

Distributional Incidence of Indirect Taxation on Consumer Groups: Sri Lankan Perspectives

Distributional
Incidence

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Abstract

This study set out to find out how households allocated the indirect tax burden in various ways and statistically tests the difference in indirect tax burden among different aspects. Indirect tax revenue is vital to Sri Lanka's economy. We have identified a significant gap in this area in terms of empirical, theoretical, methodological, and practical. A consumer survey was performed, and data were collected using a structured questionnaire using the Stratified Convenient Sampling Method. One hundred fifteen commodity baskets were selected based on the Colombo Consumer Price Index under the broad categories of food and non-food and eleven subcategories of commodity groups. Colombo district was the sample district with the rationale of having the highest household expenditure district as per the Household Income and Expenditure Survey in 2019 conducted by the Department of Census and Statistics. Four hundred eighty-two respondents were collected, representing low-income, middle-income, and high-income households. Descriptive and quantitative approaches were used for the analysis. The findings of the study emphasized that the indirect tax burden rate of low-income households was significantly greater than the indirect tax burden rate of high-income households. The regressive effect was reflected in the findings, indicating that poor households are bearing a higher indirect tax burden rate in terms of average income and average expenditure. The derived Lorenz Curves and the calculated Gini Coefficients also emphasized the regressive effect of the indirect tax, presenting an upward-sloping Lorenz Curve and negative Gini Coefficient values. The statistical test also confirmed there is a statistically significant difference in the indirect tax burden on different income deciles, income groups, and expenditure deciles.

Keywords: Indirect tax, Burden rate, Income deciles, Income groups, Expenditure deciles.

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Introduction

Taxation is currently a highly debatable topic in Sri Lanka, and it is also a most important and highly sensitive topic. With the recent tax reforms, the government has increased the income tax level and PAYE rates. Most professionals are continuously struggling by pressuring the government to reduce income tax rates. The opinion of professionals was that the increase in income tax during the current economic crisis in Sri Lanka was totally unfair. This article is not expected to discuss the injustice of increasing the income tax levels. Income tax is a kind of direct tax mode. Here, we focus on the burden of indirect taxes on different consumer groups in Sri Lanka.

A nation's income from the government is crucial. The national income will be used to determine the government's current and capital expenses. The government can invest more in public goods when its revenue is increased. Then, the government can provide more infrastructure, education, and health facilities, and the general public's well-being will be boosted. The government should have a reliable source of money. The largest amount of government revenue comes from taxes. The government should have a proper tax system that upholds tax principles and does not adversely affect the general populace's standard of living.

Every party in the country would be significantly impacted by the imposition of indirect taxes. The equity principle underlies the imposition of direct taxes. This implies that those who have more income will pay more income tax. However, everyone is required to pay indirect taxes regardless of income level. People with low and moderate incomes will be particularly impacted by indirect taxes (Amirthalingam, 2010). As further indicated by Amirthalingam (2010), in developing nations like Sri Lanka, direct taxes which include levies on earnings, income, and capital gains—have produced fewer revenues. Over time, nations with historically weaker economic foundations have experienced tremendous growth in direct tax revenue. Aside from that, indirect taxes have tremendously regressive social and economic implications.

According to the Central Bank report in 2021, 11% of Sri Lanka's government revenue is non-tax revenue, and 89% is tax revenue. Out of the total tax revenue, 23% is direct tax, and 77% is indirect tax revenue. It is clear from this statistic that the Sri Lankan government has mainly tried to establish its dependence on indirect taxes. There are more than 20 types of indirect taxes operated in Sri Lanka, of which the main indirect tax revenue sources for the government are Value Added Tax (VAT), Excise Duty, Port and Airport Levy (PAL), CESS levy, Customs Duty, and Special Commodity Levy (SCL). (Central Bank of Sri Lanka, 2021)

Considering the tax structure of global economies, direct taxes represent a high percentage (more than 65%) of tax revenue in most developed countries. Examples include the United States (91%), Japan (80%), Canada (77%), Belgium (75%), and Switzerland (74%). Other South Asian countries also show high direct tax revenue compared to Sri Lanka. Examples include Maldives (53%), Bangladesh (33%), Bhutan (59%), India (54%), and Pakistan (38%) (Center for Tax Policy) and (Administration, 2020).

By looking at the global tax structures, it can be clearly seen that Sri Lanka has imposed a significant level of indirect taxes on goods and services. The imposition of high indirect tax significantly impacted low-income people in society. According to Kaplanoglo (2014), a regressive effect can be identified with respect to indirect taxation, which has a higher indirect tax burden on the low-income population. Low-income people do have a relatively lower level of income, and that income is also not safe and fixed. The regressive impact represented that out of the little income of poor people, a significant portion would be paid as indirect tax to the government. In other words, the indirect tax burden rate is significantly higher for poor people rather than for rich people. Rich people have a relatively higher income. The percentage of indirect tax payments by rich people is relatively low. Thus, a higher burden of indirect tax is transferred to poor people.

Plathick (1982) is concerned that indirect taxation has a negative impact on equity. One of the fundamental tenets of taxation is equity. In fact, equity is a major concern in taxation practically everywhere. According to the concept of "equity in taxation," taxes should be imposed based on a person's capacity to pay. The two dimensions of equity are typically horizontal and vertical. According to the principle of horizontal equity, taxpayers with equal income should pay the same amount of tax regardless of the source or type of their income. Vertical equity states that those with greater financial means should contribute more. According to the idea of horizontal fairness, tax rates should be the same for persons with equal incomes. An indirect tax system affects the entire population of the country. Low-level income groups have to bear such indirect taxes even though they don't know they are paying taxes. So, the cost of living for low and middle-income people will be high, and this will cause different social problems. The research problem has been established based on that rationale as "people earn income. But their living cost is high due to indirect tax". There is an unequal distribution of the burden of indirect taxation. People who belong to the low-income category have to pay a higher rate of indirect tax to the government rather than to the rich people.

