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Tax Reforms and their Impacts on Responsiveness in Nepal

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Abstract: We review the tax reform in developing countries in general and in a representative developing and transition economy of South Asia, Nepal, in particular from four different perspectives: efficiency reforms, equity reforms, institutional reforms, and promotional reforms and see their impacts on responsiveness of major taxes. Using the available macroeconomic data for the period 1990-2017, the period of major tax reform, we found that the reforms were not adequate in improving the responsiveness of the existing taxes – especially that of indirect taxes. Comparing the results with the previous studies that also followed similar method of estimation, responsiveness is all fluctuating for the period 1974-2017. Moreover, elasticities for all major tax types except that of income tax are all declining after 1995. This signifies the necessity of more effective reforms for the days ahead.

Key words: Tax revenue; efficiency; equity; responsiveness

JEL Classifications: H20, H21, H24, H71

1. Introduction

From 1951, land revenue, custom duties and excise duties were in existence in Nepal. The excise act 1958 and the customs act 1962 consolidated the existing differences in excise and customs laws and improved both the excise and custom systems throughout the country. However, the foundation of modern tax system was laid in 1959/60 after the introduction of income tax, urban house and land tax and foreign investment tax. Sales tax was introduced in 1965. In 1969/70, foreign investment tax was merged with income tax. Furthermore, corporate income tax was separated from the individual income tax in 1986/87 when public corporation and public limited companies listed in the Nepal Stock Exchange were subjected to a flat corporate tax rate. This tax was extended to private limited companies in 1993/94.

There was growing realisation that Nepalese taxes were less responsive to their bases. Tax to GDP ratio was only 7.83 in 1991/92 — lower than that of many other developing countries. Furthermore, tax system was very inelastic. The elasticity of the total tax system with respect to GDP base was only 0.48 during the period 1974/75 to 1991/92 (Harvard University, 1997) meaning that tax revenue increased by only 0.48% for every 1% increase in GDP. The Nepalese tax rates were considered high that might had resulted to market distortions and tax leakages.

Against these backdrops, tax reform became inevitable for Nepal. The first half of the 1990s witnessed efforts in extending the tax base along with smaller tax rates. From theoretical viewpoint as well, a few broad-based taxes such as a full-fledged VAT, a comprehensive income tax based on the global principle, and a wealth tax levied on net wealth generated from all property are considered very attractive. However, the Nepalese economy is not yet sufficiently developed to make such taxes feasible as most of the tax payers are small-scale business people/employees, and unorganised; they feel extremely difficult to comply with such taxes.

In light of this background, we try to measure the impacts of the reform measures on tax responsiveness in Nepal. The rest of this paper is organised as follows. We review the major tax reform efforts in Nepal in Section 2. The structure of Nepalese tax revenue is the subject matter of Section 3 followed by the estimation of responsiveness of tax yield and the comparison with previous studies in Section 4. Section 5 concludes and promotes some discussion.

2. Tax Reform Measures in Nepal

2.1. Efficiency Reforms

Revenue reforms were an important part of the Action Programmes of the government of Nepal announced in April 2000.[1] The reforms in tax policies and tax administration were initiated with a view to minimise tax-induced distortions in the economy and to increase revenue mobilisation. The reforms initiated in tax system were also directed towards making tax laws and procedures simple and transparent. Recently, the government has intensified various measures in this regard. First, the reduction in business costs has been realised through the import of raw materials using bank guarantee or pass book record facility. Likewise, modernisations of custom offices were through strengthening of valuation systems, simplification of the customs procedures, customs automation and modernisation, risk management, and customs integrity and administrative reform through the implementation of Automated System of Custom Data (ASYCUDA) accounting module. Likewise, in the wake of introducing VAT in the 1990s to replace sales tax and many small indirect taxes merged many small indirect taxes such as hotel tax, entertainment tax and contract tax.

Broadening of the tax base has also become an integral part of the tax reform. In many South Asian countries, this measure includes, inter alia, bringing services such as health provided by private hospitals, auditing, legal advice, etc. to the VAT net. Moreover, it has been extended up to the retail stage. It will help to shift the tax base from international trade to domestic consumption and establish the VAT as the backbone of domestic public resource generation.

