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Impact of Value Added Tax on Poverty in Sri Lanka

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Article Information

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Abstract

This paper examines the impact of Value Added Tax (VAT) on poverty in Sri Lanka, by considering the amount of VAT paid by the household on the consumption of food items. The study based on Household Income and Expenditure Survey (HIES) data of Sri Lanka in 2012/13 and Ordered Probit model was applied for empirical estimation. The results confirm that, despite VAT contributes to national tax revenue significantly, it essentially increases the probability of being extreme poor, poor and vulnerable non-poor by 0.0061%, 0.4942% and 1.4760% respectively, while reducing the probability of being non-poor by 1.9764%. Apart from that, the recent hike in VAT rate of Sri Lanka from 11% to 15% increases probabilities of being extreme poor, poor and vulnerable non-poor by 0.017%, 1.39% and 4.16% respectively, while decreasing the probability of being non-poor by 5.57%. Thus, the study recommends to rationalize and continue VAT exemptions, introduce a twin VAT rate for essential and luxury goods and services along with a gradual shift from indirect to direct taxes in order to lessen VAT burden on lower income groups while ensuring higher tax revenue for the government.

Background of the Study

Tax Structure and Value Added Tax in Sri Lanka

Taxes play a central role in government finance by accounting for the largest share of government revenue in both developed and developing countries. In particular, indirect taxes generate significantly higher revenue for governments compared to direct taxes such as income tax. According to Amirthalingam (2010), an indirect tax is a tax that is imposed upon the individuals other than those who are intended to bear the final burden of the tax. Despite most of the direct taxes are progressive, indirect taxes are regressive as individuals are taxed irrespective of their income levels. In fact, indirect taxes are imposed on producers and however they shift tax burden to consumers by increasing the prices. Nevertheless, indirect taxes have been a vital tool of raising government income through increasing tax revenue. Unlike other indirect taxes, there is a growing discussion on Value Added Tax (VAT) due to its regressive nature, despite VAT generates massive revenue for governments' financing.

According to Shoup (1988), VAT is a tax that imposed on value which is added into goods and services by producers or distributors during the processes of production or distribution chain. As VAT is an indirect tax, the tax is borne by the final consumer of goods or services. In 1954, VAT was introduced firstly in France and thereafter VAT has become major indirect tax in many developed and developing countries. According to Amirthalingam (2010), the pace spreading out and adaptation of VAT by other countries has been significantly higher compared to other tax development in recent history. Sri Lanka introduced VAT through act No.14 of 2002 by replacing Good and Services Tax (GST) and VAT rate was multi-tier during that period. More specifically, standard VAT rate was 20% along with concessionary rate of 10% in 2002. Apart from that, several goods and services were exempted from VAT while providing zero VAT rate for some other goods and service. However, the VAT rate was amended almost annually and the current VAT rate is 15%.

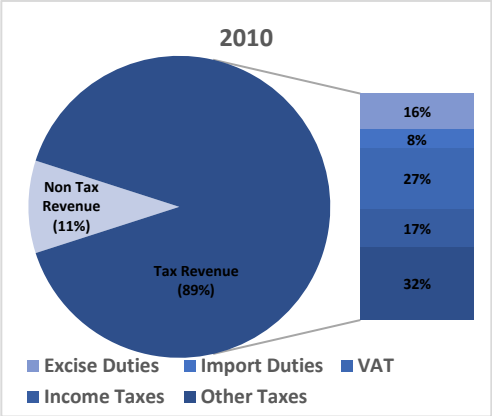
Table 01 summarizes the revenue of each tax as a percentage of GDP along with both tax and non-tax revenue of Sri Lanka during the period of 2010-2016. The ratio of tax revenue to GDP in Sri Lanka which was 13% in 2010, has been significantly low and dropped down to 10.1% by 2014. Despite it started increasing in since 2015 (12.4%), the average tax revenue to GDP ratio stands at 12% during the period of 2010-2016. In 2010, VAT generated the highest revenue as a percentage of GDP (3.9%) compared to other main taxes in Sri Lanka and however, the contribution of VAT has gradually declined to 2.0% by 2015. It is apparent that, VAT revenue to GDP ratio started increasing after raising the VAT rate from 11% to 15% in 2015.