The objective of this study was to identify the indirect tax burden on different consumer groups in Sri Lanka and measure the unequal distribution of the indirect tax among different consumer groups. Three kinds of consumer groups have been identified in this study. Expenditure deciles, income deciles, and income groups were the identified consumer categories. There are ten expenditure deciles, ten income deciles, and three income groups (low-income, middle-income, and high-income) (Department of Census and Statistics, 2019). It was expected to measure the indirect tax burdens of individual subcategories of main consumer groups and identify how indirect taxes are distributed.

Mieszkowski (1969) describes the theory as an investigation of the distributive impact of taxes done through the examination of tax incidence. Incidence theory, which focuses on how different tax regimes affect factor returns and commodity prices, is generally applied to distribution theory. While the effects of some taxes are rather complex, those of others have pretty clear-cut distributive implications. For instance, a household's part of the national income determines the burden of a proportional income tax, which is levied on all income. On the other hand, taxes that don't apply to all forms of income or all commodities alter relative commodity prices, have an impact on how certain factors are used in specific industries, and alter the way the

economy is produced. In order to fully account for changes in commodity and factor prices caused by taxes, a general equilibrium technique is necessary for analyzing the incidence of taxes that result in these effects.

In the global and local context, relatively fewer studies have been conducted on the area of indirect tax, especially on the distributional impact of indirect taxation. Theories of taxation discussed how indirect taxes are shifted into the product price based on the elasticities of demand and supply. However, practically, irrespective of the elasticity concept, the entire tax portion may be transferred to the product price by manufacturers. Also, tax theories focus on how taxes are distributed among consumers and producers theoretically; those are not concerned with how the actual burden of indirect tax impacts the poor population in a country. By considering the said significance, it is expected to fill many gaps while achieving the objective of this study.

Literature Review

Decoster et al. (2009), while looking into the incidence of indirect tax for five European nations that are members of the OECD (Organization of Economic Co-operation and Development), namely Belgium (BE), Greece (GR), Hungary (HU), Ireland (IE), and the United Kingdom (UK), the study concentrated on the distributional image of indirect taxes. They added that the indirect tax instrument is important, which stands in stark contrast to the minimal attention the microsimulation community gave it. Most microsimulation models (MSMs) focus on the micro-mathematical modeling of social security contributions, personal income taxes, and other benefits rather than indirect taxes. Decoster et al. (2009) contend that this isn't due to a lack of theoretical support for the study of indirect taxation. Indirect taxes and the direct-indirect tax mix have both been widely researched in theoretical public finance studies.

Furthermore, it cannot be a result of indirect tax legislation's complexity. Systems for indirect taxes are simpler than those for direct taxes. According to the Decoster et al. (2009) study, impoverished persons have a considerably greater indirect tax liability as a percentage of their disposable income than rich people. When compared to disposable income, indirect taxes are unmistakably regressive in every country. The tax rate decreases monotonically as income levels equalize. In every country, the bottom 10% of households pay at least twice as much in indirect taxes as the richest 10%. The image demonstrates how low-income individuals are severely impacted by the cost of indirect taxes. The following Table 01 illustrates the uneven distribution of the indirect tax burden.

Table 01. Indirect Tax Payment as a % of Disposable Income

Income Deciles	(BE)	(GR)	(HU)	(IE)	(UK)
One	26.80	28.60	25.70	24.80	20.60
Two	13.60	22.60	19.30	19.50	14.80
Three	13.30	19.20	17.60	16.60	13.50
Four	12.80	18.80	16.70	15.20	12.50
Five	12.40	17.70	15.80	15.50	11.80
Six	11.80	16.20	15.40	14.20	10.90

Seven	11.60	15.80	15.10	13.10	10.80
Eight	11.00	14.90	14.70	12.40	10.10
Nine	10.80	14.20	14.40	11.00	9.30
Ten	9.60	11.90	12.80	7.80	7.50

Source: Decoster et al. (2009)

According to Decoster et al. (2009), It is evident that the distribution of indirect tax burden among income deciles is unequal across all five countries. Decile one begins with the poorest people and decile ten finishes with the richest people. Low-income households are represented by the first four deciles and have a heavier indirect tax burden. Poor people in some nations, like Greece, pay the government more than 28% of indirect taxes relative to their income. The decile one illustrates the worst case. The lowest income bracket pays a lot more indirect tax. The richest groups in a nation are typically found in the ninth and tenth deciles. Table 01 demonstrates that high-income groups pay a considerably smaller share of indirect taxes than the poor. Poor people are negatively impacted by this kind of regressive influence.

Kaplanoglo (2014) conducted a household expenditure survey in Greece (1899–2011) to perform research on the distributional effects of indirect taxation. The analysis concluded that the indirect tax system appears to be the most regressive across the study period in terms of its effect on inequality and its unfavourable burden on sensitive goods. Two vulnerable demographic groups that were most harmed by the policies were families, including children (especially the poorest ones), and the unemployed.

