



“The Effect of Revenue from Taxation on the Economic Growth of Bangladesh: Evidence from Time Series Data”

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Abstract. Taxes play a pivotal role in influencing a nation's economic progress by generating revenue for essential public goods and services. Nonetheless, an excess of taxation can impede economic growth by deterring investment and consumption. Therefore, this study examines the relationship between taxation and economic growth in Bangladesh through the application of econometric analysis. A time series data collected from the period of 1987-2022 was applied to conduct the econometric analysis. This investigation employs diverse econometric techniques and models to explore the impact of taxation on economic growth in Bangladesh. The results revealed the GDP growth by indicating 1% increase of tax revenue, GDP will be increased by 0.00068%. The econometric study yields a substantial coefficient of $R^2=0.971$, indicating a high level of determination with a forecasting accuracy of 97.1%. Furthermore, it is evident that not all taxes exert an identical influence on bolstering the economy. These findings offer valuable insights for policymakers in formulating effective tax policies that promote sustainable economic growth.

Keywords: Taxation, Economic growth, Impact, Bangladesh, Tax policy

1 Introduction

The current global economic situation in 2023 is marked by a complex web of interconnected challenges. The world is grappling with several crises simultaneously including slower economic recovery from the COVID-19 Pandemic, by the Ukraine-Russia war, and climate Crisis affecting vulnerable countries and populations worldwide [1]. Many countries are suffering in their social and economic performance due to such crisis and challenges. Bangladesh is not out of such crisis. The country is facing a complex situation such as declining foreign exchange reserve, falling value of own current (Taka), increasing budget deficit over the year in one hand while the rising food prices and inequality on the other hand [2] [3]. The complex interactions between political,

economic, and global concerns make the country more critical to overcome the challenges. This situation also escalates the hardship of the government to manage the crisis by searching alternatives solution of monetary need for socio-economic recovery [4].

Looking at the tax system, Bangladesh has the second-lowest tax-to-GDP ratio in South Asia at 8% at the moment. The presence of institutional corruption presents a significant obstacle to the collection of revenue, since it has an adverse effect on taxpayer compliance and the tax-to-GDP ratio. Tax assessments are crucial for governments to generate income and cover rising consumption. With industrialization and monetized sectors increasing tax bases, flexibility is essential. According to Khan (2021) [5], Bangladesh's tax system faces challenges due to inadequate management, including limited expertise, transparency, nepotism, fraudulent payments, and collusion between taxing officials and the population. Increasing taxes and income rates within the national budget is crucial. Moreover, proper use of tax revenue is also essential to reduce the misuse of taxpayer's money and budget deficit which is a growing concern of Bangladesh. To do this, judicious government spending should ensure while unnecessary less important expenditure should be avoided for economic recovery and progress toward the Sustainable Development Goals. Unprecedented government spending has been necessary to stimulate recovery from the deepest global recession since World War II. Corporate taxes play a crucial role in shaping economic behavior as it is founded to least harmful to long-run economic growth. Rahman, M. (2020) [6] Argued that different tax regimes/systems should be materialized to attract more investment opportunities and higher economic growth. policymakers to evaluate the impact of taxes on investment and overall economic health as we know tax authorities and policies have played a critical role in supporting individuals, businesses, and organizations. This study was conducted an extensive review of existing related literature to understand and determine the theoretical and analytical aspect of tax – GDP relationship.

According to Ogundele (1999) [7], Tax is a means or mechanism by which social management and development can be achieved with the collective contribution of varying amounts. Tax is a mandatory payment made by the government Nightingale (1997) [8]. Myles (2000) [9] described tax as a necessary contribution to economic growth that supports growing prosperity, and it is frequently used as compared with gross domestic product as an indicator of societal progress. Revenue generation, economic regulation, and promotion of economic growth are the main functions of national governments [10] (Minh Ha, N, et al 2022). These measures ensure the economy's efficient and just functioning and spread the advantages of economic expansion to improve the quality of life. The capacity of private individuals to support economic development will be constrained by the higher tax, and corporate taxpayers' ability to expand their product offerings may also be constrained by higher taxes. The government claims that the increased tax will finance expenditures in infrastructure, health, education, and fundamental information technologies, which are anticipated to increase economic productivity in the future.

Tax is very essential for the country's economic development, especially for the countries those are least developed and developing counties. However, sometimes, economic development is hampered by high tax rates, which discourage employment, savings, and investment [11] [12] (sekkat, 2020, GAO, 2020). Certainly, excessive taxation

may hinder people and businesses from participating in productive economic activities, leading to diminished growth [13] (Ahmed 2016). Korkmaz et al. [14] In 2019, they discovered that the Turkish economy experiences comparable consequences due to taxation, resulting in significant harm to economic growth. Reducing the consumption tax rate on basic goods and increasing the tax rate on luxury goods has a positive effect on GDP growth [15] [16] (Asllani and Statovci, 2018; Gasteratos et al., 2016). GDP per capita is most negatively affected by corporate income taxes, while growth is positively impacted by property taxes (especially real estate reuse tax), consumption taxes, and personal income Tax (Arnold, 2008) [17]. The conclusion drawn from both theoretical and empirical investigations is that there is no perfect tax system, as its establishment is reliant on various quantitative and qualitative factors and varies across states. The impact of corporate taxes on a company's returns from both investment and capital structure is limited [18] (Daniel and Jefferey 2013). According to Schraztenstaller and Kohler (2015), corporate taxes are negatively correlated with foreign direct investment (FDI) while inflows of FDI are encouraged by low tax rates [19]. The impact of tax changes on economic activity is not uniform, as changes in income levels and tax system structure can have long-lasting positive effects [20] (Gale and Samwick, 2014). In the short term, consumers' economic freedoms can be curtailed by high taxes; however, this may hurt their long-term prosperity and growth. Cuts to government spending would have an immediate impact on groups which profit right away from government operations [21] (Vito, 1990). Taxes are the primary means of increasing the national budget and are expressed in many ways [22] (Rimmler et al., 2017). Hence, in accordance with this principle, taxes charged for income generation are classified as direct taxes, while those charged during income expenditure are considered indirect taxes. Economic growth can be boosted by raising taxes in multiple ways. How? Initially, surplus revenue can be used to finance public goods and services such as infrastructure, education, and healthcare. The acceleration of economic productivity, stimulation of foreign investment, and creation of pristine employment opportunities lead to a more robust economy. Subsequently, Taxes can decrease public debt, enhance government credibility, and boost investor self-esteem, and stimulate investment and economic growth. Finally, the use of tax revenue can help to decrease income inequality and provide social security for underprivileged communities, which will ultimately improve social cohesion and enhance the quality of life for people that will promote stronger economic growth [23] (BalasoIU, N et al 2023). In order to optimize the tax system's efficiency while avoiding excessive tax burden, it is essential to reject any tax concessions that undermine neutrality and promote legal tax evasion [24] (Juravle, V et al 2000). According to Keynes argument Lower government taxes will lead to upgraded personal expenses, more liberalized business activities, and a greater desire for everyday products [25]. He alleged that achieving a just distribution of income through fiscal policy will result in increased consumption. Keynes also points out the importance to determine the appropriate tax rate for an individual based on their income and wealth, as unequal taxes can lead to avoidance of taxes.