Table 01: Tax revenue and tax structure as a percentage of GDP during the period of 2010-2016

Item	As Percentage of GDP							Average (2010-2016)
	2010	2011	2012	2013	2014	2015	2016	
Tax Revenue	13.0	12.4	12.0	11.6	10.1	12.4	12.4	12.0
Non-Tax Revenue	1.7	1.9	1.9	1.5	1.4	0.9	1.9	1.6
Income Taxes	2.4	2.4	2.3	2.4	1.9	2.4	2.2	2.3
VAT	3.9	3.3	3.0	2.9	2.6	2.0	2.4	2.9
Excise Taxes	2.3	2.8	3.0	2.9	2.5	4.5	3.8	3.1
Import Duties	1.1	1.2	1.1	1.0	0.8	1.2	1.3	1.1
Other Taxes	3.1	2.7	2.7	2.5	2.3	2.2	2.6	2.6

Source: Created by the author based on Annual Central Bank Reports (Various years) of Sri Lanka.

However, the revenue from excise taxes as a percentage of GDP has outnumbered that of VAT by 2016 and also the excise taxes accounted for the highest average tax revenue as percentage of GDP during 2010-2016. In fact, excise taxes have been significantly increased in order to control alcoholism which was found to be one of the factors of poverty in Sri Lanka. In general, none of tax revenue as a percentage of GDP has shown a clear trend during the period of 2010-2016.



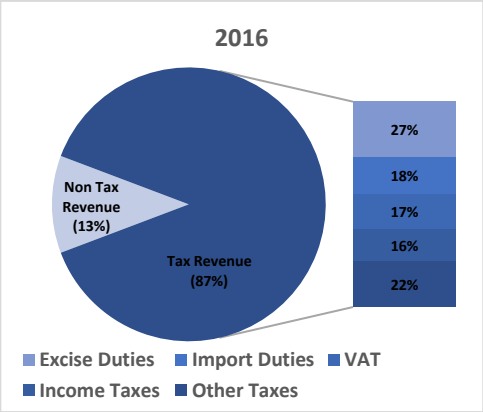


Figure 01: ***Government revenue structure and composition of tax revenue of Sri Lanka between 2010 and 2016***

Source: Created by the author based on Annual Central Bank Reports (Various years) of Sri Lanka.

Figure 01 compares structure of government revenue of Sri Lanka together with the composition of tax revenue, between 2010 and 2016. Tax revenue which has been the driving force of government revenue, however slightly declined from 89% in 2010 to 87% by 2016. Apart from that, as a single tax, VAT accounted for the largest share of tax revenue (27%) in 2010. However, the share of VAT has dramatically reduced down to 17% by 2016 and now stands at the 4th position. Reduced contribution of VAT is mainly due to large number of VAT exemption and also reduced VAT rate till 2014. In addition to VAT and excise taxes, the contribution of income tax on tax revenue of Sri Lanka has been remained the same during the last six years while the contribution of import duties has increased by 10%. In conclusion, VAT has been one of the major taxes which remarkably boosts government tax revenue of Sri Lanka and however, the contribution of VAT on tax revenue has decreased over time.

Recent Trends in Poverty in Sri Lanka

Overall poverty reduction process of Sri Lanka is widely appreciated due to continuous and significant drop down in poverty figures especially during last two decades. Figure 02 illustrates poverty trends in Sri Lanka during the period of 1990-2016. It is apparent that poverty headcount index reached a peaked (28.8%) by 1995/96 from 26.1% was in 1990/91. However, the population below the official poverty line which is measured by headcount index, have declined from 28.8% in 1996/96 to 4.1% by 2016. Similarly, other poverty measures such as poverty gap and squared poverty gap indices also dropped down significantly. Moreover, approximately 3,841,000 people were in poverty in 2002 and which has decreased to 843,913 by 2016. Similarly, in 2016, 3.1% of total households' which accounted for approximately 169,392 households in Sri Lanka, were estimated as poor households.