Savage and Tim (2015) focused on identifying the distributional impact of indirect taxation. Based on Ireland's 2009 and 2010 VAT systems, they found that the poorest families paid about 16% of their discretionary income in VAT, whereas the richest families paid only about 6%. The poorest households would contribute the largest percentage of their available money toward paying VAT. Table 02 of Savage and Tim (2015) analysis of the indirect tax system in 2010 illustrates how much disposable income is spent on indirect taxes at various income levels. The results show how regressive Ireland's indirect tax system is. Over one-fourth of the disposable income paid by the bottom decile (the poorest 10%) is thought to have gone toward indirect taxes. Indirect taxes typically have a regressive effect on disadvantaged households.

Table 02. Indirect Taxation by Income Decile - 2010 as a % of Disposable Income

Income Decile	Actual %	Estimated %	Imputed %
1	24.6	17.6	20.5
2	15.3	14.4	15.2
3	14.6	12.6	12.7
4	12.6	11.7	11.4
5	12.1	14.4	11.6
6	11.7	10.9	10.7
7	10.0	10.1	9.7
8	9.7	9.0	9.8
9	9.0	8.2	8.6
10	6.4	6.5	6.6

Source: Savage and Tim (2015)

Husain and Ayesha (2021) conducted a study on the effects of indirect taxation in the setting of Iraq. Indirect taxes, he claimed, are a sizable source of funding, but as they rise, the cost is shifted from the taxpayer to another expense where it is produced, exported, or imported in some way. This indirect cost is then passed on to the final consumer through the high prices of produced, exported, or imported goods. In a study conducted in Japan, Adachi (2018) predicted that indirect taxes will raise household costs, particularly the consumption tax. Low-income groups will bear a disproportionate amount of the burden. The regressivity of the consumption tax is a problem since it disproportionately impacts lower-income groups in Japan.

According to studies on the incidence of taxation, all indirect taxes are regressive, as Richard (1987) examined. This investigation covered 22 emerging nations. DeWulf (1975) backed up this claim by pointing out that a sizable amount of the income of the poor is devoted to indirect taxes. Therefore, a regressive effect can be detected among the lower-income groups. That means that when it comes to indirect taxation, the poor are most susceptible.

According to McLure (1977), the average tax rate on the incomes of the urban poor was 10%, compared to a slightly lower percentage on the incomes of the rural poor. The bottom half of the island's population pays the majority of the indirect taxes, which amount to close to 20% of all income taxes. According to the study by McLure (1977), which was also done in Jamaica, the most regressive tax in Jamaica would be on tobacco, which is also scarcely taxed.

Omodero (2020) presented a different perspective on the Nigerian context. Items that are necessary and vital and are heavily consumed by poor households have been exempted from the VAT as part of Nigeria's introduction of a new finance act. In Nigeria, a few examples of goods that are exempt from sales tax are milk, almonds, seasoning oil, baby food, books, educational materials, pharmaceuticals, and nourishments. The government has identified the necessity of items and the tax burden on poor households and exempted those essential products from indirect taxes.

In order to quantify the disparity in the distribution of indirect tax burdens, researchers have utilized a variety of measures to measure inequality. As seen in the Kaplanoglo (2014) study conducted in Greece, several inequality indices have been employed to express distinct value judgments regarding the significance of a person's welfare in various distributional sectors. In order to gauge inequality, he has employed the Gini coefficient, Atkinson index, and Theil indices.

Table 03 shows how, in 1988, 2002, 2005, 2008, and 2011, the indirect tax system affected inequality changes. Since a uniform tax was put in place in 1988, a small distributional impact can be detected. After 1988, it seemed that the indirect tax system had a negative distributional impact. According to Table 03 from Kaplanoglo (2014), 2011 was the most regressive year since 1988.

Table 03. Change in Inequality with Indirect Tax System

Inequality Measure	1988	2002	2005	2008	2011
Gini Coefficient	-1.8%	0.3%	-0.8%	0.0%	0.7%
Atkinson ($\epsilon = 0.5$) A0.5	-3.5%	0.0%	-1.8%	-0.1	2.1%
Atkinson ($\epsilon = 1$) A1	-3.7%	0.6%	-1.8%	-1.1%	1.2%
Atkinson ($\epsilon = 2$) A2	-3.3%	-0.3%	-1.9%	-0.2%	0.3%
Theil Index (I)	-3.8%	1.0%	-1.8%	-0.2%	0.4%
Theil Index (N)	-3.9%	0.3%	-1.9%	-0.1%	2.0%

Source: Kaplanoglo (2014)

Decoster et al. (2009) also utilized the Suits Index to calculate indirect taxation's regressive impact. In order to look into the uneven distribution of the indirect tax burden, Decoster et al. (2009) undertook a study in 5 European countries. The Suits Index was negative for all nations, indicating a regressive effect that shows those with lower incomes pay more indirect taxes overall, which consumes a larger share of their disposable income. This rate of regressivity is highest in Greece. The UK is the nation with the lowest regressive rate out of the five.

Decoster et al. (2009). Furthermore, it was noted that in every country, the bottom 10% of taxpayers pay twice as much in indirect taxes as the top 10%. The suits index ranges from -1 to +1. A progressive tax has a positive index value, which means that persons with higher incomes will pay more in taxes. In a regressive tax system where lower-income individuals or households are required to pay a larger share of indirect tax, the index value is negative. For proportional tax, the index value is zero, signifying that each person pays an equal amount of tax. When the wealthiest people pay all taxes, the index value is positive (+1), and when the poorest people pay all taxes, the index value is negative (-1).

