provide a source of financing for investment in physical and human capital, which can lead to sustained economic growth (Mohsin et al., 2021).

2.4 Tax revenue

Fiscal policy refers to the government's use of taxes, government expenditure, and borrowing to influence the economy's overall performance (Cochrane, 2022). Fiscal policy aims to stabilize the economy by making business shifts less important (Vence & López Pérez, 2021). However, the price level theory looks at how changes in the amount of money in the market affect prices (Taylor & Barbosa-Filho, 2021). The connection between tax revenue and the fiscal policy of the price level theory claims that the government uses tax money to change the quantity of money in the economy (Bordo & Levy, 2021). Furthermore, the government changes tax rates to increase or decrease the money in the economy, which changes prices (Greenwood & Hanke, 2021). For instance, if the government wants to lower inflation, it can raise taxes to reduce individual savings (Diamond et al., 2022). This lowers overall demand, which in turn lowers prices. However, the government can use tax cuts to stimulate the economy by increasing individuals' money, growing overall demand, and raising prices. In this manner, fiscal policy can affect the money supply and prices in the economy (Amaglobeli et al., 2022).

2.5 Relationship between external debt and inflation

External debt is the money a country or entity owes to foreign lenders, such as other countries, international organizations, or private creditors, due to borrowing (Manasseh et al., 2022). It can include both public and private debt in the form of loans, bonds, or other financial instruments. External debt is an important indicator of a country's financial health, ability to repay debts, and exposure to external economic risks (Saleem Jabari et al., 2022). It is typically measured as a percentage of a country's Gross Domestic Product (GDP) (Ahmad, 2022; Wang et al., 2021). However, inflation refers to a sustained increase in the general price level of goods and services in an economy over time (Azam & Khan, 2022). In other words, it is the rate at which the prices of goods and services increase over time, leading to a decrease in the purchasing power of money. Inflation can occur due to various factors, such as an increase in the money supply, a decrease in the supply of goods and services, or an increase in demand for goods and services (Musarat et al., 2021; Saungweme, 2021). High inflation levels can negatively impact the economy by reducing consumer purchasing power, leading to economic instability and uncertainty and discouraging investment and economic growth (Mandeya & Ho, 2021). Although the connection between external debt and inflation is intricate and multifaceted, one general finding is that when all other factors remain constant, increasing external debt tends to increase inflation (Djalo et al., 2023). This is possible because financing external debt frequently entails borrowing in foreign currencies, which means that as more debt is collected, a country's currency may weaken to other currencies (Chindengwike, 2022). Imported products may become more costly as a result of increasing consumer prices.

In addition, when a country takes on more debt, it is tempted to print more money to help pay off that debt (Ridwan, 2022). This can lead to an increase in the money supply, which can further fuel inflation. Many other factors, such as demand, supply, or government policy changes, can also affect inflation. Thus the relationship between external debt and inflation can be challenging to understand (Chindengwike, 2022). However, countries must be aware of their debt levels and potential impact on prices and the economy.

H1.   Keeping economic growth and population constant, prices increase with increasing external debt.

2.6 Relationship between tax revenue and inflation

Tax revenue refers to the funds collected by a government through taxation (Zhang et al., 2022). The total amount of money a government receives from its taxpayers, including individuals, businesses, and other organizations. Tax revenue is an important source of income for governments, which they use to fund public services and programs such as education, healthcare, infrastructure development, and national defense (Krieger et al., 2021). The tax revenue collected by a government is determined by the tax rates and the number of taxpayers subject to those rates (Hassan et al., 2021). The relationship between tax income and inflation needs to be clarified, and it is essential to understand all of its components to arrive at intelligent choices regarding economic policy (Asandului et al., 2021). When economic growth and population stay the same, one thing to consider is how to tax income affects inflation. In this situation, less money from taxes will likely lead to higher prices (Tien, 2021). This is because tax revenue provides financing for government expenditures, which can be used to generate employment and stimulate economic growth. When tax revenue falls, the government has less money to spend on these initiatives, which can cause an economic contraction (Huseynli, 2022). When this happens, prices can go up because inferior goods and services meet the demand. The amount of government debt is another way that tax revenue can affect inflation. When the government spends more than it gets in taxes, which is called a budget discrepancy, it has to borrow money to pay for its spending (Azam & Khan, 2022). As a result, more people want to borrow money, which can cause interest rates to rise. When companies pass on the higher cost of borrowing to consumers, this can cause prices to rise. In addition, it is essential to recognize that the relationship between tax revenue and inflation is only sometimes simple (Liu et al., 2022). For example, the government can use tax revenue to invest in infrastructure and education. In that case, this can lead to long-term economic growth that can lower inflation in the future.

