

The Distributional Impact of Taxes and Social Spending in Bhutan: an application with limited income data

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Abstract

This paper analyzes the distributional impact of the tax-benefit system in Bhutan. It makes two main contributions: first, this is the first substantive study of this kind in Bhutan, and second, due to limited information on incomes in the household survey, a consumption-based model is combined with Mincer-type earnings to derive estimates of incomes. Results show that the combined impact of government taxes and social spending is to reduce inequality and slightly increase poverty as of 2017. The increase in poverty is mainly due to the burden of indirect taxes and social contributions that are not offset by other transfers. Households in the bottom 80 percent are net receivers of fiscal interventions, with fiscal benefits primarily occurring through education and health benefits which are both progressive. Most households do not pay much into the system as of 2017, as personal income taxes have a high exemption threshold and sales taxes only apply to a selected number of goods that are mainly consumed by richer households. Due to the lack of direct transfers, the net cash position is negative for poor households, though the magnitude is very small. Simulations suggest that the recent PIT reduction leads direct taxes to be slightly more progressive; however, the inequality-reducing impact is dampened. The GST is expected to increase indirect taxes for households across the distribution and is less progressive than the sales tax. This could lead to a temporary increase in poverty which could be offset through direct transfers financed by the additional revenues.

Keywords: distributional impact, fiscal policy, fiscal incidence, poverty, inequality, taxes, Bhutan

JEL classification codes: H22, I38, D31

1. Introduction

Bhutan's has a remarkable track record in reducing poverty and improving the welfare of its people. Between 2007 and 2017, Bhutan cut poverty by two-thirds from 36 percent to 12 percent, measured using the \$3.20 poverty line (in 2011 PPP) for lower middle-income countries. However, the economy remains predominantly agrarian, with over half of the employed engaging in agricultural activities in 2019. Poverty is almost exclusively found in rural areas. The private sector is underdeveloped and dominated by small and micro firms, with a large share of the workforce employed informally.

This study was initiated during a time when the introduction of the GST was being considered to strengthen fiscal management. Bhutan's domestic revenue mobilization relied heavily on hydropower related revenue inflows which could be highly volatile from year to year. Unlike the existing sales tax system, which applies only to a narrow number of goods and services, the GST would apply to all services, including the economically significant tourism, transport and consultancy sectors, thereby expanding the tax base and providing a steady revenue stream independent of hydropower generation. Partly in an effort to offset potential negative distributional impacts, the government also reformed the personal income tax.

This paper presents the first comprehensive analysis of the distributional impacts of Bhutan's tax-benefit system as of 2017. It further aims to understand the impact of recent fiscal reforms on poverty and inequality amongst the Bhutanese population. A standard fiscal incidence analysis using the Commitment to Equity (CEQ) methodology (Lustig, 2018) is employed to help understand the following questions: (i) How does Bhutan's overall fiscal system contribute to poverty reduction and redistribution?; (ii) How progressive are the different fiscal instruments and what is the marginal contribution of each intervention to poverty and inequality?; (iii) Who bears the burden of taxes and receives the benefits?; (iv) What is the likely distributional impact of new policies, specifically the changes to personal income tax and the introduction of the GST? The paper assesses the individual and combined effects of tax and spending policies. The results are also benchmarked against other countries where similar analysis has been conducted.

The analysis relies on the 2017 Bhutan Living Standard Survey collected by the National Statistics Bureau of Bhutan, in conjunction with macroeconomic and fiscal data from national accounts. An input-output matrix is used to capture cascading effects of indirect taxes (such as sales taxes and excise taxes) on intermediate goods, which can be passed through to the prices of final consumptions. Given the available information and data, the analysis incorporates the fiscal components that capture around 45% percent of fiscal revenues, including direct taxes and indirect taxes. On the spending side, the analysis primarily accounts for spending on health and education which accounts for 29% percent of total government spending.

Our findings show that the combined impact of government taxes and social spending in Bhutan is to reduce inequality and slightly increase poverty as of 2017 (before recent major fiscal reforms). The increase in poverty is mainly due to the burden of indirect taxes and social contributions that are not offset by other direct transfers. Disaggregating the results by fiscal intervention shows that households in the bottom 80 percent are net receivers of fiscal interventions, with fiscal benefits primarily occurring through education and health benefits which are both progressive. In fact, most households do not pay much into the system as of 2017, as personal income taxes have a high exemption threshold and sales taxes only apply to a selected number of goods that are more likely to be consumed by richer

households. Due to the lack of direct transfers, the net cash position, which is the sum of all tax payments and cash benefits, is negative for poor households, though the magnitude is very small. Simulations suggest that recent reductions in personal income taxes and the planned introduction of the GST would alter these distributional impacts. With the reduction in PIT, direct taxes have become slightly more progressive; however, the inequality-reducing impact is slightly dampened than before. The GST as a broad-based tax likely leads to an increase in indirect taxes paid by households across the distribution, including those in the bottom 40 percent. At the same time, the GST is much less progressive than the existing sales tax. While the GST is poverty-increasing as a result, the poverty rate reverts to levels similar to the baseline in 2017.

The rest of the paper is organized as follows. Section II presents an overview of taxes and social spending in Bhutan. This is followed by a description of data sources and general methodology in section 3. It will elaborate and further expand on the standard methodology to account for an important limitation in the available dataset, i.e., the lack of information on household income. The paper introduces a model which combines a consumption-based model with Mincer-type earnings to derive estimates of incomes. The incidence of taxes and social spending are subsequently presented in section IV, followed by simulations of personal income tax and GST in section V. Section VI concludes.

2. Overview of Taxes and Social Spending in Bhutan

Fiscal revenues in Bhutan rely on a mix of tax and non-tax revenues. Total revenue collection amounted to 18.6 percent of GDP in the fiscal year 2016-17,² out of which roughly two thirds were from tax receipts. Among tax revenues, direct taxes have a slightly larger contribution than indirect taxes. Corporate income taxes account for a large share of direct taxes while the Personal Income Tax only contributed 0.6 percent of GDP.³ Sales tax and excise tax accounted for a combined 80 percent of indirect taxes (table 1). Among the different types of taxes whose incidence can be estimated from the household survey, PIT and import duties are particularly overestimated compared to the amounts reported in the national accounts. In the case of PIT, this may be partly due to the fact that the entire value of durable goods is accounted for in the construction of the consumption aggregate, resulting in an overestimation of the consumption flow from durable goods. Indeed, dropping durable goods from the consumption aggregate yields a PIT allocation of 102%, much closer to the value reported in national accounts. A second possibility is that our methodology overestimates the number of formal workers. Our classification of workers (detailed in section 3.3) is closely aligned with the tax/contribution system, and while there may be some informal workers within each category of formal workers, it is impossible to identify them with the available information. The overallocation of import duties is likely because of an assumption related to the condition of the car—specifically, the tax rates differ for new and used cars, but the surveys do not collect information on the condition of the car. The modeling is based on the assumption that all cars were purchased new, likely leading to an overestimation of consumption and therefore, income.

² The fiscal year in Bhutan runs from July to June of the following year.

³ Ministry of Finance. Annual Fiscal Statement, FY2016-2017.

Table1. General Government Revenue, FY2016-17

Revenue 2016-17	Amount (Nu. Million)	% Total Revenue	Amount BLSS (Nu. Million)	Total amount BLSS / national accounts ⁴	Total amount national accounts/ national accounts private consumption	Total amount BLSS/BLSS private consumption
Tax Revenue	21564.465					
Direct Tax	12345.794	57.25%				
Corporate Income Tax	8170.299	37.89%				
Business Income Tax	1276.903	5.92%				
Personal Income Tax	957.313	4.44%	1332.3	139.17%	1.10%	2.40%
Other Direct Tax	39.342	0.18%				
Royalties	1901.937	8.82%				
Indirect Tax	9218.67	42.75%				
Bhutan Sales Tax	3800.12	17.62%	2677	70.45%	4.37%	4.80%
Excise Duty	3579.663	16.60%	253.2	7.07%	4.12%	0.50%
Import Duty	562.563	2.61%	1265.3	224.92%	0.65%	2.30%
Other Indirect Tax	366.673	1.70%				
Green Tax	909.652	4.22%	774	85.09%	1.05%	1.40%

Source: Annual Financial Statement of the Royal Government of Bhutan, FY2016-2017. Ministry of Finance.

Key features of taxes and contributions in Bhutan are briefly presented next. The description in this section includes features of the prevailing fiscal system as of 2017 which is the year of the last household survey on which the analysis is based. Changes to the system after 2020 are discussed in section V along with results from a simulation exercise that estimates the ex-ante distributional impact of those reforms.

Direct and indirect taxes⁵

⁴ The ratio of total consumption in the survey to expenditure of households and nonprofit institutions serving households (NPISHs) in national accounts is 76%.

⁵ Bhutan implemented the Sales tax, Customs and Excise Rules in 2001 and amended it several times, most recently in 2014. As of 2017, the sales tax was levied on the following items: alcohol; packaged fruit juices; spare parts; glass and glassware; articles of iron and steel; nuclear reactors, boilers machinery and mechanical appliances and parts thereof; electrical machinery and equipment and parts thereof; sound recorders and reproducers; precious metal; vehicles other than railway or tramway and parts thereof; bicycles; petrol, gas, and diesel; telecom services; hotels whose basic room rate is not less than Nu. 100 per night or hotels and restaurants catering to mid-/high-income Bhutanese nationals, foreign residents and tourists; and entertainment services. Items exempted from the sales tax include: the electrically operated or hybrid vehicles; parts of bicycles; plant and machinery related to manufacture of products; raw materials used by a manufacturing unit; foreign diplomatic missions, international organizations and their personnel; Bhutanese organizations and agencies,

- Personal income tax (PIT): All citizens and residents that earn more than Nu. 200,000 per year are liable to pay PIT. Income sources that are subject to the PIT include income from salary, property, dividends, interests, income from cash crops, income from hire of privately-owned vehicles; plant and machinery and from intellectual property rights.⁶
- Sales tax: The sales tax is currently Bhutan’s primary source of indirect taxes and is levied on goods entering the country and on a limited number of domestically supplied services such as entertainment and hotel services. The current sales tax has 9 ad-valorem and two specific tax slabs, with tax rates ranging from 0% to 100%, and is mostly applicable on imported goods. Only six types of goods and services are subject to a sales tax at point of sale while around 37% of total imports are subject to a 0% sales tax.
- Excise tax: The excise tax is levied on select domestically produced and imported items and ranges from 30% to 75% (Table A.2). The government also collects fees for liquor exports and excise permit fees for the import of beer.
- Green Tax: A green tax was introduced in 2012 to better protect the environment and reduce carbon dioxide. It is levied on motor cars and vehicles, with the rate varying between 5% and 30% depending on vehicle type. Starting in 2014, petrol and diesel are also imposed a green tax.
- Custom Duty: Imported goods generally pay custom duties ranging from 10% to 100%. Select items are exempt such as import of goods by diplomatic missions, international organizations and their personnel; import of goods by Bhutanese organizations and agencies; import of industrial plant, machinery, their spare parts and raw materials; electric or hybrid vehicles; re-exported durable and consumable household and personal effects or such goods.

