DIRECT TAX AND ITS IMPACT ON THE GROSS DOMESTIC PRODUCT (GDP) OF NEPAL

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ABSTRACT

This article analyzes the relationship between direct tax and Nepal's GDP. For the methodology, the Autoregressive Distributed Lag (ARDL) model is used for which the dependent variable is taken as GDP and the independent variables are taken as Corporate Income Tax (CIT) and Individual Income tax (IIT) respectively. The research uses time series data from 1990/91 AD to 2020//21 AD. This article found that a long-run relationship exists among the variables. There is a positive and significant relationship between IIT and GDP in the long run whereas there exists a positive but insignificant relationship between CIT and GDP in the long run. The model is free from heteroskedasticity and serial correlation, the functional form is correct and residuals are normally distributed. The CUSUM and CUSUMSQ test shows that the model is structurally stable. The article concludes that an increase in direct tax can contribute to an increase in GDP and it can be used as an option for Indirect tax which can hamper the poor.

Keywords: direct taxes, GDP, ARDL, Nepal

INTRODUCTION

Economic growth is the foundation for prosperity which can be achieved by investing in new capital (both human and physical), applying new production techniques, and unveiling new products. However, these processes and choices by which economic growth is achieved can be affected by taxation. Taxation can affect the return on investment and ultimately the rate of economic growth (Myles, 2000). Likewise, as cited by (Macek, 2015), King and Rebello (1990) while analyzing the disparity

among the individual countries in the long run economic growth found that national tax policies influencing the private incentive for capital (physical and human) accumulation do have a significant impact on the average rate of economic growth of the isolated country. This effect of tax can be traced in the open economies more strongly where a small tax change can result in the stagnation of the economy because open economies do have access to international capital markets.

An optimal level of taxes can have a fundamental role and place in the economy of each country for providing contributions to the prosperity of that economy (Kalaš *et al.,* 2018). However, what level is termed as 'optimal' is very controversial and debatable. In fact, (Gashi *et al.,* 2018), after going through several theoretical and empirical types of research conclude about what includes non-optimality in the tax system. The tax system depends on many quantitative and qualitative factors and differs from state to state. One can learn from the experience of a specific country but any country may or may not benefit through that tax policy depending on the numerous economic and non-economic factors of that own country.

At the same time, tax can have a two-way effect. (Stoilova, 2017) after going through the conclusion of different research opines that, on one hand, a higher rate of taxes indicates a higher level of public expenditure, some of which may foster economic growth on the other hand, higher taxes cause potentially higher distortions and impact negatively on economic growth. Likewise, (Padda & Akram, 2010), found that tax policies (changes in tax rate) adopted by the South-Asian countries have only a transitory impact on their economic growth, not a permanent effect. In this connection, (Nantob, 2014) has pointed out that there is no magical tax formula that propels economic growth at once in developing countries. Some countries with high tax burdens are having high growth and some countries with low tax burdens have shown low growth rates. Thus, it can be felt that the relationship between tax and economic growth is not fairly simple

Nepalese Context

(Dahal, 2011) has categorically pointed out some of the key problems of tax in the context of Nepal. The problems include: 1) Marginally high tax rates (2) limited tax base (3) low tax elasticity (4) Poor voluntary compliance (4) leakages in tax collection (5) rigid income tax act, (6) inefficient, indifferent and corrupt tax administration, and (7) no consolidated record of property (land and building) with the internal revenue department. The above issues mentioned are not the consequences

of the shift in tax policy or tax strategy. It is the regular administrative and functional reform. If the country can address the above issue, it can add billions of rupees to its treasury which would have gone wasted or unnoticed. The economic survey report shows that the GDP ratio of Nepal stands at 20.3 in FY 2020/21 which is impressive compared to other south Asian countries but our economic growth is not satisfactory as compared to theirs. The individual income tax (IIT) revenue and corporate income Tax Revenue (CIT) in the FY 2020/ 21 stands at Rs 83,491 million and Rs.137,992 million respectively. In the same year GDP at current price is Rs 4,277,300 million. If we compare the pre-pandemic period, the real GDP growth rate in 2017/18 and 2018/19 is 7.62 percent and 6.66 percent respectively while corporate income tax revenue growth was 3 percent and 17 percent also individual income tax revenue growth was 18 percent, and 32 percent at the same time. Also, it is seen that direct tax collection is increasing every year. On this backdrop, this article analyzes the role of direct taxes on GDP.