A wide range of programmes of tax reforms especially to the extension of tax bases are underway in Nepal through the following measures: (i) endorsing the legislation to strengthen VAT procedures, including better maintenance of records; (ii) updating the import valuation system for customs and provision of payments through banks; (iv) expanding the income tax base to include commercial farming, exports, dividends and interest; (v) strengthening tax administration by combining the Departments of Taxation and VAT into the Inland Revenue Department; and (vi) strengthening anti-corruption measures by reducing harassment of taxpayers and requiring annual asset declarations by tax officials. These are impressive reforms, which now need proper implementation.

2.2. Equity Reforms

In a number of taxes, the nominal rates have been reduced over the years. The highest rate of customs duty has been reduced from 40 to 30 percent. The income tax exemption limit for individual and couple has been increased to reduce the tax burden. Other measures in this regard include reduction of capital gain tax rate; and imposition of only nominal customs duty for machinery/equipment/parts used for production of organic fuel and dialysis bath concentrate for kidney patient, and license fee for sugarcane industries producing molasses using power crusher.

2.3. Promotional/Incentive Schemes

As an incentive to export, exporters now get refunded with their export service charges paid provided that they are able to export more than 40 per cent of their monthly sale. Likewise, excise duty exemption on items produced by using more than nine-tenths of domestic scraps has been made.

Manufacturing firms using more than 50 per cent indigenous raw materials now do not need to disclose their sources of income to the tax authority. Likewise, firms employing more than 300 national workers, and firms working for establishing hydroelectric projects, international airports, tunnels, road/rail ways also receive these incentives until mid-April, 2019. Furthermore, these firms also enjoy with reduction of income tax by 10 per cent. Similarly, industries which directly employ 1200 or more Nepalese nationals all the year round or 33 per cent women, Dalits (the downtrodden) or the handicapped will enjoy with 20 per cent reduction in their tax. Hydroelectric power generation firms are also exempted from value added tax. Brick industries that emit less than 50 per cent of the emission standard set by the Ministry of Environment, Science and technology now get 50 per cent exemption in license fee.

2.4. Institutional Reforms

Most important development in Nepalese domestic tax reform is the establishment of centralized electronic Information Technology (IT), especially web-based system has been developed for the registration of tax payers and their tax assessment. Online payment system is now underway. As an impact of these reforms, tax revenue collection has swelled-up recently. About half of the Inland Revenue offices have connections to the web-based revenue collection system now.

Tax payers are now receiving electronic personal account number (E-PAN) – a recently introduced system. Income tax administration has introduced Personal Incentive and Evaluation System that has remarkable positive impact on the revenue generation for the last couple of years. Simplifications of the tax acts are also underway. Web-based tax education and online tax payment system might reduce the direct contact between the tax officers and the tax payers – a major source of corruption – in coming years.

The custom department has recently introduced trade facilitation reforms that include efforts to bring all import and export businesses into the custom net and overall information sharing among the traders. The Standard Operating Procedure (SOP) followed in this regard uses the Broker Model for customs valuation and clearance.

Custom offices are now following automation and information technology that expects to improve the compliance problem, reduce the administrative cost and boost revenue generation. Nepalese tax administration consists Inland Revenue Department, Department of Customs, and Department of Revenue Investigation. An integration of these departments is the next essential measure for making unified goods and services tax.

3. Change in Tax Structure: Impact of Tax Reform?

The first half of the 1990s remained a golden period retaining the highest historical growth in overall revenue mobilisation attributed to the highest economic growth with sound macroeconomic management and relatively stable political environment. However, Nepal witnessed a sharp deceleration in almost all the components of revenue after the mid-1990s due mainly to the following reasons (Paudel, 2006, p.12):

- Nepal was removing the non-tariff barriers as well as rationalising the tariff rates in line with the global trade integration especially for the entry in WTO, BIMSTEC and SAFTA. It created only a little room in benefiting from the tariffication with a gradual deceleration in the economic growth, among others.
- The internal conflict that acutely intensified during 1995-2005 hit hard and created discouraging psychic effects both to the public and private sectors resulting in a passive development ethos. It pressed the public sector to escalate the security expenditure leaving the development expenditure at a low profile.