While the household survey collects information on the consumption of many different items, not all taxable goods can be identified. In addition, custom duty on cars varies depending on whether the vehicle is new or used, but that information is not collected in the household survey. Table A.1 in the appendix shows Custom Duty, Sales Tax, and Green Tax Rates in 2017 for select items identified in the household survey.

Social insurance contributions

There are broadly pension-related contributions and non-pension related contributions. The former includes the National Pension and Provident Fund for civil servants, and the Provident Fund for private sector employees. Various life insurance schemes exist that fall under non-pension related contributions.

- National Pension and Provident Fund⁷: mandatory savings plan of the civil servants, state-owned corporations, and the armed forces. Civil servants contribute a minimum of 11 percent of the monthly salary, while members of the Armed Forces and the Royal Bhutan Police

purchase/import trade made by an exempt organization. The sales tax rate ranges from 5% up to 100%, with alcohol, juice, and vehicles subject to the highest tax rates.

⁶ The Income Tax Act of the Kingdom of Bhutan 2001 (ITAB) defines the legal framework for the personal income tax.

⁷ Rules and regulations of the NPPF are enacted in the “National Pension and Provident Fund Plan (Amendment of 2010), Rules and Regulations of the Kingdom”.

contribute 15 percent and 12 percent, respectively. The employer contributes an equal amount.

- Provident Fund⁸: covers employees of private sector and non-government entities. The contribution is determined by the employment contract and is no less than 5 percent of the basic salary.
- Rural Life Insurance: voluntary life insurance for people above eight years old residing in rural areas. In 2017 the annual premium was 87 Nu per person.
- Group Insurance Scheme (GIS) and Group Saving Linked Insurance (GSLI): both are compulsory life insurance schemes; the GIS is for salaried workers in the public sector, whereas the GSLI is for all other workers.

On the spending side, social services and economic services account for over half of government expenditure. Table 2 presents a summary of government spending by sector. Social services, economic services, and general public services each account for about 29 percent of total spending. Social spending in Table 2 only reflects health and education services, while spending on contributory programs is not included. According to the Annual Financial Statement of FY2016-17, contributions to the Provident Fund amounted to Nu. 660.4 million in the same fiscal year.

Table 2. Government expenditure by sector, FY2016-17

Sectors	Amount (Nu. Million)	% of Total
Social Services	15,087.73	28.6
Health Services	4,359.02	8.3
Education Services	10,728.71	20.4
Economic Services	15,058.83	28.6
RNR Services	6,764.55	12.8
Mining, Manufacturing & Industries Services	142.833	0.3
Transport & Communication Services	6,288.99	11.9
Energy Services	905.498	1.7
Other Economic Services	956.963	1.8
Housing & Public Amenities Services	2,109.68	4
General Public Services	15,219.90	28.9
General Public Services	10,475.73	19.9
Public Debt Services	4,744.17	9
Religion & Cultural Services	2,578.06	4.9
Public Order & Safety Services	2,657.87	5
Total	52,712.06	100

Source: Annual Financial Statements of the Royal Government of Bhutan. Ministry of Finance.

Social spending mainly covers education and health services while social protection programs are limited in Bhutan. Public education is free from primary to tertiary level. Health services are predominantly provided by the public sector and are also available free of charge. On the other hand,

⁸ Rules and regulations of the provident fund scheme are contained in the Private Fund Scheme of Royal Insurance of Bhutan Limited, of the Kingdom of Bhutan 2011.

social protection programs are very limited. *Kidu* is a key program aimed at alleviating the hardships of the most vulnerable population but information on Kidu receipt is not collected in the household survey.⁹ Most recently during the COVID-19 pandemic, the Druk Gyalpo’s Relief Kidu provided temporary income support to vulnerable people, including the self-employed, who had suffered from livelihoods losses due to the COVID-19 crisis.

Education Spending

The education system in Bhutan consists of general education, monastic education and non-formal education. The CEQ analysis only considers general education as it represents the formal education system and accounts for an overwhelming majority of government education spending. General education spans all stages of education from early childhood care education to tertiary/technical/vocational education. Most schools in Bhutan are public and provide everything free of charge, from textbooks to boarding facilities. In FY2016-2017, 5.9 percent of GDP was spent on education (0.9 percent of GDP on tertiary education).¹⁰ While public education is provided for free, students are encouraged to share a small portion of cost based on their financial ability.

Health Spending

Health care in Bhutan is almost entirely funded and delivered by the Royal Government of Bhutan (RGoB) health institutions. Large investments in health care helped greatly to improve access and utilization in the past. Private health care services are limited to a few pharmacies and selective diagnostic centers, mostly in urban areas. Bhutanese can access public health services free of charge with only a few exceptions.¹¹ Some services not covered include private cabin facility at government hospitals, cosmetic dental care, and drugs outside the national essential drug list. Specialized health services which are not available in the country are referred to hospitals in India at the cost of the government. In FY2015-16, the total health expenditure incurred by the government was around 3 percent of GDP.¹²

3. Data Sources and Methodology

3.1. Data sources

The main source of data is the Bhutan Living Standards Survey 2017 (BLSS). The survey is representative at the national and district (“dzongkhag”) level and covered 11,660 households in both

⁹ The Bhutan Living Standards Survey does not collect information on Kidu receipt.

¹⁰ For example, students in primary schools are required pay Nu. 30 per annum, students in secondary schools pay Nu. 100-200 per annum, and students living in urban areas arrange their own stationery. According to the Bhutan Living Standards Survey 2017, the average out of pocket spending is Nu. 5,259 at the primary level, Nu. 5,708 at the middle secondary level and Nu. 23,879 at the higher secondary level. There are significant disparities in out-of-pocket spending between urban and rural areas.

¹¹ Article 9, Section 21 of Constitution of Kingdom of Bhutan states that, “The state shall provide free access to basic public health services in both modern and traditional medicines”.

¹² Ministry of Health, National Health Accounts report, Bhutan, Fiscal Years 2014-15 & 2015-16.

rural and urban areas in 2017. Detailed information was collected on individual demographics, education, and health; household expenditure; housing; access to services; assets; credit; priorities for government intervention; and self-rated poverty and happiness. Despite this wealth of information, there are important drawbacks, especially in view of the data requirements for a standard CEQ—information on employment is limited, and the survey only asked about income sources and not the amounts received. The latter in particular makes it difficult to construct market income following the standard CEQ approach, as described in the next section. To circumvent this limitation, we develop a novel approach to estimate market income based on the rich data in the consumption module. This approach is described in detail in section 3.3.

3.2. The CEQ Approach

To conduct fiscal incidence analysis for Bhutan, we adopt the Commitment to Equity (CEQ) approach, which was developed by Lustig et al. (2018). This approach can be used to examine the incidence of individual tax and subsidy policies, estimate the poverty and inequality impact of each fiscal intervention, and assess whether taxes and transfers are progressive and pro-poor. The distributional impact of the fiscal system as a whole can also be evaluated.

In the standard CEQ approach, the income concepts are constructed as follows:

- *Market income plus pension*: market income is the income before any fiscal intervention such as taxes and government transfers. It includes labor income (e.g., wages and salaries), income from capital (e.g., rents, interests, and dividends), income from private and public pensions,¹³ and private transfers (e.g., remittances). Old-age pensions exist primarily in the public sector in Bhutan and are considered deferred income given their contributory nature.¹⁴ We align our approach to the standard CEQ methodology whenever possible, while labor income is constructed following the approach described in the next section.
- *Disposable income* is obtained by adding direct transfers and subtracting direct taxes and social security contributions from market income. Since there are few government-supported direct transfer programs in Bhutan and no information in the household survey to identify beneficiaries, we assume that there are no receipts from direct transfers for the baseline assessment. Direct taxes refer to personal income taxes. Social security contributions comprise of payments into a pension fund and mandatory life insurance.
- *Consumable income* subtracts indirect taxes from disposable income and adds indirect subsidies. Indirect taxes include green taxes, custom duties, sales taxes, and excise taxes in Bhutan. Indirect subsidies are not modeled in this paper.¹⁵

¹³ Pension income is included in the market income for retirees.

¹⁴ Old-age contributory public pensions can be treated either as deferred income or as government transfers, depending on the design and functioning of the pension system.

¹⁵ Subsidies are mainly provided through state-owned enterprises (SOEs) in Bhutan. For electricity, the central government provides subsidies to Bhutan Power Corporation for the domestic power tariff. In FY21/22 budget, of total Nu 2,000 million subsidies, Nu 1,800 million was allocated for the domestic power tariff. For LPG, Bhutan receives subsidized and non-subsidized gas from the government of India. The subsidized LPG is distributed to rural households. There are agricultural subsidies provided to farmers through local governments

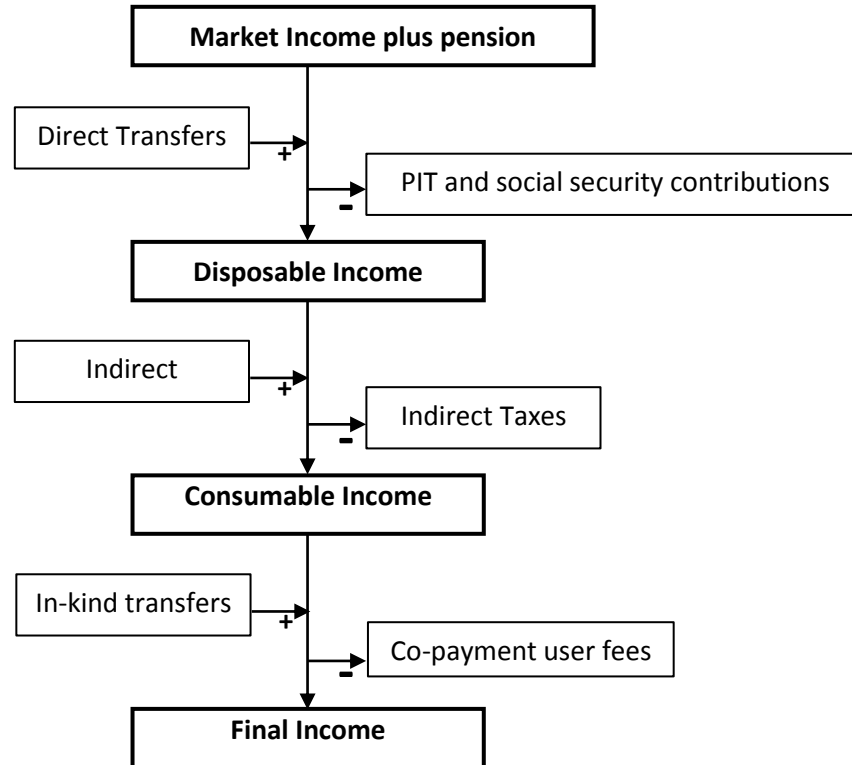
- *Final income* is constructed by adding in-kind transfers to consumable income. In Bhutan, these mainly comprise education and health benefits.

