Impact of Indirect Tax on the Gross Domestic Product of Nepalese Economy

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Abstract
This study investigated the impact of indirect tax on GDP in Nepal from fiscal year 2057/2058 to 2078/2079 based on empirical evidence. Descriptive and analysis research designed was used. To meet this objective, time series macroeconomic data of GDP and indirect tax were used. Data are collected from economic survey, ministry of finance. The ordinary Least Square technique was employed to test the hypotheses formulated. The result shows that indirect tax contributes significantly to GDP. During the periods under review, the growth rate of indirect tax revenue was 16.52 % on average and the average ratio of indirect tax revenue to that of GDP was 9.98 %. The coefficient of determination was 98.4 %. P-value is very low (p < 0.001). The hypothesis suggests a positive relationship between indirect tax revenue and GDP in Nepal. The regression model indicates significance, rejecting the null hypothesis. Indirect tax revenue plays a crucial role in Nepal’s GDP. The findings also reveal that there is the existence of both a positive and strong relationship between indirect tax revenue and GDP. Hence, the Government of Nepal should search for a way to boost the revenue from indirect tax by mostly supporting the configurations of networks among all the agencies of government and taxing authorities of the federal level, each providence, and local bodies to meet the growth and to facilitate public services for the country.

Keywords: Government, revenue, significant, development, Nepal

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Introduction

A modern government collects required funds through different sources, mainly from revenue and debt. Among different sources, tax is the most important source of government revenue. Taxes are revenue collected by the government to facilitate public services for the country and the operation of its administrative activities (Bhatia, 2009). Taxation is the most powerful instrument available to a Government to collect the required funds for the growth of a country. It is a powerful tool to control a country's economy. The main objectives of taxation are to raise revenues, regulate the economy, boost the economy, the equal distribution of national income, and remove provincial disparities (Dhakal et al., 2023). Tax on these goods and services is included in their prices. Taxpayers can easily shift the burden to consumers at large by selling these goods and services at higher prices (Kandel, 2006). People pay tax when they consume goods and services, and indirect tax is transferrable and does not affect taxpayers directly. There is mass participation because every person pays tax for the receipts of goods and services. It can charge a higher rate for harmful goods, such as cigarettes, tobacco, cigar, chewing tobacco, pan masala, alcohol, and beer to discourage them. The contribution of the indirect tax to Nepali’s GDP, total revenue, and tax revenue has always been significant (Dangal, 2018). The tax can be classified into two categories direct tax and indirect tax. The tax that is levied directly on income is direct tax and the tax that is levied on the price of consumption is an indirect tax. Indirect tax is imposed on one person but the burden can shift to another person (Chapagai, 2021). Indirect taxes are taxes collected by intermediaries who bear the possible economic burden of the tax. It can be transferred by the taxpayer to another person. Indirect taxes can increase the price of goods, so consumers pay the tax by paying more for the product. Indirect taxes contribute substantially to government revenue in Nepal. Revenue collected from indirect taxes is an essential source of funding for public services and infrastructure development. The government relies on these revenue to finance its operations and (Dhakal et al., 2023). Gross domestic product (GDP) is the total monetary or market value of all the finished goods and services produced within a country’s borders in a specific period. As a broad measure of overall domestic production, it functions as a comprehensive scorecard of a given country’s economic health (Adhikari et al., 2021). Ghimire (2019) found that GDP and government revenue have been strongly related to the direct tax and indirect revenue of Nepal. Shrestha (2000) shows that
the contribution of indirect tax to total revenue has a fluctuating trend, indirect Tax is found regressive the Nepalese tax system has reflected the overall dependency on indirect Tax. Dangal (2021) during the study periods, the percentage contribution of indirect taxes to gross domestic product was increasing trend from 6.60 to 14.45. Dangal (2022) during the study periods, direct tax seemed to fluctuate and increase. Mannan et al. (2022) argue that the higher indirect tax caused a negative relationship between tax revenue and national income. Honcharenko et al. (2023) indirect taxes are a significant source of Government revenue, it is a sample for the government to impose and collect since they are applied widely and automatically added to the cost of products and services. The above studies and results show that there are positive and negative relationships between indirect tax and GDP.

