

Tax Structure in Nepal: Its Impact on the Real Economy

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<p>Article info: Received: February 9, 2024 Revised: March 4, 2024 Accepted: March 29, 2024</p> <p>Keywords: <i>Tax structure, economic growth, macroeconomic stability, income inequality, GDP</i></p>	<p>Abstract: The objective of this paper is to study the tax structure of Nepal and its impact on the real economy. The data collected from various published data sources like Economic Survey of Nepal, Nepal Rastra Bank, World Bank, IMF and other institutions are used to test regression models to reach at conclusion of the research paper. This article reviews the structure of Nepal's tax systems and looks at how they affect economic growth, redistribution of income, and macroeconomic stability. Studies reveal that Nepal's relatively higher dependency on direct taxes restrains economic expansion, however not as much as in the "Rest of the World." Still, Nepal's greater reliance on direct taxes does not appear to materially reduce economic volatility or income inequality, unlike most other countries.</p>
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Introduction

The comparatively low ratio of tax income to GDP (with few exceptions) is one of the most studied aspects of Nepal's tax systems. A lack of public investment on human capital (health and education) and public infrastructure has often been linked to low tax revenue levels. This has resulted in a slowdown in economic growth and uneven wealth distributions. The structural makeup's of Nepal's tax systems and their impact on the actual economy have received little attention in research studies.

The decision between direct and indirect taxes has fueled an extensive political and scholarly discussion on the benefits and drawbacks of each type of taxation. The best way to construct tax structures is to choose between direct and indirect taxes because the effects of these taxation methods on equality and efficiency can vary. The majority of the early attention in the optimal tax literature was on distinct forms of taxing (e.g., Ramsey, 1927; Diamond & Mirrlees, 1971), although some early contributions seemed to show the superiority of direct over indirect taxes under particular situations (Hicks, 1939).

Atkinson and Stiglitz's (1976) landmark study, which for the first time examined the interaction of direct and indirect taxes in the achievement of efficiency and equality goals, was a significant development in the optimal tax literature from the standpoint of the optimal tax mix. We now take direct and indirect kinds of taxation for granted.

Macek (2014) has pointed that economic growth is a traditional leading to improvements in the quality of life or gradual, as well-ordered socio-economic change. The empirical studies found that most of the tax structures were highly significant and related with the economic growth in a country. The change in tax policy might affect the economic planning (Marsden, 1983). According to Guber and Burns (1997), a countries economic may be affect differently due to any changes in each tax components. Mahdavi (2008) has suggested that the effect of rises in total tax revenue reduce the growth in developing countries. In a budget constant economy like, Nepal, study of tax-growth relationship enables us to formulate the suitable policy measures for the more inclusive and equitable growth process. The budget crisis is generally resulted through the reducing of public spending or/and an increasing in tax revenue (Macek 2014). Rapid reduction in spending or increasing in taxes is

harmful to long-term growth performance. Thus, the concern of the government lies with the difficulty of fiscal consolidation with the suitable growth performance where tax policies are vital.

The combination of direct and indirect taxes can have a significant impact on the overall performance of economic systems, including economic growth, macroeconomic stability (through internal stabilizers), and overall income redistribution capacity. The form and makeup of tax systems in Latin America, as well as their effects on macroeconomic stability, economic growth, and income distribution, are the primary subjects of this article.

General Background of Taxation in Nepal

Nepal's political history demonstrates that several types of taxes have existed from prehistoric times (Dahal, 2004). In the past, taxes were levied in accordance with the Shastras, Yagyavalkya Smriti, Manu Smriti, and Kautilya Nitee. Three of the greatest philosophers in ancient Eastern civilization were Kautilya, Yagyavalkya, and Manu. Their ideas and tenets were referred to as Yagyavalkya Smriti, Manu Smriti, and Kautilya Nitee. In popular culture, Kautilya was also referred to as Chanakya, and his teachings as Chanakyaniti. Chandragupta Maurya, the first Mauryan Emperor, is believed to have ruled India from 320 BC to 298 BC. Chanakya served as his advisor. At the time, the basic tenet of taxation was to levy taxes without impeding the ability of taxpayers to pay (Kandel, 2011). According to the Shastras, taxes were levied in a way that would enable people to obtain milk from a milk cow's udder or harvest honey from beehives.

In order to start various government programs, taxes were collected at that time. The Treasury is the primary factor that determines when a program is launched, according to Kautilya. From the Republic of Vaisali, which is now the northern portion of the Indian state of Bihar, the Licchavi kings arrived in Nepal in the middle of the fifth century B.C. and governed the Kathmandu Valley until 750 B.C. Three types of Karas (taxes) were imposed by them: bhoga (a tax on livestock), kara (a tax on trade), and Bhaga (a tax on agriculture). The levies of the era included the Goyuddha Kara levied on bull fighting, the Sin Kara levied on firewood, the Malla Kara levied on wrestling, the Palabdu Kara levied on swimming, and the Matsya Kara levied on onion and garlic.

One of the Licchavi rulers, Ansubarma, levied taxes on the restoration of sacred monuments and water. Depending on the condition of the land, a tax on farmers' agricultural revenue was levied at the rate of 1/6, 1/8, and 1/12 shares of crop production at that time (Dahal, 2004).

In Nepal, the history of taxes is very recent, despite the fact that they were collected in different ways in the past. When a multi-party democratic political system was instituted in Nepal in the early 1950s, the notion to enact an income tax was born. During the budget speech in 1951, the government announced its plan to impose income taxation.

In 1959, Nepal's first elected government finally enacted the Business Profit and Salaries Tax Acts, 1960. Income tax was solely applied to business profits and salaries at the time. The government updated the existing Tax Act with the Income Tax Act 1962 after roughly three years of income tax experience. The Act expanded the coverage.

The Income Tax Act of 1974 was passed into law. Five categories were established by the Act to classify sources of income: agriculture, industry, trade, profession or occupation, remuneration, house and compound rent, and other sources. But thanks to the Finance Acts, revenue from agriculture was kept out of the income tax system with the exception of a few years.

The Parliament of Nepal embraced the Personal Duty Act 2002 with the end goal of raising income through a productive assortment process for financial improvement in the nation, as well as correcting and coordinating personal expense regulation. The Annual Duty Demonstration of 1974, which has been revised multiple times and has been in force for a long time, was supplanted by this

Demonstration. In 2059, the public authority of Nepal set down Personal Expense Rules to explain this regulation. To get annual assessment, Nepal has taken on different severe approach measures.

In Nepal, the idea of VAT was first presented in the early 1990s. The Finance Minister then announced the introduction of a two-tier sales tax system to provide the groundwork for the implementation of VAT beginning in the FY 1992/93. The Government of Nepal had stated its desire to adopt VAT in the Eighth Plan. In 1993, a VAT task group was established with funding support from USAID to ensure the required arrangements were in place for the implementation of VAT. The task of creating the draft VAT legislation fell to the tax force.

The "Value Added Tax Act – 1995 (2052)" was established by the Nepalese Parliament in 1995. A VAT regulation was then created in 1996, and the Act itself was passed in 1997. Political unpredictability and fierce resistance from the business community caused its implementation to be postponed. Effective November 16, 1997, a single rate of 10 percent VAT was completely established. Sales tax, lodging tax, contract tax, and entertainment tax were all replaced by it. The necessity for increased revenue mobilization through an effective tax system and the government's budget imbalance has made the case for Value Added Tax (VAT). The Nepal government raised the value-added tax (VAT) from 10% to 13% on February 15, 2004. Value-added taxes, or VATs, are consumption taxes imposed on goods and services anytime value is added at any point in the supply chain, from the point of production to the point of sale. The cost of the product less any prices for ingredients that were previously subject to taxes is the amount of VAT that the user must pay.