Studies show that the correlation between direct taxes and economic growth is influenced by factors like economic development, tax system structure, and revenue utilization. Economic growth, as defined by Myles, involves growing prosperity and is often

measured by gross domestic products [26]. Lower corporate tax rates stimulate spending, causing the aggregate demand curve to shift right and increase price and real GDP. Income taxes also impact consumption, leading to leftward changes in the aggregate demand curve. The value of the multiplier is influenced by changes in the tax rate. Investigation frequently reveals that income tax rates are negatively linked to GDP, indicating the potential for businesses to experience greater business growth with higher income taxes. economic production such as work, saving and investment [27] [28] (Gomis-Porqueras, 2020; Kneller, R, 2020). The relationship between taxes and economic development in 21 OECD countries was examined by Arnold (2008), who found that income tax is generally associated with lower growth rates than consumption and wealth taxes [29]. Research by (Nguyen et al., 2021) concludes that in the short run, if the average income tax rate decreases by 1 percentage point, GDP will increase by 0.78% immediately after the tax change [30]. Four quarters after the exogenous shock (lower income taxes), GDP will grow by 1.5%. Here are a few empirical studies that have explored the relationship between taxation and GDP growth. "Taxation and Economic Growth" by Christina D. Romer and David H. Romer (2010) is a influential study that analyzes historical data across various countries [31]. The authors discovered that higher marginal tax rates on labor and capital income tend to hinder economic growth. They contend that lowering these marginal tax rates could boost investment, enhance work effort, and promote stronger economic growth. Additionally, broadening the income tax base by removing special treatments would enhance horizontal equity, making the tax system fairer for all taxpayers. "The Impact of Tax Cuts on Economic Growth: Evidence from the Canadian Provinces" by Bev Dahlby and Ergete Ferede (2018): This study examines the economic growth prospects of Canadian provinces through the impact of provincial tax reductions [32]. Economic growth is positively correlated with tax cuts, particularly on personal and corporate income taxes, as per the authors. The study suggests that reducing tax burdens can accelerate economic activity and advance growth. Another study was Macek, Rudolf. (2015). The Impact of Taxation on Economic Growth: Case Study of OECD Countries. Review of Economic Perspectives, this study investigates the relationship between taxation and economic growth in a sample of OECD countries [33]. The findings suggest that higher tax burdens have a negative effect on economic growth. However, the study also highlights the importance of the composition of taxes, with consumption taxes found to have a less detrimental impact on growth compared to income taxes.

"Tax Structure and Economic Growth: Evidence from OECD Countries" by Antonio Afonso and João Tovar Jalles (2017): This study examines the impact of tax structure on economic growth across OECD countries [34]. The authors find that a higher reliance on consumption taxes and property taxes, compared to income taxes, is associated with higher economic growth. They argue that a shift towards consumption and property taxation may have positive effects on investment and labor market outcomes, supporting long-term growth. "Tax Policy and Economic Growth: Does It Really Matter?" by Donatella Baiardi and Paola Profeta: This study provides a meta-analysis of previous empirical studies on the relationship between tax policy and economic growth [35]. The findings suggest that reducing marginal tax rates and simplifying tax systems can have a positive impact on economic growth. However, the authors caution that the magnitude

of the effects may vary depending on country-specific factors and the specific design of tax reforms.

It is important to note that empirical studies on taxation and economic growth can yield varied and sometimes contradictory results due to differences in methodology, data, and country-specific factors. Therefore, our study would contribute to improving understanding on the relationship between taxation and economic growth, highlighting the potential importance of tax policy in fostering economic development.

2 Conceptual Review

2.1 Economic Growth

According to Mankiw's (2020), *Principles of Economics* (N. G.), Economic growth defines the steady increase in a nation's production of goods and services over time, often measured by GDP and GNP [36]. It indicates improvements in a country's economic performance, which raises living standard, creates employment opportunities, and promotes prosperity in general (Todaro & Smith) [37]. According to (Agunbiade & Idebi, 2020), a few indirect factors include the size of aggregate demand, the rate of savings and investment among the populace, the effectiveness of financial systems, budgetary fiscal policy, government efficiency, immigration of capital and labor, and various types of state institutions, including financial and administrative institutions [38]. Depending on its sources and durability, growth in the economy may be classified into several categories: Growth in the Short and Long Term; fluctuations in the business cycle, such as the recovery from a recession, cause short-term growth. Fundamental changes in an economy, such improvements in infrastructure and technology, lead to long-term growth.

In the research work of Arvin et al in 2021, it shows that in the short term, there are frequently endogenous relationships between institutional quality, government spending, tax income, and economic growth [39]. Technological advancement, human development, and capital accumulation all have an impact on the intricate process of economic growth. Having a solid understanding of growth theories and how they are used in practice aids policymakers in creating sustainable development plans.

2.2 Tax Revenue

Taxation is a very important tool for managing the economy. In July-September 2022, tax revenue in Bangladesh accounted for 88.1% of total revenue collection (National Board of Revenue). The most common used method of government intervention in an economy is taxes, which is used to raise money for the delivery of public goods and services. In this sense, taxes reflect the monetary value that is obtained by taxation, and taxes themselves represent all of the procedures used to collect taxes, Agunbiade, O., & Idebi, A.A (2020) [38]. Equity in terms of progressivity and efficiency in terms of collection are characteristics of an effective tax system. Any nation's government is responsible for providing public goods and services that private individuals are unable to supply, mostly because of the problem of free riders. The government imposes taxes

on pertinent taxable individuals in order to fulfill these duties. In this sense, taxes contribute to a nation's economic development, and Bangladesh is no exception. According to Tanzi, V., & Zee, H. H. (2000) Adequate tax revenue enables investments in infrastructure, healthcare, and education, which are vital for economic growth and societal well-being [40].

According to The Investopedia, Taxes have an influence on demand, which, at least temporarily, affects economic growth [41]. Because it raises individuals' disposable income and encourages businesses to spend and recruit, a tax cut boosts demand. The strength of the economy, however, determines how big the influence is. In the event that it is functioning near capacity, the impact is probably minimal. It will have a more noticeable effect if it is functioning much below its possibilities. The effect in the second scenario is estimated by the Congressional Budget Office (CBO) to be three times greater than in the former. Tax cuts are generally less effective in spurring economic growth than are increases in government spending. Tien et al. (2023) claim that Economic growth is positively impacted by tax revenue, and trade openness plays a key role in enhancing this effect overall [42]. Their study's conclusions are consistent with economic theory and other studies. However, excessive trade openness does not help the rising nations' economy since it may reduce the positive relationship between tax revenue and economic progress. It is found that revenue gaps affect economic growth negatively, but economic growth is also affected by several reasons such as unemployment, wage, GDP growth, urbanization, political risk, literacy rate, trade and so on Mueyed et al (2020) [43]. Tanzi et al (2000) analyze critical tax policy issues for developing countries [40]. The authors emphasize that taxation is the primary mechanism for governments to generate revenue essential for financing public services and development projects. When opening their economies to foreign commerce, developing nations still confront enormous obstacles in obtaining budget resources to meet development goals (Mahdavi, 2008) [44]. Effective fiscal management and enhancing fiscal autonomy emerge as crucial factors in promoting local economic development, Fauji, Z., & Syafitri, W. (2024) [45].

3 Data and Research Methodology

3.1 Data Sources

To conduct an econometric analysis on the impact of taxation on economic growth in Bangladesh, will require reliable and relevant data. Secondary sources of data were used as the main data collection sources. The time series data collection method was the main method of data collection. The relevant data for this study were collected from the Bangladesh Economic Review, Central Bank of Bangladesh Annual Report and Statement of Accounts and NBR annual reports The study was based on time series data collected from the period of 1987-2022. Data were collected from the Bangladesh Bureau of Statistics (BBS), National Board of Revenue (NBR), the World Bank and the Central Bank of Bangladesh. The study utilized secondary sources, including the Bangladesh Economic Review and OECD, and time series data collection methods, primarily from the Central Bank of Bangladesh Annual Report, Statement of Accounts,

and NBR annual reports from 1987-2022. The study was set the following hypothesis to test the relationship between various taxes with economic growth.

3.2 Research Hypothesis

A set of research hypotheses has been formulated for subsequent investigation.

- H1: The direct tax exerts a positive influence on the growth of GDP.
- H2: Indirect taxes play a role in enhancing GDP growth.
- H3: A noteworthy correlation exists between income tax and the growth of GDP.
- H4: Customs duties contribute to the advancement of economic development.
- H5: personal Income tax has a positive correlation with economic growth
- H6: Corporate Income tax has a positive correlation with economic growth
- H7: Supplementary duty is a contributing factor to the growth of GDP.
- H8: A positive correlation can be identified between excise duty and GDP growth.
- H9: Various other taxes positively impact the overall economy.
- H10: Non-tax revenue plays a part in fostering GDP growth.