With reference to the discussion above, using the case of Nepal, we test an important hypothesis in this paper. Series of tax reform measures during 1970s-2000s are not enough to raise the tax effort ratio and responsiveness of the tax yield apparently. Six indicators such as buoyancy, elasticity, compound growth rate, marginal tax rate, tax ratio and tax effort are available to judge the efficiency of a tax system in a country. Of these six indicators, buoyancy and elasticity are primarily useful to make a regional analysis of the productivity differential. Moreover, it is also useful to make a comparative analysis of responsiveness by type of tax. The compound growth rate and marginal tax rates are less significant analytically since they do not take into account taxable capacity.

The growth rate in revenue in Nepal decelerated significantly in some years during the 2000s primarily due to political unrest. However, there are some important trends as well in the government revenue system in the long run. Total revenue to GDP ratio has been marginally increasing; it was 8.9 per cent during 1980s, 10.6 per cent during 1990s, and 11 per cent during 2000s and beyond (*Economic Surveys various issues*, Ministry of Finance, Kathmandu). The tax burden measured in terms of nominal tax to GDP ratio has gradually increased from 5.2 per cent during 1970s to 7.2 per cent during the 1980s, 8.3 per cent during the 1990s and 9.3 during 2000s showing good positive trend but the pace is rather slow during the last four decades. Moreover, the share of tax revenue in total domestic government revenue has risen very slowly over the last two decades – from 77 to 79 per cent. In the total revenue, the share of direct tax has marginally raised from 15 per cent in the 1990s to 20 per cent during the 2000s and about 26 per cent during 2010s. In contrary, the indirect tax revenue shared approximately 62 per cent during the 1990s and 58 per cent during the 2000s and 65 per cent during 2010s (Table 1).

Trade liberalisation swelled the import that coupled with the relatively higher economic growth helped increase tax revenue after 1990. The growth of the direct tax revenue was impressive (20.8%) during the 1990s but that marginally declined (18.8%) during the 2000s and further declined after 2010. The growth rate of the indirect tax revenue as well declined slightly (15.1%) beyond 2000 from the average growth rate of 15.6 per cent during the 1990s. In the direct tax, this growth is mainly attributed to the income tax whereas in case of indirect tax it is mainly due to the growth in the VAT revenue.

In the indirect tax, customs duties used to share the biggest proportion until 2000. During the first half of the 2000s, the shares of custom duties and VAT revenues were almost equal. Eventually from the second half of the 2000s, the VAT revenue has, however, exceeded the revenue collection from the custom duties. Now, VAT constitutes almost half of the total indirect tax collection (Table 1).

As envisaged, the unweighted average collected tariff rate has been declining over the period. The overall rate of customs duty – customs revenue as a percentage of total foreign trade — was as high as 12.9 per cent during the second half of the 1970s; it has a constant declining trend except during 2006-11 mainly because of the growing need of public expenses. During 2012-17, it has declined to 5.99 per cent. As export tax is virtually absent in Nepal, the overall custom revenue or effective custom tariff rate primarily refers to import

Table 1: Trends in Tax and Non-Tax Revenues in Nepal

Growth rate (in %)	*1976-81*	*1982-87*	*1988-93*	*1994-99*	*2000-05*	*2006-11*	*2012-2017*
Total Revenue	13.17	16.36	19.07	21.67	11.80	10.40	20.11
Tax Revenue	12.88	15.91	18.47	22.17	11.06	10.43	21.79
Non-tax Revenue	15.57	20.63	23.73	20.65	15.18	10.69	14.36
Direct Tax Revenue	7.5	18.41	21.72	24.00	17.68	7.75	28.27
Indirect Tax Revenue	14.17	15.50	17.91	21.92	9.24	11.38	19.57
Custom Revenue	13.85	13.01	21.12	21.58	9.14	7.92	14.97
VAT	17.64	16.45	14.39	29.81	10.61	14.42	20.65
Excise	19.91	20.20	17.30	12.42	7.37	13.43	27.50
Income Tax	23.26	25.59	25.25	26.78	23.01	7.80	24.02
% in Total Revenue							
Tax Revenue	81.68	82.72	78.03	76.96	78.26	77.53	80.31
Non-Tax Revenue	18.32	17.28	21.97	23.04	21.74	22.47	19.68
Indirect Tax	65.08	68.74	64.22	64.07	59.97	59.08	58.29
Direct Tax	16.60	13.99	13.81	12.88	18.29	18.44	21.58
Custom	31.67	28.62	28.09	26.93	26.04	24.69	19.63
Income Tax	7.62	7.59	8.82	8.15	14.76	16.28	18.59
Share in Indirect Tax (%)							
Custom	48.69	41.57	43.72	42.02	43.44	41.79	33.65
VAT	27.63	33.17	29.20	34.67	37.47	41.47	49.32
Excise	15.36	17.33	17.39	14.92	11.48	9.90	17.71