Taxes are the money we provide the government in exchange for goods and services. The government utilizes this money to pay for all the services it provides, including the military, infrastructure, social and economic services, welfare, and basic utilities.

There are two categories of taxes in Nepal: direct taxes and indirect taxes. Direct taxes are those that are paid to the enforcing body directly by the person or entity. They are imposed on earnings and revenues.

The taxes that are not paid directly to the enforcing authority by an individual or entity are known as indirect taxes. Instead of taxes on earnings and profits, they are imposed on products and services.

Research Questions

This research aimed to address the following key questions:

1. How does the current tax structure in Nepal affect the behaviour of business, investors and consumers?
2. What are the specific areas within the tax structure that might be hindering economic growth and development in Nepal?

By developing into these questions, this research endeavors to provide valuable insights into the relationship between the tax structure and the real economy in Nepal. It seeks to contribute to the ongoing discourse on taxation policies and reforms, aiming to inform policymakers, businesses and other stakeholders about the potential avenues for enhancing economic efficiency, competitiveness and prosperity in the country.

Research Objectives

The objectives of the study of this research paper were:

- i. To examine the current tax structure in Nepal and its components including direct and indirect taxes and other levies to understand their implications on businesses, investors and consumers.
- ii. To identify specific challenges and influences within the Nepalese tax system that may be impeding economic growth, investment and development.

Literature Review

The specific literature reviews on the tax structure and its impact on the real economy in Nepal is scarce, but there are studies and articles that touch this topic. Here are a few scholarly works and reports that could provide insights into this area. Atkinson and Stiglitz (1976) have attempted to present a framework within which they evaluate the appropriateness of different tax bases and to apply this framework to the classical question of the use of direct versus indirect taxation. Based on their observation, they conclude that necessity for any form of taxation other than a uniform lump-sum tax arises from the fact that individuals have differing characteristics. The choice of the direct/indirect tax structure depends upon the objectives of the government.

Atkinson and Stern (1980) have been concluded on their working paper as if the government had no distributional objectives and was concerned solely with efficiency, it may employ only direct taxation and this would take the form of a poll tax; if a general income tax function may be chosen by the government, we have shown that, the whole the utility function is separable between labour and all commodities, no indirect taxes need to be employed. Horizontal equity considerations may impose constraints on the structure of taxes which may be levied.

Widmalm (2001) has examined the effect of the tax structure on economic growth based on data for 23 OECD countries between 1965 to 1990. Researcher found that a robust negative correlation between economic growth rates and the share of tax revenue from personal income taxes and a measure of the progressivity of the tax system. Researcher also found that reliance on consumption taxes to be growth enhancing.

Dalby (2003) has used a framework of a class of endogenous growth models that have been developed by economists over the years to study the growth effects of restructuring the personal tax system. It focused on a knowledge-based economy—that success depends on having a highly skilled and educated workforce that can take advantage of technological innovation, scientific breakthroughs and the communication revolution that are occurring throughout the world. Researcher concludes that endogenous growth models and recent economic studies indicate that switching the tax mix toward consumption taxes can significantly increase the growth rate of the economy. Theoretical models and empirical evidence predict a significant boost to the growth rate from switching to consumption taxation.

Jorge & Violeta (2011) have examined the structure of the tax systems in Latin America and analyzed their impact on the real economy—economic growth, micro-economic stability, income redistribution and foreign direct investment and on the extent of informally the size of the shadow economy and tax morale. Researcher concludes that the effect of tax structure measured by the direct to indirect tax ratio on the real economy is relatively higher reliance on direct taxes slows economic growth, the direct to indirect tax ratio also plays a significant role in dampening economy volatility, the very weak evidence of a positive impact of the direct to indirect tax ratio on income distribution, relatively higher reliance on direct taxes is quite significant in decreasing the flow of foreign direct investment, strong highly significant effect of the role of tax structure as measured by the direct to indirect tax ratio on tax morale.

Kyle (2016) has suggested that the largest changes in the tax system over the last three decades—that is, the move from trade to domestic consumption taxes—have only slightly benefited lower-middle-income economies. Additionally, it is discovered that revenue-neutral increases in social contributions or personal income taxes have a negative impact on long-term rates of per capita GDP growth.

Madhav (2018) has investigated the structure of Nepalese tax. Researcher concludes that the current tax system in Nepal is beset by various shortcomings. The overall tax structure isn't doing a good job of generating income. It is generally and legitimately seen as unjust, and it lacks efficiency

and openness. It will be necessary to alter administrative processes, rules, policies, and regulations in order to address the issues.

Uttam (2024) has concluded a positive relationship between income tax revenue and GDP progression, implying that an increase in income tax revenue correlates with a corresponding rise in Nepal's economic growth.

In conclusion, a growing body of empirical research indicates that the selection of tax policies can have a substantial impact on macroeconomic factors like income distribution and economic growth. This paper tries to find out the present tax structure and its impact on real economic growth of Nepal by incorporating income inequality and macroeconomic stability which is still not discovered properly.

Research Methodology

This research paper is employed secondary data obtained from the different sources of the government of Nepal and non-governmental organizations to examine the data using a descriptive and analytical research design. Specifically, researcher build on the recent work by Lee & Gordon (2005), Kenny & Winer (2006), Hines & Summers (2009), and Martinez-Vazquez et al. (2011) to estimate the following model:

$$GDP_t = \alpha \text{TaxRatio}_{it} + X_{it}\beta + V_t + \varepsilon_{it}, i=1, \dots, N, t=1, \dots, T \dots \dots \dots (i)$$

Where i indicates country and t denotes subsample period, Vector X , includes GDP per capita, top marginal corporate tax rate, primary school enrollments, openness, population growth rate and inflation rate.

We proceed to estimate two versions of the following equation, with one version introducing an interaction term with a dummy for Nepal.

$$SDGDPg_{it} = \alpha_1 \text{TaxRatio}_{it} + \alpha_2 \text{TotalRev}_{it} + X_{it}\beta + V_t + \varepsilon_{it}, i=1, \dots, N, t=1, \dots, T \dots \dots \dots (ii)$$

Where i indicates country and t denotes subsample period, Dependent variables SD_GDPg , is the subsample standard deviation of annual GDP (real) per capita growth rate, TaxRatio is the average subsample direct to indirect tax ratio, is the average subsample total revenue to GDP and X , represents all other control variables.

The following empirical model is estimated for the full sample of developed and developing countries with and without interaction terms with a Nepal dummy to allow the estimated coefficient to vary and for developing countries and Nepal alone.

$$Gini_{it} = \alpha_1 \text{TaxRatio}_{it} + \alpha_2 \text{TotalRev}_{it} + X_{it}\beta + Gini_{it} + \varepsilon_{it}, i=1, \dots, N, t=1, \dots, T \dots \dots \dots (ii)$$

Where I indicate country and t denotes years. Gini is the Gini coefficient as a measure of income inequality over time and across country, X_t is the set of observable characteristics that affect income inequality, which represent a consequences specification in. the empirical literature on aggregate income distribution. Besides our main variable of interest, TaxRatio , they include the Initial Gini coefficient, total revenue collection to GDP, GDP per capita growth rate, private credit as a percentage of GDP, Labour force participation, and Openness (measured by the ratio of import plus export to GDP) Lee & Gordon (2005), Kenny & Winer (2006), Hines & Summers (2009), and Martinez-Vazquez et al. (2011).