The overall indirect tax burden as a share of disposable income for all nations is regressive, as shown in Table 04 as per Decoster et al. (2009) study. Negative suites index scores reflect the regressive effect. The inequality distribution is also shown using the Gini coefficient.

Table 04. Regressive Effect of Indirect Taxation

	Country				
	BE	GR	HU	IE	UK
Average Income Tax	11.8	15.7	15.3	13.2	10.3
Suits Index	-0.079	-0.101	-0.086	-0.143	-0.120
Gini Coefficient	0.319	0.324	0.318	0.331	0.368

Source: Decoster et al. (2009)

Methodology

Data was collected from the Colombo District with the representation of all secretariat divisions in the same district and the representation of low-income, middle-income, and high-income households. The expected sample size was 500, and the sample was selected using the stratified judgment sampling method. The sample consisted of 40% of low-income households,

40% of middle-income households, and 20% of high-income households. According to the Household Income and Expenditure Survey in 2019, conducted by the Department of Census and Statistics Department, entire households have been divided into ten national household income deciles (10% each). Out of which, the first four deciles belong to low-income households, the next four deciles belong to middle-income households, and the last two deciles belong to high-income households.

Based on the study of Kaplanoglo (2014), a structured questionnaire was prepared for the household consumption survey in order to calculate the indirect tax payments by each Household. One hundred fifteen nondurable consumption basket was selected from the consumption basket of the National Consumer Price Index. The questionnaire was designed and circulated, and data was collected through the KOBO ToolBod platform. Once the data was collected, nominal indirect tax rates were applied to the respective commodities Kaplanoglo (2014) to obtain the indirect tax payments to the government. Indirect tax rates for each commodity were obtained from the VAT schedule, special commodity levy imposed commodity list, import tariff list and social security contribution levy schedule, and special gazette notifications.

The analysis was performed while measuring the indirect tax burden on different consumer groups in Sri Lanka. First, measure the indirect tax burden of expenditure deciles, then the indirect tax burden of income deciles, and lastly, the indirect tax burden of income groups. The definitions of the above-mentioned expenditure deciles, income deciles, and income groups are presented in Tables 05, 06, and the Table 07.

Table 05. National Household Expenditure Deciles

Income Decile	% of Household
Less than or equal to Rs. 20,140	10%
Rs. 20,141 - Rs. 27,588	10%
Rs. 27,589 - Rs. 33,972	10%
Rs. 33,973 - Rs. 40,380	10%
Rs. 40,381 - Rs. 47,544	10%
Rs. 47,545 - Rs. 55,634	10%
Rs. 55,635 - Rs. 66,761	10%
Rs. 66,762 - Rs. 82,858	10%
Rs. 82,859 - Rs. 114,984	10%
More than Rs. 114,984	10%

Source: Household Income and Expenditure Survey, 2019)

Table 06. National Household Income Deciles

Income Decile	% of Household
Less than or equal to Rs. 18,500	10%
Rs. 18,501 - Rs. 28,057	10%
Rs. 28,058 - Rs. 36,381	10%
Rs. 36,382 - Rs. 44,429	10%
Rs. 44,430 - Rs. 53,333	10%
Rs. 53,334 - Rs. 63,533	10%

Rs. 63,534 - Rs. 77,264	10%
Rs. 77,265 - Rs. 97,590	10%
Rs. 97,591 - Rs. 141,605	10%
More than Rs. 141,605	10%

Source: Household Income and Expenditure Survey, 2019)

Table 07: Income Group Classification

Income Group	Deciles Contain	Lower and Upper Limits of Monthly Income
Low-income	1, 2, 3, and 4	Less than Rs. 44,429
Middle-income	5, 6, 7, and 8	Rs. 44,430 – Rs. 97,590
High-income	9 and 10	More than Rs. 97,591

Source: Household Income and Expenditure Survey, 2019)

Results

Descriptive statistics techniques have been employed to measure the burden of indirect tax among different commodity groups, and the Lorenz Curve and the Gini Coefficients have been used to present the unequal distribution of the indirect tax burden.

Indirect Tax Burden by National Expenditure Deciles

Expected to calculate the indirect tax portion paid by each expenditure decile group and calculate the burden rates. The idea of the burden rate is how much of the amount paid as indirect tax to the government, compared with the average expenditure of the respective expenditure deciles. Also expected to measure the inequality of the distribution of indirect tax burden among expenditure deciles. Calculated indirect tax portions and the burden rates of respective expenditure deciles are presented in Table 08.

Table 8. Indirect Tax Burden Rates by Expenditure Deciles

Expenditure Decile	Avg. Tax Burden	Avg. Expenditure	Tax Burden Rate of Exp. Decile
1	2,880.19	14,592.00	19.74%
2	3,775.98	23,900.00	15.80%
3	4,067.38	30,743.00	13.23%
4	5,269.78	37,174.00	14.18%
5	5,732.35	43,860.00	13.07%
6	6,075.54	51,420.00	11.82%
7	8,506.36	60,930.00	13.96%
8	10,408.75	74,202.00	14.03%
9	14,028.93	96,384.00	14.56%
10	19,452.15	198,169.00	9.82%

Source: Authors' estimation

According to Table 08, households with the lowest expenditure decile (1st income decile) are paid Rs. 2,880.19 as indirect tax per month. That amount is 19.74% compared with the

decile's average expenditure. Thus, the poorest households are paid nearly 20% of their monthly expenditure as indirect tax to the government. When considering the second expenditure decile, the respective households are paid Rs. 3,775.98 as indirect tax per month, which is 15.8% compared with the average expenditure of the second income decile. Households available in the third expenditure decile are paid Rs. 4,067.38 per month, which is 13.23% of the average expenditure of the third expenditure decile.