Note: Although it was introduced during the mid-1990s, VAT in this table also refers to all those taxes that were replaced by it before its introduction.

duties. Although there are some nominal export service charges, they also have declining trend in the course of trade liberalisation (Table 2). More importantly, because of the intensive conflict during 2000-05 and the resource requirement to meet the growing public expenses, the trend of custom duties had apparently grown. However, after the settlement of the armed conflict in the country in 2006, the downward revisions in the tariff rates are again established as revealed by Table 2. Although in terms of average collected tariff rate and share of it in total tax revenue have been declining (Table 2 and 3), revenue from import duties is still growing in monetary term (Table 4). Import surge in some products specifically, petroleum products, gold, and vehicle has contributed to maintain the customs revenue at this level. However, the negative consequences noticed in balance of payments situation could further influence the exchange rate regime.

Table 2: Unweighted Average Collected Tariff Rates (in %)

	1976-81	*1982-87*	*1988-93*	*1994-99*	*2000-05*	*2006-11*	*2012-2017*
Total Trade	12.93	11.36	11.14	8.07	7.34	8.03	5.99
Import	13.54	13.00	13.04	9.27	8.18	8.75	7.71
Export	4.14	2.64	1.95	1.37	0.84	1.35	1.04

Source: Economic Surveys, various issues, Ministry of Finance, Kathmandu.

Export duty is in fact only in the form of nominal service charge on export. Therefore, the import tariffs have been dominating the collected total trade tariff. However, the excise refund and other duties and charges that are included in the total trade tariff make it larger to some extent. Obviously, due to free and competitive trade practices, the tariff rates are bound to decline further in coming years and they will have revenue implications.

The trend of collected trade tax revenue as a percentage of GDP had been marginally increasing during 1976-2005 but that is declining after 2005. The decline after 2005 is mainly attributed to the entry of Nepal to the World Trade Organisation (WTO) and South Asian Free Trade Agreement (SAFTA). Consequently, the custom duties to GDP ratio declined to 2.48 per cent during 2012-2017 from 3.19 during 2006-2011 (Table 3). Nominal tariff in exports — a reflection of the export promotion industrialisation strategy – has been constantly declining, with minor exceptions, during 1976 - 2017.

Table 3: Taxes on International Trade (as % of GDP)

	1976-81	*1982-87*	*1988-93*	*1994-99*	*2000-05*	*2006-11*	*2012-2017*
Total Trade Taxes	2.41	2.48	2.63	2.68	2.98	3.19	2.48
Of which:							
Import Duties	1.59	1.92	2.05	1.95	2.26	2.31	1.99
Export Duties	0.24	0.13	0.10	0.12	0.09	0.16	0.08

Source: Economic Surveys, various issues, Ministry of Finance, Kathmandu.

As Nepal has made liberalisation commitments in the trade of goods, the prevailing custom tariff as mentioned in the report of WTO Working Party were in between 5 to 130 per cent which have come down from numerous categories into a few with maximum tariff rate 30 per cent in most of the cases. The average bound tariff rates of Nepal are higher than the average applied tariff rates.

Structural Change in Tax Revenue

The tax composition in Nepal is still dominated by indirect taxes. Indirect tax is incidental on the transaction based on expenditure whereas the direct tax is based on the money income receipt of the taxpayers. No doubt, the nature of direct tax is more progressive and not shifting backward; indirect taxes are imposed normally for the proper allocation of resources through curtailing the consumption and production of others. Because of the high average propensity to consume and relative ease of the collection, the developing countries such as Nepal rely on indirect taxes where the direct taxes based on income and wealth have relatively low contribution due to low level of income and wealth holding.