The role of indirect tax as a major source of revenue in Nepal has been growing over the years. The government of Nepal, in the national budget, increases its expenditure to a great extent. To meet the increase in expenditure, more emphasis was laid on indirect. So, a question arises here; is there a connection between indirect tax and GDP in Nepal? So the primary objective of this study was to determine the impact of indirect tax on GDP in Nepal by answering the following research question: what is the effect of indirect tax on GDP in Nepal? Or how does indirect tax impact the GDP growth of the economy?

**Literature Review**

The studies examine the impact of indirect tax on the economic growth of Nigeria; the result revealed that has a negative and insignificant relationship between indirect tax and economic growth in Nigeria (Ilabora & Mgbame, 2012). The study examined the impact of indirect tax on the economic performance of Nigeria, the result revealed that value-added tax, has a positive and insignificant impact on the real gross domestic product while customs and excise duties have a positive and significant impact on the real gross domestic product of Nigeria (Akhor & Ekudayo, 2016; Nmesirionye et al., 2019; Laure, 2019). Gbata (2017) examines the impact of taxation on long-run growth in Sub-Saharan Africa, tax has no impact on growth over the long run, whereas indirect tax has a negative effect on growth over the short run. Bazgen (2018) indirect tax will positively affect the economic growth of the Romanian economy. Ahmad et al. (2018) investigated the empirical relationship between indirect taxes and economic growth in Pakistan, indirect tax has a long-
term, considerable negative impact on economic growth while its coefficients in the short run were insignificant. Odhiambo and Olushola (2018) examine the relationship between taxation and economic growth in a developed country the results reveals that taxation has a significant impact on GDP. Nwamuo (2019) the study analyzed the effect of tax revenue on economic growth in Nigeria using root test the results shows that profit tax, corporate income tax, custom duty and excise duty have a positive and insignificant effect on the economic growth and non-oil revenue has a positive and significant effect on the economy. All et al. (2018) the study examines the impact of tax revenue and economic growth of Kenya using the ordinary least square methods. The results reveal that tax revenue has a positive significant impact on economic growth. Adhikari (2019) investigates the impact of VAT on Nepal's GDP; the results indicate that the share of VAT to GDP is not satisfactory. Duravic-Todorovic et al. (2019) examine the linear link between direct tax and economic development in the OECD countries for the study period. The result indicates a statistically significant relationship between tax revenue and gross domestic product in OECD countries. Korkmaz et al. (2019) the study investigates the impact of taxation on economy growth in turkey by using the autoregressive distributed lag approach. The result shows a positive and significant impact of indirect taxes on economic growth and negative significant impact of direct tax revenue. Nguyen's (2019) analysis of how direct tax and indirect taxes impact Vietnam's economic growth reveals that indirect tax has a positive effect, whereas direct tax has no appreciable effect. Shrestha and Kautish (2020) examine the impact of Government revenue on the economic growth of Nepal, the results show that there is a positive relation between government revenue and economic development. Indirect tax and non-tax revenue positively effects economic development whereas direct tax on economic growth is insignificant. Kharel (2021) investigates the impact of tax revenue and total revenue on Nepal's GDP, the result indicates that both had a positive significant impact on GDP, and the tax revenue trend had indicated positive trends. Chapagai (2021) studies the contribution of VAT to the gross domestic product in Nepal from 2001 to 2019 by using the ordinary least square technique. The result reveals that there is a positive and strong relationship between VAT and GDP. The average ratio of VAT revenue to GDP was 4.38 percent. Oluwatobi et al. (2021) a causal –effect study was conducted between tax revenue, capital formation and economic growth, the result shows that tax revenue has a positive
impact on GDP and capital formation. Abd Hakim et al. (2022) the findings of this study indicate that developed and developing countries have distinct effects from direct and indirect taxes on economic growth. Based on the GDPPC of emerging countries, the results demonstrate a substantial negative correlation between direct and indirect taxes and economic progress. Direct taxes do, however, have a strong positive correlation with economic progress in developed countries. The findings indicate a negative correlation between GDPPC-measured economic progress and indirect taxation. These findings suggest that developing nations' tax systems do not contribute to their economies growing faster. It's interesting to note that in both developed and developing nations, the increase of GDP per capita is inversely connected with GST. This study suggests that, despite the fact that the majority of countries obtain their tax income primarily from indirect taxes, such as GST, society does not appear to profit economically from the introduction of the tax, especially in emerging nations. Karki et al. (2023) examined the relationship between indirect taxes and government expenditure in Nepal, the results showed that indirect tax has a favorable and statistically significant association with government expenditure during the study periods. Abata et al. (2023) examined the effect of direct and indirect tax on economic growth in Nigeria, the result shows that direct tax had a negative significant effect on economic growth while indirect tax had a positive significant effect on economic growth in Nigeria. Thus, the literature review reveals that the present research work is an addition to the existing work to analyze the contribution of indirect tax on GDP in Nepal.