3.3 Statistical Methods

The model utilized in this study endeavors to demonstrate the correlation between tax revenue and economic development in Bangladesh. A time series design is specifically utilized in the study to achieve this objective. By applying the traditional method of Ordinary Least Squares (OLS) regression, the study was able to estimate the relevant data by using time series data. Both descriptive and inferential statistics have been used to achieve the purpose of the study. Average, percentage, etc. have been computed and the results are tabulated to understand the current picture of the taxation system of Bangladesh. Correlation and regression analyses have been carried out to identify the impact of different types of taxes on the level of economic growth.

3.4 Regression Model

These regression models aim to assess the impact of various types of taxes on the economy, specifically on GDP (Gross Domestic Product). Here is a detailed explanation of each model:

Model (i): Impact of Direct and Indirect Taxes on GDP

$$L_GDP = \alpha + \beta_1 DT + \beta_2 IND + \epsilon$$

L_GDP: Logarithm of GDP, used to linearize relationships and interpret coefficients as elasticities (percent changes).

- **α /alpha:** Intercept, representing the base level of L_GDPL_GDP when all tax variables are zero.
- **β_1 DT/beta_1 DT:** Coefficient of Direct Taxes (DTDT), showing how changes in direct taxes (e.g., income tax, corporate tax) affect L_GDPL_GDP .
- **β_2 INDT/beta_2 INDT:** Coefficient of Indirect Taxes (INDTINDT), representing the effect of taxes on goods and services (e.g., VAT, sales tax) on L_GDPL_GDP .

- **epsilon**: Error term, capturing unobserved factors affecting GDP.

Purpose: This model tests how **direct taxes** (often linked to income and corporate earnings) and **indirect taxes** (typically affecting consumption and transactions) impact economic growth. The coefficients (β_1 and β_2) indicate whether these taxes stimulate or hinder GDP.

Model (ii): Impact of Corporate and Personal Income Taxes on Economic Development

$$L_GDP = \alpha + \beta_1 CIT + \beta_2 PIT + \epsilon$$

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- **$\beta_1 CIT$** : Coefficient of Corporate Income Taxes (CIT), representing the effect of taxes on corporate profits on L_GDP .
- **$\beta_2 PIT$** : Coefficient of Personal Income Taxes (PIT), indicating the impact of taxes levied on individual incomes on L_GDP .

Purpose: This model investigates how **corporate income taxes** (taxes paid by businesses) and **personal income taxes** (taxes paid by individuals) influence economic development. It helps determine if one tax type has a stronger or weaker influence on economic growth.

Model (iii): Comprehensive Analysis of Tax Types on Economic Growth

$$L_GDP = \alpha + \beta_1 IdT + \beta_2 VAT + \beta_3 CD + \beta_4 SD + \beta_5 ED + \beta_6 OT + \beta_7 NTR + \epsilon$$

$\beta_1 IdT$: Coefficient for Indirect Taxes (IdT), measuring their influence on GDP.

- **$\beta_2 VAT$** : Coefficient for Value Added Tax (VAT), assessing its specific impact as a key indirect tax.
- **$\beta_3 CD$** : Coefficient for Customs Duty (CD), reflecting the effect of import/export taxes on GDP.
- **$\beta_4 SD$** : Coefficient for Supplementary Duty (SD), indicating its contribution to GDP changes.
- **$\beta_5 ED$** : Coefficient for Excise Duty (ED), showing its specific effect on GDP.
- **$\beta_6 OT$** : Coefficient for Other Taxes (OT), representing the combined influence of uncategorized taxes.
- **$\beta_7 NTR$** : Coefficient for Non-Tax Revenue (NTR), assessing its role in economic growth (e.g., earnings from government-owned enterprises, fees, or royalties).

Purpose: This comprehensive model provides a detailed assessment of how various tax types and **non-tax revenues** contribute to economic growth. Each coefficient quantifies the GDP sensitivity to a specific tax or revenue source, helping policymakers understand the relative importance of different revenue streams.

Key Points Across All Models

1. Logarithmic GDP (L_GDP):

- The logarithmic transformation allows interpretation of coefficients (β) as elasticities:
 - A 1-unit change in a tax variable results in a $\beta \times 100\%$ change in GDP.

2. Tax Effects:

- **Positive Coefficient ($\beta > 0$):** Indicates that the tax type is associated with higher GDP growth, suggesting its potential to stimulate economic activity.
- **Negative Coefficient ($\beta < 0$):** Suggests that the tax type hinders GDP growth, possibly due to reduced investment, consumption, or production.

3. Comparative Insights:

- By comparing coefficients across models, you can identify which tax types have the most significant influence on economic growth, and which might need reform.

4. Policy Implications:

- If DT (direct taxes) has a strong negative impact, policymakers might consider reducing corporate or personal tax rates to boost economic activity.
- If IND (indirect taxes) or VAT positively correlates with GDP, it may be an effective tool for revenue generation without hampering growth.

Applications

Economic Planning: Optimize tax structures to enhance economic growth.

Policy Evaluation: Assess the effectiveness of current tax policies on GDP.

Revenue Strategies: Balance between direct and indirect taxes based on their growth impact.

Optimize Tax Mix: Balancing direct and indirect taxes to maximize GDP while ensuring equitable revenue generation.

Revenue Utilization: Channeling tax revenues into productive investments, like infrastructure and education, to offset any negative effects of taxation on economic growth.

How do taxes (direct and indirect) affect the economy? To explore the relationship, the following regression model is employed to test:

$$L_GDP = \alpha + \beta_1 DT + \beta_2 IND + \epsilon \quad (1)$$

The model below is designed to explore the impact of corporate and personal income taxes on economic development...

$$L_GDP = \alpha + \beta_1 CIT + \beta_2 PIT + \epsilon \quad (2)$$

This model has been created to assess the influence of various taxes on economic growth.

$$L_GDP = \alpha + \beta_1 IdT + \beta_2 VAT + \beta_3 CD + \beta_4 SD + \beta_5 ED + \beta_6 OT + \beta_7 NTR + \epsilon \quad (3)$$

Dependent Variable:

Economic Growth: The dependent variable represents the measure of economic growth in Bangladesh. It is measured using indicators such as Gross Domestic Product (GDP), GDP per capita, or real GDP growth rate. Here we use L_GDP = Natural log of Gross Domestic Product (GDP) at constant price. This variable has also been used by previous researchers as a measure of economic growth like Keho (2011).

Independent variables: This variable represents the total tax revenue or government revenue collected in Bangladesh. Analyzing the impact of different types of taxes (e.g., income tax, value-added tax, corporate tax) on economic growth can provide insights into the role of tax composition. Here following variables are using as independent variable:

DT = Direct Tax

CIT = Corporate Income Tax

IT = Income Tax

CD = Customs Duty

ED = Excise Duty

Control Variables: Other variables that can impact economic growth should be considered as control variables.

NTR = Non-tax Revenue α = Constant, ε = Error term.

INDT = Indirect Tax

PIT = Personal Income Tax

VAT = Value Added Tax

SD = Supplementary Duty

OT = Other Taxes

4 Results

4.1 Influence of Tax Regime on Gross Domestic Product (GDP)

This study explores the effect of tax regime on the gross domestic product of Bangladesh. To make a clear understanding, the results of the study are presented in the following sub-sections:

Influence of total revenue and tax revenue on Gross Domestic Product (GDP)

A country's economy is greatly influenced by its government. The economic impact and size of a government are measured by economists who use the ratio of total revenue to gross domestic product as their only means of comparison. The tax-to-GDP ratio measures the contribution of taxes to GDP.