When considering the tenth expenditure decile, there is a different picture. The tenth expenditure decile represents the richest households in the country. The households in the tenth expenditure decile are paid Rs. 19,452.15 per month as indirect tax, which is 9.82% of the average expenditure of the particular expenditure decile. There is a significant finding to be pointed out. In the lower expenditure deciles, respective households are paid a higher amount as indirect taxes compared with the average expenditure. And by looking at the higher expenditure deciles, they paid a relatively lower indirect tax percentage compared with their average expenditure. Households in the highest expenditure decile represent the richest households in the country. The richest people are consuming a higher portion of goods and services. So naturally, the richest people pay a higher indirect tax than the poor people. However, when it comes to the burden rate, poor people bear a higher burden rate than rich people. It is important to adopt measurements to identify the inequal distribution of indirect tax burden among expenditure deciles. Based on the literature, the Gini Coefficient and the Lorence Curve were selected as the measurements of inequality. The derived Lorenz Curve based on the indirect tax burden tare of respective expenditure deciles is presented in Figure 01.

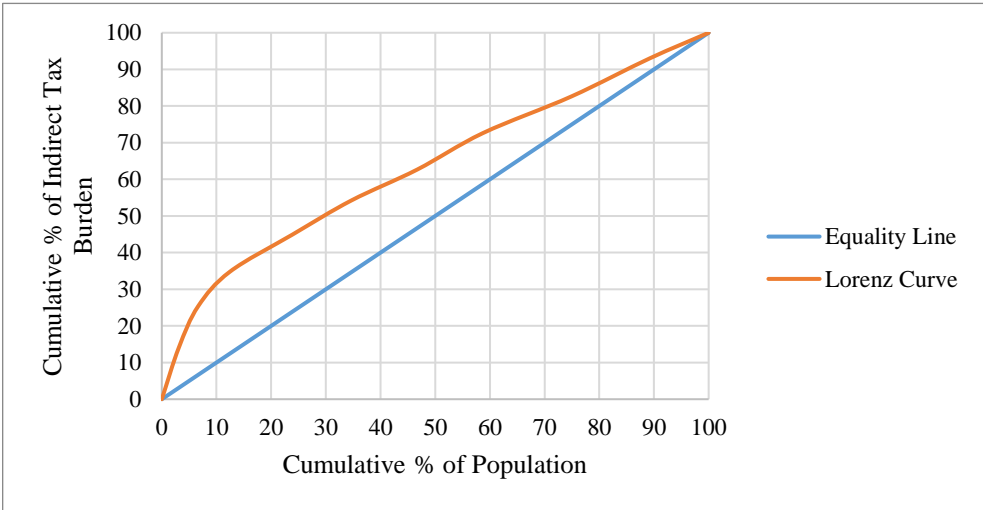


Figure 01. Lorenz Curve for Indirect Tax Burden by Expenditure Deciles

Source: Authors' estimation

Figure 01 clearly shows the regressive effect of the indirect tax burden. That means the curve has an upward-sloping nature. This means households in the lower expenditure deciles have to bear a higher indirect tax burden rate than the households in higher expenditure deciles. When deriving the Lorenz Curve for income distribution of a country like Sri Lanka, the curve gets downward sloping. The meaning of such a downward-sloping Lorenz curve is that the

higher portion of the income will be absorbed by the people with higher incomes. But here, the situation is different. In the case of indirect tax burdens, the higher rate of burden is absorbed by the lower-income or poor people.

Based on the derived Lorenz Curve, the Gini Coefficient was also calculated to measure the degree of inequality. The calculated Gini Coefficient for the distribution of indirect tax burden was -0.27. The coefficient value gets a negative value. The negative sign of the Gini Coefficient indicates the regressive impact. This means lower expenditure households have to bear a higher rate of the indirect tax burden.

Indirect Tax Burden by National Income Deciles

According to Table 09, households in the lowest-income decile (the poorest population in the country) paid Rs. 3,813.40 per month as indirect tax to the government. That amount is 32.62% of the average income of the particular decile. The static confirmed that a significant portion of the income of the poorest population is taken by the government as an indirect tax. When considering the second income decile, respective households paid Rs. 5,555.32 per month as indirect taxes, which represents 23.68% of the average income of the second income decile. In the third income decile, relevant households are paid Rs. 5,720.76 per month as indirect tax. The amount was 17.75% of the average income of the third income decile.

Table 09. Indirect Tax Burden Rates by Income Deciles

Income Decile	Avg. Tax Burden	Avg. Income	Tax Burden Rate of Income Decile
1	3,813.40	11,692.00	32.62%
2	5,555.32	23,459.00	23.68%
3	5,720.76	32,231.00	17.75%
4	5,142.04	40,347.00	12.74%
5	7,738.01	48,777.00	15.86%
6	7,486.61	58,270.00	12.85%
7	9,987.48	70,190.00	14.23%
8	12,172.48	86,669.00	14.04%
9	14,600.49	115,742.00	12.61%
10	19,030.17	276,889.00	6.87%

Source: Authors' estimation

By looking at the tenth income decile in Table 09, the respective households are paid Rs. 19,030.17 per month, which is only 6.87% of the average income of the richest population. Just like the analysis made on the expenditure deciles, according to the indirect tax calculated based on the income deciles, the higher tax burden goes to the poor households, and a regressive effect can be seen.