Figure 1 illustrates the relationship between these income concepts and fiscal interventions. Only market income is considered pre-fiscal income while disposable income, consumable income, and final income are considered post-fiscal incomes. The heart of a CEQ assessment is the allocation of taxes and transfers to each individual or household so that one can construct the income concepts (Lustig et al. 2018). In practice, when the amount of taxes paid or transfers received is available in the survey, that information is directly used; otherwise, the incidence of each intervention is simulated using information on the prevailing tax structure and eligibility rules.

There are some important caveats to the standard CEQ approach. First, it uses a partial equilibrium model and focuses on a snapshot in time rather than the lifecycle of a household; therefore, the results should be interpreted as short-term effects. Second, it relies on a static model without considering the behavioral responses or second-order effects when there is a change in the fiscal system. Third, it assumes that households as the final consumers bear all the burden of taxes and enjoy all the benefits of subsidies; while in reality, part of the tax burden could also be borne by producers. Fourth, household surveys typically fail to capture information on the richest households which could underestimate inequality. Finally, the CEQ methodology does not account for certain categories of taxes and spending due to the difficulties of assigning the burden or benefits to individual households. This notably includes corporate income taxes and spending on infrastructure and other public goods. Such limitations tend to be more relevant for indicators of poverty that rely on absolute income/consumption, rather than inequality which depends on relative income/consumption.

Figure 1. Definitions of Income Concepts in the CEQ Analysis

and SOEs, in the form of seeds, fertilizers, pesticides, agricultural machinery. There are also rural timber subsidies for households to construct houses in rural Bhutan, provided by the Natural Resources Development Corporation, an SOE. While with additional information and some assumptions, the incidence of electricity could be estimated, the other two subsidies will be more difficult to identify in the household survey.



Source: Lustig et al. 2018

3.3. Application to Bhutan

Modelling of Market Income

The most challenging part of the fiscal incidence analysis for Bhutan is the lack of information on labor and nonlabor income. Previous studies have dealt with this in several different ways. A popular approach is to use the survey-to-survey imputation to match the consumption survey with an income survey—this was done in Argentina (Lopez Del Valle et al. 2021), Ecuador (Llerena Pinto et al. 2015) and Paraguay (Canavire et al. 2021), for example. The feasibility and success of this approach depends on a number of factors, including the availability of income and consumption surveys that were conducted not too far apart in time and the existence of a sufficient number of common variables. While Labour Force Surveys are conducted annually in Bhutan, the questions are less suited to capture the earnings from the agriculture sector which is the most important source of livelihoods for the rural poor.

Another approach is to impute market income by assuming disposable income equals consumption aggregates, which is a reasonable assumption in a lower-middle-income country as it may be rather uncommon to have large savings, when information on direct transfers and taxes are available, . However, using this approach directly for Bhutan is challenging since there is no information in the BLSS on direct taxes and social security. Moreover, it is difficult to attribute aggregate household consumption into individual-level consumption unless some simplifying assumptions are made, such as dividing household consumption or income by the number of workers to get an estimate of average

individual income (see Lara Ibarra et al. 2019 for Egypt and Hill et al. 2017 for Ethiopia). Since this method would not reflect income differences between household members, it could lead to an imprecise estimate of income tax liabilities.

We develop a more sophisticated approach for Bhutan by adopting a consumption-based approach to modeling market income. Specifically, we employ a Mincer earnings model to estimate individual net labor income and then recover gross income using information on the prevailing income tax structure in Bhutan. The approach is consistent with the recommendation in Lustig et al. (2018), which suggests working backwards to impute market income from disposable income. Compared to other methods, this approach allows for the modeling of fiscal interventions that target individuals, such as social security schemes or personal income taxes. In sum, this approach combines a consumption-based model with a Mincer earnings model to derive estimates of individual income.

The estimation of individual market income is performed in two stages. In the first stage, a Mincer earnings model is estimated on households with a single earner—in this case, net market income equals disposable income (or consumption). The coefficient estimates from the Mincer model are then applied to predict net income for households with multiple earners. In the second stage, we estimate individual gross market income from net labor income by using prevailing rules about personal income taxation and social security contributions. The rest of this section describes the detailed set-up of the model.

The model starts with an identity of household consumption, as shown in equation (1):

$$C_j + A_j = Y_j^n + \pi_j \quad (1)$$

Where C_j is household j 's consumption, A_j is the demand for assets of household j , Y_j^N is total net labor income for household j (for example, gross wages minus direct taxes), and π_j is other non-labor income for household j (for example, interest income). Let Y_{ij}^D and A_{ij} represent individual net labor income and the assets demand for worker i in household j , respectively. Specifically, for a household with N workers:

$$Y_j^D = \sum_{i=1}^N Y_{ij}^n \quad (2a)$$

$$A_j = \sum_{i=1}^N A_{ij} \quad (2b)$$

Let α_{ij} be the share of net labor income after asset purchases for worker i in household j :

$$\alpha_{ij} = \frac{Y_{ij}^n - A_{ij}}{Y_j^n - A_j} \quad (3a)$$

$$\alpha_{ij} = \frac{Y_{ij}^{\tilde{n}}}{Y_j^{\tilde{n}}} \quad (3b)$$

where $Y_{ij}^{\tilde{n}}$ denotes disposable labor income after assets purchases. Substituting equations (3a) and (3b) into equation (1), we obtain:

$$\alpha_{ij} C_j = Y_{ij}^{\tilde{n}} + \alpha_{ij} \pi_j \quad (4)$$

Since we can observe C_j in the data, if we can estimate α_{ij} , we will be able to obtain the sum of net labor income after assets purchases ($Y_{ij}^{\tilde{n}}$) and non-labor income ($\alpha_{ij}\pi_j$) for each individual.

We estimate each worker's α_{ij} over several steps. First, the sample is restricted to households that have only one worker and only income from labor. For these households, the worker's net labor income is equal to household consumption. The following Mincer earnings model is estimated separately for wage workers and self-employed workers:

$$\log(C_j) = \log(Y_{1j}^{\tilde{n}}) = X_{1j}\beta + \epsilon_{1j} \quad (5)$$

where the set of explanatory variables X_{1j} includes household size, gender, age, education level, language skills, whether the household is located in a rural area, size of land owned, employment type (e.g., public vs. private, informal vs. formal), and sector of activity (farming vs nonfarming). The model estimates the equilibrium price of individual attributes in the labor market. **Error! Reference source not found.** in the appendix shows the estimation results for equation (5) for the disposable income of wage workers and self-employed workers. The results are largely in line with expectation: for example, schooling and experience (proxied by age) are positively and highly correlated with income.¹⁶

Next, using the estimates above, we predict each worker's net labor income (the fitted values of $Y_{ij}^{\tilde{n}}$) for households with multiple workers. We estimate α_{ij} using the following equation:

$$\widehat{\alpha}_{ij} = \frac{\widehat{Y}_{ij}^{\tilde{n}}}{\sum_{i=1}^N \widehat{Y}_{ij}^{\tilde{n}}} \quad (6)$$

Using observed consumption C_j and the estimated $\widehat{\alpha}_{ij}$, the sum of individual net labor income and non-labor income is identified through equation (4).

One of the caveats of this methodology is that households may have both labor and nonlabor income sources, but it is not possible to distinguish the amount from each source. Hence, we assume that the entire amount, $Y_{ij}^{\tilde{n}} + \alpha_{ij}\pi_j$, comes from labor income which represents individual market income before taxes and social security contributions. Meanwhile, for households that have a single source of labor income, it is possible to distinguish between labor and nonlabor income. The lack of information on assets and savings in the survey makes it difficult to identify disposable income net of asset purchase in this consumption-based approach; therefore, we assume asset purchase is zero and hence $Y_{ij}^{\tilde{n}}$ equals Y_{ij}^n .

In order to estimate the personal income tax and various social contributions, we classify workers into different groups. Using information on employment status (wage workers vs. self-employed), sector of activity (public vs. private and farm vs non-farm) and formality status (formal vs informal)¹⁷, we disaggregate workers into public sector workers, formal private sector workers, formal self-

¹⁶ The sample of single earner households allow us to link observable consumption to net labor income, and thus fit a standard Mincer equation. It comes at a cost of a potential selection-bias in the sample of single-earner household.

¹⁷ Since there was no direct information on whether the respondent worked formally or not in the survey, we use whether the individual paid direct taxes as a proxy for formality status.

employed workers (in farm and nonfarm sectors), and informal workers. The latter are identified based on their tax- or contribution-paying status, since it is assumed that informal workers are outside the purview of government regulation and taxation. Casual paid workers are considered informal. Table 3 shows the different types of workers and their distribution in the survey.¹⁸

Table 3: Distribution of Workers by Employment Status, Sector of Activity and Formality Status

	Percentage of total workers
Paid Employees	34.8%
Public Workers	15.1%
Private Workers	19.8%
Formal	4.9%
Informal	14.9%
Self-employed workers	65.2%
Non-Farmers	12.2%
Formal	1.1%
Informal	11.1%
Farmers	
Formal	6.5%
Informal	46.5%

The last step consists of estimating market income using the individual net income that was calculated above, $Y_{ij}^{\tilde{D}} + \alpha_{ij}\pi_j$. Specifically, net income is a function of market income, direct taxes and social insurance contributions and is estimated as follows for each type of worker:

For public sector employees:

$$(Y_{ij}^{\tilde{D}} + \alpha_{ij}\pi_j) = Y_{ij}^M(1 - s) - GIS - TDS(Y_{ij}^M(1 - s) - GIS) \quad (7)$$

where Y_{ij}^M is the labor income component of market income, s is the social security contribution rate (NPPF in the case of public workers), GIS is the payment to the Group Savings and Insurance Scheme, and $TDS(.)$ is a function of tax deducted at source¹⁹ which depends on gross income, social security contributions, GIS payments, and the tax rate.