Table 1. The total revenue and total tax collection in relation to the gross domestic product

Year	2012- 2013	2013- 2014	2014- 2015	2015- 2016	2016- 2017	2017- 2018	2018- 2019	2019- 2020	2020- 2021	2021- 2022	Avg 10yr s	Avg 35 yrs
GDP	7299	7741	8249	8835	9480	10224	11058	11446	13540	14655	9776	5015
TR	1397	1567	1634	1774	2185	2595	3166	3481	3515	3890	2520	959
TR as %of GDP	19.14	20.24	19.81	20.08	23.05	25.38	28.63	30.41	25.96	26.54	22.19	14.06
TTaxR	1168	1301	1407	1554	1923	2322	2896	3131	3160	3460	2233	832
TTaxR as %of GDP	16.00	16.82	17.06	17.59	20.28	22.71	26.19	27.35	23.34	23.61	20.45	11.87

Sources: Bangladesh economic review, 2022; annual reports of NBR 2021

Note: TR-Total revenue; TTaxR-Total tax revenue

Over the past decade, the tax-to-GDP ratio has steadily increased, from 3.70% in 1987-88 to 27.35% in 2019-20 and 23.61% in 2021-2022 which is shown in Table 1. This gradual increase in total revenue and tax revenue as a function of GDP demonstrates how the government manages the country's economic resources, highlighting the government's ability to manage its resources effectively. This reflects economic growth over the years, indicating economic growth. Also, both TTR and TR have increased in absolute terms over the years. Total revenue increased from 1327 billion BDT in 2012-2013 to 3890 billion BDT in 2021-2022. Total tax revenue also increased from 1168 billion BDT in 2012-2013 to 3460 billion BDT in 2021-2022. Which also shows that governments revenue collection has improved over the years alongside economic growth. From the table it has shown that Total revenue and Total Tax Revenue also improved in the share of GDP. This shows that revenue collection has increased related to economic growth advocating better tax administration, broader tax base and improved compliance. In long term trend percentage of Tr to GDP is 22.19% in 10 years trend and 14.06% in 35 years trend and TTR to GDP is 20.45% in 10 years and 11.87% in 35 years trends which shows fiscal policy has become more effective in collecting revenue related to economic output. Higher revenue collection shows a strong fiscal policy enables government to fund development projects, infrastructure, and social reforms. One of the main elements of Sustainable economic growths is tax revenue growth which reduces dependency on borrowing and international aid. Higher tax revenue related to GDP improves the state's ability to provide public goods and infrastructure (Tanzi, V. & Zee, H. H. (2000) [40]. Stronger tax collection improves state capacity and enables governments to invest in public services that support economic growth (Besley, T., & Persson, T. (2013) [46]. Insite of improvements Bangladesh's tax to GDP ratio remain lower than many developing economies, which indicates emergency for further tax system enhancements.

The share of tax and non-tax revenue in the overall economy

The table 2 illustrates that both of average 35 years and average 10 years period contribution of tax revenue to total revenue is more than 80%, while the share of nontax revenue is 16% and 12% respectively.

Table 2. Tax revenue and non-tax revenue collection in relation to total revenue (Taka billion)

Year	2012- 2013	2013- 2014	2014- 2015	2015- 2016	2016- 2017	2017- 2018	2018- 2019	2019- 2020	2020- 2021	2021- 2022	Avg 10 yrs	Avg 35 yrs
TR	1397	1567	1637	1774	2185	2595	3166	3481	3515	3890	2521	959
TTaxR	1168	1302	1407	1554	1923	2322	2896	3131	3160	3460	2233	832
%ofTTaxR on TR	84	83	86	88	88	90	91	90	90	89	87	83
NTR	228	228	265	227	220	273	270	350	355	430	285	126
%of NTR on TR	16	15	16	13	10	11	9	10	10	11	12	17

Sources: Bangladesh economic review, 2022; annual reports of NBR 2021

The primary source of governments' earnings is tax revenue. Over the years, tax revenue (TTaxR) has consistently made up of 83–91% of total revenue (TR). Over the past ten and thirty-five years, the average percentage of tax income in total revenue has been 87% and 83%, respectively. This study reveals that economic growth and government's ability to efficiently collect taxes are meticulously knotted, as tax revenue works as preliminary source of fiscal revenue [28]. Due to improved tax collecting methods and economic progress, tax revenue has grown with GDP. Non-tax revenue (NTR), which includes fees, fines, dividends, and income from state-owned businesses, has been very low, ranging from 9% to 17% of TR. The percentage of NTR has decreased recently, from 16% in 2012–2013 to around 10%–11%. This suggests that economic growth has not been significantly stimulated by non-tax revenue, highlighting the government's heavy reliance on taxation as a source of funding [23].

Impact of direct tax and indirect tax on total tax revenue

Direct taxes impose taxes on individuals based on their ability to pay, measured by income, consumption, or net worth. They are typically progressive, increasing as income increases. Adaptations for affordability include family dynamics, offspring number and age, and financial hardship. Although direct taxation contributes to social justice and helps to reduce inequality yet is carved for obstructed entrepreneurs. Direct taxation contributes to social justice and reduces inequality, but is criticized for limiting morale, hindering entrepreneurs, and encouraging tax fraud. Indirect taxes, on the other hand, impose taxes on production, consumption, and transactions like imports and exports. The indirect tax collection is found to higher in Bangladesh compared to direct tax as presented in Table 3.

Table 3. Impact of Direct and Indirect tax on Total Revenue (TK Billion)

Year	201 2- 201 3	201 3- 201 4	2014 - 2015	2015- 2016	2016- 2017	2017- 2018	2018- 2019	2019- 2020	2020- 2021	2021- 2022	Avg 10 yrs	Avg 35 yrs
TTaxR	116 8	130 2	1407	1554	1923	2322	2896	3131	3160	3460	2233	832
DT	353	444	517	518	628	777	952	1029	960	1053	723	250
%of DT on TTaxR	30	34	37	33	33	33	33	33	30	30	33	23
INDT	815	864	821	1036	1295	1545	1944	2082	2008	2184	1459	568
%of INDT on TTaxR	70	66	58	67	67	67	67	66	64	63	66	77

Indirect taxes are easier to collect and pay in small amounts, benefiting the public but hindering social justice as taxpayers must pay the same amount regardless of their financial situation.

Table 3 demonstrates that the Bangladeshi government relies heavily on indirect tax revenue, accounting for 66.02% of overall tax income between 10 and 35 years, compared to direct tax 32.38% of total revenue over a ten-year period and 22.67% over 35

years [6]. The study shows steady growth of direct tax, although direct tax has grown, its share of overall income remained mostly constant around 30-37%. Here we also see the dominance of indirect tax, the majority of tax revenue is consistently provided by indirect tax ranging from 63 to 70%, which indicates consumption-based tax. The share of indirect tax has also decreased from 70% in 2012-2013 to 63% in 2021-2022, which indicates slow shift towards direct taxation. As consumption-based taxes like VAT, excise duty affects all income level equally, a higher reliance on indirect taxes can impact lower income group disproportionately. The WAVE Foundation in collaboration with Christian Aid conducted a study found that poor pay the larger portion of indirect tax specially VAT than do the wealthier segment of the society, leading to a regressive taxation system exacerbates income inequality.

Tax Mix Proportion to Total Tax Revenue

The increase of the economy's supply side and potential GDP are what we mean when we talk about "economic growth." This expansion may take the form of a one-time increase in the economy's size that has no effect on future growth rates but sets the economy on a higher growth trajectory, a rise in the yearly growth rate, or both.