Graphically and mathematically measure the inequality of the distribution of the indirect tax among income deciles. For the graphical presentation of the inequal distribution of the indirect tax, the Lorenz Curve has been derived, and it shows in Figure 02.

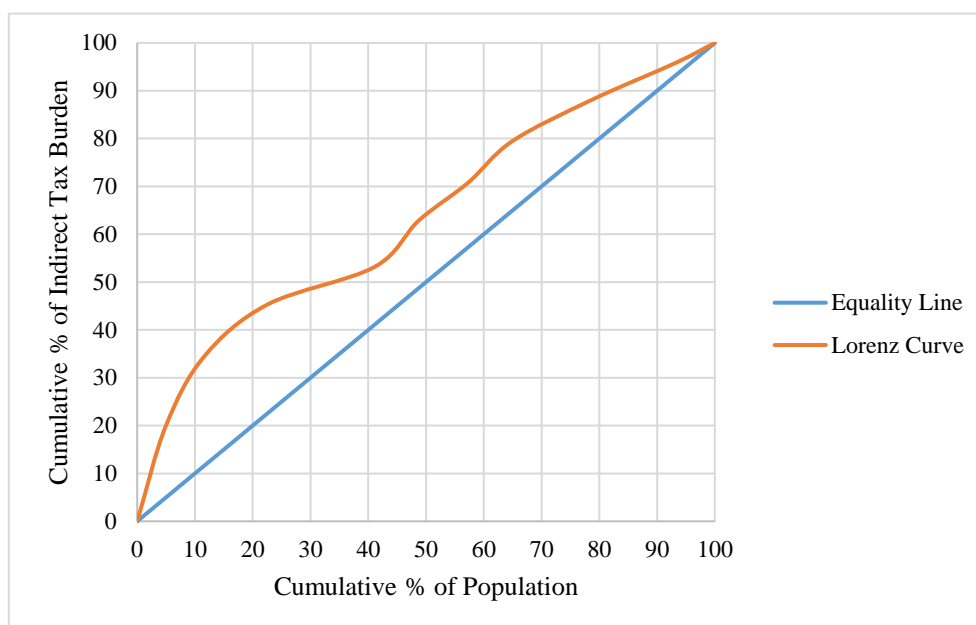


Figure 02. Lorenz Curve for Indirect Tax Burden by Income Deciles

Source: Authors’ estimation

The Lorenz Curve, shown in Figure 02, also represents the regressive impact of the indirect tax burden. The same Lorenz Curve is also upward-sloping and placed above the perfect equality line. The Lorenz curve shows a higher indirect tax burden absorbed by poor households (lower income decile). It shows the distance between the perfect equality line and the derived Lorenz curve. The higher distance between the said lines is available during the lower income deciles. This confirms the regressive impact of the indirect tax on poor households. The distance between those two lines is much less during the higher income deciles. That means the indirect tax burden is much lower than that of poor households. The calculated Gini Coefficient based on the derived Lorenz Curve was -0.23. The negative Gini Coefficient also confirms the regressive effect of indirect taxes. That means the higher impact of indirect tax goes to poor households.

Indirect Tax Burden by Income Groups

Table 10. Indirect tax Burden Rates by Income Groups

Income Group	Avg. Tax Burden	Avg. Income	Tax Burden Rate of Income Group
Low Income	5,202.70	26,930.00	19.32%
Middle Income	9,757.89	65,976.00	14.79%
High Income	16,019.71	196,289.00	8.16%

Source: Author’s presentation

According to Table 10, low-income households paid Rs. 5,202.70 per month as indirect tax to the government, which is 19.32% compared to the average income of the low-income group. Households in the middle-income group paid Rs. 9,757.89 per month as indirect taxes.

That is 14.79% of the average income of the middle-income group households. There is a significant thing to point out in the high-income group. The households in the high-income group paid Rs. 16,091.71 per month as an indirect tax to the government. However, when comparing the average income of the high-income groups, the indirect tax paid was only 8.16%. Like the previous analysis made on national expenditure deciles and the national income deciles, when considering the income groups also, there is a high indirect tax burden pressure on poor households. 19.32% of the income of the low-income group is paid as indirect taxes, while the high-income group households are paid only 8.16% of their income. Thus, more tax burdens are absorbed by poor households. Therefore, a regressive effect can be identified here as well.

Lorenz Curve is used to identify the inequal distribution of the burden of indirect tax among income groups. Lorenze Curve also satisfied the regressive impact of the indirect tax burden while depicting an upward-sloping curve. Figure 03 shows the Lorenz Curve for the indirect tax burden by income groups.

The calculated Gini Coefficient for the indirect tax burden by income groups was -0.05. This also confirms the regressive effect. Based on the value of the Gini Coefficient, it can be concluded that there is a high indirect tax pressure on poor households. According to the Household Income and Expenditure Survey in 2019, the upper limit of the lower income group was the national poverty line. Therefore, 40% of poor households that lie under the national poverty line had to bear a higher portion of the indirect tax burden rather than higher-income households.