LITERATURE REVIEW

The research paper by (Muinelo-Gallo & Roca-sagalés, 2011) about the role of fiscal policies in economic growth and inequality found that larger current expenditures and direct taxes diminish economic growth and reduce inequality, while increases in public investment reduce inequality without harming output. The effects of indirect taxes on both output and inequality are found to be statistically insignificant. The research work of (Ilaboya & Mgbame, 2012) illustrated a negative and insignificant relationship between indirect tax and economic growth in Nigeria. On contrary to that, while studying the impact of direct and indirect taxes on Nigerian economic growth, (Ogundana *et al.,* 2017) found that both direct and indirect taxes positively impact Nigeria's economy. However, there is a mixed result by (Owino, 2018) in Kenya while studying the relationship between direct and indirect tax on economic growth. The study found a negative relationship between direct tax and economic growth and a positive relationship between indirect taxes and economic growth. Similarly, while studying the impact of tax on the economic growth of Pakistan by (Ahmad *et al.,* 2013) found that there is a negative and significant relationship between tax and economic growth both in the long run and short run. The research recommends for increment of direct taxes rather than indirect taxes for the economic prosperity of the country. The research work of (Kesavarajah, 2014) found that higher levels of income taxes, import taxes, and other taxes have had a negative and significant impact on growth but higher levels of domestic consumption

tax (VAT) show a significant positive impact on long-term output growth while excise taxes do not have any impact. Likewise, (Venkataraman & Urmi, 2017) on assessing the impact of taxation on economic growth in India found that, in the long run, within the direct tax, only corporate tax had a positive statistically significant impact on economic growth but personal tax had no impact. In the case of indirect tax, customs duty had a positive statistically significant impact but no impact of excise duty was seen. Similarly (Phiri, 2016) investigated the effects of direct and indirect taxes on economic growth in South Africa. This paper suggested direct and indirect taxes are significantly related to economic growth only when the optimal tax rate or threshold on the indirect tax-growth ratio is 10.27 percent. Below the threshold indirect tax is positively related to economic growth but direct tax is adversely related to economic growth.

The research work performed by (Bâzgan, 2018) analyzed the impact of direct taxes and indirect taxes on the economic growth of Romania. The econometric model provided the outcome that positive change in the structure of indirect taxes will have a strong positive influence on economic growth over a medium period. In case of a positive change in direct taxes, it will have a negative influence on the economic growth over the next short period but it will return a positive influence in the medium-term period and maintain that influence in the future period. However, when (Bhattarai *et al.,* 2019) analyzed the impacts of direct and indirect Tax Reforms in Vietnam, the article recommended Vietnamese government increase the standard VAT (Indirect tax) rate to 12 percent from 10 percent and reduce CIT (direct tax) rate to 17 percent from 20 percent to shift the tax burden from capitalists to consumers. Lastly, (Maharjan, 2018) analyzed the relationship between tax revenue and economic growth in Nepal and found that there exists a long-run relationship between tax revenue and economic growth in Nepal controlling the non-tax revenue. It is seen that plenty of research works have been done internationally however there lack substantive and adequate research in the context of Nepal regarding the impact of taxes, especially direct taxes on GDP which this research tries to analyze.

METHODS AND MATERIALS

Data

The study uses the time series data from 1990/91 AD to 2020/21 AD. The secondary data is collected from government finance statistics, 2017 published by Nepal Rastra Bank, and the economic survey of various years published by the Ministry of Finance, Nepal

Empirical Estimation

To understand the impact of tax on economic growth, this research uses three variables. For the dependent variable, GDP is used and for the independent variable, two major components of direct tax i.e. Corporate Income Tax (CIT) and Individual Income Tax (IIT) have been used. The functional form of the model is given as:

$$Y = f\,(CIT, IIT)\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

Where, Y= GDP, CIT = Corporate Income Tax, IIT = Individual Income Tax

Each variable of equation 1 after converting into a natural log can be transformed as the following equation

$$LN\,(Y) = a + a_1\,LN\,(CIT) + a_2\,LN\,(IIT) + \mathcal{E}_t\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

Where, a, a_1, and a_2 are the parameters needed to be estimated.