H2.   Keeping economic growth and population constant, prices increase with decreasing tax revenue.

3. Methodology

3.1 Research design

In order to research and comprehend the world, positivism emphasizes the use of scientific methods and observation. Positivism contends that only scientific knowledge—which can be acquired through empirical observation and experimentation—is legitimate. Positivists hold that empirical data should support theories and that knowledge should be founded on facts (Alharahsheh & Pius, 2020). Deductive reasoning is frequently used in a positivistic method to create theories and evaluate them via empirical observation and experimentation. As a result, this study would benefit from a positivistic strategy that strongly emphasizes empirical observation and scientific techniques (Chua, 2019). Second, evaluating hypotheses and creating theories based on existing information are frequent components of financial study. In this situation, a deductive method is advantageous because it enables scholars to develop ideas based on accepted theories or principles and evaluate them using data analysis and empirical observation (Puspitawati et al., 2022).

3.2 Sample and population

The population in this scenario would be the total Pakistani economy from 2002 to 2021. This would include all measures of the economy, such as the GDP, inflation, unemployment, exports, imports, and other metrics. The scholar can conclude the whole community by analyzing the sample, which can offer important insights into the recurring trends and patterns in the economy.

3.3 Econometric model

Following equation is the econometric model of the study based on a time-series approach.

$$CPI_t = \alpha_t + \beta_1 (LnED)_t + \beta_2 (LnTAX)_t + \beta_3 (GDP)_t + \beta_1 (POP)_t + \varepsilon_t$$

In the above equation, inflation at a specific time t is denoted as CPI, external debt at a specific time t is denoted as ED, tax revenue at a specific time t is denoted as TAX, economic growth at a specific time t is denoted as GDP and population growth at a specific time t is denoted as POP. However, α is the constant term, β is the regression coefficient and ε is the residual/error.

Table 3.1: Definition and measurement of the variables

Variable	Measurement	Definition
Inflation	Consumer prices (annual %)	The overall level of prices of products and services in a market that consistently rises over time is referred to as inflation (Jaravel, 2021).
External debt	External debt stocks, total (DOD, current US$)	A country's debt to foreign lenders, whether governments, non-governmental organizations, or businesses, is called its external debt (Dey & Tareque, 2020).
Tax revenue	Tax revenue (current LCU)	Tax revenue is the sum of money that a government receives via the collection of taxes from citizens, corporations, and other organizations (Gurdal et al., 2021).
Economic growth	GDP growth (annual %)	Economic growth is the gradual rise in a country's output and use of commodities and services (Lin & Zhou, 2022).
Population	Population growth (annual %)	The term "population growth" describes the rise in the number of people residing in a specific geographic area, such as a city, region, or nation (Johri et al., 2022).

3.4 Data analysis

Time-series data, observations gathered over time, are frequently used to define financial-related subjects, including inflation, foreign debt, and tax income. In order to turn non-stationary data into static data that can be utilized for regression analysis, unit root analysis is performed to test for stationary. Co-integration analysis is performed when two or more-time series are non-stationary, but there is a stationary linear combination of these series. Co-integration analysis, in other words, is used to determine whether there is a long-term link between two or more non-stationary variables (Gulzar et al., 2019). Economic research frequently uses this method to examine the long-term correlations between variables, including inflation, foreign debt, and tax revenue. In conclusion, time-series data analysis techniques, including unit root analysis, co-integration analysis, and OLS analysis, are frequently employed in financial research to examine the correlations between variables like inflation, external debt, and tax revenue.

4. Results and Findings
4.1 Descriptive statistics

Table 4.1 shows the descriptive statistics of the series. The mean inflation rate is 8.343, with a standard deviation of 4.335. The minimum inflation rate observed is 2.529, and the maximum is 20.286. The mean of the logarithm of external debt is 11.170, with a standard deviation of 0.216.