¹⁸ Formal wage workers are identified as those either working for the government or those that are not casual paid workers and paying direct taxes; formal self-employed farmers are those that report cultivating cash crops, producing products that are mainly intended for sale (as opposed to self-consumption), and paying direct taxes; formal self-employed workers not in farming are those working in a high-skilled occupation and paying direct taxes.

¹⁹ According to the guidelines described in the Rules of Income Tax 2017 and the Tax Deduction at Source, all income from salary income, rental income, dividend income, interest income and income from other sources is liable to pay the tax deduction at source (TDS) which is a provisional tax to the annual personal income tax. The taxable base is the prefiscal income after deducting social security contributions, and the provisional tax amount is calculated using the TDS contribution table. The last section shows how TDS is implemented in the construction of the prefiscal income.

For formal private sector employees:

$$Y_{ij}^{\bar{D}} + \alpha_{ij}\pi_j = Y_{ij}^M(1 - s) - GSLI(Y_{ij}^M(1 - s)) - TDS(Y_{ij}^M(1 - s) - GSLI(Y_{ij}^M(1 - s))) \quad (8)$$

where s is the social security contribution rate (provident fund in the private workers' case), $GSLI$ is the Group Savings Link Insurance rate, and $TDS(.)$ is the tax deducted at source.

For formal self-employed workers in the farming sector:

$$(Y_{ij}^{\bar{D}} + \alpha_{ij}\pi_j) = Y_{ij}^M - RI - TDS(Y_{ij}^M - RI) \quad (9)$$

where RI is the payment to the rural insurance scheme.

For formal self-employed workers in the non-farming sector:

$$(Y_{ij}^{\bar{D}} + \alpha_{ij}\pi_j) = Y_{ij}^M - TDS(Y_{ij}^M) \quad (10)$$

For all informal workers (wage workers or self-employed workers):

$$(Y_{ij}^{\bar{D}} + \alpha_{ij}\pi_j) = Y_{ij}^M \quad (11)$$

Self-employed workers are assumed to pay income taxes but not social security. We assume that informal workers do not pay any income tax or contributions as they are not covered by labor regulations. Importantly, equations (7)-(11) are defined in terms of the observed variable $(Y_{ij}^{\bar{D}} + \alpha_{ij}\pi_j)$, the policy parameters and the unknown Y_{ij}^M . Therefore, the estimation of individual market income depends on a value of Y_{ij}^M that satisfies equations (3)–(6).

Fiscal Interventions and Assumptions

Direct Taxes/Contributions

The estimation of personal income taxes and social security contributions relies on the identification of individuals that belong to the formal sector. Formal workers in the private sector contribute to the provident fund and the GSLI; formal workers in the public sector contribute to the NPPF and the GIS, and farmers pay for the Rural Insurance. The BLSS contains information on employment and income sources, allowing us to identify the type of work and the applicable social security regime. Since the amount of taxes and social security paid cannot be directly observed in the BLSS, we combine information on the inferred formality status with the tax and social security rules to impute the values.²⁰ After discounting social security contributions, standard deductions apply to the payment of personal income taxes.²¹ The last step is to calculate the final net taxable base using the statutory personal income tax rates shown in Table 4.

²⁰ Furthermore, we also utilize information that describes the primary source income of the household.

²¹ Educational household expenses (up to Nu. 50,000) and donations are deducted from the taxable base of the highest-income individual in the household.

Table 4. Personal income tax rates by income bracket

Minimum	Maximum	Rate
0	200000	0%
200000	250000	10%
250000	500000	15%
500000	1000000	20%
1000000		25%

Source: Rules on the Income Tax Act of Bhutan 2001 (2017)

Indirect Taxes

We include all types of indirect taxes—green taxes, custom duties, sales taxes and excise—in the CEQ analysis; however, the imputation of indirect taxes is restricted to the goods and services that are captured in the BLSS. Custom duty is applied on imported goods, while sales taxes and green taxes are applied on both domestic and imported goods. In 2017, excise is only levied on domestically manufactured alcoholic beverages (see Appendix for the applicable tax rates).

Since we use a household survey which only includes consumption by households, many goods and services with sales tax cannot be identified in the survey (for example, raw materials). In the BLSS, we can identify whether the food consumed is domestically produced or imported using the relevant question. However, unfortunately, this question was not asked for non-food consumption. We apply custom duty on imported food items and assume all non-food consumption is from domestic goods with the exception of cars, which are all imported in Bhutan.

Excise is levied on all domestically manufactured alcoholic beverages. The government also collects fees for liquor exports and excise permit fees for the import of beer, however, these are not included in our analysis. Since the survey does not cover information on the brand of liquor consumed by households, we apply a simple average of excise tax rates of the three brands to all liquor.²²

Both direct and indirect effects are included in the calculation of total indirect taxes. The direct effect refers to the effect on final goods, which is the loss in purchasing power that the households experience due to consumption taxes. The indirect effect (also called cascading effect) is the effect of taxes on the purchase of intermediate goods, which captures how the taxes on inputs affect the price of final consumption goods. Using an Input-Output matrix²³ and a price-shifting model (also called cost-push model) (Gillingham, 2008), we quantify the magnitude of sectoral changes in retail prices resulting from taxes on inputs, which is the burden of taxes that are “pushed forward” to the household

²² This average excise tax rate is consistent with the tax rate calculated for the overall liquor revenues and taxes in NSB (2014), “Alcohol Use and Abuse in Bhutan”.

²³ The Bhutan Input-Output matrix is obtained from Asian Development Bank (2018), “Economic Indicators for South and Central Asia—Input-Output Tables”.

due to the cascading effect in the tax system. We assume constant returns to scale, perfect competition, and reproducible fixed factors of production (Lustig, 2018).

In-kind transfers

In Bhutan, the main in-kind transfers are education and health services that are provided for free by the government. To allocate a monetary value to the in-kind benefits received by the household, we follow the CEQ assessment approach (Lustig et al. 2018) by using the production cost of the government. The unit cost is calculated as total public spending divided by the total number of beneficiaries and allocated to households after taking into account the number of beneficiaries in the household. This constitutes the value of in-kind transfers.

For education transfers, we identify the per beneficiary public spending using total education spending at primary, secondary and tertiary levels for two types of schools—boarding and day school—divided by the number of enrollees for each level and type of education. The beneficiaries are identified using survey questions on school enrollment. For health transfers, we employ an insurance value approach by assigning the same per capita spending to everybody sharing the same characteristic such as age, state, type of care, gender, rural/urban etc., with the assumption that the probability a person gets access to these services is the same as that prevailing for others with the same characteristics.

Education

Beneficiaries are identified based on information on the household member's level of school (from primary school to college), ownership of school (public or private), location of school (in Bhutan or overseas) and the type of school (boarding school or day school). Only students attending public schools in Bhutan are assumed to receive transfers. Per student expenditure data are taken from Annual Education Statistics 2018 (for boarding schools and day schools at the primary and secondary level) and State of Tertiary Education in Bhutan 2017 (for tertiary level).

Health

Since Bhutan's health sector is managed and financed by the government, all households are considered as beneficiaries. We allocate health transfers using an insurance-value approach in which the same per capita spending is assigned to those sharing the same characteristic. Since per capita healthcare expenditure was only available by age group, we apply the transfer amount to all individuals in the survey based on their age. Variation in the quality of services or different valuations of health services across the welfare distribution are not considered.²⁴

²⁴ We do not use the actual consumption approach, which allocates the transfers based on actual healthcare usage. That approach has a few shortcomings: (i) the demand for health care services is irregular and we would only observe care utilization during a short reference period; (ii) individuals with worse health conditions are assigned a higher transfer, which would have a significant impact on the income distribution that may not reflect the purpose of public health services, which is to provide equitable access to healthcare for everyone.

4. The Distributional Impact of Taxes and Social Spending

This section starts by describing the overall distributive impacts of taxes and social spending on poverty and inequality; these are then benchmarked against other countries. The second half of the section focuses on the disaggregated impact of individual policies.

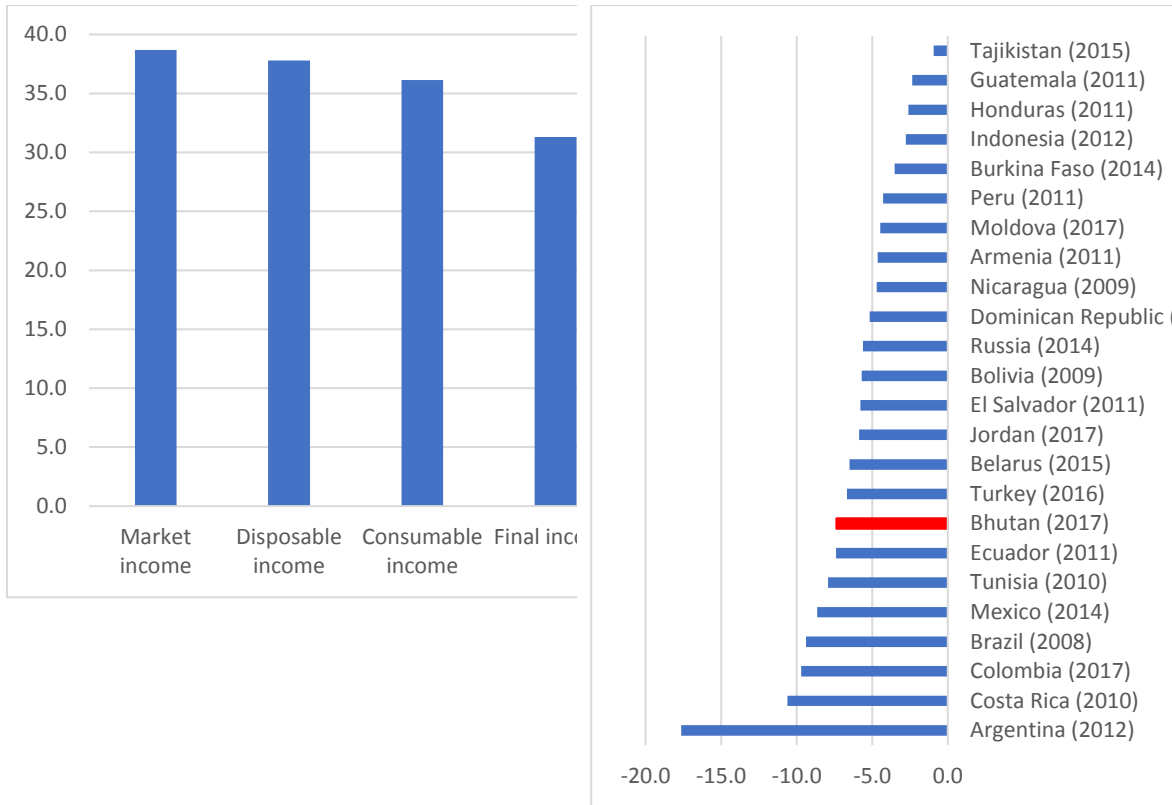
4.1. Impact on Poverty and Inequality

Taxes and social spending combined contribute to a decrease in inequality in Bhutan. Figure 2 presents the Gini index of inequality for each income concept described in Figure 1. The Gini index based on market income (or gross market income plus pension) is 38.7 prior to any fiscal intervention; this is assuming that contributory pensions, mainly an entitlement for civil servants, are treated as deferred income. The Gini index slightly declines to 37.8 once direct transfers, personal income taxes and social security contributions are taken into account, and further to 36.1 when indirect taxes and subsidies are considered. The largest equalizing effect is achieved through in-kind transfers, which in Bhutan are mainly the benefits stemming from education and health services—the Gini index based on final income is notably lower at 31.3. The overall reduction in inequality is equivalent to around 7.4 Gini points from market income to final income.