**Methods**

This comprehensive investigation employs a descriptive research design to analyze the contribution of indirect tax revenue to GDP in Nepal based on time series data covering the periods from 2057/20058 to 2078/2079. Secondary quantitative data were used. Such quantitative data were sourced mainly from the economy survey of the Ministry of Finance in Nepal. The study applies the Ordinary Least Square (OLS) regression and correlation coefficient to empirically estimate the relationships between GDP and indirect tax revenue. Descriptive statistics was employed to present the data through percentages and ratios. Additionally, the independent t-test was employed to validate the research hypotheses and interpret the result obtained from the OLS analysis.
Model Specification

This paper examines the correlations between GDP and indirect tax to find out the contributions of indirect tax to the GDP of Nepal from 2057/20058 to 2078/2079. To that extent, the construction of a statistical model which inaugurates the relationships among the variables of the study was essential. The review of different empirical literatures existing in the area of indirect tax and GDP for different countries shows that the analysis of selected variables has a linear functional form in their general contexts. Hence, guided by the perceived functional relationship between the matrix of GDP and indirect tax revenue, the link is forged between these two variables. From sub-macro and micro-economic perspectives, the model for this work states that the GDP depends on the revenue collected from indirect tax. Accordingly, the purposeful relationships and resulting models are specified as follows:

\[ \text{GDP} = f(X) \] (1)

From the above functional relationships, the working model of the paper is specified below:

\[ \text{GDP} = \beta_0 + \beta_1 (X) + \mu \] (2)

Where;

\( \text{GDP} = \) Gross domestic product, \( \beta_0 = \) Autonomous (Intercept) \\
\( \beta_1 = \) Coefficient of indirect tax, \( \mu = \) Error term \\
\( X = \) Indirect tax revenue.

As the GDP is expected even when no revenue was collected from indirect tax, the ‘priori’ expectation is that the model parameter is expected to be positively signed.

Research Hypothesis

The review of different empirical previous research on this subject area shows that there were positive relationships between indirect tax and GDP for the economies of different countries. To that extent, the present study evaluates statistically by developing the following hypothesis:

H0: Indirect tax plays no significant role in Nepal's GDP. 
H1: Indirect tax plays a crucial role in Nepal's GDP.
Results and Discussion