Table 4: Share of Major Tax Revenues (values in million Rupees)

Year	*Custom*		*Value Added Tax*		*Excise*		*Income Tax*		*Total Major Tax*	
	Amount	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*	*Amount*	*%*
1998	8309.1	34.0	8477.1	34.7	2298.2	9.4	5339.9	21.9	24424.3	100.0
1999	9517.7	35.4	8765.9	32.6	2953.2	11.0	5646.6	21.0	26883.4	100.0
2000	10813.3	34.9	10259.7	33.1	3127.6	10.1	6754.9	21.8	30955.5	100.0
2001	12552.1	33.8	12382.4	33.4	3771.2	10.2	8388.6	22.6	37094.3	100.0
2002	12658.8	34.4	12267.3	33.3	3807.1	10.3	8087.8	22.0	36821.0	100.0
2003	14236.4	35.1	13459.7	33.1	4785.1	11.8	8131.9	20.0	40613.1	100.0
2004	15554.8	34.0	14478.9	31.6	6226.7	13.6	9514.5	20.8	45774.9	100.0
2005	15701.6	30.5	18885.4	36.7	6445.9	12.5	10466.2	20.3	51499.1	100.0
2006	15343.7	28.2	21614.9	39.7	6506.5	12.0	10933.5	20.1	54398.5	100.0
2007	16707.6	24.7	26095.6	38.5	9234.7	13.6	15731.8	23.2	67769.7	100.0
2008	21062.4	26.0	29815.7	36.7	11189.6	13.8	19077.8	23.5	81145.5	100.0
2009	26792.9	24.0	39700.9	35.5	16220.9	14.5	29097.4	26.0	108741.5	100.0
2010	35150.8	23.3	54920.9	36.5	24306.1	16.1	36238.9	24.1	150616.7	100.0
2011	35711.6	21.1	61663.6	36.5	26542.9	15.7	45082.6	26.7	169000.7	100.0
2012	4339.06	17.8	7093.04	33.5	3001.61	14.2	5130.30	24.2	19564.0	100.0
2013	5689.00	19.2	8351.00	32.2	3666.00	14.1	6702.00	25.8	24408.0	100.0
2014	6788.00	19.0	10096.00	32.4	4539.00	14.6	7792.00	25.0	29215.0	100.0
2015	7467.10	18.4	11237.74	31.6	5352.50	15.0	8845.91	24.9	32903.3	100.0
2016	8185.70	17.0	12105.51	28.7	6570.56	15.6	11713.12	27.8	38574.9	100.0
2017	11318.40	18.6	16031.66	29.3	8467.84	15.5	14823.61	27.1	50641.5	100.0

Source: Economic survey, various issues, Ministry of Finance, Kathmandu.

Nepal introduced Value Added Tax (VAT) in FY 1997/98 replacing the sales tax and all other existing taxes on services including entertainment, hotel and contract taxes. At the beginning, only 10 per cent of the taxpayers registered in VAT; however, the number is escalating in successive years. Furthermore, the VAT collection has also been evident from its largest share in the overall tax revenue in Nepal (Table 4).

After getting the observer status of the WTO in 1995, it became the pressing need for Nepal to implement VAT as a broad base tax. Nepal had initiated the approach of gradual liberalisation of international trade as early as the mid-1980s, and that got momentum after Nepal got membership of the WTO in 2005. Nepal is bound to explore the alternative taxes to compensate the possible loss of revenue upon the fulfilment of tariff and non-tariff rationalisation. Looking at the short experience of VAT implementation and also a single and constant rate in the range of 10-15 per cent throughout the period under review, the VAT has already become the dominating component of indirect tax (Table 5).