The magnitude of the overall reduction in inequality compares relatively favorably in international comparison. Bhutan's tax-benefit system ranks above the middle when compared with other middle-income countries by the magnitude of its redistributive effect, measured using the decrease in the Gini index (figure 3). The reduction of 7.4 points in Bhutan's Gini index is similar to the performance of the net fiscal systems of Ecuador and Turkey, and lower than that of Mexico and Brazil, though these countries have a significantly higher GDP per capita than Bhutan. In fact, the redistributive impact of fiscal policies is significantly larger in high-income countries compared with low- or middle-income countries. The initial level of inequality in the latter countries is often lower to begin with and their post-fiscal level of inequality is significantly and uniformly lower than other countries (Fuchs et al 2021).

Figure 2. Change in inequality (Gini index) from market income to final income

Figure 3. Change in inequality from market to final income across countries (Gini index)



Source: World Bank staff calculation using BLSS 2017.

Source: World Bank staff calculation using BLSS 2017 for Bhutan. See references section for estimates for other countries. Pensions are treated as deferred income.

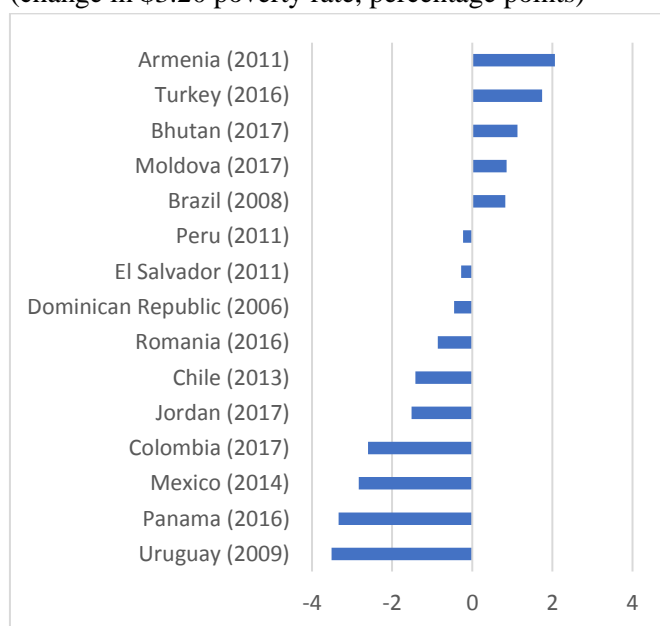
However, the net fiscal system leads to a small increase in poverty as of 2017. The \$3.20 poverty rate (in 2011 purchasing power parity terms) is 8.2 percent using pre-fiscal (market) income. Once the burden of direct and indirect taxes and contributions are taken into account, the share of the population whose consumable income falls below the same poverty line increases to 9.3 percent. Most of this increase is due to the burden of indirect taxes, and to a lesser extent from contributions. The impact of direct taxes (i.e., personal income taxes) is very low, largely because of the high exemption threshold. This results in a fiscal system that is poverty-increasing in the absence of direct transfers or indirect subsidies. Increases in the poverty gap and poverty severity indices are also observed when moving from market income to consumable income (table 5). It is customary in the literature to not consider in-kind transfers when measuring the poverty effect because households do not observe the monetary benefits deriving from education and health spending. For this reason, Table 5 only reports poverty estimates for market income, disposable income and consumable income. The result that the fiscal system increases poverty in Bhutan is not unique—as shown in Figure 4, the fiscal system in some countries decreases poverty in some countries, while it increases it in others.

Table 5. Poverty headcount, poverty gap, and poverty severity for different income concepts

	Poverty headcount (\$3.20/day)	Poverty gap (\$3.20/day)	Poverty severity (\$3.20/day)
Gross market income plus pension	8.2	1.6	0.5
Disposable income	8.2	1.6	0.5
Consumable income	9.3	2.2	1.0

Source: World Bank staff calculation using BLSS 2017.

Figure 4. The impact of fiscal systems on poverty reduction across countries
(change in \$3.20 poverty rate, percentage points)



Note: A positive number indicates an increase in poverty. Pensions are treated as deferred income.
Source: World Bank staff calculation using BLSS 2017.

4.2. Incidence, Progressivity, and Marginal Contribution of Taxes and Social Spending

Besides the overall impact of the net fiscal system, a relevant policy question could be which fiscal instrument is equalizing or not, and to what extent. For this purpose, we examine how the individual fiscal interventions contribute to the observed changes in poverty and inequality. Figure 5 shows the impact of broad categories of tax and benefit programs as a share of market income by decile.

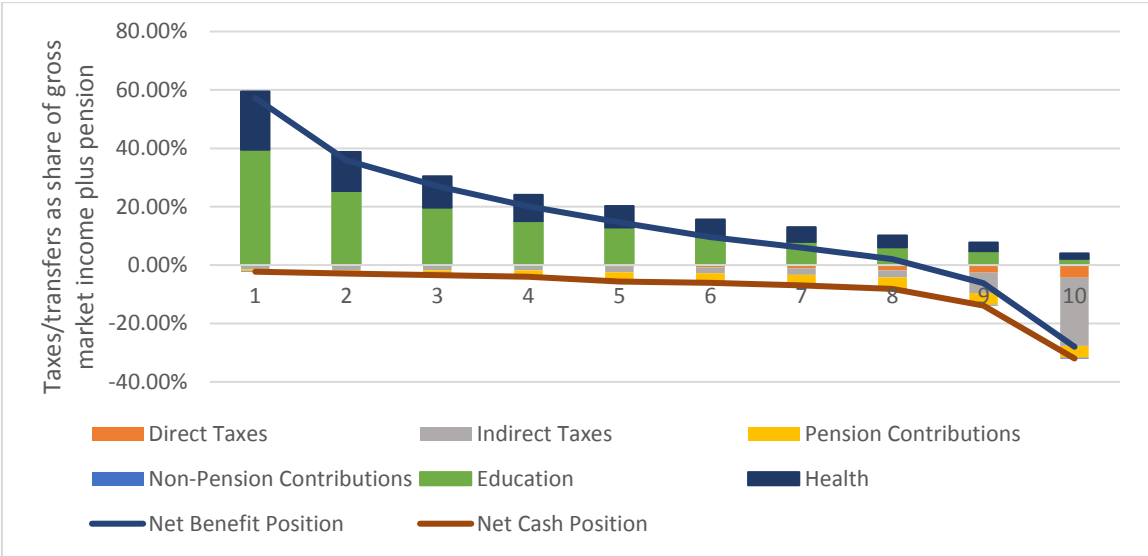
There are a few notable findings in the results. First, Bhutanese households, except for those in the top 20 percent, are net receivers of fiscal interventions, as indicated by the net benefit position in Figure 5. Fiscal benefits occur overwhelmingly through education and health benefits which are progressive (that is, poorer households receive significantly larger amounts as a proportion of their market income). The size of the benefit is also quite large compared to their income, totaling from 60 percent of market income for the bottom 10 percent to around 20 percent for households in the 50th percentile. The shares of education and health transfers tend to be large for poor households because

their market income (i.e., the denominators used in the calculation of the share) is very low. At the same time, these households pay very little into the fiscal system.

Second, in fact most households do not pay much into the system. This is mainly because personal income taxes have a relatively high exemption threshold, and sales taxes apply only to a selected number of goods that are also more likely to be consumed by richer households. Both direct and indirect taxes represent a higher share of income for households in the top deciles, whereas their impact is small for most others. Households in the top 20 percent are net payers under Bhutan’s fiscal system, with most of the payment occurring through indirect taxes and only a modest amount through direct taxes. The incidence of indirect taxes falls predominantly on households in the top two deciles.

Third, due to the lack of direct transfers, the net cash position is negative for households across the board, though the magnitude is minimal for the bottom 40 percent of the income distribution. The net cash position measures all tax payments and cash benefits, while net benefits additionally consider indirect transfers.

Figure 5. Distributional impact of tax and benefit system in 2017



Source: World Bank staff calculation using BLSS 2017.

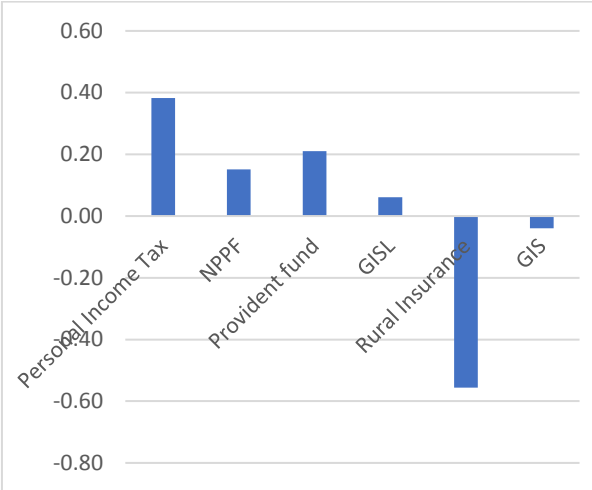
In the presence of multiple taxes and benefits, assessing the progressivity of individual fiscal interventions can be complex. To determine whether a particular intervention is redistributive, we rely on a few different concepts: the Kakwani index, the marginal contribution, and the concentration of each intervention.²⁵ The effect of specific fiscal interventions is summarized in appendix Table A.