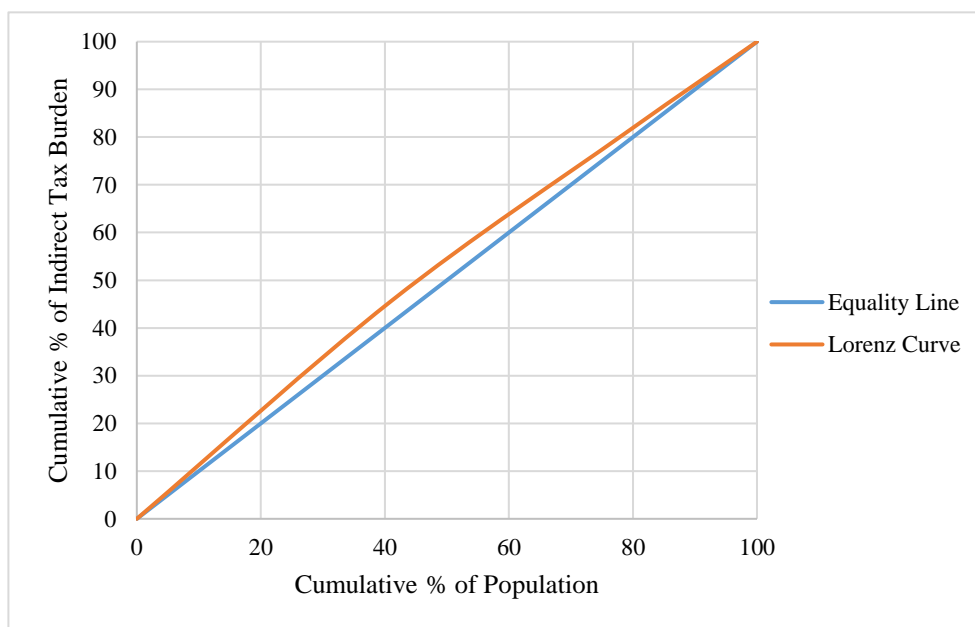


Figure 03. Lorenz Curve for Indirect Tax Burden by Income Groups

Source: Authors' estimation

It was also expected that the differences in the indirect tax burden among different aspects would be statistically tested. Accordingly, the tax burden among national expenditure

deciles, national income deciles, and income groups was checked. First, it was checked whether the difference in the burden of indirect tax among different expenditure deciles was statistically significant or not.

Table 11. One-way ANOVA Test Output for the Difference of the Indirect Tax Burden by National Expenditure Deciles

One-way ANOVA					
Burden Rate by Expenditure Deciles					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.169	9	.019	15.455	.000
Within Groups	.574	472	.001		
Total	.743	481			

Source: Authors’ estimation

The Significant value shown in Table 11 was 0.000. Since the significant value is less than 0.05, the null hypothesis is rejected. Based on that decision, it can be concluded that there is a statistically significant difference in indirect tax burden among national expenditure deciles. After the identification of a statistical significance in indirect tax burden among expenditure deciles, then the Post Hoc Analysis was performed to identify which expenditure deciles had a significant difference. The combinations of expenditure deciles that have a statistically significant difference in indirect tax burden are presented in Table 12 as a matrix.

Table 12. Post Hoc Analysis Matrix for the Difference of the Indirect Tax Burden by Expenditure Deciles

		Expenditure Deciles									
		1	2	3	4	5	6	7	8	9	10
Expenditure Deciles	1		Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
	2			-	-	-	Sig.	-	-	-	Sig.
	3				-	-	-	-	-	-	Sig.
	4					-	Sig.	-	-	-	Sig.
	5						-	-	-	-	Sig.
	6							Sig.	Sig.	Sig.	-
	7								-	-	Sig.
	8									-	Sig.
	9										Sig.
	10										

Source: Authors’ estimation

The second part tested whether there was a significant difference in indirect tax burden among national income deciles. The One-way ANOVA output for this test is shown in Table 13.

Table 13. One-way ANOVA Test Output for the Difference of the Indirect Tax Burden by National Income Deciles

One-way ANOVA					
Burden Rate by Income Deciles					
	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	1.357	9	.151	59.486	.000
Within Groups	1.194	471	.003		
Total	2.551	480			

Source: Authors’ estimation

According to Table 13, the estimated significant value was 0.000, which is less than 0.05. Based on the decision criteria of the One-way ANOVA test, the null hypothesis was rejected. As per that decision, it can be concluded that there is a statistically significant difference in indirect tax burden among national income deciles. In other words, in each income decile, there is no same burden of indirect tax. Since the alternative hypothesis was accepted, it is important to investigate which income decile combinations are significant in terms of the indirect tax burden. In order to find significant combinations, a post-hoc test was performed. The Post Hoc Analysis Matrix for the difference in the indirect tax burden of income deciles is presented in Table 14.

Table 14. Post Hoc Analysis Matrix for the Difference of the Indirect Tax Burden by Income Deciles

		Income Deciles									
		1	2	3	4	5	6	7	8	9	10
Income Deciles	1		Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
	2			Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.	Sig.
	3				Sig.	-	Sig.	Sig.	Sig.	Sig.	Sig.
	4					-	-	-	-	-	Sig.
	5						-	-	-	-	Sig.
	6							-	-	-	Sig.
	7								-	-	Sig.
	8									-	Sig.
	9										Sig.
	10										

Source: Authors’ estimation

Table 15. One-way ANOVA Test Output for the Difference of the Indirect Tax Burden by Income Groups

One-way ANOVA					
Burden Rate by Income Group					

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.849	2	.425	154.610	.000
Within Groups	1.315	479	.003		
Total	2.165	481			

Source: Authors' estimation

According to Table 15, the estimated significant value was 0.000, which is less than 0.05. Since the significant value is less than 0.05, the null hypothesis will be rejected. Accordingly, it can be concluded that there is a significant difference in the burden of indirect tax among different income groups. Since there is a significant difference in the burden of indirect tax among income groups, it is supposed to find which income group combinations are significant. Table 16 presented the Post Hoc Analysis Matrix for the difference in the indirect tax burden for income groups. According to Table 15, it can be identified that the difference in the indirect tax burden of all combinations of the income groups was statistically significant.