The result revalues that GDP has increased over the study periods, with a minimum Rs. 4,415,190 million in 2057/058 and a maximum of Rs. 49,337,000 million in year 2078/079, the mean GDP over the this period is Rs. 19,235,728 million. Indirect tax revenue has also increased over the periods, form Rs. 287,057 to 7,247,728 million, the mean indirect tax is Rs. 2,287,704. The ratio of indirect tax to GDP has varied over the study periods. This percentage increases, from a low of 6.10 percent in 2059/060 to a high of 14.75 in 2077/078. The mean indirect tax to GDP ratio is 9.89 percent. The percentage increase in indirect tax revenue ranged from a decrease of 11.74 percent to a significant increase of 45.60 percent. The mean growth rate of indirect tax is 16.52 percent (Table 1). These variations indicate changes in the rate of growth of indirect tax revenue, which can be influenced by economic conditions of the country. Indirect tax to GDP ratio measure the proportion of indirect taxes relative to the GDP. It gives an idea of how much of the country's economic output is being collected as indirect taxes. Therefore indirect tax contributed its own share to enhance the GDP of Nepalese economy.

The multiple correlation coefficients (R) is 99.2 percent, indicating a strong positive correlation between indirect and GDP. The coefficient of determination (R^2) is 98.4 indicates that 98.4 percent of the variance in GDP explained by indirect tax suggesting a strong relationship. Adjusted R^2 is also 98.4 percent, indicating that the model is a good fit even after considering the number of predictors. The regression findings also acquaint as F-ratio is 1265.70 and the associated p- valued (sig, F change is) very low (0.000), indication that addition of indirect tax significantly improved the model's fit, which is significant. (Table2). The result indicated that null hypothesis was rejected and assuming that indirect tax makes significant to the Nepalese economy and there is strong positive correlation between indirect tax and GDP.

The result shows that as the autonomous of the regression is positive which depicts that the economy will be having positive value of Rs.43416.961 as the GDP, due the existence of indirect tax during the study periods. There is a positive coefficient of indirect tax and GDP. To that extent, the result reveals as Rs. 1 increment of indirect tax will lead to in increment of about Rs. 6.510 in Nepal GDP. The unstandardized coefficients show the actual value of the coefficients in the
regression model is 43416.961. The coefficient for the indirect tax is 6.510. The Beta for Indirect tax is 0.992. This suggests that Indirect tax has a strong positive impact on the GDP in Nepal. The T-statistic measures the statistical significance of the coefficients. A higher absolute T-value indicates greater significance. For the constant (intercept), T is 7.575, and it is highly significant (p < 0.001). For Indirect tax T is 35.577 and it is also highly significant (p < 0.001) (Table3). The significance level (p-value) indicates whether the coefficients are statistically significant. A small p-value (typically less than 0.05) suggests that the indirect tax has a significant impact on the GPD. In both cases (constant and Indirect tax), the p-value is very low (p < 0.001), indicating that both are highly significant.

The result indicated that null hypothesis was rejected this implies as indirect tax has statistically significant influence on GDP of Nepal during the study periods under considerations. The findings of this study is consists with Dangal (2018), Ghimire (2019), Shrestha (2000), Dangal (2021), Honcharenko et al., (2023), Bazgen (2018), Nguyen (2019), Akhor and Ekuda (2016), Nmesirionye et al. (2019), Laure (2019), Korkmaz et al. (2019), Shrestha and Kautish (2020), Kharel (2021), Chapagai (2021), Oluwatobi et al. (2021), Karki et al. (2023) and Abata et al. (2023) but Mannan et al., (2022), Ilabora and Mgbame (2012), Gbata (2017), Adhikari (2019), and Abd Hakim et al. (2022) is not consists with the finding of the study. Finally, result indicates that indirect tax has a positive significant impact on GDP.