Table 4.1: Descriptive Statistics

	Mean	**S. D.**	**Min.**	**Max.**	**Obs.**
Inflation	8.343	4.335	2.529	20.286	20
Log (External Debt)	11.170	0.216	11.003	11.664	20
Log (Tax Revenue)	14.076	0.611	13.012	15.003	20
Economic Growth	4.155	2.138	-1.274	7.547	20
Population Growth	1.869	0.389	1.204	2.509	20

Author's Estimation

The minimum value of the logarithm of external debt is 11.003, and the maximum is 11.664. The mean of the logarithm of tax revenue is 14.076, with a standard deviation of 0.611. The minimum value of the logarithm of tax revenue is 13.012, and the maximum is 15.003. The mean economic growth rate is 4.155, with a standard deviation of 2.138. The minimum economic growth rate observed is -1.274, and the maximum is 7.547. The mean population growth rate is 1.869, with a standard deviation of 0.389. The minimum population growth rate observed is 1.204, and the maximum is 2.509.

4.2 Stationary analysis
Table 4.2 shows the result of stationary analysis using unit root test based on Augmented Dickey and Fuller (1979) estimations.

Table 4.2: Unit Root using Augmented Dickey and Fuller (1979)

	I (0)		**I (1)**	
	t-Stats	**Prob.**	**t-Stats**	**Prob.**
Inflation	-2.341	0.170	-5.197	0.001
Log (External Debt)	1.821	0.999	-1.842	0.064
Log (Tax Revenue)	-1.426	0.546	-6.063	0.000
Economic Growth	-2.081	0.254	-4.058	0.007
Population Growth	-1.574	0.471	-3.484	0.031

Author's Estimation

The above table has shown that all variables are significant at 1st difference rejecting the null hypothesis of stationary in the series. Therefore, all the variables are found non-stationary at 1st difference. Therefore, cointegration analysis has been used for estimating long-run relationship between series.

4.3 Cointegration analysis
Table 4.3 shows the result of cointegration analysis using Johansen and Juselius (1990) estimations while the null hypothesis is the absence of long-run relationship between series.

Table 4.3: Johansen and Juselius (1990) Cointegration Analysis

Hypothesized CE(s)	Trace	Critical	Prob.
None	164.132	69.819	0.000
At most 1	78.160	47.856	0.000

Author's Estimation

Above table has shown that trace statistics found higher than their critical value at none and at most 1 hypothesized CEs rejecting the null hypothesis of no cointegration between series. Therefore, the series have long-run relationship based on cointegration estimations.

4.4 Hypothesis testing

Table 4.4 shows the result of hypothesis-testing using OLS analysis while all assumptions are also tested for establishing robustness of the findings.

Table 4. 4: Hypothesis-testing using OLS analysis

	Beta	S. E.	t-Stats	Prob.	Skew.	Kurt.	VIF
Constant	-48.084	52.394	-0.918	0.373		N/A	
Log (External Debt)	-5.946	5.443	-1.092	0.292	1.407	3.345	2.095
Log (Tax Revenue)	7.198	3.701	1.945	0.071	-0.291	1.824	7.756
Economic Growth	-0.284	0.492	-0.578	0.572	-0.663	3.177	1.679
Population Growth	12.144	4.770	2.546	0.022	-0.263	1.755	5.219

Author's Estimation; Dependent Variable: Inflation

R-Square: 0.474; Adj. R-Square: 0.333; Durbin-Watson (DW) = 1.853

F-Stats (Prob.) = 3.373 (0.037); Breusch-Pagan-Godfrey (Prob.) = 1.740 (0.194)

Breusch-Godfrey Serial Correlation LM Test (Prob.) = 0.414 (0.669)

Above table has shown that all series have Skewness and Kurtosis below their recommended thresholds of ±2 and ±7 (Ghasemi & Zahediasl, 2012; Shapiro et al., 1968) and therefore, series are normally distributed. VIF for all predictors are found below the recommended threshold of 10 (Daoud, 2017; Kim, 2019) and therefore, no multicollinearity has been found between predictors. Furthermore, natural logarithm of external debt (β = -5.946; p > 0.10) has a negatively insignificant effect on inflation while natural logarithm of tax revenue (β = 7.198; p < 0.10) has a positively significant effect on inflation. However, economic growth (β = -0.284; p > 0.10) and population growth (β = 12.144; p > 0.10) have been taken as control variables. Lastly, the analysis showed that inflation has been moderately explained upto 47.4 percent (Cohen, 1988) in the model while DW-statistics found near to 2 (Gujarati, 2009). The analysis found F-Statistics significant at 5% providing model fitness of the OLS analysis and there is no evidence of serial correlation (*Breusch-Godfrey*) and heteroskedasticity (*Breusch-Pagan-Godfrey*) in the series (Fomby et al., 2012).