Table 4. Proportion of different types of tax on Total tax revenue (in billions of Taka)

Year	2012 -	2013 -	2014 -	2015 -	2016 -	2017 -	2018 -	2019 -	2020 -	2021 -	Avg 10 yrs	Avg 35 yrs
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
TTaxR	1168	1302	1407	1554	1923	2322	2896	3131	3160	3460	2233	832
VAT	405	459	496	539	687	827	1048	1098	1152	1276	799	329
%of VAT on TTaxR	35%	35%	35%	35%	36%	36%	36%	35%	36%	37%	36%	33%
Income tax	353	444	517	518	628	777	952	1029	960	1053	723	250
%of Income tax on TTaxR	30%	34%	37%	33%	33%	33%	33%	33%	30%	30%	33%	23%
Customs Duty	146	135	151	172	216	266	766	788	372	926	394	153
% of customs duty on TTaxR	12%	10%	11%	11%	11%	11%	26%	25%	12%	27%	16%	24%
Excise duty	10	12	9	10	12	17	0	0	33	1	10	6
% of Excise duty on TTaxR	0.9%	0.9%	0.7%	0.7%	0.6%	0.7%	0.0%	2.0%	1.0%	0.0%	0.6%	4.5%
Supplementary Duty	200	192	99	251	295	348	20	53	488	38	195	99
% of supplementary duty on TTaxR	17.1 %	14.7 %	7.0%	16.1%	15.4 %	15.0%	0.7%	1.7%	15.3 %	49.4%	15.4%	15.2 %
Other Tax	55	67	66	64	85	87	110	141	161	167	95	41
% of other tax on TTaxR	4.7%	5.1%	4.7%	4.1%	4.4%	3.8%	3.8%	4.5%	5.1%	4.8%	4.5%	7.5%

From the above table it has shown that there is a strong correlation between economic growth and tax revenue. The Table 4 shows that VAT is the primary source of tax revenue in Bangladesh, accounting for 343.04 billion Tk in 2011-2012. The average contribution of VAT to total tax is 35.58% over ten years, with a range of 34.64% to 36.87%. An increase in VAT collection indicates corporate and consumer expenditure. A study published by the International Monetary Fund (IMF) found that, for higher long run economic growth, broadening the VAT base by reducing exemptions and reduced rate is more effective than increasing the standard VAT rate (Santiago et al 2019) [47]. This suggests that efficient VAT systems, which effectively capture a broad range of economic activities, are associated with stronger economic performance. Research published in the Review of General Studies and Analysis suggests that VAT has a positive and small impact on economic growth but only in the short-term. In particular, real per capita GDP can rise by around 0.3% in the third quarter with a one percentage point increase in VAT collection efficiency.

Liko, E. (2024) [48]. Income Tax is the second-largest source, collecting Tk 280.61 billion in 2011-2012 and Tk 1053.25 billion in 2021-2022. Research by the Brookings Institution highlights that the structure and financing of income tax changes are crucial. Tax cuts can boost economic growth by boosting work, savings, and investment incentives. However, they can also reduce productive economic activity and subsidize old capital, reducing incentives for new activity. In addition, states experience federal budget deficit due to tax cuts alone by reducing national saving and negatively impacting investment. The net effect depends on the tax cut structure and financing (William & Andrew 2016) [49]. Bangladesh's economy relies heavily on customs duty, accounting for 13.16% of total tax revenue in 2011-2012. Over the years, collections have increased, reaching Tk. 766.12 billion in 2018-19. The percentage of total income that came from customs duty dropped from 12% in 2012-13 to 11% in 2016-17 before rising to 26-27% in 2018-19 and 2020-21. The variation points to shifting import quantities, tariff structures, or trade policies. According to the study of Toufique 2024, notable customs duty collections are generally correlated with increased imports which indicates expanding economy's increased demand for products [50]. Supplementary Duty, which contributed 16.85% of total tax collection in 2011-2012, dropped sharply to Tk. 19,76 billion in 2019-2020. However, it picked up speed and continued to support the national exchequer, peaking at 49.4% of TTaxR in 2020-21, possibly due to policy changes or targeted taxation on specific goods. Excise duty, which only makes up 0.55% of total tax revenue, has been a significant source of revenue for the government for a long time. Other significant taxes include sales tax, land tax, non-judicial stamp, narcotics duty, and property transfer tax. The average tax collection over ten years was Tk. 95.36 billion, with a 7.53% contribution from 1987-1988 to 2021-2022.

Corporate and Personal Income Tax (in billion Taka)

Income taxes are often divided into two categories: corporate income tax and personal income tax. For years, corporate income taxes have been disproportionately higher than personal income taxes. The rationale may be that corporate taxpayers are simpler to manage, monitor, and control than individual taxpayer groups.

Table 5. Income taxes between corporations and individuals

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021-	Avg 10	Avg 35
	-	-	-	-	-	-	-	-	-	2022	yrs	years
Total income tax (TIT)	438	572	681	754	833	847	940	1004	1037	1344		
Personal income tax	125	167	119	126	254	209	206	248	248	339	205	118
% of PIT on TIT	28	29	17	17	30	25	22	25	24	25	24	26
Corporate tax	313	405	562	629	579	638	734	757	789	1004	641	360
% of corporate tax on TIT	71%	71%	83%	83%	70%	75%	78%	75%	76%	75%	76%	74%

Data Source: OECD and National Board of Revenue

The study reveals significant fluctuations in corporate and personal income tax contributions. According to the findings, total income tax growth is steady. total income tax collection climbed steadily from BDT 438 billion in 2012-2013 to BDT 1344 billion in 2021-2022 which is the result of better tax administration. The average income tax in the last 10 years is BDT 923 billion, whereas the average for the 35 years is BDT 360 billion indicates long term upward increase.

The corporate tax to total income tax ratio ranges from 66.90% to 83.35%, with an average contribution of 76.20% over the last decade. The majority of income tax revenue comes from corporate tax (CIT), which has continuously exceeded 70% of Total Income Tax and peaked at 83% in 2014–15 and 2015–16, showing the Dominance of Corporate Taxation over personal tax. Even in 2021-22, corporation tax remained 75% of overall income tax receipts, suggesting that companies are the key source of income tax revenue. In 10-year average contribution of corporate tax is 76% and 74% in 35-year average which shows long term consistency trend by the corporate tax contributions. This study shows corporate tax dependency because in Bangladesh major source of revenue comes from business sector. This suggests that the corporate sector is well-regulated and compatible while individual taxes still have space for expansion [35].

Personal income tax contributions also increase, except in 2015-2016, reaching 30.46% in 2016-2017 possibly due to higher wages, increased formal employment, or tax reforms. The government reduced the allowable investment ceiling for tax rebates from 30% to 20% of total taxable income in 2016 (Budget 2016-2017) here, personal income tax has smaller share but growing contribution. IMF conducted research on five countries named—Cambodia, Georgia, Guyana, Liberia, and Ukraine—indicate that, despite the obstacles they encounter, nations may improve their ability to levy taxes by implementing reform initiatives that have a few key characteristics. The study shows that Georgia's tax reform, facilitated by the 2003 Rose Revolution, aimed to combat corruption and improve the economy. A revised tax code in 2004 simplified the system, reduced rates, and eliminated minor local taxes. Progressive personal income tax rates were replaced with a flat 20 percent rate, social security contribution tax rates were reduced, corporate income was taxed at a flat 15 percent rate, and VAT was reduced to 18 percent (Bernardin et al 2015) [51]. A broader tax base, better compliance

environment and stricter enforcement helps to recover revenue loss from lower tax rates.

4.2 Result from Regression Analysis

The results obtained from regression are presented and explained by the following sub-sections:

Relationship between Total Tax Revenue and GDP Growth

Regression analysis was used to analyze the relationship between total tax revenue and growth rate. The following tables illustrate the results:

Table 6. Regression Analysis between Total Tax Revenue and GDP Growth

Regression statistics						
R square		0.7307				
Adjusted R square		0.7225				
F-value		89.53				
P-value		0.000				
Observations		35				
Variables	Coefficient(β) ^b	Standard error	t-value	p-value	Lower 95% conf. interval	Upper 95% conf. interval
Constant	7.633032	.937607	81.41	0.000	7.442274	7.823789
TTaxR	0.0006778	0.000716	9.46	0.000	0.0005321	0.0008235

note: a. dependent variable: LGDP (natural logarithm of GDP)

b. independent variables: TTAXR (Total tax revenue).