Direct taxes and most contributions are progressive and equalizing, as indicated by the positive value of the Kakwani index (figure 6). The personal income tax is the most progressive of all, while at the

²⁵ Concentration can be measured using a coefficient that summarizes the concentration curve of a tax or transfer. The curve shows the cumulative percentage of households, ranked from poor to rich by market income, against the cumulative percentage of the tax paid or transfer received by centile. The Kakwani index is defined as the difference between the concentration coefficient of the tax and the Gini for market income. The marginal contribution of a tax or transfer compares the poverty/inequality indicator with and without the intervention. Concentration of taxes/transfers can also be shown using the share of taxes and social spending paid/received by each income decile.

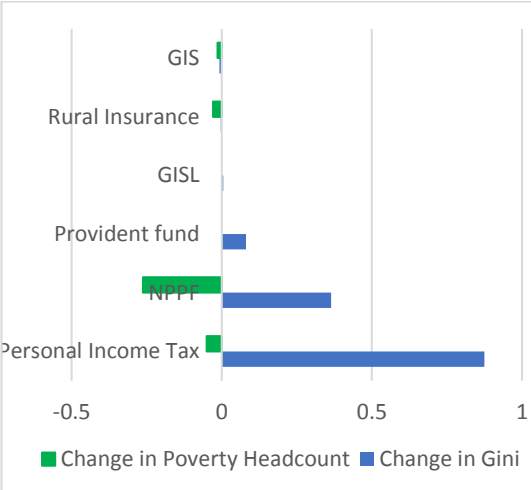
same time equalizing and very slightly poverty-increasing, as assessed by its marginal contribution to the poverty rate and the Gini index (figure 7). Contributory social security schemes such as the Provident Fund and NPPF are also progressive, though the magnitude is smaller than direct taxes. Among social insurance contributions, the rural insurance scheme has a large regressive impact (figure 6). Most social contributions are equalizing yet slightly poverty-increasing, with the NPPF having the largest effect on increasing poverty.

Figure 6. Progressivity of Direct Taxes and Contributions (Kakwani Index)



Source: World Bank staff estimation using BLSS 2017.

Figure 7. Marginal Contribution of Taxes and Contributions to Change in Poverty and Gini



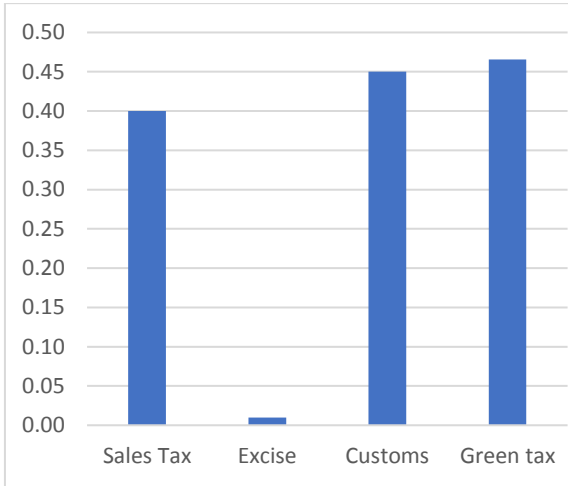
Source: World Bank staff estimation using BLSS 2017.

Note: Positive marginal contribution to Gini implies that the tax/contribution is equalizing.

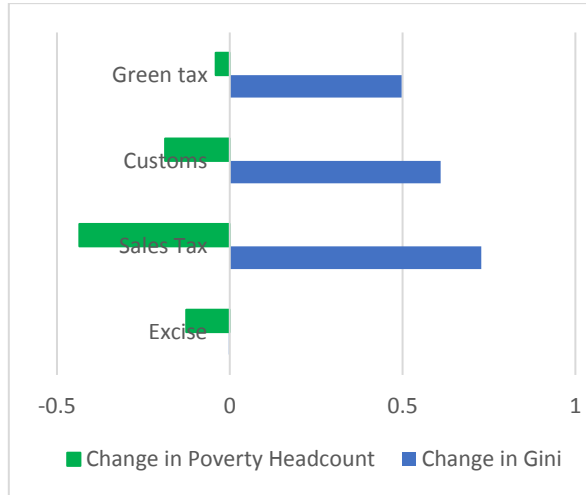
Indirect taxes are uniformly progressive which could be attributed to at least two reasons (figure 8). First, the tax base under the existing sales tax system is small. Second, consumption patterns vary distinctively across the income distribution such that the tax burden falls disproportionately on households that are better off: for example, the green tax is levied on vehicles that are only afforded by richer households. All indirect taxes are poverty-increasing yet inequality-reducing, with the exception of excise taxes which do not exert a noticeable impact on the Gini (figure 9). Most taxes and contributions are pro-poor as they are disproportionately concentrated among the better-off. Unsurprisingly, this is not the case with rural insurance given that the rural (urban) population to whom this is applicable is more likely to fall in the lower (upper) deciles.

Figure 8. Progressivity of Indirect Taxes (Kakwani Index)

Figure 9. Marginal Contribution of Indirect Taxes to Change in Poverty and Gini



Source: World Bank staff estimation using BLSS 2017.

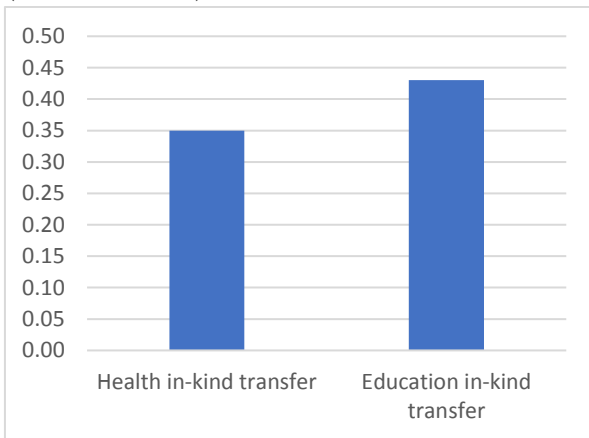


Source: World Bank staff estimation using BLSS 2017.

Indirect transfers are progressive and poverty-reducing. The Kakwani index exhibits progressivity for indirect social transfers and positive redistributive effects (figure 10, figure 11). In absolute terms, education benefits accrue slightly more among households in the bottom of the distribution: for example, 12.1 percent go toward those in the bottom 10 percent. This is likely because those households have more children and are less likely to send them to private schools.

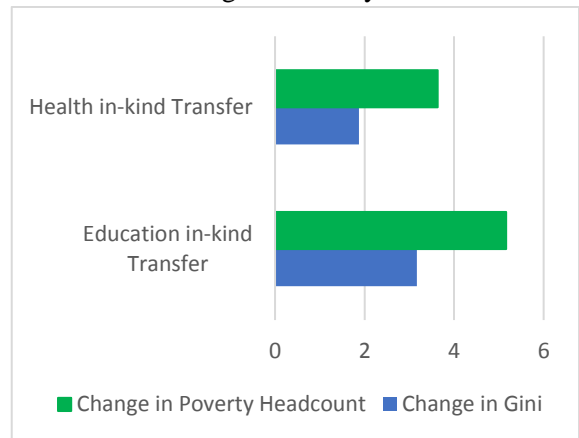
Health benefits are highly evenly distributed across the distribution, with households across all deciles accruing around 10 percent of total health spending (figure 12). This likely reflects the fact that health services are almost exclusively funded and delivered by the public health care system.

Figure 10. Progressivity of Indirect Transfers (Kakwani Index)



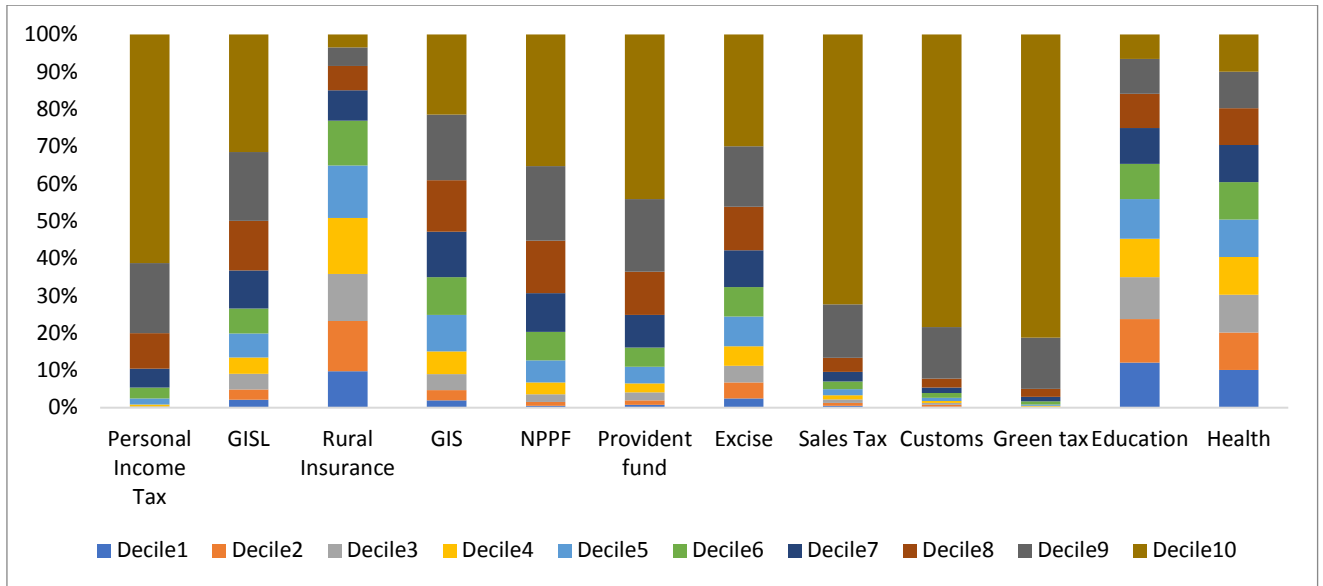
Source: World Bank staff estimation using BLSS 2017.

Figure 11. Figure 6. Marginal Contribution of Transfers to Change in Poverty and Gini



Source: World Bank staff estimation using BLSS 2017.

Figure 12. Concentration of taxes and social spending (by decile of market income)



Source: World Bank staff estimation using BLSS 2017.

5. Simulating the Impact of COVID-19 and Changes in Tax Policies

The Bhutanese government has implemented important fiscal reforms in recent years, aimed at improving revenue collection and promoting equity. In this section, we will first describe the changes in tax policies applicable to households and apply the CEQ methodology supplemented with simulations to assess the potential impact on poverty and inequality.