Results and Interpretation

Trends in Structure of Taxation in Nepal

The Nepali government, like any other, depends on income to carry out its mandate as an independent nation. A contemporary democratic government must carry out a number of social welfare initiatives in addition to its usual duties. Government income is gathered for this purpose. Tax and non-tax revenue are these. The total of these two sources, which are both susceptible to non-repayment, is what the government or public revenue is made of. The function of taxes in the process of economic growth is extremely important for a developing nation such as Nepal. Thus, the ability of the populace

to pay taxes and the tax system itself to function as a mirror of the government are the two main design considerations. The tax system plays a crucial role in growth in this regard.

The government gets its revenue from a variety of sources. Tax and non-tax revenue make up the two main sources of government revenue. Our whole revenue structure has been dominated by tax income. The low revenue performance of the Nepalese economy contrasts with the country's rising governmental spending rise in revenue is not keeping up with rise in expenses. Table 1 and Figure 1 show the breakdown of government revenue and total taxation from FY 2000–01 to FY 2022–23.

Table 1: Tax revenue, non-tax revenue, total revenue and real GDP of Nepal from 2001 to 2023

Year	Tax Revenue		Non-Tax Revenue		Total Revenue	Real GDP in CP	Percent
	NRs in Ten Millions	Percentage	NRs in Ten Millions	Percentage	NRs in Ten Millions	NRs in Ten Millions	Total Revenue to GDP
2001	3,886.50	79.49	1,002.88	20.51	4,889.38	44,151.90	11.07
2002	3,933.06	77.96	1,111.60	22.04	5,044.66	45,944.30	10.98
2003	4,089.60	74.99	1,364.29	25.01	5,453.89	49,223.10	11.08
2004	4,817.30	77.29	1,415.80	22.71	6,233.10	53,674.90	11.61
2005	5,410.47	77.16	1,601.80	22.84	7,012.27	58,941.20	11.90
2006	5,743.04	79.45	1,485.15	20.55	7,228.19	65,408.40	11.05
2007	7,112.67	81.09	1,658.54	18.91	8,771.21	72,782.70	12.05
2008	8,515.55	79.12	2,246.70	20.88	10,762.25	81,565.80	13.19
2009	11,705.19	81.58	2,642.26	18.42	14,347.45	98,827.20	14.52
2010	15,978.53	89.77	1,820.56	10.23	17,799.09	119,277.40	14.92
2011	17,722.72	89.34	2,114.87	10.66	19,837.59	136,695.40	14.51
2012	21,172.18	86.64	3,265.12	13.36	24,437.30	152,734.40	16.00
2013	25,921.49	87.57	3,680.62	12.43	29,602.11	194,929.00	15.19
2014	31,244.13	87.61	4,417.96	12.39	35,662.09	223,253.00	15.97
2015	35,595.57	87.70	4,991.07	12.30	40,586.64	242,364.00	16.75
2016	42,109.66	87.37	6,086.50	12.63	48,196.16	260,818.00	18.48
2017	55,386.65	90.92	5,531.34	9.08	60,917.99	307,714.00	19.80
2018	65,949.15	90.75	6,722.60	9.25	72,671.75	345,595.00	21.03
2019	73,860.40	89.62	8,558.20	10.38	82,418.60	385,893.00	21.36
2020	70,005.55	88.71	8,911.00	11.29	78,916.55	388,870.00	20.29
2021	87,010.66	93.42	6,127.61	6.58	93,138.27	427,730.00	21.78
2022	98,433.20	92.86	7,573.11	7.14	106,006.31	493,370.00	21.49
2023	86,562.00	90.44	9,153.00	9.56	95,715.00	538,134.00	17.79

Source: Economic Survey, FY 2000/01 to 2022/23 and Various Years' Budget

Figure 1: Tax revenue, non-tax revenue total revenue and real GDP of Nepal

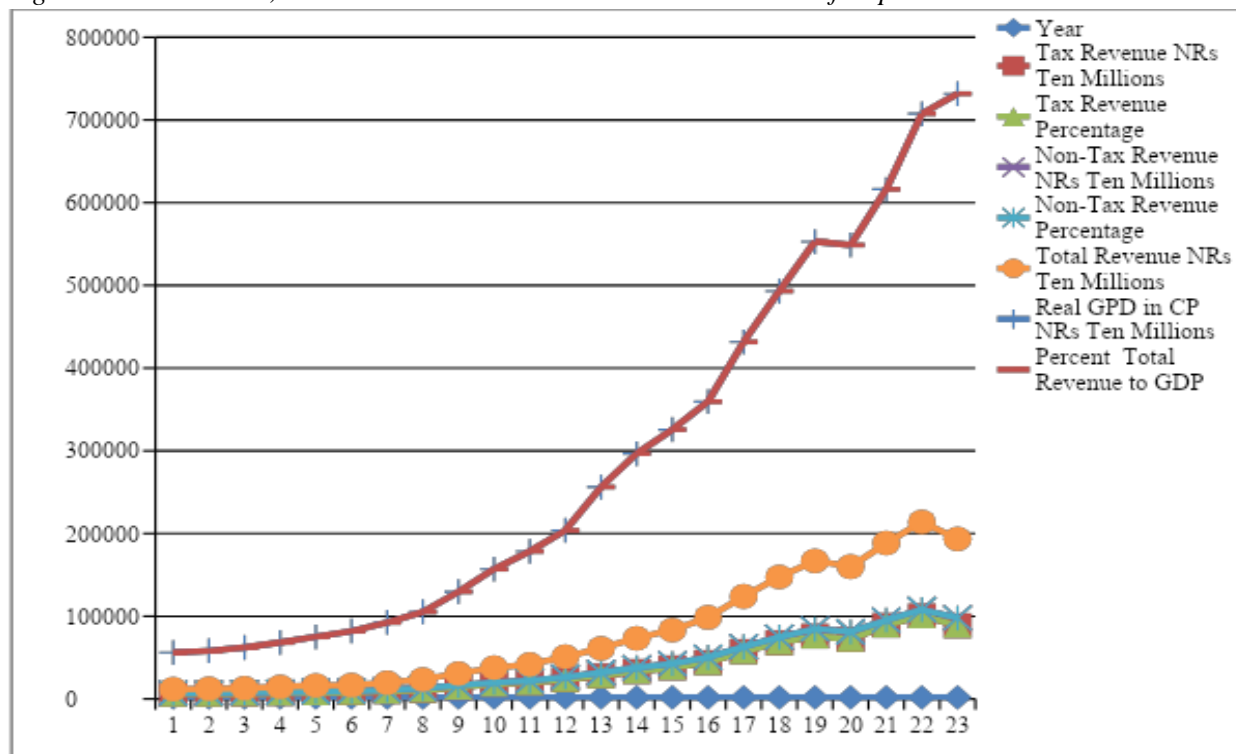


Table 1 and figure 1 shows the tax revenue, non-tax revenue, total revenue and real Gross Domestic Product in current price in Nepal since 2001 to 2023. This shows contribution of tax revenue is in increasing trends and non-tax revenue is in decreasing trend in total government tax revenue. The contribution from tax revenue was 79.49 percent in 2001 and it was 90.44 percent in 2023. Similarly, the contribution from non-tax revenue was 20.51 percent in 2001 and declined to 9.56 percent in 2023. Overall, figure 1 provides a visual roadmap for understanding the research framework and guiding the analysis of the impact of tax structure on the real economy in Nepal, facilitating a systematic exploration of the topic and informing the formulation of policy recommendations.