The analysis reveals that total tax revenue significantly impacts growth (p The t-value (9.46) further confirms strong statistical significance = 0.000, which is < 0.05)., explaining 73.07% of variation. This relationship is meaningful at a 1% level, with a unit increase in total tax revenue increasing LGDP by 0.0006778 times, which indicates that an increase in total tax revenue leads to an increase in GDP. The t-value (9.46) further confirms strong statistical significance. The model shows a strong, positive, and significant impact of total tax revenue on GDP. Policymakers should focus on optimizing tax collection mechanisms while ensuring that tax policies support economic growth rather than hinder it.

Relationship between growth in total revenue versus total tax revenue

By using regression analysis, it is possible to determine the relationship between total revenue and tax revenue when estimating growth. The results are presented in the following tables:

Table 7. Regression Analysis between growth in total revenue versus total tax revenue

Regression statistics	
R square	0.9118
Adjusted R square	0.9063
F-value	165.37
P-value	0.000

Observations		35				
Variables	Coefficient(β) ^b	Standard error	t-value	p-value	Lower 95% conf. interval	Upper 95% conf. interval
Constant	7.265025	.07093	102.43	0.000	7.120546	7.409505
Total Revenue	0.0101474	0.001252	8.11	0.000	0.0075972	0.0126976
Total tax revenue	-.0105825	.0013899	-7.61	0.000	-.0134137	-.0077514

The regression analysis provides valuable insights into the relationship between total revenue, total tax revenue, and economic performance (likely economic growth or another fiscal measure). The analysis reveals that total income and tax revenue significantly influence growth, accounting for 91.1% of variation. Total revenue positively impacts growth, while total tax has a negative relationship when controlling for total revenue. The coefficient of total revenue (0.0101474) is positive and statistically significant ($p = 0.000$). This suggests that an increase in total revenue leads to higher economic growth or another favorable economic outcome. Higher total revenue foster government expending. When total revenue increases in the form of higher tax and non-tax revenue like foreign aid, grants or profit from state owned enterprise. Government can spend more on infrastructure, healthcare, education leading to long-term economic growth (world Bank Revenue Academy) [10]. The coefficient for total tax revenue (-0.0105825) is negative and statistically significant ($p = 0.000$), suggesting that higher tax collection could negatively impact economic growth. Instead, then just increasing tax rates, governments should concentrate on measures that boost revenue through Economic performance which may be further enhanced by promoting non-tax income streams including public-private partnerships (PPPs) and investments in state-owned businesses.

Impacts of direct taxation and indirect taxation with economic growth

A regression analysis was conducted to determine the impact of direct and indirect taxes on growth. The results are reported in the tables below:

Table 8. Regression Analysis between direct taxation and indirect taxation with economic growth

Regression statistics						
R square			0.7572			
Adjusted R square			0.7420			
F-value			49.89			
P-value			0.000			
Observations			22			
Variables	Coefficient(β) ^b	Standard error	t-value	p-value	Lower 95% conf. interval	Upper 95% conf. interval
Constant	7.489579	.1258236	59.52	0.000	7.233285	7.745873
Direct tax	-.0024894	.002103	-1.18	0.245	-.0067731	.0017942
Indirect tax	0.002341	.0010804	2.17	0.038	.0001404	.0045419

Note: a.dependent variable: LGDP (natural logarithm of GDP)

b. independent variables: DT, IND

75.7% of the difference in growth is explained by direct and indirect taxes, according to the report. Direct taxes decrease GDP by 0.0024894 units and increase GDP by 0.0023411 units, but indirect taxes have a positive effect on growth rate. According to this model, direct taxes—such as income tax and corporate tax—have little effect on GDP. Potential causes may be Excessive direct taxes may discourage labor participation and investment. According to the the study of Mohammad A. Razzaque et al ,2023 expanding and strengthening the direct taxation regime to boost revenue and tackle inequality in Bangladesh [52]. They suggest Strengthen the capacity of the National Board of Revenue, Increase the number of registered taxpayers, introduce an automated and centralized audit system to encourage the taxpayers and boost their confidence may strengthen the direct tax system in Bangladesh [21].

However, there may be long-term advantages if the tax structure is progressive and well reinvested.

Impacts of Multiple Kinds of Taxes on Bangladesh's Economic Growth

The primary goal of this article is to determine the impact of several tax regimes on the rate of economic expansion in Bangladesh. Excise duty, value-added tax (VAT), customs duty [8], supplemental duty, and income tax are the most common types of taxes in Bangladesh. The following table shows regression results indicating the extent to which certain tax types influence economic growth:

Table 9. Regression Analysis of Multiple Kinds of Taxes on Bangladesh's Economic Growth

Regression statistics						
R square	0.9719					
Adjusted R square	0.9634					
F-value	113.72					
P-value	0.000					
Observations	35					
Variables	Coefficient(β) ^b	Standard error	t-value	p-value	Lower95% conf. interval	Upper 95% conf. interval
Constant	7.144896	.0845531	84.50	0.000	6.969984	7.319807
Income tax	-.007543	.0018441	-4.09	0.000	-.0113579	-.0037281
Value added tax	0.0077601	.0018327	4.23	0.000	.00039689	.00115514
Customs duty	-.0012052	.0010569	-1.14	0.266	-.0033917	.0009812
Excise duty	-.0020819	.0114126	-0.18	0.857	-.0256907	.0215268
Supplementary duty	-.0001176	.0011603	-0.10	.920	-.002518	.0022827
Other tax	-.0027777	.0061154	-0.45	.654	-.0154284	.0098731
Nontax revenue	.0085209	.001061	8.03	0.000	.0063261	.0107157

Note: a. dependent variable: LGDP (natural logarithm of GDP)

b. independent variables: income tax, value added tax, SD, CD, ED, OT, NTR

The model's independent variables account for 97.19% of the dependent variable's variability. The regression results indicate that on-tax revenue, VAT and income tx significantly impact Bangladesh's economic growth. Income tax reduces growth due to

a negative coefficient (-0.0113579 to -0.0037281), Entirely negative, confirming a robust negative impact on GDP. Empirical studies have demonstrated that higher income tax rates can negatively impact economic growth by discouraging work, saving, investment, and innovation. For instance, a study by the National Bureau of Economic Research found that a tax increase equivalent to 1% of GDP can reduce real GDP by approximately 2 to 3% [53]. To stimulate economic activity governments should balance direct taxation with incentives aimed at mitigating this adverse effect. According to The Tax Policy Center The well-designed tax regime can encourage labor, savings, and investment in contrary high marginal tax rate can discourage productive economic behavior. Also in addition, the reduction in marginal tax rates has been associated with increase in real GDP. Tax foundation suggests that incentives can promote economic growth.

By adopting policies that reduce the tax burden on individuals and businesses while providing incentives for economic engagement, governments can foster an environment conducive to sustainable growth.

Value-Added Tax (0.00039689 to 0.00115514) shows Entirely positive, reinforcing a strong positive relationship with GDP. According to the institute of capacity development of IMF, A rise in VAT, funded by a decrease in income taxes, only stimulates growth when it is achieved through C-efficiency. also, Growth is also encouraged when a decrease in the standard rate balances out an increase in C-efficiency for a given VAT income. Therefore, it may be concluded that expanding the VAT base through fewer lower rates and exemptions is more likely to result in stronger long-term growth in the OECD countries than raising the standard rate.

Non-Tax Revenue (0.0063261 to 0.0107157) Entirely positive, confirming a strong contribution to GDP growth. Other independent variables like additional duty, customs duty, value-added tax, and other taxes have no significant influence on Bangladesh's economic growth.

Table 10. Analysis of Pearson correlation on various types of tax and GDP: Consistency check

	GDP	TR	TTAXr	DT	INDT	Val- uea-X	CD	ED	Suppli- Y	OT
GDP	1									
TR	0.97	1								
TTAXr	0.96	0.99	1							
DT	0.95	0.99	0.99	1						
INDT	0.96	0.99	0.99	0.99	1					
Value added X	0.96	0.99	0.99	0.99	0.99	1				
CD	0.82	0.90	0.90	0.89	0.90	0.89	1			
ED		0.24	0.25	0.26	0.23	0.40	-0.06	1		
Supplement Y	0.64	0.56	0.55	0.55	0.55	0.55	0.15	0.89	1	
OT	0.96	0.99	0.99	0.98	0.98	0.97	0.89	0.29	0.56	1

Growth is strongly linked to income tax, VAT, customs duty, and additional duty, with a correlation coefficient of 0.85 or higher. More tax revenue, especially between 7% and 15% of GDP, leads to greater investments in health and education, which improves productivity and human capital and lowers the volatility of government spending consequently volatility of the economy (Rishabh et al 2024) [54].