$\mathcal{E}_t$ is an error term.

Now, to check the stationarity of time series data, the unit root test is conducted through augmented dickey-fuller. Following, (Ahmad *et al.*, 2013), (Chandio *et al.*, 2019), and (Dhungel), this article uses the autoregressive distributed lag (ARDL) model proposed by (Pesaran *et al.*, 2001). ARDL approach is applicable irrespective of whether the underlying regressors are purely I(0), purely I(1), or mutually cointegrated.

The equation for the ARDL approach is specified as:

$$\Delta lnY_t = a_0 + \sum_{i=1}^{p} a_{1i}\Delta lnY_{t-i} + \sum_{i=1}^{q} a_{2i}\Delta lnD_{t-1} + \sum_{i=1}^{q} a_{3i}\Delta lnI_{t-1} +$$
$$a_4 lnY_{t-i} + a_5 lnD_{t-i} + a_6 lnI_{t-i} + \mathcal{E}_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3)$$

Here Δ, is the difference operator. Now, for the hypothesis testing.

The null hypothesis: $H_0 : a_4 = a_5 = a_6 = 0$ (No Long-run relationship exists)

The alternative hypothesis: $H_1 : a_4 \neq a_5 \neq a_6 \neq 0$ (Long run relationship exists)

An F test is used to test the hypothesis. (Chandio *et al.*, 2019), (Pesaran *et al.*, 2001) have stated that if the value of the *F*-test>upper critical bound (UCB), then reject H_0 and the variables of the study are co-integrated, if the value of *F*-test < lower critical bound (LCB), then accept

H_0 and the variables of the present study are not co-integrated; however, if the value of F-test $\geqslant$ LCB and $\leqslant$ UCB, then the decision is inconclusive.

Now, to understand and estimate the long-run and short-run effect of one-time series variables with another, ECM is used. ECM helps to estimate the speed at which two or more time series variables return to their common equilibrium following a shock that disturbs this equilibrium (Brooks, 2019).

ARDL equation incorporating the error correction model is as follows:

$$\Delta lnY_t = a_0 + \sum\nolimits_{t=1}^{p} a_{1i}\Delta lnY_{t-i} + \sum\nolimits_{t=1}^{q} a_{2i}\Delta lnD_{t-i} + \sum\nolimits_{t=1}^{q} a_{3i}\Delta lnI_{t-i} + \delta ECT_{t-1} + \mathcal{E}_t \ldots(4)$$

Here, δ denotes the speed of convergence to the equilibrium value. ECT is the Error correction term that measures deviations of the dependent variable from the long-run equilibrium.

RESULTS AND DISCUSSION

At first, the stationarity of data is checked using an Augmented Dickey-Fuller (ADF) unit root test then cointegration is tested using the ARDL Bound test, and after that long-run and short-run estimates using the ARDL framework are estimated. Lastly, residual diagnostics and stability test is conducted to check the fitted model's adequacy and stability.

Unit Root Test

The unit root test is performed using Augmented Dickey-Fuller (ADF) test whose result is listed below in the table.

Table 1

Augmented Dickey-Fuller (ADF) Tests for Unit Root

Variables	Intercept		Intercept & Trend		Conclusion
	t- stat	Prob.	t- stat	Prob.	
LN GDP	- 4.57**	0.001	-4.46**	0.007	I(1)
LN CIT	-3.86**	0.006	-4.34**	0.009	I(1)
LN IIT	-5.12**	0.003	-5.47**	0.0007	I(1)

** Denotes significance at 1percent level.

Source: Author's Calculation

Table 1 shows all variables are integrated of order 1 I (1). So, the ARDL bounds test approach to cointegration is applicable.

Cointegration Results

The result of the ARDL bounds test approach to cointegration of the variables: GDP, corporate income tax, and individual income tax are illustrated in Table 2

Table 2

Result of Bound Test

Test Statistic	Value	K (independent variable)
F-statistic	58.60	2
Critical Value Bounds		
Significance	I(0) Bound	I(1) Bound
10 percent	2.63	3.35
5 percent	3.1	3.87
2.5 percent	3.55	4.38
1 percent	4.13	5

Source: Author's Calculation

As is seen from Table 2, the value of F-statistics (58.60) is above all the upper bounds values at 1 percent, 2.5 percent, 5 percent, and 10 percent levels of significance. So, we reject the null hypothesis that no long-run relationship exists (no cointegration). This indicates that there are long-run relationships among variables. So, we can proceed with our ARDL model.