Table 2: Tax structure as a share of total tax in Nepal from 2001 to 2023 (NRs. in 10 millions)

Year	Taxes on Business Income	Payroll Taxes	Taxes on Property	Taxes on Goods and Services	Taxes on International Trade	Other Taxes	Total Taxes
2001	954.65	59.73	61.29	1,615.36	1,255.21	-	3,946.24
2002	946.57	83.56	113.18	1,607.43	1,265.00	-	4,015.74
2003	951.10	59.73	60.78	1,723.09	1,278.32	16.58	4,089.60

2004	855.53	139.12	169.75	2,070.56	1,555.48	26.86	4,817.30
2005	929.80	167.59	179.92	2,533.13	1,570.16	30.37	5,410.97
2006	945.72	176.41	281.92	2,811.83	1,534.40	56.57	5,806.85
2007	1,402.11	200.79	225.35	3,543.83	1,670.76	69.78	7,112.62
2008	1,522.94	215.10	294.07	4,100.53	2,106.25	276.66	8,515.55
2009	2,379.72	319.52	522.33	5,593.83	2,679.29	210.50	11,705.19
2010	3,382.13	270.96	551.10	8,417.04	3,521.89	106.37	16,249.49
2011	4,135.03	253.08	357.25	9,479.34	3,571.35	108.77	17,904.82
2012	5,130.30	155.50	358.84	11,056.10	4,339.06	132.38	21,172.18
2013	6,418.67	188.06	534.02	12,927.05	5,693.18	160.52	25,921.50
2014	7,561.36	244.99	667.11	15,771.84	6,798.05	200.77	31,244.12
2015	8,616.56	292.58	939.94	18,002.52	7,484.13	259.84	35,595.57
2016	11,413.80	326.98	1,314.94	20,566.87	8,215.91	271.16	42,109.66
2017	14,484.61	413.69	1,829.40	27,856.89	10,305.88	496.18	55,386.65
2018	15,479.00	509.78	1,933.23	34,804.94	12,686.54	535.66	65,949.15
2019	18,841.26	600.62	-	39,564.28	14,331.90	522.24	73,860.30
2020	21,323.74	650.81	-	35,641.26	12,379.03	10.01	70,004.85
2021	22,148.35	688.36	-	46,278.67	17,895.19	0.10	87,010.67

2022	25,218.85	780.60	-	52,562.96	19,870.32	0.44	98,433.17
2023	20,820.47	786.27	0.10	42,988.31	17,350.00	1,535.00	83,480.14

Source: Economic Survey, FY 2000/01 to 2022/23 and Various Year's Budget

Figure 2: Tax structure as a share of total tax in Nepal from 2001 to 2023 (NRs. in 10 millions)

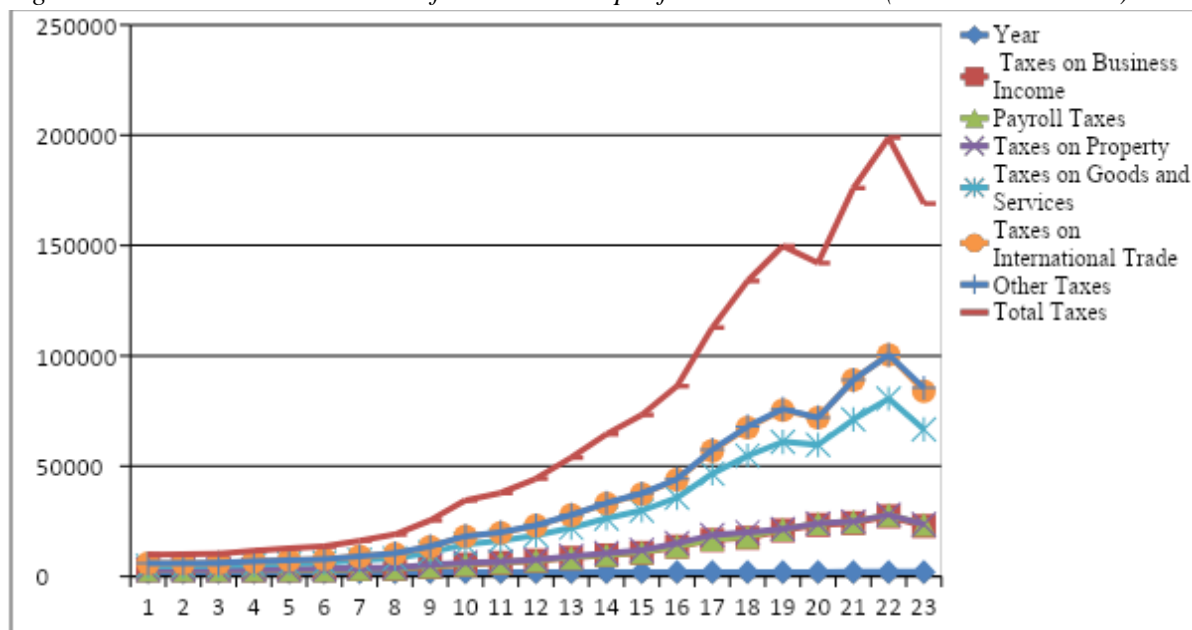


Table 2 and figure 2 shows the tax structure as a share of total tax in Nepal since 2001 to 2023. This shows that the total tax revenue in Nepal is in increasing trends. The major source of the total revenue is tax on goods and services (Value added tax). Second largest sectors is taxes on international trade (customs, excise duty and tariff) till 2010 then income tax on business income takes its place and it was become second largest source of total tax revenue in Nepal. Overall, tax revenue is in increasing trends and figure 1 provides a visual roadmap for understanding the research framework and guiding the analysis of the impact of tax structure on the real economy in Nepal.

Impact of Tax Structure on the Real Economy

A distinct body of research has emerged over the past few decades analyzing the effect of tax structure, or the direct to indirect tax ratio, on economic activity in addition to the theoretical modeling on the ideal tax structure and the empirical literature on its drivers. Generally speaking, these empirical studies—possibly as a result of the estimate methodology used, among other reasons—have been finding progressively larger effects on the actual economy of the direct versus indirect tax mix.

Examples of studies that find minor long-term impacts are Atkinson and Stern (1980), Poterba et al. (1986) and Xing (2012). But the European Commission (2006), Johansson et al. (2008), Dahlby (2003), Li and Sarte (2004), Kneller et al. (1999), Padovano and Galli (2001), Arnold et al. (2011), and Acosta-Ormaechea and Yoo (2012) discover a noteworthy impact on growth and income.

In this part, we examine the effects of tax structure, as determined by the direct to indirect tax ratio, on the real economy using panel data for Nepal. We accomplish this along the lines of economic growth, macro stability, and income distribution—three crucial macroeconomic performance dimensions.

We utilize a dummy variable to identify Nepal in the tax data, which is consolidated general government data taken from the Economic Survey Database, World Bank, IMF and Other Governmental and non-governmental database covering the years 2001–2023.

The Tax Structure and Economy Growth

The economic literature on the factors influencing economic growth, and more specifically, how taxes affect growth, has maintained its interest. A large body of prior research concentrated on the possible detrimental impacts of direct taxes on growth over the long run, namely those of progressive personal income taxes and corporate income taxes (Jones et al., 1993; Mendoza et al., 1997; Kim, 1997; Dahlby, 2003; Lee and Gordon (2004)). According to the most recent empirical findings, while all other factors remain constant, larger direct to indirect ratios should result in lower rates of economic growth. Here, we want to examine this hypothesis within the Nepali setting. We will expand on Martinez-Vazquez et al. (2011) and Lee and Gordon (2005) in order to achieve this.

Following Lee and Gordon we regress the average subsample real GDP per capita growth rate (GDPg) on the average subsample direct to indirect tax ratio (TaxRatio) and a Vector of other control variables(x) which have proven to be robust in previous empirical analysis. The estimating equation is given by:

$$GDP_{it} = \alpha TaxRatio_{it} + X_{it}\beta + V_i + \varepsilon_{it}, \quad i=1, \dots, N, \quad t=1, \dots, T$$

Where i indicates country and t denotes subsample period, Vector X, includes GDP per capita, top marginal corporate tax rate, primary school enrollments, openness, population growth rate and inflation rate.