The first reform was a reduction in personal income taxes across the board. With the aim to provide tax relief to lower-income households and to reduce the burden from the introduction of the GST, the government implemented a revision to the personal income tax schedule in 2020. The exemption threshold was raised from Nu 200,000 to Nu 300,000, which is expected to result in about 31,000 less taxpayers.²⁶ A new maximum marginal tax rate of 30% was introduced and the tax brackets were adjusted. Table 6 and table 7 show the old and revised tax schedules side-by-side.

Table 6. Old Personal Income Tax Schedule

Minimum	Maximum	Rate
-	200,000	0%
200,000	250,000	10%
250,000	500,000	15%
500,000	1,000,000	20%
1,000,000	-	25%

Source: Bhutan Income Tax Act 2001.

Table 7. Revised Personal Income Tax Schedule

Minimum	Maximum	Rate
-	300,000	0%
300,000	400,000	10%
400,000	650,000	15%
650,000	1,000,000	20%
1,000,000	1,500,000	25%
1,500,000		30%

Source: Bhutan Income Tax (Amendment) Act of 2020.

²⁶ World Bank, 2020. Program document for a proposed Development Policy Credit to the Kingdom of Bhutan.

The second major reform is the introduction of the Goods and Services Tax (GST) which was passed by Bhutan's National Assembly in 2020 and is planned to take effect in mid-2022. The GST will replace the existing sales tax and will be implemented at a single standard rate of 7 percent. The GST contains significantly fewer exempt goods and services than the existing sales tax which has a narrow base; it will apply to all services, including the economically significant tourism, transport, and consultancy sectors. Exports will be zero-rated and excise equalization rates of 20, 30, 40 and 100 percent will apply on top of the GST rate for select products whose use the government wants to discourage, such as environmentally harmful goods, alcohol and tobacco. The GST is widely expected to boost revenues by broadening the tax base and minimizing tax exemptions, curbing revenue leakages, and implementing a tax scheme that is simple, fair and equitable by design. Besides the sales tax, the existing green tax and custom duty will remain in place.²⁷

Excise taxes are expected to increase under the new regime because of new higher tax rates. Since one of the objectives of the GST is to minimize the cascading effects by allowing tax credits, we only model the direct effect for items that are subject to either the general GST tax rate or the zero rate. Indirect effects are modeled for exempt items since final producers or retailers are not allowed to claim credits for GST paid in earlier production stages. A caveat is that not all legally exempt items can be identified in the household survey. The list of exempt items that were found in the household survey is shown in appendix Table A.3. The new excise schedule is shown in appendix Table A.4.

Simulation models can be a powerful tool to analyze the ex-ante distributional impact of significant fiscal reforms such as these. This done by adjusting the CEQ income concepts in line with the changes in these tax policies. In the case of the GST, we first simulate household GST liabilities for a given year and calculate the static effect of GST on household welfare based on the new estimates of income. Such a simulation model does not take into account behavioral changes that could occur in reality, including changes in people's consumption patterns in response to changes in relative prices or in the level of tax evasion (such as households opting for more informal transactions).

Given that the tax reforms are occurring over a span of multiple years—and with the COVID-19 pandemic happening in between—, below we present simulated fiscal incidence as of 2021 and 2022 that reflect both sets of reforms, which can then be compared against the 2017 baseline. These simulations also take into account the impact of the COVID-19 pandemic, which has hit Bhutan primarily in the tourism sector, an important source of livelihoods mainly in larger urban areas. The impact on poverty has been relatively modest, as most of the poor live in rural areas and are engaged in subsistence-level farming activities which had been relatively protected during the crisis.²⁸ The crisis impact is modeled in a distribution-neutral manner, by applying the GDP growth forecasts to

²⁷ Similar to a VAT, the GST is a destination-based tax on the consumption of goods and services. The GST is levied at all stages of the supply chain, with a credit option to set off the taxes paid at various stages. Such an arrangement can help avoid the build-up of taxes as a cost component while allowing the supplier to pass the total burden of tax to the final consumer.

²⁸ The Druk Gyalpo's relief kidu is the most important mitigation response to the COVID-19 crisis. It aimed to support those whose livelihoods were affected by the pandemic, specifically, employees who have been laid off, employees of businesses that are closed, individuals engaged in the tourism sector, and Bhutanese who were working abroad and returned home because of loss of employment caused by COVID-19. Documents to show proof of employment are required to be submitted. Given that an overwhelming majority of the poor live in rural areas and are engaged in subsistence farming, and considering the temporary nature of the relief measures, they are not expected to have a significant impact on distributional outcomes.

the full distribution of household consumption.²⁹ Since the survey was conducted in 2017, to simulate the impact of these new taxes and Covid-19 on households' welfare in 2021 and 2022, we first nowcast household income and consumption using a growth rate of real GDP multiplied by an income-GDP elasticity and inflation, assuming household income grows at the same rate across the entire distribution, and then apply the new PIT and GST rules on the nowcasted income.

Simulation #1: PIT only (fiscal incidence as of 2021)

As expected, the PIT reform results in a small reduction of income taxes, primarily for households in richer deciles (figure 13, panel a). Households in the bottom two deciles, as before the reform, pay near-zero income taxes. Simulations suggest that poverty using consumable income is estimated to be 8.7 percent with the new PIT schedule (combined with assumptions on income growth), compared to 9.3 percent previously. These results are shown in Table 8 under 2021 simulations.

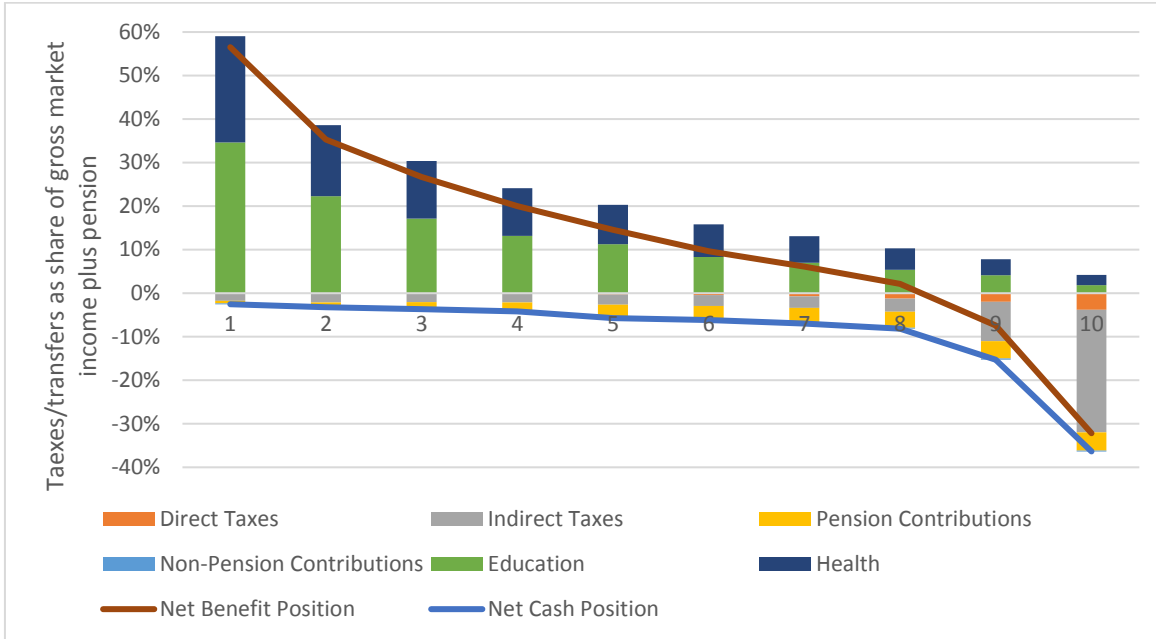
Direct taxes have become slightly more progressive, as measured by the Kakwani index which increased from 0.38 to 0.42 after the PIT reform. The burden of taxes has fallen throughout the distribution and has become slightly more concentrated among richer households (table 9). The inequality-reducing effect is smaller as the Gini index based on consumable income is estimated to be slightly higher than before at 36.3. Estimates of the marginal contribution suggest that the poverty-increasing effect of PIT, albeit previously small, has nearly disappeared.

Simulation #2: PIT + GST (fiscal incidence as of 2022)

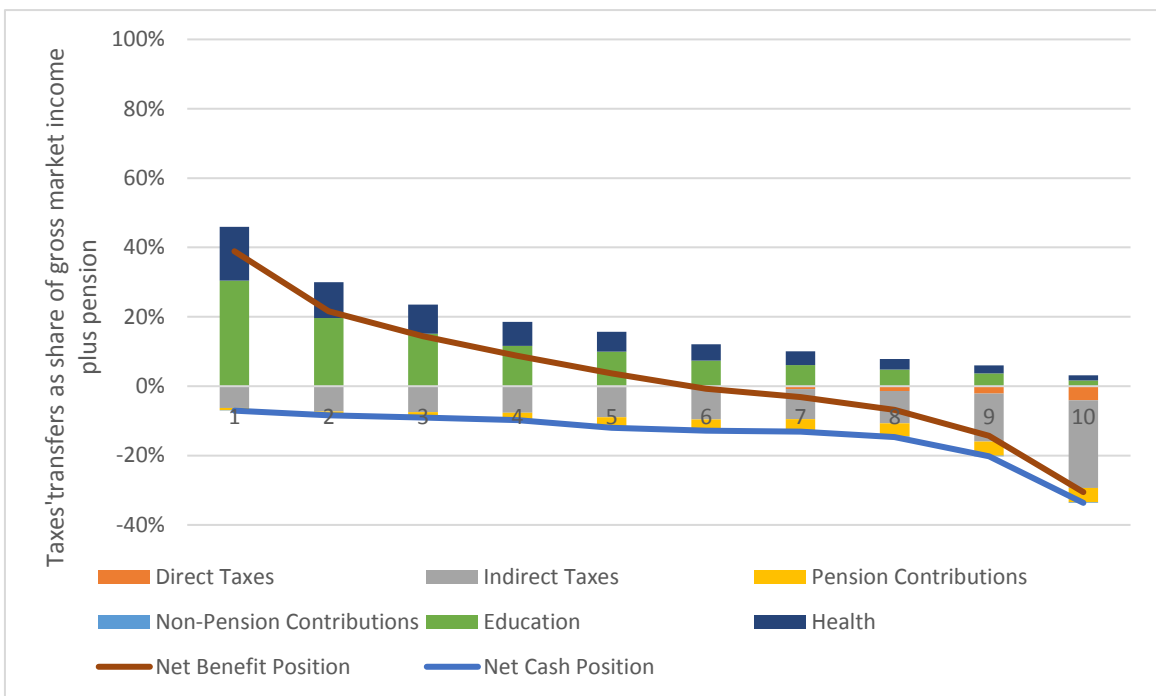
The simulation for 2022 reflects the combined impact of the PIT and GST reform. The impact of GST on poverty is negative, as the estimated poverty rate based on consumable income is 9.3 percent, similar to the poverty rate before any fiscal reforms. In fact, households' net cash position shows that the introduction of the GST is likely to significantly increase the indirect taxes paid by households across the distribution (figure 13, panel b). For example, households in the bottom 10 percent would experience an increase in taxes from 1.4% to 6.3% as a share of their market income. In comparison, those in the top decile are likely to experience a relatively small increase since they are already paying a large share of the sales taxes under the current system. At the same time, the GST is much less progressive than the previous sales tax, as assessed using the Kakwani index which falls significantly from 0.40 to 0.12. While the indirect tax burden increased throughout the distribution, the tax burden is slightly more concentrated toward richer households (table 9).