Table 5: Structural Shift in Indirect Tax with the Implementation of VAT

Fiscal Year	*Total Revenue (in million Rs.)*	*Indirect Tax (in million Rs.)*	*Indirect Tax/ Total Revenue (in %)*	*Custom Duty/ Indirect Tax (in %)*	*VAT/Indirect Tax (in %)*	*Excise Tax/ Indirect Tax (in %)*
1997/98	32937.9	19926.9	60.50	42.67	35.74	14.48
1998/99	37251.0	21456.2	57.60	44.36	36.74	13.76
1999/00	42893.8	24597.1	57.34	43.96	40.07	12.72
2000/01	48893.6	29135.3	59.59	43.08	41.35	12.94
2001/02	50445.5	29292.8	58.07	43.21	40.84	13.00
2002/03	56229.8	33040.9	58.76	43.09	40.74	14.48
2003/04	62331.0	36974.2	59.32	42.07	39.16	16.84
2004/05	70122.70	41849.7	58.68	38.03	45.28	15.19
2005/06	72282.10	43462.3	60.12	35.30	49.72	14.97
2006/07	87712.10	52146.4	59.45	32.03	50.04	17.91
2007/08	107622.50	62067.82	57.67	33.93	48.03	18.02
2008/09	143474.5	82731.20	57.7	32.39	48.00	19.60
2009/10	176503.8	104447.64	59.17	31.71	49.36	18.80
2010/11	19837.59	12371.56	62.36	28.9	49.8	21.3
2011/12	24437.30	14433.71	59.06	30.1	49.1	20.8
2012/13	29664.20	17706.00	59.69	32.1	47.2	20.7
2013/14	35684.00	21423.00	60.04	31.7	47.1	21.2
2014/15	40584.64	24057.34	59.28	31.0	46.7	22.2
2015/16	48275.02	26861.77	55.64	30.5	45.1	24.5
2016/17	60918.00	35817.90	58.80	31.6	44.8	23.6

Source: Economic Surveys and Budget Speeches, Ministry of Finance, Government of Nepal. Total revenue does not include foreign grant.

During the last two decades, some fundamental changes in Nepalese indirect tax system are apparent; however, the share of indirect tax in overall government revenue is approximately two-fifths and almost stable with minor fluctuations.

The custom duty shared highest in the indirect tax (43%) in FY 1997/98 when the VAT was implemented. Its share has been declining sharing less than one-third after FY 2007/08; whereas that of VAT is growing. This shows structural change in Nepalese tax system in line with multilateral commitments. VAT used to share almost 36 per cent in indirect tax when it was introduced in FY 1997/98 but it is growing at the annual rate of 2.87 per cent in an average for the period 1998-2017 and has become the single largest source in indirect tax revenue. By 2008/09, its share has reached almost half in Nepalese indirect tax revenue (Table 5). Therefore, VAT possesses the highest potentiality of compensating the revenue loss accrued from the trade liberalisation in the wake of Nepal's WTO membership and other regional trade reforms especially with SAFTA and BIMSTEC. The relative contribution of excise duties in overall indirect tax has also been growing slowly over the last two decades; its share marginally swelled from approximately 14 to 23 per cent over the period under study. Consequently, it also reveals some scope of compensating tariff revenue loss in connection with trade liberalisation.

4. Tax Responsiveness in Nepal

The most appropriate measure of the responsiveness of tax revenues to changes in the base for most analytical applications is the 'elasticity' or, in the words of A.R. Prest (1962), the "built-in flexibility", which seeks to relate the percentage change in tax revenue to a percentage change in the tax base with a given tax structure. The legislative changes and other efforts, however, in the tax structure affect this relationship from time to time; consequently, direct measurement of the tax elasticity from a historical revenue series often becomes problematic. The problem becomes even more complex if the tax base itself is not precisely measurable or if such data are not available. It causes to use proxy measures. Due to these problems, most analytical studies on tax responsiveness tend to deal with broad categories of taxes that are aggregates of a wide variety of tax rates applied to different tax bases.

Four approaches are in use to measure the built-in elasticity of a tax for the last forty years, (1) proportional adjustment; (2) constant rate structure; (3) Divisia index; and (4) econometric methods. However, the most appropriate method would clearly depend upon the availability, nature and reliability of information on tax revenues, discretionary changes in the tax structure and tax bases. Generally, researchers use econometric method to apply on time series data on tax revenues but that requires adjustment to eliminate the effects of discretionary tax measures while measuring tax elasticity. The discretionary measure is generally the change in the legal aspect of the tax system including change in the tax rates, extension/contraction of the tax net, and change in the exemption or deduction provisions in the tax system. Therefore, each individual tax revenue assessed (T_i*) is mainly a function of two proxy variables: its potential tax base (X_i) (automatic growth or natural/normal growth), and tax reform measures (γ_i) or discretionary change. To express it mathematically (Ehdaie, 1990, p. 17):

$$ln(T_i^*)_t = \alpha_{i0} + \alpha_{i1} ln(X_i)_t + \alpha_{i2} (\gamma_i)_t + \varepsilon_{it} \quad (1)$$

where, ε_i = disturbance term as representative of other explanatory variables excluded from the model, t the time subscript, and

i = specific tax (i.e. import duties, export duties, VAT, excise duties, income tax, etc.),