Table 3: Tax structure as a share of total tax in Nepal from 2001 to 2023

Year	Direct Taxes (NRs. in 10 Millions)	Indirect Taxes (NRs. in 10 Millions)	Tax Ratio	Economic Growth Rate Percent	Population Growth Rate (%)	Inflation Rate (%)	Per Capita GDP (NRs)	Primary School Enrollment (%)	Openness (%)	Corruption Index	Top Corporate Tax Rate
2001	1,015.94	2870.56	35.39	4.80	1.61	2.69	19,071.00	99.89	55.80	24	30
2002	1,059.75	2873.31	36.88	0.12	1.51	3.03	19,410.00	95.36	46.23	24	30
2003	1,088.19	3001.41	36.26	3.95	1.38	5.71	20,340.00	96.04	44.25	24	30
2004	1,191.26	3626.04	32.85	4.68	1.25	2.84	21,694.00	98.17	46.15	28	30
2005	1,307.18	4103.29	31.86	3.48	1.08	6.84	23,300.00	92.68	44.06	25	30

2006	1,396.81	4346.23	32.14	3.36	0.89	6.92	25,290.00	84.30	44.76	25	30
2007	1,898.03	5214.64	36.40	3.41	0.73	5.90	27,525.00	87.81	44.58	25	30
2008	2,308.77	6206.78	37.20	6.10	0.54	6.70	20,171.00	60.00	46.04	27	30
2009	3,432.07	8273.12	41.48	4.53	0.50	12.60	35,865.00	63.00	47.08	23	30
2010	4,175.02	11454.75	36.45	4.81	0.39	9.50	45,435.00	67.00	45.98	22	30
2011	4,563.26	13159.46	34.68	3.42	0.24	9.60	51,594.00	72.00	36.30	22	30
2012	5,644.64	15527.54	36.35	4.67	0.19	7.70	65,484.00	77.00	37.92	27	30
2013	7,140.75	18780.74	38.02	3.52	0.29	9.04	71,627.00	78.00	41.87	31	30
2014	8,348.60	22895.53	36.46	6.01	0.54	9.10	80,941.00	79.00	45.98	29	30
2015	9,849.08	25746.49	38.25	3.97	0.91	7.20	86,700.00	80.00	46.67	27	30
2016	13,055.72	29053.94	44.94	0.43	1.16	9.90	94,398.00	82.00	42.12	29	30
2017	16,727.70	38658.95	43.27	8.97	1.15	4.50	110,357.00	59.60	44.64	31	30
2018	17,921.46	48027.69	37.31	7.62	1.14	4.20	122,815.00	62.40	48.45	31	30
2019	19,441.98	54418.42	35.73	6.66	1.79	4.60	135,889.00	66.30	49.25	34	30
2020	21,974.55	48031.00	45.75	(2.37)	2.34	6.20	135,692.00	68.60	40.92	33	30

2021	22,837.02	64173.64	35.59	4.84	1.71	3.60	150,495.00	70.20	43.05	33	30
2022	25,999.45	72433.75	35.89	5.61	1.14	6.30	169,038.00	74.90	49.40	34	30
2023	21,606.84	61873.31	34.92	4.10	1.11	7.90	182,683.00	76.70	51.40	35	30

Source: Economic Survey of Nepal 2001-2023, Various Govt. Report of Nepal, IMF, World Bank, UNDP and Other published report

Table 5: Correlations between the dependent and independent variables

	Economic Growth Rate	Tax Ratio	Population Growth Rate	Inflation Rate	Per Capita GDP	Primary School Enrollment Rate	Openness /Freedom Index	Corruption Index	Top Corporate Tax Rate
Pearson Correlation	1.000	.033	.021	-.027	.355	-.590	.264	.396	.000
		1.000	-.084	.326	.185	-.415	-.091	.105	.000
			1.000	-.742	.267	.308	.539	.365	.000
				1.000	-.027	-.348	-.374	-.235	.000
					1.000	-.476	.189	.877	.000
						1.000	.119	-.331	.000
							1.000	.248	.000

	Corruption Index	.396	.105	.365	-.235	.877	-.331	.248	1.000	.000
	Top Corporate Tax Rate	1.000
Sig. (1-tailed)	Economic Growth Rate	.	.441	.462	.178	.052	.002	.118	.034	.000
	Tax Ratio	.441	.	.355	.070	.205	.028	.343	.321	.000
	Population Growth Rate	.462	.355	.	.000	.115	.082	.005	.047	.000
	Inflation Rate	.178	.070	.000	.	.452	.056	.043	.146	.000
	Per Capita GDP	.052	.205	.115	.452	.	.012	.200	.000	.000
	Primary School Enrollment Rate	.002	.002	.082	.056	.012	.	.298	.066	.000
	Openness /Freedom Index	.118	.034	.005	.043	.200	.298	.	.133	.000
	Corruption Index	.034	.321	.047	.146	.000	.066	.133	.	.000
	Top Corporate Tax Rate	.000	.321	.000	.000	.000	.000	.000	.000	.
N	Number of years	22	22	22	22	22	22	22	22	22

The table 4 shows the correlation coefficient between dependent and independent variables. In correlation analysis, correlation coefficients range from -1 to +1, representing the strength and direction of the relationship between two variables. The correlation coefficients of dependent variable economic growth rate with its independent variables tax ratio, population growth rate, inflation rate, per capita GDP, Primary School Enrollment Rate, Openness, Corruption index and top corporate tax rate are 0.33, 0.21, -0.207, 0.355, -0.590, 0.264, 0.396 and 0.00.

There is a positive correlation of 0.33 between the tax ratio and economic growth rate. This suggests that as the tax ratio increases, economic growth tends to increase as well, though the relationship is moderate. There is a positive correlation of 0.21 between population growth rate and economic

growth rate. This indicates that higher population growth tends to be associated with higher economic growth, though the relationship is relatively weak. There is a negative correlation of -0.207 between inflation rate and economic growth rate. This suggests that as the inflation rate increases, the economic growth tends to decrease, although the relationship is weak. There is a positive correlation of 0.355 between per capita GDP and economic growth rate. This indicates that higher per capita is associated with higher economic growth, and the relationship is moderate. There is a strong negative correlation of -0.590 between primary school enrollment rate and economic growth rate. This suggests that the higher primary school enrollment rates are associated with lower economic growth.

Similarly, there is a positive correlation of 0.264 between openness (likely referring to trade openness or economic openness) and economic growth rate. This indicates that greater openness in the economy is associated with higher economic growth, and the relationship is moderate.

Like, openness, there is a positive correlation of 0.396 between corruption index and economic growth rate. This suggests that lower levels of corruption with higher economic growth and finally, there is no correlation between the top corporate tax rate and economic growth rate. This indicates that there is no linear relationship between these two variables.

Overall, these Correlation coefficients provide insights into the direction and strength of the relationships between the independent variables and the dependent variable. However, it is essential to remember that correlation does not imply causation and other factors may also influence economic growth. Further analysis, such as regression analysis, may be needed to understand the combined effect of multiple variables on economic growth.

Table 5: Regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.810 ^a	.655	.483	1.42906	.655	3.804	7	14	.016	2.667
a. Predictors: (Constant), Corruption Index, Tax Ratio, Openness/Freedom Index, Inflation Rate, Primary School Enrollment Rate, Population Growth Rate, Per Capita GDP										
b. Dependent Variable: Economic Growth Rate										

Table 5 shows the results of the regression analysis of the model presented above. R is the correlation coefficient, representing the strength and direction of the linear relationship between the predictors and the dependent variable. In this case, the value of R is 0.810, indicating a strong positive correlation.