ARDL Estimates

The result of ARDL estimates which is calculated using statistical software are presented in the tables below.

Table 3

Autoregressive Distributed Lag Estimate

Dependent Variable is LN GDP				
Selected Model: ARDL (1, 0, 0) based on Akaike Information Criterion (AIC)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN GDP (-1)	0.8219	0.0977	8.4095	6.8486
LN CIT	0.0169	0.02654	0.6372	0.52953
LN IIT	0.1023	0.04413	2.3185	0.02854
C	1.4768	0.7474	1.9758	0.05887
R-squared	0.9984	D-W statistics		1.57
Adjusted R-squared	0.9982	Prob(F-statistic)		1.4290

Source: Author's Calculation

The ARDL estimates in Table 3 show the dynamic relationship between the variables used in this time series model. Here, GDP is the dependent variable and Direct Tax (Corporate Income Tax and Individual Income Tax) are independent variables. It is found that individual income tax has a positive and significant relationship with GDP. It shows 1 percent increase in IIT leads to a 0.1 percent increase in GDP. Similarly, there is also a positive but insignificant relationship between CIT and GDP.

Table 4

ARDL Long Run Estimate

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LN CIT	0.095044	0.106613	0.891491	0.3808
LN IIT	0.574845	0.124031	4.634684	0.0001
C	8.296954	0.457146	18.14945	0.0000

Source: Author's Calculation

Table 4 shows that there exists a positive and significant relationship between IIT and GDP in the long run and a positive but insignificant relationship between CIT and GDP.

Table 5

Error Correction Representation for the ARDL Model

Dependent Variable is LN Δ GDP

Selected Model: ARDL (1, 0, 0) based on Akaike Information Criterion (AIC)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Δ LN CIT	0.0169	0.02654	0.6372	0.52953
Δ LN IIT	0.1023	0.04413	2.3185	0.02854
Δ C	1.4768	0.7474	1.9758	0.05887
ECM (-1)	-0.17	0.011	-16.17	0.000
R-squared	0.21		D-W statistics	1.57
Adjusted R-squared	0.21		AIC	-3.51

Source: Author's Calculation

Table 5 shows the short-run relationship between dependent and independent variables. Here, the value of ECM should be negative and

significant which is also the case here. The value of ECM is -0.17 with a probability value of 0.000. The value of ECM shows the rate of adjustment which is 17 percent. This means a 17 percent deviation from equilibrium in GDP that occurred last year will be corrected this year.

Diagnostic Test

The diagnostic test is performed to check whether the model is the best fit and stable to draw inferences whose result is listed in tables and figures below.

Table 6

Result of the Diagnostic Test

Item	Test used	Statistics	Prob.
Serial Correlation	Breusch Godfrey LM test	0.38 Chi-Square(X^2)	0.42
Heteroskedasticity	Breusch- Pagan-Godfrey	0.75 Chi-Square(X^2)	0.78
Normality Test	Jarque-Bera	0.22 (JB)	0.89
Functional Test	Ramsey reset	0.68 (F- Statistics)	0.41

Source: Author's Calculation

Table 6 shows that the model is free from serial correlation and heteroskedasticity. Also, the functional form is correct and residuals are normally distributed
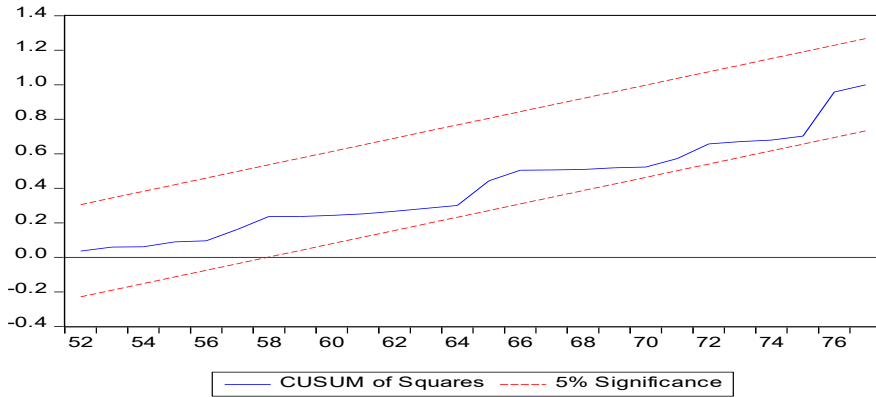
Figure 1