5. Discussions

The research identified that external debt has an insignificant and adverse relationship with inflation. Thus, the hypothesis has been rejected. This result is also consistent with Nabila and Anwar (2021). Economists continuously discuss the nature and significance of the complicated link between external debt and inflation. However, several studies contend there is no connection between inflation and external debt.

On the one hand, it is a widespread belief that nations with significant levels of foreign debt may create more money to pay off their debt commitments, which might result in inflation. Increased money supply as a result of this may result in inflation and higher prices (Omodero, 2019). It is challenging to separate the influence of foreign debt from other factors that may affect inflation, such as productivity changes, supply and demand, and governmental actions. A high amount of foreign debt may suggest to investors that a nation is creditworthy and has sound financial management. Increased investor confidence and foreign investment may boost economic growth and lower inflation (Dey & Tareque, 2020).

On the other hand, other research contends that there may be little connection between foreign debt and inflation. For instance, research by the International Monetary Fund (IMF) revealed no consistently positive correlation between external debt and inflation among a sample of developing nations. Similarly, foreign debt has no bearing on inflation in South America (Sosa Varrotti & Gras, 2021).

The study results showed that tax revenue has a significant and positive relationship with inflation. Thus, the hypothesis has been accepted and the result align with the study of Junejo et al. (2021). There are several views on how tax revenue and inflation are connected, which is complicated. However, some research indicates that tax revenue and inflation have a tangible and positive link, suggesting that inflation also tends to rise as tax revenue rises. Governments may be more inclined to boost spending when tax income increases, resulting in higher demand, prices, and inflation. This is especially true if government funds are used on initiatives that are only sometimes productive or raise the cost of manufacturing for private companies (Wijaya & Dewi, 2022).

The government could raise staff salaries and wages if tax revenue rises. Inflationary pressures may result from higher consumer expenditure as a result of this. Inflation may result if the government spends tax money by expanding the money supply (Tujo, 2021). This is so that higher prices might result from increased demand, which could result from an increase in the money supply. People may spend more in anticipation of higher costs if they anticipate inflation in the future. As tax revenue rises, people may anticipate higher government spending, creating inflationary expectations (Effendi, 2021).

It is crucial to remember that tax revenue and inflation do not necessarily have a positive connection. For instance, inflationary pressures could be lessened if tax money is used to pay down debt. Nevertheless, long-term economic development and lower inflation may result if the government allocates tax revenue to infrastructure or productive investment projects that boost economic production (Romadhini & Utomo, 2022).

In conclusion, while tax revenue and inflation may positively correlate, the link is complex. It may rely on many variables, including how the government utilizes the tax income and the condition of the general economy (Junejo et al., 2021).

6. Conclusion and implications
6.1 Conclusion
The study examined the impact of external debt and tax revenue on inflation. The World Development Indicator (WDI) database of the World Bank was used to gather data on inflation, economic growth, and population growth. The study also collected data on ED and TR from the Handbook of Statistics on Pakistan's Economy. Also, the study employed regression and unit root/stationary techniques for data analysis. The study concluded that ED has an insignificant negative effect on inflation, whereas TR has a significant positive effect.

Moreover, ED could be considered as resources obtained from outside for investment projects, which in no way come from locals, whether corporate or individual. Foreign lenders like commercial banks, governments, or international financial institutions often obtain this. The stability of macroeconomic factors like the exchange rate and the inflation rate are crucial

indicators that support the usage of ED in the economy. In addition, taxes are a key funding source for economic planning and development, and even economic policies are based on anticipated tax revenues. Tax policies are an important part of every country's economic policy. Similarly, ED contributes to macroeconomic imbalance, which affects the economy. Inflation is also directly impacted by TR. Furthermore, many countries require external financing to meet their development objectives. It is expected to provide the capital required for productive economic activity and infrastructure investments, promoting macroeconomic stability and economic growth.

6.2 Theoretical implications

Firstly, the study significantly improves the theoretical understanding of ED and inflation. As the country's debt level impacts economic growth, the government must consider its internal and external borrowing policies (Obiano, 2023). Second, the study contributed to knowledge regarding the relationship between TR and inflation (Aimola & Odhiambo, 2022). Furthermore, this study incorporated the fiscal theory of the price level to propose a relationship between ED and inflation by indicating that the price level is influenced by government debt and the current and long-term tax and spending plans (Osei & Ogunkola, 2022).