Acharya (1999) estimated the elasticity and buoyancy of major taxes in Nepal using the approach used by Ehdaie (1990). However, some modifications deemed necessary to make the estimate robust and reliable as below. The models used were:

Import duties

$$\Delta Log(ImpTax)_t = \beta_1 \Delta Log(ImpTaxBase)_t + \beta_2 \Delta Log(ImpTax)_{t-1} + \beta_3 \Delta ImpDisch_t \quad (2)$$

Where ImpTax, ImpTaxBase, ImpDisch refer to import tax revenue, import tax base, and revenue from discretionary measures in import tax reform, respectively, and t the time subscript.

Consumption tax

$$Log(ConTax)_t = \beta_1 Log(ConTaxBase)_t + \beta_2 Log(ConTax)_{t-1} + \beta_3 ConDisch_t \quad (3)$$

where ConTax refer consumption tax revenue that includes sales tax/value added tax, excise duties, contract tax, entertainment tax, vehicle tax, hotel tax, and air-flight tax. They all have their common tax base (ConTaxBase) that is private domestic consumption in the national income account. Likewise, ConDisch refers to revenue from discretionary change in consumption tax reform.

Income tax

$$Log(IncTax)_t = \alpha + \beta_1 Log(IncTaxBase)_t + \beta_2 Log(IncTax)_{t-1} + \beta_3 IncDisch_t \quad (4)$$

where IncTax, IncTaxBase and IncDisch refer to income tax revenue, its tax base, and revenue from discretionary change in income tax reform.

Urban property tax

$$Log(UPTax)_t = \beta_1 Log(UPTaxBase)_t + \beta_2 Log(UPTax)_{t-1} + \beta_3 UPDisch_t \quad (5)$$

where UPTax, UPTaxBase, UPDisch refer to revenue from urban property tax, its tax base for which the study has taken the proxy as private capital formation, and discretionary measures in connection with urban property tax, respectively.

Paudel (2006) estimated the elasticities of Major taxes in Nepal. These estimations were made to custom duties, sales/value added tax, income tax, and excise duties using the tax revenue function originally used by an eminent economist Prest (1962) and also applied by Monga (1984), which is as follows:

$$T = \alpha\, Y^{\beta} e^{\varepsilon} t \text{ or } In\ T_t = \alpha + \beta In Y_t + \varepsilon_t \quad (6)$$

Prest (1962) had estimated the tax revenues following the above exponential function, where b is the tax buoyancy (change in tax revenue by per unit change in the source including the endogenous system change), T the tax revenue, Y the source of tax revenue, and e_t is the disturbance term at tth year capturing the effects of all other variables not included in the model that could explain the variation of the given tax revenue to some extent.

The present study has also made another attempt in estimating elasticities of major Nepalese taxes, notably, import duties, export duties, VAT, excise duties, and the income tax. For the most recent data 1989/90-2016/17, the following models have been found useful in estimating the elasticities:

$$Log(ImpTax)_t = \beta_1 Log(ImpTaxBase)_t + \beta_2 Log(ImpTax)_{t-1} + \beta_3 ImpDisch_t \quad (7)$$

$$Log(VAT)_t = \beta_1 Log(VATBase)_t + \beta_2 Log(VAT)_{t-1} + \beta_3 VATDisch_t \quad (8)$$

$$Log(IncTax)_t = \alpha + \beta_1 Log(IncTaxBase)_t + \beta_2 Log(IncTax)_{t-1} + \beta_3 IncDisch_t \quad (9)$$

The elasticities of major Nepalese taxes based on the estimation of the studies mentioned above are summarised as below:

Table 6: Responsiveness of Nepalese Tax Yield

Tax	*Acharya (1999) (1982-1997)*	*Paudel (2006) (1974-1994)*	*Paudel (2006) (1995-2005)*	*Paudel (2006) (1974-2005)*	*Present study (1990-2017)*
Import duty	0.525				0.40
Custom duty		0.31	0.64	0.43	
Consumption tax VAT	0.441	0.830.56	0.64-0.16	0.620.49	0.14
Income tax	0.526	0.35	0.18	0.47	0.56

All the studies referred above reveal weak performance of the productivity of Nepalese tax system. The growth in the tax base has not fully reflected through the same growth pattern in the respective tax revenue. More specifically, one percentage growth in the tax base has caused a maximum of 0.83 per cent growth in case of sales tax during 1974-1994. However, even in case of this tax, the responsiveness has declined thereafter (Table 6). Discouragingly, it has reached 0.14 according to the estimate of this study. Improving the tax compliance, therefore, is the major reform required in case of value added tax system.

Custom duties have fluctuating responsiveness. As custom duties are dominated by import duties, the latter dominates the overall custom performance. In import duties, the responsiveness is still low despite several reform measures. Encouragingly, the responsiveness of the natural growth of the income tax base has improved from 0.52 to 0.56 when compared between the two periods 1982-1997 and 1990-2017. This is the major achievement of the tax reform.

5. Conclusion and Discussions

Several tax policies and strategic reforms are apparent in developing countries in general and Nepal in particular during the last two decades. Looking at the various sectoral revenue growth trends, one can draw an inference that these reforms have positive impacts on the structural change in the overall tax system. Broadly, these reforms can be categorised into four major blocks: efficiency reforms, equity reforms, promotional reforms and the institutional reforms. Efficiency reforms relate to the efforts in raising tax compliance, automation in the revenue collection, development of the information-communication technology in the tax system. Likewise, equity reforms are those of tax rate adjustments. Promotional reforms comprise the efforts to enhance productive investment and trade through tax policies. Likewise, institutional reforms broadly associate endeavours to improve the capacities of tax collection/administration of inland revenue and custom revenue systems. Growth in tax revenue as a positive impact of the reforms in Nepal even during the insurgencies and conflict needs to be the guiding element for future as well. Moreover, a relationship between tax reform and macroeconomic stability during the conflict period might be helpful for policy makers to learn the lesson that tax reforms helped maintain economic stability.

Trade liberalisation has caused the structural changes in Nepalese public revenue system. The gradually declining custom tariffs have caused the increasing role of domestic taxes in public revenue. Consequently, VAT revenue has now been sharing almost 50 per cent of the Nepalese indirect taxes. Likewise, income tax revenue has also impressive growth rate in successive years.

Despite the continual reform of the tax policy of the Government of Nepal, tax responsiveness has only marginal improvement over the last three and half decades. However, in comparison to the estimates by Dahal (1983), recent studies show deterioration of the responsiveness of the Nepalese tax system as compared to the period 1964/65 – 1981/82 when the tax elasticities were marginally above unity. According to the several recent studies that estimated the responsiveness of tax revenue change following the growth in its respective tax base, the elasticities have been found less than unity to all tax types.[2] This conclusion is robust irrespective to the coverage of time series data and the methods used in estimating the elasticity.

The trend of growth of major Nepalese taxes has revealed that the growth pattern of them is encouraging in successive years, especially during the most recent years. The only setback was during 1995-2005 which witnessed decline in the growth rate of revenues from all tax systems due to the escalating armed conflict in the country and consequent decline in the growth of the production and sales activities. However, despite the sustainable growth of the revenues over the years except the crisis period, the tax responsiveness is very slow in Nepal. Most discouragingly, the tax possessing the biggest share – Value Added Tax that shares almost half of the total indirect tax – has declining responsiveness over the period. Improving the tax compliance of all Nepalese taxes in general and VAT in particular is the pressing need now. Taxable capacity of the various sectors of the economy needs to be specifically analysed for broadening the tax net in the economy.

Notes

1. Nepal Development Forum 2002, Implementation of Reform Agenda (pg.30).
2. Tax elasticity less than unity refers less responsive tax system whereas more than unity more responsive tax system. The unitary elasticity is considered proportional responsiveness in the tax system.

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