However, other taxes have a smaller correlation coefficient, and an increase in excise tax decreases growth. According to Dahal, Arjun (2020) [55]. Nepal's economic situation demonstrates that a greater tax-to-GDP ratio by itself is insufficient to guarantee rapid economic growth. Instead of concentrating just on income tax and customs collection, the government should be advised to broaden the tax base. The government must make an attempt to diversify its tax base. When GDP is at its highest, tax income may be maximized as well. Investment is discouraged when the tax-to-GDP ratio is extremely high. Therefore, lowering the tax rate is required to enable investors to increase their investment. The effect on private investment must be taken into account when calculating the tax rate.

5 Discussion

The study explores the relationship between various tax regime and economic growth of Bangladesh. To achieve this goal, data were collected over a 35-year period, from 1987-89 to 2021-2022. To offer comprehensive data for various forms of taxes, appropriate calculations are performed and tabulated. The research also attempts to investigate the relationships between the country's tax regime and the magnitude of economic expansion. Correlation and regression analysis were used to achieve this goal. According to the findings, tax revenue accounts for most the Bangladesh government's revenue. Over the last 35 years, the average contribution of tax to total revenue has been calculated to be 82.99%, indicating a long-rising trend. It also turns out that indirect taxes account for the greatest amount (76.84%) of tax revenue during the study period. Regarding the sort of tax, VAT has been pointed out as the primary provider of tax revenue. This source's participation has been growing over time, generating an average of 33.06% of total tax revenue. Income tax has historically been the next biggest source of tax revenue. During this time frame, income tax earned 22.67% of total tax revenue on average. A considerable amount of the taxes paid into the national treasury are supplementary duties and customs duties. Their total tax contribution rate is around 15% and 23% respectively. Various taxes, including excise duty, import duty, and export duty (ITO), surcharge, non-judicial stamp, drug and narcotic duty, etc. contribute to the remaining 6% of revenue.

The findings revealed a favorable association between tax revenue and economic growth in Bangladesh. The significance of this variable in relation to total income in the Bangladeshi economy is not statistically significant. The literature and empirical analysis presented in this study consistently support the argument that taxes have a detrimental effect on economic growth. An increase in the level and rate of investment through indirect taxes is expected to stimulate economic growth in Bangladesh. This can be seen as a positive outcome. But the direct tax has a negative relationship with

growth being theoretically consistent with a priori expectation was also statistically significant. Balasoïu, et al all 2023 assert that the results are in complete agreement with these findings, but they also acknowledge that direct taxes may have an impact on economic development as well [56]. The impact of high direct taxes on businesses' ability to engage in sustainable practices can be limited by the resources they have available. Furthermore, high level of direct taxes can cause businesses to tax avoidance and evasion of taxation, which limits the amount of resources that can be allocated to sustainable development initiatives. A closer look at the results also shows that among all indirect taxes, VAT has a very positive relationship with economic growth in Bangladesh. This is consistent with the theoretical axiom. The Bangladeshi economy during the reference period is significantly influenced by this variable. According to (Rahman Zia et al, 2021), the statistical significance of VAT in Bangladesh is evident from its positive impact on economic growth as measured by GDP. Bangladesh's economic growth in relation to GDP is influenced by VAT, which has a significant positive impact on TTR and TR [56]. Furthermore, the empirical data indicates a favorable and substantial correlation between non-tax income on the economy of Bangladesh. Keho (2011) offered similar result for the Cote d'Ivoire economy [57]. The estimated regression line is well-suited to the data and the estimated model can be easily scaled, which is indicated by a high adjusted R-Square value. Similarly, high values of F-Square indicate that the whole model is statistically significant. It indicates that the dependent variable and the explanatory variable in the model are highly linear.

6 Conclusion

This research examines the influence of tax revenue on the economic development of Bangladesh between 1987-1989 and 2022-2023. As one of the important sources of government revenue around the world, taxes help governments to meet their obligations and expenditures. There is an immense contribution of taxes to fostering economic progress of Bangladesh as majority of the government incomes are obtained by taxes. The result portrays that tax revenue positively contributes to Bangladesh's economy's growth. However, some key issues hindering tax administration include a lack of coordination among the three main divisions of the National Board of Revenue (NBR) VAT, income tax, and customs as well as insufficient computerization and an over-reliance on physical controls rather than streamlined accounting processes. Therefore, an efficacious and potent tax policy is mandatory to bring about sufficient revenue for growth. The paper makes recommendations for the extension of indirect tax based on its results with the goal of accelerating the nation's economic development. The solution to spur individual entrepreneurs' enthusiasm is to expand the tax base as much as possible, while also catering to the growing number of people. Modernizing VAT, income tax, and customs administration could significantly boost tax revenue in Bangladesh. The tax administration should prioritize taxpayer services, as this modernization is crucial for unlocking the country's revenue potential. While taxes will inevitably distort economic behavior to some extent, an effective tax system aims to minimize the

impact of highly distortionary taxes while maximizing revenue from those that are less so.

References

1. Chang, L., Mohsin, M., & Iqbal, W. (2023). Assessing the nexus between COVID-19 pandemic-driven economic crisis and economic policy: lesson learned and challenges. *Environmental Science and Pollution Research*, 30(9), 22145-22158.
2. Beyer, Robert & Wacker, Konstantin. (2023). Good enough for outstanding growth: The experience of Bangladesh in comparative perspective. *Development Policy Review*. 42. 10.1111/dpr.12750.
3. Amit, Sajid & Kafy, Abdulla Al. (2023). Addressing the dollar crisis by investigating underlying causes, effects, and strategic solutions in emerging economies. *Research in Globalization*. 8. 100187. 10.1016/j.resglo.2023.100187.
4. Fagbemi. T. O. M. Uadiale and A. O. Noah (2010) "The Ethics of Tax Evasion: Perceptual Evidence from Nigeria", *European Journal of Social Sciences*, Volume 17, Number 3.
5. Khan, M. M. R. (2021). "Corruption and Tax Compliance in Developing Countries: Evidence from Bangladesh". *Asian Economic Policy Review*.
6. Rahman, M. (2020). "Issues and Challenges of Tax Administration in Bangladesh". *Bangladesh Journal of Public Administration
7. Ogundele, A. E., (1999) "*Elements of Taxation*". 1st Edition: Lagos Libri Service.
8. Nightingale, K. (1997). "*Taxation: theory and Practice*" United Kingdom, Pitman Press.
9. Myles, G. Taxation and Economic Growth. *Fiscal Stud.* 2000, 21, 141–168.
10. Minh Ha, N.; Minh, P.T.; Binh, Q.M.Q.; Ercolano, S. The determinants of tax revenue: A study of Southeast Asia. *Cogent Econ. Finance* 2022, 10, 2026660.
11. Sekkat, K.; Varoudakis, A. Fiscal policy and economic growth: A review of the literature. *J. Econ. Surv.* 2020, 34, 598–627.
12. Gao, Y.; Xu, T. Tax policy and economic growth: A comparative study of China and the United States. *Sustainability* 2020, 12, 1233.).
13. Ahmad, S.; Sial, M. Taxes and economic growth: An empirical analysis of Pakistan. *Eur. Law Rev.* 2016, 8, 1.
14. Korkmaz, S.; Yilgor, M.; Aksoy, F. The impact of direct and indirect taxes on the growth of the Turkish economy. *Public Sect. Econ.* 2019, 43, 311–323.
15. Asllani, G., Statovci, B. 2018. Effect of the Change in Value Added Tax on the Fiscal Stability of Kosovo. *Croatian Economic Association Zagreb*, 65(6), 513-540. Asllani, G. 2012. The impact of fiscal policy on economic development. *OEconomica*, Danubius University of Galati, 1(1), 123-137.
16. Gasteratos, I., Karamalis, M. and Koutoupis, A. 2016. Shadow Economy Worsens Income distribution. *International Journal of Economics & Business Administration*, 4(3), 80-92
17. Arnold, J. Do tax structures affect aggregate economic growth? Empirical evidence from a panel of OECD countries. In *OECD Economics Department Working Papers*; OECD Publishing: Washington, DC, USA, 2008; Volume 643, pp. 1–3.
18. Daniel, B., Jeffrey, P. 2013. Investment Taxation and Portfolio Performance. *Journal of Public Economics*, 97(1), 245-257.
19. Schraztenstaller, W., Kohler, T. 2015. The Impact of Tax on Economic Growth. Case Study of OECD Countries.
20. Gale, William. "The Kemp Commission and the Future of Tax Reform." *Tax Notes* 70 No. 6 (February 5, 1996): 717–29.