R Square is 0.655, representing the proportion of the variance in the dependent variables that is predictable from the independent variables. In this model, approximately 65.5 percent of the variance in the economic growth rate can be explained by the independent variables.

The Durbin-Watson statistic detects the presence of autocorrelation in the residuals. It ranges from 0 to 4, with values close to 2 indicating no significant autocorrelation. In this case, the value is 2.667, suggesting minimal autocorrelation.

Conclusion, this model summary provides insights into how well the independent variables collectively explain the variation in the dependent variable, the significance of the model, and the presence of autocorrelation in the residuals.

The Tax Structure and Macroeconomic Stability

Governments' capacity to maintain macroeconomic stability may be impacted by the type of taxes they impose. The function of direct taxes as automatic stabilizers has been the subject of a substantial body of research spanning several decades (Musgrave and Miller 1948; Brown 1955; Musgrave 1959; and Pearse 1962). When firm profits are strong during the expansion stage of the cycle, the corporate income tax generates more money; but, during recessions, it significantly decreases. During a business cycle, the personal income tax with progressive rate schedules and payroll taxes tend to function countercyclical, as do social security payments and payroll taxes. However, compared to other direct taxes, property taxes are much smaller and have a tendency to stay more consistent over the course of the business cycle. In contrast, same stabilizing elements are absent from indirect taxes, such as excise taxes and VAT.

This section examines how Nepal's macroeconomic stability is affected by the distribution of direct and indirect taxes. In accordance with the findings of Easterly et al. (2000) and Beck et al. (2001), we regress the volatility of economic growth, as determined by the standard deviation of GDP Growth rate within each subsample period, on the direct to indirect tax ratio—which captures the impact of automatic stabilizers on economic stability—and a vector of other explanatory variables. The "volatility of inflation" vector, which aims to represent exposure to monetary shocks, openness, and GDP per capita, is one of the other control variable vectors. We proceed to estimate two versions of the following equation, with one version introducing an interaction term with a dummy for Nepal.

$$SDGDP_{it} = \alpha_1 TaxRatio_{it} + \alpha_2 TotalRev_{it} + X_{it}\beta + V_i + \varepsilon_{it}, \quad i=1, \dots, N, \quad t=1, \dots, T$$

Where i indicates country and t denotes subsample period, Dependent variables SD_GDP_{it} is the subsample standard deviation of annual GDP (real) per capita growth rate, $TaxRatio_{it}$ is the average subsample direct to indirect tax ratio, $TotalRev_{it}$ is the average subsample total revenue to GDP and X_{it} represents all other control variables.

Table 6: Tax structure and macroeconomic economic stability form 2001 to 2023

Year	Tax Ratio	Total Rev to GDP	Inflation Rate (%)	Freedom Index	Trade Freedom	Govt. Integrity Index	Eco. Growth Rate
2001	35.39	11.07	2.69	51.60	67.80	10.0	4.80
2002	36.88	10.98	3.03	52.30	64.70	10.0	0.12
2003	36.26	11.08	5.71	51.50	49.60	10.0	3.95
2004	32.85	11.61	2.84	51.70	51.40	10.0	4.68
2005	31.86	11.90	6.84	51.40	56.40	10.0	3.48
2006	32.14	11.05	6.92	53.70	53.80	28.0	3.36
2007	36.40	12.05	5.90	54.40	61.40	25.0	3.41
2008	37.20	13.19	6.70	54.10	61.40	25.0	6.10
2009	41.48	14.52	12.60	53.70	63.20	25.0	4.53

2010	36.45	14.92	9.50	52.70	58.80	27.0	4.81
2011	34.68	14.51	9.60	50.10	61.40	23.0	3.42
2012	36.35	16.00	7.70	50.20	60.50	22.0	4.67
2013	38.02	15.19	9.04	50.40	60.80	22.0	3.52
2014	36.46	15.97	9.10	50.10	61.00	21.3	6.01
2015	38.25	16.75	7.20	51.30	61.80	31.0	3.97
2016	44.94	18.48	9.90	50.90	55.60	29.0	0.43
2017	43.27	19.80	4.50	55.10	68.10	26.7	8.97
2018	37.31	21.03	4.20	54.10	66.60	24.6	7.62
2019	35.73	21.36	4.60	53.80	60.40	26.2	6.66
2020	45.75	20.29	6.20	54.20	60.40	31.5	(2.37)
2021	35.59	21.78	3.60	50.70	57.60	33.8	4.84
2022	35.89	21.49	6.30	49.70	57.60	33.8	5.61
2023	34.92	17.79	7.90	51.40	57.80	34.0	4.10

Source: www.worldeconomics.com/GrossDomesticProduct/GDP-per-capita-Grwoth-Rate/Nepal.aspx, public.knoema/fettqbg/index-of-economic-freedom, wider.unu.edu/database/world-income-inequality-database-wiid & *economicsurvey of Nepal various fiscal year and other govt. publications.*

Table 7: Correlations between dependent variable and independent variables

		Economic Growth Rate	Tax Ratio	Total Revenue GDP	Inflation Rate	Political Freedom Index	Trade Freedom Index	Government Integrity Index
Pearson Correlation	Economic Growth Rate	1.000	.033	.475	-.207	.369	.341	.227
	Tax Ratio	.033	1.000	.368	.326	.204	.375	.302
	Total Revenue GDP	.475	.368	1.000	.006	-.063	.213	.714

	Inflation	-.207	.326	.006	1.000	-.203	-.099	.346
	Political Freedom Index	.369	.204	-.063	-.203	1.000	.333	.045
	Trade Freedom Index	.341	.375	.213	-.099	.333	1.000	.071
	Government Integrity Index	.227	.302	.714	.346	.045	.071	1.000
Sig. (1-tailed)	Economic Growth Rate	.	.441	.013	.178	.045	.060	.154
	Tax Ratio	.441	.	.046	.070	.181	.043	.086
	Total Revenue GDP	.013	.046	.	.490	.390	.171	.000
	Inflation	.178	.070	.490	.	.182	.331	.057
	Political Freedom Index	.045	.181	.390	.182	.	.065	.421
	Trade Freedom Index	.060	.043	.171	.331	.065	.	.376
	Government Integrity Index	.154	.086	.000	.057	.421	.376	.
N	Number of Observations	22	22	22	22	22	22	22

The table 7 shows the correlation coefficient between dependent and independent variables. In correlation analysis, correlation coefficients range from -1 to +1, representing the strength and direction of the relationship between two variables. The correlation coefficients of dependent variable economic growth rate with its independent variables tax ratio, total revenue to GDP, Inflation rate, political freedom index, trade freedom index and government integrity index are 0.33, 0.475, -0.207, 0.369, 0.341 and 0.277.

The correlation coefficients provided indicate the strength and direction of the linear relationship between the economic growth and each of the independent variables. There is a weak positive correlation between the tax ratio (i.e.0.33) and economic growth. This suggests that as the tax ratio increases, economic growth tends to increase slightly, but the relationship is not very strong. There is a moderate positive correlation between the total revenue to GDP (i.e.0.475) and economic growth.

This means that as the total revenue generated compared to the GDP increases, economic growth tends to increase as well, and the relationship is stronger than that of tax ratio.

There is a negative correlation of -0.207 between inflation rate and economic growth rate. This suggests that as the inflation rate increases, the economic growth tends to decrease, although the relationship is weak.

Similarly, there is a moderate positive correlation of 0.369 between political freedom and economic growth rate. This suggests that as the level of political freedom increases, economic growth tends to increase as well. There is a moderate positive correlation between the trade freedom index (i.e. 0.369) and economic growth rate. This means that as trade freedom increases (indicating fewer restrictions on international trade), economic growth tends to increase as well.