²⁹ For purposes of the simulation, household income is inflated using the GDP growth rate and an assumption on the pass-through of 0.7.

Figure 13. Net cash position after tax reforms
 Panel a. Fiscal incidence as of 2021 (after PIT reform)



Panel b. Fiscal incidence as of 2022 (after PIT + GST reform)



Source: Staff calculations using BLSS 2017.

Note: x-axis shows deciles based on gross market incomes plus pension. Y-axis shows taxes/transfers as share of gross market income plus pension.

Table 8. Simulated impact of PIT and GST reforms on poverty and inequality

		Gross market income plus pension	Disposable income	Consumable income	Final income
Poverty (\$3.20/day, %)	2017 baseline	8.2	8.2	9.3	
	2021 simulation	7.2	7.2	8.7	
	2022 simulation	6.7	6.7	9.3	
Gini index	2017 baseline	38.7	37.8	36.1	31.3
	2021 simulation	38.7	37.9	36.3	31.4
	2022 simulation	38.7	37.8	35.9	31.8

Note: The results for 2017 present the baseline; the 2021 simulation incorporates the PIT reform and the 2022 simulation reflects both PIT and GST reforms.

Source: World Bank staff calculations using 2017 BLSS.

Table 9. Concentration of old and new PIT schedule and sales tax/GST

	Old PIT schedule	New PIT schedule	Sales tax	GST
Poorest	0.0%	0.0%	2.5%	1.6%
2	0.0%	0.0%	4.3%	2.6%
3	0.3%	0.1%	4.4%	3.4%
4	0.5%	0.3%	5.2%	4.2%
5	1.6%	0.9%	8.0%	5.6%
6	2.9%	2.0%	7.9%	7.3%
7	5.0%	3.8%	9.9%	8.2%
8	9.6%	8.2%	11.7%	11.2%
9	18.7%	17.4%	16.2%	18.3%
Richest	61.3%	67.3%	29.9%	37.7%

Source: Staff calculations using BLSS 2017.

6. Conclusion

The analysis presented in this paper provides insights into the distributional impact of Bhutan's tax-benefit system. To our knowledge, this is the first comprehensive analysis undertaken on this issue. The CEQ methodology is used to provide an assessment of the impact of tax-benefit policies as of 2017 as the baseline and then is supplemented with simulations to estimate the impact of two major fiscal reforms in Bhutan: the personal income tax reform in 2020 and the introduction of the GST in 2022.

The results in this paper show that the fiscal system in Bhutan plays a modest yet positive role in reducing inequality, while it slightly increases poverty. Taxes and social spending combined contribute to a decrease in inequality in Bhutan, while leading to a small increase in poverty as of 2017 (before the major fiscal reforms). The increase in poverty is mainly due to the burden of indirect taxes and social contributions that are not offset by other direct transfers. Disaggregating the results by fiscal intervention shows that households in the bottom 80 percent are net receivers of fiscal interventions, with fiscal benefits primarily occurring through education and health benefits which

are both progressive. In fact, most households do not pay much into the system as of 2017, as personal income taxes have a high exemption threshold and sales taxes only apply to a selected number of goods that are more likely to be consumed by richer households. Due to the lack of direct transfers, the net cash position is negative for poor households, though the magnitude is very small. Simulations suggest that recent reductions in personal income taxes and the planned introduction of the GST would alter these distributional impacts. With the reduction in PIT, direct taxes have become slightly more progressive; however, the inequality-reducing impact is slightly dampened than before. The GST as a broad-based tax likely leads to an increase in indirect taxes paid by households across the distribution, including those in the bottom 40 percent. At the same time, the GST is much less progressive than the existing sales tax. While the GST is poverty-increasing as a result, the poverty rate reverts to levels similar to the baseline in 2017 after considering the growth of income/GDP during this period. This suggests that the negative welfare impact of the new GST is likely to be temporary. More broadly, some of the additional revenues raised from the GST could effectively be used to offset the temporary deterioration in household welfare, such as through direct transfers to poor households.

This study shows that fiscal incidence analysis tools can provide important insights into the distributional impact of the fiscal system, including major fiscal reforms. While Bhutan has achieved significant poverty reduction in the past, effective fiscal policies can help further accelerate progress.

The exercise faced severe data challenges. In particular, the household survey did not contain information on incomes and information on labor market activities was also. Additional limitations in data availability prevented the use of other methodologies employed in the literature, such as survey-to-survey imputations. Instead, this study uses a sophisticated consumption-based modelling approach to estimate individual-level market income and simulate direct taxes and social contributions at the same time. This is the first such study to our knowledge and could be a useful example for low-income countries facing similar data challenges. The model described in this paper uses the latest household survey available at time of publication, but a future update of the model is expected to rely on updated data from the 2022 BLSS.

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Appendix. Details on Indirect Taxes in Bhutan

Table A.1. Custom Duty, Sales Tax, and Green Tax Rates in 2017 for select items identified in the Household Survey

Consumption Category	Custom Duty (%)	Sales Tax (%)	Green Tax (%)
Alcohol	100	100	0
Juice	50	30	0
Fuel and lubricants for personal transport (petrol, diesel, etc)	20	5	5
Spare parts and accessories for personal transport	10	5	0
Telecom services	0	5	0
Glass and crystalware (drinking glass)	10	5	0
Electrical and parts thereof, sound recorders and reproducers	10	5	0
Boilers and parts thereof, lighting and heating	10	5	0
Articles of iron or steel	10	5	0

Table A.2. Excise tax in 2017

Item (Unit)	Excise Rate (%)
Liquor (rum, whisky, brandy)-Superior Brand	30
Liquor (rum, whisky, brandy)-Medium Brand	60
Liquor (rum, whisky, brandy)-Other Brands	75

Table A.3. New GST rate and exemptions for select items identified in the household survey

Consumption Category	Rate (%)	Exemptions
General	7	No
Essential food items: rice, vegetable seeds, mustard oil, sunflower oil, salt	0	Yes
Essential food items: fresh dairy products (milk, cheese, butter, curd), egg	7	No
Agriculture inputs	0	Yes
Transport by road	7	No
Postal services	7	No
Religious services	7	No
Gifts and donations to charities	0	Yes

Table A.4. Excise tax in 2021

Item (Unit)	Excise Rate (%)
Other nuts including areca and betel nuts	20
Sugar, including molasses and sugar confectionary (such as gum, chocolate)	20
Pasta	20
Fruit juice	20
Ice cream	20
Water beverage	20
Beverages (nonalcoholic), spirits and vinegar	100
Tobacco and its substitutes	100

Table A.5. OLS estimation results of Mincer earnings model for wage and self-employed workers

Variables	(1)	(2)
	Wage workers	Self-employed workers
Household size	0.102*** (0.00196)	0.129*** (0.00159)
Female	0.00136 (0.00790)	-0.0117** (0.00587)
Age in completed years	0.0339*** (0.00201)	0.0207*** (0.00128)
Age square	-0.000392*** (2.45e-05)	-0.000274*** (1.28e-05)
Primary	-0.0222 (0.0150)	-0.0762*** (0.0133)
Secondary	0.132*** (0.0145)	-0.00403 (0.0147)
College	0.351*** (0.0151)	0.0769*** (0.0238)
Post-College	0.449*** (0.0215)	0.287*** (0.0420)
Informal employee	-0.0652*** (0.0135)	
Private sector	0.0704*** (0.00569)	
Can read and write a short text in Dzongkha	0.110*** (0.0105)	0.0666*** (0.00809)
Can read and write a short text in Lotsham	-0.0590*** (0.00991)	0.0559*** (0.00987)
Can read and write a short text in English	0.0755*** (0.0147)	0.161*** (0.0133)
Can read and write a short text in Other language	0.0448*** (0.0133)	0.0458*** (0.0152)

Rural	-0.118*** (0.00709)	-0.257*** (0.00875)
Size of Land		0.0162*** (0.00101)
Farming sector		-0.360*** (0.00774)
Constant	8.890*** (0.0429)	9.423*** (0.0378)
Observations	27,753	32,366
R-squared	0.346	0.553
District fixed effect	YES	YES

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A.6. Progressivity and Marginal Contributions of Bhutan's Fiscal System in 2017

	Size (wrt Market Income plus pensions)	Concentration Coefficient	Kakwani Coefficient	Marginal contribution	
				Gini (redistributive effect)	Total poverty line (poverty reduction effect)
Disposable Income	97.7%	0.378			
Pensions - NPPF	-2.3%	0.538	0.151	0.364	-0.262
Pensions - Provident Fund	-0.3%	0.602	0.215	0.081	0.000
GISL	-0.1%	0.447	0.060	0.005	0.000
Rural Insurance	0.0%	-0.170	-0.557	-0.003	-0.029
GIS	-0.2%	0.347	-0.039	-0.008	-0.014
Personal income tax	-1.2%	0.769	0.383	0.875	-0.051
All direct taxes and contributions	-4.0%	0.625	0.238	1.275	-0.416
Consumable Income	90.3%	0.346			
Sales tax	-2.5%	0.773	0.396	0.728	-0.436
Excise	-0.4%	0.389	0.012	-0.003	-0.126
Custom duty	-1.0%	0.825	0.447	0.610	-0.187
Green tax	-0.6%	0.852	0.475	0.497	-0.041
All indirect taxes	-4.5%	0.779	0.401	-0.076	-1.084
All taxes and contributions	-8.5%	0.716	0.338	0.894	-1.604
Final Income	103.5%	0.295			
Education in-kind transfer	14.3%	-0.082	0.428	3.167	
Health in-kind transfer	8.1%	-0.005	0.351	1.874	
All in-kind transfers	22.4%	-0.053	0.401	4.798	

Source: Staff calculations using BLSS 2017.