Table 16. Post Hoc Analysis Matrix for the Difference of the Indirect Tax Burden by Income Groups

		Income Groups		
		Low-Income	Middle-Income	High-Income
Income Groups	Low-Income		Sig.	Sig.
	Middle-Income			Sig.
	High-Income			

Source: Authors' estimation

Discussion and Conclusion

In every country, taxation plays a significant role. The tax income represents a significant portion of a government's general revenue. Different countries have different tax structures. Tax structures, in a sense, are direct and indirect tax compositions. Most of the developed countries have a higher portion of direct tax and a lower portion of indirect taxation. Direct taxes are imposed on the income and profits of persons, which confirms the equity principle of taxation. That means direct taxes are paid according to ability. When considering indirect tax, the principle of equity cannot be seen. Indirect taxes are paid irrespective of income level. Every

person/household, including poor and rich, is paying indirect taxes (goods and services taxes) to the government.

Paying taxes indirectly, such as goods and services taxes, may not have a significant impact on rich people. The indirect tax payment per month is a relatively low amount compared with their average income. But that is different for the poor. Poor people have unstable, unsecured, and relatively lower incomes. When poor people purchase their necessary products from the market, they pay several indirect taxes. The indirect tax amounts paid by poor people are a significant portion of the average income of poor people. That will be a huge economic and social impact. Increasing indirect tax payments will reduce the disposable income of poor people.

We discussed the regressive impact of indirect taxation. The regressive impact refers to the poor people's side. The indirect tax portion paid by the poor people represented a significantly higher portion of their income. Thus, poor people bear a higher rate of the indirect tax burden than rich people. According to the findings of the study, the poorest population of the society paid nearly 32% of the indirect tax portion compared with their income. Based on the initial findings, it can be seen that for every hundred rupees of income for poor people, the government gets thirty-two rupees as an indirect tax. As mentioned above, due to the higher indirect tax burden on poor people, their disposable income will be reduced. Reduction of disposable income refers to insufficient funds for essential activities like food, health, education, etc. Economically, due to the indirect tax, there are several side effects such as the reduction of consumption, increase in living cost, and decrease in the living standard. According to the study, most of the poor households had expenses exceeding their income level, which indicated a minus saving. Thus, poor people are unable to maintain savings for future requirements.

There are some limitations also available in this study. Only the Colombo District has been selected as the sample district, and only 115 consumer products have been selected as consumption basket. In future studies, it is expected to cover more areas in the country and select more consumption basket.

As a summary of findings, it can be stated that poor households have to bear a higher rate of the indirect tax burden than rich households. The indirect tax amount paid by the rich households was a relatively insignificant percentage compared with the average income and expenditure of the rich households. Similarly, the indirect tax paid by the poor households was a significant portion compared with the average income and expenditure of the poor households. Thus, in Sri Lanka, a regressive impact will be reflected in the indirect tax, which indicates a higher rate of indirect tax burden goes to the poor households while a low rate of indirect tax burden reflects the high-income households.

Recommendations

In Sri Lanka, the tax structure has been established as regressive for poor households. That confirms the findings of the study. The study found that a higher rate of indirect tax burden goes to poor (low-income) households, and higher-income households bear a lower rate of indirect tax burden. The reason for that was the significantly higher percentage of indirect tax in Sri Lanka. As researchers, we recommend that the government decrease indirect taxes and

increase direct taxes. Then, one can argue about the justice of increasing income tax. Sri Lanka is currently going on protests and strikes by professionals to reduce the income tax rates. Everyone knows that there is a huge economic crisis in Sri Lanka. While having that crisis, the government increased the income tax significantly. Increasing the income tax during this economic crisis was a highly disappointing situation.

As researchers, we are not recommending further imposing income taxes on existing taxpayers. The government needs to identify new taxpayers. How is it achieved? In Sri Lanka, there are plenty of people who have the ability to pay income tax but do not pay taxes. Developed countries have good practices in their tax system. Developed countries have a proper mechanism to trace all public income. People in such countries are also willing to pay income tax because they know that they also obtain benefits from the government's welfare activities, and they know which welfare activity they are contributing to by paying income tax. But in Sri Lanka, the picture is different. People do not have the willingness to pay taxes and are always trying to escape from the income tax.

Most of the developed countries maintain their direct tax portion of more than 60% of the total tax income. Instantly, Sri Lanka may not be able to increase the direct tax portion to such a level. However, direct tax contributions should be continuously increased. In the short term, we recommended maintaining the tax structure as 40% direct tax and 60% indirect tax, and in the long term, we recommended maintaining the tax structure as 60% direct tax and 40% indirect tax. Then, the adverse impact of indirect taxes on poor people will be eliminated. The government and respective tax authorities should introduce new laws & regulations and amend the existing regulations in order to achieve the target. And the transparency of the spending tax revenue should be enhanced.

In Sri Lanka, tax policies are directly linked with political policies. When changing the ruling party, they change their economic policies along with the tax policies. Changing the tax policies is one of the major political campaigns in Sri Lanka. In Sri Lanka, there is no national tax policy. Those are changed government by government. Thus, we recommend implementing a national tax policy in the country that does not change with the political agendas.

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