Theoretically, this study adds to the body of literature by highlighting the relationship between ED and inflation. The findings showed that ED has long-term effects, both arising from the taxes required to finance the interest payments, supporting the neoclassical growth theory (Ideh & Uzonwanne, 2021). Salhi and El Aboudi (2021) said that although the current study only focuses on Pakistan, the researchers will utilize this model to generalize the results to other developing countries. Academicians may also benefit from this study by imparting their specialized knowledge to other researchers (Sirah, 2020). Ideh and Uzonwanne (2021) indicated that the literature reviews included in this study would help academicians better understand how the model works and conduct a more thorough analysis of the results by examining previous research in the same field (Mbakwe, 2023).

Maneerat and Fazal (2020) asserted that academicians could also use this study's findings to conduct future research with some modifications. Additionally, the study supported previous theoretical knowledge research by showing the positive effects of TR on inflation (Son & Cung, 2019).

6.4 Policy implications

The study has provided many policy implications. Firstly, it has been found that sectoral economic performance—namely, the proportions of agriculture, industry, and value-added services—contributes positively to TR performance (Gnangnon, 2022). This indicated that these variables continue to be important drivers of TR. In order to successfully develop the economy and reduce inflation, the government should consistently take steps to enhance the performance of each economic sector (Wen et al., 2023). Wibowo and Setyowati (2023) said introducing new technologies, enabling innovation in production, and policy incentives that encourage sustainable resource use are important for raising TR (Hassan, 2022). As a result, it is essential to design policies and strategies to develop these sectors since they serve as the foundation for driving the economy and maximizing TR opportunities (Van Hung et al.). Second, the study also revealed that TR would rise under a stable macroeconomic environment. So, the government should focus on adopting economic policies that show low inflation rates and favorable trade policies (Junejo et al., 2021).

Also, countries should focus on trade openness policies because favorable trade positively impacts trade flows (Aimola & Odhiambo, 2022). They help countries generate tax money through import and export activities and develop infrastructure and the economy, which helps reduce inflation and indirectly increase TR (Nazamuddin et al., 2022). Boshra Ghaly (2023) indicated that countries should accelerate economic restructuring to achieve industrialization,

modernization, and increased industry contribution to GDP. Evans (2022) also asserted that reducing the country's debt might significantly lessen inflationary pressure. So, the government should implement policies for managing the country's inflation rate and public debt to support or improve macroeconomic stabilization (Benli, 2020).

Also, the country must change its focus from agriculture to the growth of the industrial sector since the industrial value-added share of GDP significantly impacts TR over time (Ayenew, 2016). Government must work to integrate small industries into medium-sized and large industries by enacting policies that encourage industrial production. The performance of the existing economic growth also has to be maintained (Cung, 2019). Mohamed (2022) indicated that macroeconomic instability lowers the value of TR in real terms and reduces the purchasing power of the people. People could therefore choose not to pay taxes. Hence, to formalize the underground economy, the government must manage the country's macroeconomic situation (Omodero et al., 2021). Moreover, policies promoting employment development could give customers who must pay taxes more purchasing power. This study suggested policies to increase per capita income growth, and new tax bases should be considered to improve tax administration and raise revenue growth (Kwesi Ofori et al., 2018).

Lastly, developing countries should focus on expanding the tax base to increase TR rather than raising tax rates. Emerging economies must improve their governance structure (Nchege et al., 2019). Strict laws are necessary, and an independent and efficient judicial system should vigorously enforce them. The revenue performance of developing countries is significantly impacted by policy reforms that seek to improve accountability, transparency, and the rule of law (Țibulcă, 2022). Azam et al. (2013) suggested that active debt management policies be implemented for sustainable economic growth. ED should be reduced to a more manageable level to lower the risk of adverse external shocks (Danish et al., 2022). In this regard, the government's strategy to use domestic debt rather than ED is a good decision (Agyeman et al., 2022).

6.5 Limitations and future research

Firstly, the study included a few variables to investigate the impact of ED on inflation. Further studies should include more variables in addition to these. Second, the study collected data from just one country, Pakistan, between the years 1992 to 2021. The study was carried out in Pakistan, and as a result, its findings and conclusion exclusively apply to Pakistan's economy. Future studies should test the conceptual model by collecting data from other countries for better generalization. Moreover, the study did not include any moderating or mediating variables. The role of a mediator in the relationship between TR and inflation should be included in future studies. Moreover, the comprehensive research model developed in this study needs more empirical validation. Future studies should incorporate more theories and constructs to increase their capacity for an explanation. Lastly, the study needed to account for the in-depth perception and comprehensive viewpoint of the phenomena because it was quantitative. It has been recommended that qualitative analysis should be employed in future studies to produce more detailed research findings that are representative of the study population.

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