Recursive Residuals: CUSUM Test
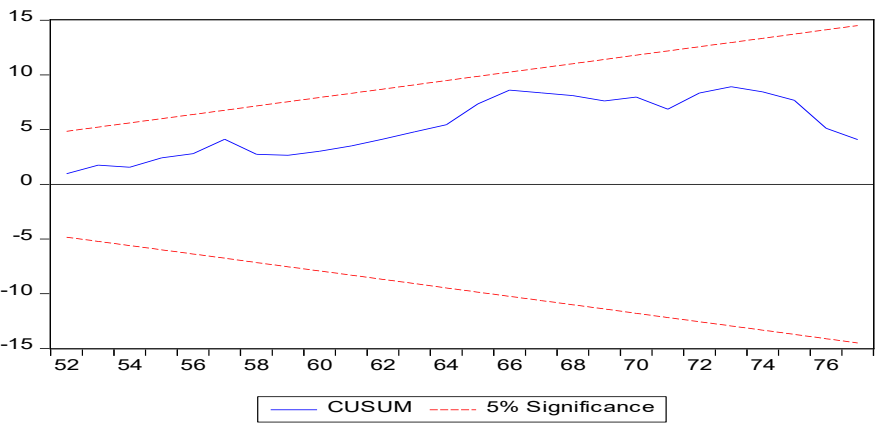
Figure 2

Recursive Residuals: CUSUM of Squares Test

Source: Author's Calculation

   Figures 1 and 2 show that, the model also has structural stability as the estimated curve lies within the two given lines.

CONCLUSIONS

   This research paper studied the impact of a direct tax on GDP using the autoregressive distributive lag (ARDL) approach to co-integration through the time series annual data from 1990/91 to 2020/21. Both in the short run and long run individual income tax (IIT) has a positive and significant impact on GDP whereas corporate income tax (CIT) has a positive but statistically insignificant impact on GDP. The diagnostic tests confirm that the model is free from serial correlation and heteroskedasticity. Stochastic residuals are normally distributed and the functional form is also correct. The co-efficient of ECM is negative and statistically significant with the speed of adjustment 17 percent.

   In this research, it is seen that the direct tax has a positive impact on GDP, especially individual income tax. Corporate income tax (CIT) is seen as insignificant in this research but this model has a long-run relationship, so CIT should also not be ignored by the government rather it should also be implemented in a way that does not discourage business but helps to generate revenue for the government. Tax evasion and influencing the stakeholders to readjust the tax amount is no new practice in Nepal so one notion for CIT being insignificant in this research can be pointed to the malpractice in our system. IIT is deducted at source and it is more about the

employees and is recorded so the real influence of it is seen but CIT can be manipulated therefore its effect may not be seen. However, not because of any suspicious doings but because of real reasons if CIT is not contributing to growth, then the government instead of levying more tax on the corporate sector should incentivize the private sector to invest more in research and development, employment generation, and corporate social responsibility. Those corporate houses that are creating jobs and exportable products should be exempted and rebated with their CIT. This will encourage the private sector and economic growth objectives can be fulfilled indirectly through businesses rather than collecting taxes and it can also attract foreign investors in Nepal.

As IIT has a positive influence on GDP, indicates that the government should bring more people into the tax bracket and find a new source for taxation. However, positive IIT should not be mis-utilized because Nepalese wage earners have low income and more taxes significantly impact their livelihood. The government should bring policies to categorize individual income and tax as per their earning. Also, the government can shift and increase the rate from indirect tax to direct tax. Since the indirect tax hampers the poor, shifting to direct tax is also beneficial from the welfare perspective. Moreover, the result of this research implies that the government should bring policies that help to create employment and business enhancement and increase the sources of direct tax and ultimately economic growth.

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