21. Vito, T. 1990. Tax structure and growth: are some taxes better than others? Public choice. Working paper, IMF.
22. Rimmler, M., Rose, M., Zöllner, D. 2017. Tax Reform for Tax Competition: Which Alternatives should be Used? Croatian Economic Association Zagreb, 56(11), 1079-1100.
23. Balasiou, N.; Chifu, I.; Oancea, M. Impact of Direct Taxation on Economic Growth: Empirical Evidence Based on Panel Data Regression Analysis at the Level of Eu Countries. *Sustainability* 2023, 15, 7146. <https://doi.org/10.3390/su15097146>
24. Juravle, V.; Vintilă, G. Metode ,si Tehnici Fiscal; Editura Rolcris: Bucures,ti, Romania, 2000.
25. Keynes, J. M. (2018). *The General Theory of Employment, Interest, and Money*. doi:10.1007/978-3-319-70344-2 eBook ISBN978-3-319-70344-2Published: 20 July 2018
26. Myles, G. Taxation and Economic Growth. *Fiscal Stud.* 2000, 21, 141–168.
27. Gomis-Porqueras, P.; Smith, R. Income taxation and growth: New insights from public policy expansion. *J. Econ. Dyn. Control* 2020, 118, 103974.
28. Kneller, R.; Staringer, C. The impact of tax competition on economic growth in OECD countries. *J. Public Econ.* 2020, 184, 104169.Kose, M.A.; Terrones, M.E. Global macroeconomic developments and the impact of COVID-19: A new set of scenarios. *J. Policy Model.* 2021, 43, 809–816.)
29. Arnold, J. Do tax structures affect aggregate economic growth? Empirical evidence from a panel of OECD countries. In *OECD Economics Department Working Papers*; OECD Publishing: Washington, DC, USA, 2008; Volume 643, pp. 1–3.
30. Nguyen, A.D.; Onnis, L.; Rossi, R. The macroeconomic effects of income and consumption tax changes. *Am. Econ. J. Econ. Policy* 2021, 13, 439–466
31. Romer CD, Romer DH (2010) The macroeconomic effects of tax changes: estimates based on a new measure of fiscal shocks. *Am Econ Rev* 100: 763-801.
32. Ferede, Ergete & Dahlby, Bev. (2012). The Impact of Tax Cuts on Economic Growth: Evidence from the Canadian Provinces. *National Tax Journal.* 65. 563-594. 10.17310/ntj.2012.3.03.
33. Macek, Rudolf. (2015). The Impact of Taxation on Economic Growth: Case Study of OECD Countries. Review of Economic Perspectives. 14. 10.1515/revecp-2015-0002.
34. Afonso, António & Tovar Jalles, João. (2013). Fiscal Composition and Long-Term Growth. *Applied Economics.* 46. 10.1080/00036846.2013.848030.
35. Baiardi, D., P. Profeta, R. Puglisi, and S. Scabrosetti. 2019. “Tax Policy and Economic Growth: Does It Really Matter?” *International Tax and Public Finance* 26 (2): 282–316.
36. Mankiw, N. G. (2020). *Macroeconomics* (10th ed.). Worth Publishers.
37. Todaro, M. P., & Smith, S. C. (2020). *Economic Development* (13th ed.). Pearson.
38. Agunbiade, O., & Idebi, A. A. (2020). Tax revenue and economic growth nexus: empirical evidence from the Nigerian economy. *European Journal of Economic and Financial Research.*, 4(2), 18-41.
39. Arvin, Mak & Pradhan, Rudra & Nair, Mahendhiran. (2021). Are there links between institutional quality, Government expenditure, Tax revenue and economic growth? Evidence from low-income and lower middle-income countries. *Economic Analysis and Policy.* 70. 10.1016/j.eap.2021.03.011.
40. Tanzi, V., & Zee, H. H. (2000). Tax Policy for Emerging Markets: Developing Countries. IMF Working Paper, 00/35.
41. Economic Growth: What It Is and How It Is Measured by The Investopedia TeamUpdated June 05, 2024,Reviewed by Charles Potters,Fact checked by Katrina Munichiello.

42. Tien, Ho & Tran Xuan, Hang & Nguyen, Quang Khai. (2023). Tax revenue-economic growth relationship and the role of trade openness in developing countries. *Cogent Business & Management*. 10. 2213959. 10.1080/23311975.2023.2213959.
43. Mueeed, Abdul & Barman, Chandan. (2020). The Impact of Revenue Gap on Economic Growth: A Case Study of Bangladesh.
44. Mahdavi, S. (2008). The level and composition of tax revenue in developing countries: Evidence from unbalanced panel data. *International Review of Economics & Finance*, 17(4), 607–617.
45. Fauji, Z., & Syafitri, W. (2024). The impact of local governance and regional own-source revenue on economic growth at the district level in Indonesia. *Jurnal Ekonomi Dan Bisnis*, 27(2), 153–174.
46. Besley, T., & Persson, T. (2013). *Taxation and Development*. Handbook of Public Economics, Vol. 5, pp. 51–110.
47. Santiago Acosta-Ormaechea and Atsuyoshi Morozumi* The Value Added Tax and Growth: Design Matters IMF Working Paper Institute for Capacity Development, May 2019.
48. Liko, E. (2024). Value Added Tax Collection Efficiency and Economic Activity. *Revista De Gestão Social E Ambiental*, 18(11), e09450.
49. William G. Gale and Andrew A. Samwick; Effects of Income Tax Changes on Economic Growth February, 2016.
50. S M Toufique Huq Sowrov, Trade Openness, Tariffs and Economic Growth: An Empirical Study from Countries of G-20 13 May 2024
51. Bernardin Akitoby, Anja Baum, Clay Hackney, Olamide Harrison, Keyra Primus, and Veronique Salins.
52. Large Tax Revenue Mobilization in Low-Income Countries and Emerging Markets: Lessons from a New Database,” by IMF 2015.
53. Mohammad A. Razzaque, Jillur Rahman, Rabiul Islam Rabi, Deen Islam, and Abu Eusuf January 2023; Using Direct Taxation to Reduce Inequality and Boost Revenue, Research and Policy Integration for Development.
54. The Macroeconomic Effects of Tax Changes: Estimates Based on a New Measure of Fiscal Shocks (NBER Working Paper No. 13264).
55. Rishabh Choudhary, Franz U Ruch, and Emilia Skrok1, Taxing for Growth: Revisiting the 15 Percent Threshold July 10, 2024.
56. Dahal, Arjun. (2020). Tax-to-GDP Ratio and the Relation of Tax Revenue with GDP: Nepalese Perspective. *Researcher: A Research Journal of Culture and Society*. 4. 80-96. 10.3126/researcher.v4i1.33813.
57. Keho, Y. (2011). Tax Structure and Economic Growth in Cote d’Ivoire: Are Some Taxes Better Than Others? *Asian Economic and Financial Review*, 1(4), 226-235.

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