Likewise, there is a weak positive correlation between the government integrity index (i.e. 0.277) and economic growth rate. This suggests that as the government integrity index increases (indicating less corruption and more transparency), economic growth tends to increase slightly.

Conclusion, these correlation coefficients indicate the strength and direction of the relationships between economic growth and each independent variable. Positive correlations suggest that higher values of the independent variables tend to coincide with higher economic growth rates, while negative correlations suggest the opposite. However, correlation does not imply causation, so further analysis would be needed to determine any causal relationships.

Table 8: Regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df 1	df 2	Sig. F Change	
1	.729 ^a	.532	.345	1.60890	.532	2.842	6	15	.047	2.748
a. Predictors: (Constant), Government Integrity Index, Political Freedom Index, Trade Freedom Index, Inflation, Tax Ratio, Total Revenue GDP										
b. Dependent Variable: Economic Growth Rate										

Above table shows the results of the regression analysis of the model presented above. R is the correlation coefficient, representing the strength and direction of the linear relationship between the predictors and the dependent variable. In this case, the value of R is 0.729, indicating a strong positive correlation.

R Square is 0.532, representing the proportion of the variance in the dependent variables that is predictable from the independent variables. In this model, approximately 53.2 percent of the variance in the economic growth rate can be explained by the independent variables.

The Durbin-Watson statistic detects the presence of autocorrelation in the residuals. It ranges from 0 to 4, with values close to 2 indicating no significant autocorrelation. In this case, the value is 2.748, suggesting minimal autocorrelation.

Conclusion, this model summary provides insights into how well the independent variables collectively explain the variation in the dependent variable, the significance of the model, and the presence of autocorrelation in the residuals.

The Tax Structure and Economic Inequality

In tax and income distribution literature, it is generally assumed that a more progressive tax structure is necessary to achieve a more equitable distribution of income. This would therefore usually imply that in tax systems, direct taxes—which are often assumed to be progressive—would need to be comparatively more significant than indirect taxes, which are frequently expected to be regressive or much less progressive. According to Martinez-Vazquez (2008), the anticipated total incidence of tax systems ranges from progressive to slightly progressive or proportional, and these assumptions are generally met for various tax systems around the world. Nepal appears to be an exception, though.

In addition to the fact that income distributions in Nepal are more uneven than in other nations, the country's tax structure has generally been determined to be regressive, which contributes to the inequality in income distribution. However, although low in Nepal, the direct to indirect tax ratio varies greatly throughout the nation.

In light of a greater number of other developed and developing nations, we are interested in examining the significance of the direct to indirect tax ratio as a driver of income inequality in Nepal in this section. The empirical literature on this topic presents conflicting evidence (Bird and Zolt, 2005; Martinez-Vazquez, 2008 and Harberger, 2008), and the empirical results presented in this section do not provide compelling evidence to support the hypothesis that the distinction between direct and indirect taxes contributes significantly to the observed income distribution inequality. The crucial disclaimer, though, is that our result is contingent on the challenges associated with utilizing the Gini Coefficient—our dependent variable—to measure the distribution of inequality both nationally and over time.

The following empirical model is estimated for the full sample of developed and developing countries with and without interaction terms with a Nepal dummy to allow the estimated coefficient to vary and for developing countries and Nepal alone.

$$\text{Gini}_{it} = \alpha_1 \text{TaxRatio}_{it} + \alpha_2 \text{TotalRev}_{it} + X_{it}\beta + \text{Giniconc}_{it} + \varepsilon_{it}, \quad i=1, \dots, N, \quad t=1, \dots, T$$

Where I indicate country and t denotes years. Gini is the Gini coefficient as a measure of income inequality over time and across country, X_t is the set of observable characteristics that affect income inequality, which represent a consequences specification in. the empirical literature on aggregate income distribution. Besides our main variable of interest, TaxRatio, they include the Initial Gini coefficient, total revenue collection to GDP, GDP per capita growth rate, private credit as a percentage of GDP, Labour force participation, and Openness (measured by the ratio of import plus export to GDP).

Table 9: Tax structure and economic inequality in Nepal from 2001 to 2023

Year	TaxRatio	TotalRev to GDP	Per Capita Growth Rate	Gini index	Private Debt as a Percentage of GDP	Eco. Growth Rate
2001	35.39	11.07	3.10	53.00	23.67	4.80
2002	36.88	10.98	(1.40)	53.00	22.90	0.12

2003	36.26	11.08	2.50	54.00	26.10	3.95
2004	32.85	11.61	3.40	55.00	24.63	4.68
2005	31.86	11.90	2.40	54.00	25.95	3.48
2006	32.14	11.05	2.50	53.00	28.87	3.36
2007	36.40	12.05	2.70	51.00	29.94	3.41
2008	37.20	13.19	5.40	50.00	34.53	6.10
2009	41.48	14.52	4.00	49.00	36.52	4.53
2010	36.45	14.92	4.30	48.00	34.55	4.81
2011	34.68	14.51	3.00	47.00	29.96	3.42
2012	36.35	16.00	4.40	47.00	31.80	4.67
2013	38.02	15.19	3.30	47.00	35.39	3.52
2014	36.46	15.97	5.70	47.00	37.05	6.01
2015	38.25	16.75	3.40	47.00	41.77	3.97
2016	44.94	18.48	(0.50)	47.00	48.94	0.43
2017	43.27	19.80	7.70	47.00	51.53	8.97
2018	37.31	21.03	6.40	47.00	55.87	7.62
2019	35.73	21.36	5.50	47.00	59.50	6.66
2020	45.75	20.29	(4.10)	47.00	68.91	(2.37)
2021	35.59	21.78	1.90	47.00	78.75	4.84
2022	35.89	21.49	4.20	47.00	78.22	5.61
2023	34.92	17.79	1.90	30.00	74.47	4.10

Source: www.worldeconomics.com/GrossDomesticProduct/GDP-per-capita-Grwoth-Rate/Nepal.aspx, public.knoema/fettqbg/index-of-economic-freedom, wider.unu.edu/database/world-income-inequality-database-wiid&economicsurvey of Nepal various fiscal year, other govt. publications & <https://data.worldbank.org/indicator/FS.AST.PRVT.GD.ZS?locations=NP>.

Table 10: Correlations between dependent variables and independent variables

		Econom ic Growth Rate	Tax Rat io	Total Revenu e to GDP Ratio	Per Capita Growt h Rate	Gin i Ind ex	Private Debt as a Percentag e of GDP
Pearson Correlati on	Economic Growth Rate	1.000	.920	.168	.885	.111	-.664
	Tax Ratio	.920	1.000	.279	.935	.271	-.766
	Total Revenue to GDP Ratio	.168	.279	1.000	.361	.601	-.198
	Per Capita Growth Rate	.885	.935	.361	1.000	.436	-.552
	Gini Index	.111	.271	.601	.436	1.000	-.018
	Private Debt as a Percentage of GDP	-.664	-.766	-.198	-.552	-.018	1.000
Sig. (1- tailed)	Economic Growth Rate	.	.000	.239	.000	.321	.001
	Tax Ratio	.000	.	.117	.000	.123	.000
	Total Revenue to GDP Ratio	.239	.117	.	.059	.003	.202
	Per Capita Growth Rate	.000	.000	.059	.	.027	.006
	Gini Index	.321	.123	.003	.027	.	.470
	Private Debt as a Percentage of GDP	.001	.000	.202	.006	.470	.
N	Number of Observations	20	20	20	20	20	20

The table 10 shows the correlation coefficients of dependent variable economic growth rate with its independent variables tax ratio, total revenue to GDP ratio, per capita growth rate, Gini index and private debt as a percentage of GDP are 0.920, 0.168, 0.885, 0.111 and -0.664.