Conclusion

This study examines the correlations among GDP and indirect tax in order to find out the contributions impact of indirect tax to GDP of Nepal from 2057/20058 to 2078/2079 with the applications of the OLS method by using the annual quantitative time series secondary data. The GDP has been steadily increasing over the years, with substantial growth from 2057/058 to 2078/079, indicating overall economic growth. Indirect tax collected has also increased significantly over the study periods. This suggests that the governments' revenue from indirect taxes has grown in line the expending economy. The indirect tax as a percentage of GDP has shown fluctuations tends to increase in recent years. This indicates that the government in collecting a higher share of taxes relative to the GDP. GDP based on indirect tax. The R2 value of 98.4 indicates a strong relationship and the F change statistic's low p-value suggests that the model is significant and indirect tax directly impact on GDP.
in Nepal. The result revalues that indirect tax revenue has increased over the study periods which has a positive influenced by economic conditions of the country. The coefficients of determination model are good fit and the explanatory power of the variable within the model is high to make strong conclusions. Correlation coefficient (R) is the existence of both positive and strong relationship between indirect tax and GDP. The regression findings also acquaint as F-ratio is 1265.70 and the associated p-valued (sig, F change is) very low (0.000), indication that addition of indirect tax significantly improved the model's fit, which is significant. Indirect tax makes significant to the Nepalese economy and there is strong positive correlation between indirect tax and GDP. There is a positive coefficient of indirect tax and GDP. This suggests that Indirect tax has a strong positive impact on the GDP in Nepal. Indirect tax T is highly significant (p < 0.001). The significance level (p-value) indicates whether the coefficients are statistically significant. A small p-value (typically less than 0.05) suggests that the indirect tax has a significant impact on the GDP. In both cases (constant and Indirect tax), the p-value is very low (p < 0.001), indicating that both are highly significant. So, the study concluded that indirect tax revenue plays an energetic role for the GDP in Nepal and it enables to succeed the current growth and transformations plan (GTP) of the country. The empirical investigation in the study reveals that indirect tax has a positive relationship with GDP and is contributing to the economic growth of the nation. Finding the positive relation is important to any economy for some reasons. GDP has increased over the study periods. It indicates economic development and prosperity over the years. The growth in indirect tax revenue is positive sign for GDP Therefore, the paper recommends that the Nepal government should make a full effort to efficiently collect and effectively utilize such tax revenue through closing the door towards the issues of corruptions which can be possible through making the tax administrations more fashionable than ever before. The Government should ensure effective and efficient use of taxes since they have a direct bearing on the Development of the economy.

The study suggests that the Government of Nepal should focus on strategies to enhance revenue from indirect taxes. This can be achieved by fostering collaboration and coordination among various Government agencies, tax authorities at the federal, provincial and local levels. Strengthening these networks can not only encouragement economic development but also facilitate the provision of public services for the benefit of the country.
References


### Appendix

**Table 1**  
*GDP and indirect tax*

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP (Expenditure method) at current price</th>
<th>Total Indirect tax</th>
<th>Indirect tax to GDP</th>
<th>Percentage increase of indirect tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>2057/2058</td>
<td>44,151.90</td>
<td>2870.57</td>
<td>6.50</td>
<td>0.00</td>
</tr>
<tr>
<td>2058/2059</td>
<td>45,944.23</td>
<td>2872.43</td>
<td>6.25</td>
<td>0.06</td>
</tr>
<tr>
<td>2059/2060</td>
<td>49,223.13</td>
<td>3001.41</td>
<td>6.10</td>
<td>4.49</td>
</tr>
<tr>
<td>2060/2061</td>
<td>53,674.90</td>
<td>3626.04</td>
<td>6.76</td>
<td>20.81</td>
</tr>
<tr>
<td>2061/2062</td>
<td>58,941.20</td>
<td>4103.29</td>
<td>6.96</td>
<td>13.16</td>
</tr>
<tr>
<td>2062/2063</td>
<td>65,408.40</td>
<td>4346.23</td>
<td>6.64</td>
<td>5.92</td>
</tr>
<tr>
<td>2062/2064</td>
<td>72,782.70</td>
<td>5214.64</td>
<td>7.16</td>
<td>19.98</td>
</tr>
<tr>
<td>2064/2065</td>
<td>81,566.30</td>
<td>6206.78</td>
<td>7.61</td>
<td>19.03</td>
</tr>
<tr>
<td>2065/2066</td>
<td>98,827.20</td>
<td>8273.12</td>
<td>8.37</td>
<td>33.29</td>
</tr>
<tr>
<td>2066/2067</td>
<td>119,277.40</td>
<td>12045.3</td>
<td>10.10</td>
<td>45.60</td>
</tr>
<tr>
<td>2067/2068</td>
<td>136,695.40</td>
<td>13159.46</td>
<td>9.63</td>
<td>9.25</td>
</tr>
<tr>
<td>2068/2069</td>
<td>152,734.40</td>
<td>15527.54</td>
<td>10.17</td>
<td>18.00</td>
</tr>
<tr>
<td>2069/2070</td>
<td>169,501.10</td>
<td>18781.2</td>
<td>11.08</td>
<td>20.95</td>
</tr>
<tr>
<td>2070/2071</td>
<td>223,253.00</td>
<td>22770.66</td>
<td>10.20</td>
<td>21.24</td>
</tr>
<tr>
<td>2071/2072</td>
<td>242,364.00</td>
<td>25746.49</td>
<td>10.62</td>
<td>13.07</td>
</tr>
<tr>
<td>2072/2073</td>
<td>260,818.00</td>
<td>28953.94</td>
<td>11.10</td>
<td>12.46</td>
</tr>
<tr>
<td>2073/2074</td>
<td>307,714.00</td>
<td>38658.95</td>
<td>12.56</td>
<td>33.52</td>
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<tr>
<td>2074/2075</td>
<td>345,595.00</td>
<td>48027.14</td>
<td>13.90</td>
<td>24.23</td>
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<tr>
<td>2075/2076</td>
<td>385,893.00</td>
<td>54418.42</td>
<td>14.10</td>
<td>13.31</td>
</tr>
<tr>
<td>2076/2077</td>
<td>388,870.00</td>
<td>48031</td>
<td>12.35</td>
<td>-11.74</td>
</tr>
<tr>
<td></td>
<td>Minimum</td>
<td>Maximum</td>
<td>Mean</td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>---------</td>
<td>---------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td><strong>GDP (Expenditure method) at current price (Rs.)</strong></td>
<td>44151.90</td>
<td>493370.00</td>
<td>192357.28</td>
<td></td>
</tr>
<tr>
<td><strong>Total Indirect tax (Rs.)</strong></td>
<td>2870.57</td>
<td>72477.28</td>
<td>22877.038</td>
<td></td>
</tr>
<tr>
<td><strong>Indirect tax to GDP (%)</strong></td>
<td>6.10</td>
<td>14.75</td>
<td>9.89</td>
<td></td>
</tr>
<tr>
<td><strong>Growth rate of indirect tax (%)</strong></td>
<td>-11.74</td>
<td>45.60</td>
<td>16.52</td>
<td></td>
</tr>
</tbody>
</table>

Sources: Economy survey, Ministry of Finance, Government of Nepal 2060/2061, 2067/2068, 2071/2072, 2075/2076 and 2078/2079)

**Table 2**

**Model Summary on the Relationship between Indirect Tax and GDP**

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>.992(^a)</td>
<td>.984</td>
<td>.984</td>
<td>18362.21807</td>
<td>.984</td>
<td>1265.703</td>
<td>1</td>
<td>20</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Total Indirect tax
b. Dependent Variable: GDP (Expenditure method) at current price

Sources: Calculation on the base of SPSS software

**Table 3**

**Model Specification**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
<th>95.0% Confidence Interval for B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td>(Constant)</td>
<td>43416.961</td>
<td>5731.698</td>
<td>.992</td>
<td>7.575</td>
<td>.000</td>
</tr>
<tr>
<td>1</td>
<td>Total Indirect tax</td>
<td>6.510</td>
<td>.183</td>
<td>35.577</td>
<td>.000</td>
</tr>
</tbody>
</table>

a. Dependent Variable: GDP (Expenditure method) at current price

Sources: Calculation on the base of SPSS software.