The very strong positive correlation between the tax ratio and economic growth rate suggests that higher tax ratios are associated with higher economic growth rates. However, from the perspective of economic inequality, this may imply that progressive taxation policies (where higher-income individuals pay a higher percentage of their income in taxes) contribute positively to economic growth. This could potentially mitigate income inequality by redistributing wealth from higher-income individuals to fund government programs that benefit lower-income individuals.

The weak positive correlation between the total revenue to GDP ratio and economic growth rate suggests a slight tendency for economic growth to increase as the total revenue generated compared

to the GDP increases. In terms of economic inequality, this could imply that higher government revenue as a percentage of GDP might support economic growth to some extent, but the effect on reducing inequality may be limited without specific policies targeting redistribution.

The very strong positive correlation between per capita growth rate and economic growth rate indicates that as individual incomes rise (per capita growth), overall economic growth tends to increase significantly. From an economic inequality perspective, this suggests that policies fostering individual income growth, such as education and job training programs, can positively impact economic growth while potentially reducing income inequality by lifting lower-income individuals out of poverty.

The very weak positive correlation between the Gini index (a measure of income inequality) and economic growth rate suggests a minimal association between higher levels of income inequality and higher economic growth rates. This implies that economic growth may not inherently reduce income inequality, as higher inequality levels do not strongly correlate with higher economic growth rates.

The strong negative correlation between private debt as a percentage of GDP and economic growth rate suggests that as the private debt burden relative to the size of the economy increases, economic growth tends to decrease significantly. In terms of economic inequality, this could imply that high levels of private debt might exacerbate inequality by burdening individuals with debt, particularly if higher-income individuals are better positioned to manage or avoid debt compared to lower-income individuals. Additionally, high private debt levels could hinder economic opportunities for lower-income individuals, further widening the income gap.

In Conclusion, while economic growth can influence economic inequality through various channels, these correlation coefficients suggest that policies promoting progressive taxation, fostering individual income growth, and managing private debt levels could play significant roles in both promoting economic growth and addressing economic inequality. However, further analysis and consideration of specific policy mechanisms are necessary to fully understand and address the complex relationship between economic growth and economic inequality.

Table 11: Regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.934 ^a	.873	.827	.62983	1.130
a. Predictors: (Constant), Private Debt as a Percentage of GDP, Per Capita Growth Rate, Gini Index, Tax Ratio, Total Revenue to GDP					
b. Dependent Variable: Economic Growth Rate					

The above table shows the results of the regression analysis of the model presented above. R is the correlation coefficient, representing the strength and direction of the linear relationship between the predictors and the dependent variable. In this case, the value of R is 0.934, indicating a strong positive correlation. The correlation coefficient (R) represents the strength and direction of the linear relationship between the dependent variable (presumably economic growth rate) and the independent variables in the regression model. In the context of income/economic inequality, a high correlation coefficient suggests a strong linear relationship between the variables involved in the analysis. Therefore, a value of 0.934 indicates a very strong positive linear relationship between the economic growth rate and the independent variables included in the model. However, it's important to note that while a strong correlation may indicate a relationship between variables, it doesn't necessarily imply causation or specify the nature of that relationship in terms of economic inequality directly.

R Square is 0.873, representing the proportion of the variance in the dependent variables that is predictable from the independent variables. R-squared (R^2) is a measure of how well the independent variables explain the variation in the dependent variable. In this case, an R-squared value of 0.873

means that approximately 87.3% of the variation in the economic growth rate can be explained by the independent variables included in the regression model. Regarding income/economic inequality, this suggests that the independent variables considered in the model collectively explain a significant portion of the variation in economic growth rate. However, it doesn't specify the extent to which income/economic inequality itself is explained by these variables.

The standard deviation measures the dispersion or variability of the dependent variable (economic growth rate) around the mean. In this case, a standard deviation of 0.62983 indicates the average amount of variation or deviation of individual data points from the mean economic growth rate. In terms of income/economic inequality, this may suggest the extent to which economic growth rates vary across different observations in the dataset. However, it doesn't directly speak to income/economic inequality itself.

The Durbin-Watson statistic detects the presence of autocorrelation in the residuals. It ranges from 0 to 4, with values close to 2 indicating no significant autocorrelation. In this case, the value is 1.130, suggesting minimal autocorrelation.

In conclusion, this model summary provides insights into how well the independent variables collectively explain the variation in the dependent variable, the significance of the model, and the presence of autocorrelation in the residuals.

In summary, while the regression analysis provides valuable insights into the relationship between economic growth and the independent variables considered, including their explanatory power and the presence of autocorrelation, further analysis and consideration of specific variables related to income/economic inequality would be necessary to draw direct conclusions about their relationship to inequality.

Discussion

The study helped to understand how tax structure impact on real economy of Nepal. It supports earlier studies on the subject with evidence from Nepal. The major goal was to ascertain how tax structure impact on real economy of Nepal, in terms direct and indirect taxes and other levies to understand their implications on businesses, investors and consumers. This study investigated different factors that can influence the Nepalese real economy growth.

This study is consistent with Kim (2003), Li and Sarte (2004), Martinez-Vazquez, Vulovic, and Liu (2011) and others shows that a higher proportion of consumption taxes rather than income taxes significantly boosts economic growth. In a similar vein, Kneller, Bleaney, and Gemmell (1999) contend that consumption taxes do not hinder growth in OECD nations, but income taxes do.

Conclusion and Implications

This study aims to review the structure of tax systems in Nepal and analyze their impact on the real economy-economic growth, macroeconomic stability, and income redistribution. We find that in Nepal relatively higher reliance on direct taxes slows economic growth.

In examining the impact of tax structure, specifically the ratio of direct to indirect taxes, on Nepal's real economy, we observe that a greater reliance on direct taxes tends to dampen economic growth. However, this effect is relatively minor in the context of Nepal. This outcome aligns with expectations, considering Nepal's limited variability and depth in the direct to indirect tax ratio. Moreover, the limited variation and depth in Nepal's tax structure also contribute to scant evidence supporting a positive influence of the direct to indirect tax ratio on income distribution within the country. Therefore, we find only weak indications of any such impact on income distribution in Nepal. In summary, although there's a tendency for higher reliance on direct taxes to somewhat hinder economic growth in Nepal, this effect is modest due to the country's tax structure's limited variability.

Similarly, the influence on income distribution appears to be weak, given the constraints posed by Nepal's tax system.

The literature on taxation in Nepal that this paper reviews seems to be fairly unanimous in saying that reforming the country's tax structures is necessary to provide direct taxes—personal income tax in particular—a larger role. One of the most obvious advantages of this tax policy reform path would be to have the tax system actually contribute to the reduction of income inequality in Nepal. Having a tax system with built-in stabilizers that can actively maintain macroeconomic stability would be an extra benefit.

The policy shift toward providing direct taxation a considerably larger role in Nepal's tax system, however, will not come without some considerable tradeoff costs, as the paper's findings plainly show. Specifically, the pace of economic expansion may decelerate. Every one of these is a touch pick. The selection of a significantly lower direct to indirect tax ratio on average suggests that Nepal has given more weight to the objectives—such as FDI flows, higher tax morale, and comparatively smaller shadow economies. More uneven income distributions and less macroeconomic control are two compromises that go along with those gains.

This study can be regarded as the preliminary steps in investigating the tax structure and its impact on real economy of Nepal. An extensive study on the tax structure and its impact on the real economy with a wider framework, encompassing overall aspect of tax structure, knowledge-based economy and socio-economic factors, might be done given the economic growth of Nepal.

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