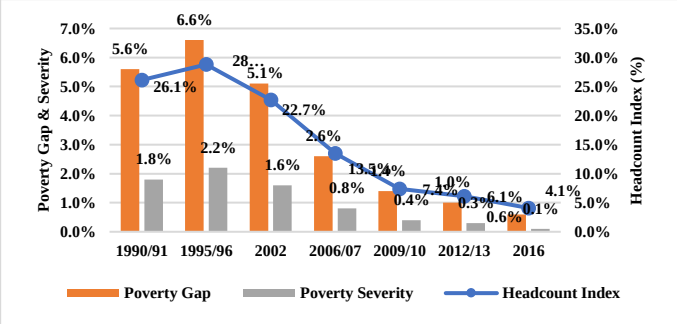


Figure 02: ***Poverty Trends at National Level in Sri Lanka During the Period of 1990-2016***

Source: Created by author based on HIES reports (Various years)

Though the poverty incidence at national level has been significantly decreasing over time, the pace of poverty reduction across the sectors is uneven. Poverty disparities which exist across the sectors such as urban, rural and estate are illustrated in figure 03.

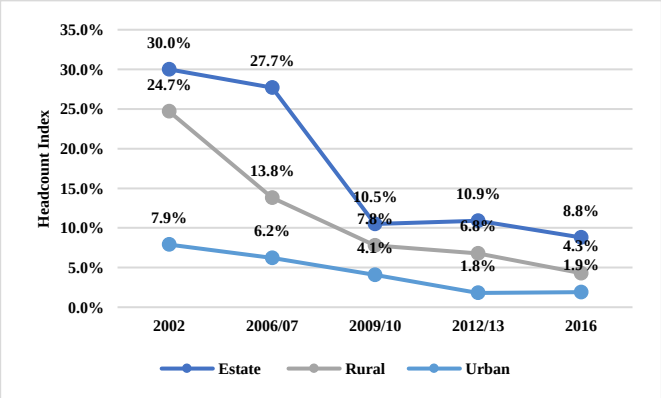


Figure 03: ***Sectoral poverty trends in Sri Lanka during the period of 2002-2016***

Source: Created by author based on HIES reports (Various years)

Poverty levels in both estate and rural sectors have been significantly higher than poverty levels of both national and urban sector. Particularly, 30% and 24.7% of people in estate and rural sectors respectively were below the poverty line in 2002 while only 7.9% of urban people were poor. A dramatic poverty reduction in estate sector can be seen after 2006/07. In fact, estate sector poverty incidence had reduced by 17.2% in a three years' time during the period of 2006/07 – 2009/10. The sharp reduction of income poverty in the estate sector was mainly driven by increase of tea prices and real wages of estate workers. Despite significant regional disparities exist, in general, poverty incidence of Sri Lanka has been declining remarkably since 1995/96.

Objectives and Structure of the Paper

It is yet undiscovered whether VAT adversely affects the poor or not. Despite, there are considerable number of studies which have addressed different aspects and impacts of VAT, it is hardly found a research that focuses on impact of VAT on poverty in the context of Sri Lanka. Studies by Chernick & Reschovsky (1990), Metcalf (1997), Martinez-Vazguez (2001) and Hossain (2003) have addressed the impacts of VAT on poverty in different countries and however they have ended up with mixed results. Therefore, this study attempts to examine the impacts of VAT on poverty in Sri Lanka. More specifically, the first objective of this study is to quantify the impact of VAT on different types of poverty (extreme poor, poor, vulnerable non-poor and non-poor). Secondly, the study examines whether there is a significant impact of increasing VAT rate from 11% to 15% on poverty in Sri Lanka. Furthermore, the study provides appropriate policy recommendation through an empirical estimation based on Household Income and Expenditure Survey (HIES) data and rigorous econometric analysis. The next sections of the paper will focus on literature review, methodology, results and discussion along with list of references.

Literature Review

It is a well-known fact that producers always try to shift tax burdens towards consumers by increasing prices in order to get rid of paying taxes only by themselves. VAT has become a major indirect tax which accounts for larger share of government tax revenue in many developed and developing countries. Bird & Gendron (2006) also expressed that producers are taxed at each stage of production and the producers are liable to pay VAT. Further, Bird & Gendron (2006) mentioned that consumers who consume the final products have to pay the entire or part of VAT as a result of increasing the prices of the commodities. Hence, consumers have become the ultimate tax payers in terms of most of the indirect taxes. Consequently, the poor and relatively low-income groups are adversely affected compared to the high-income groups, as the low-income groups have to pay relatively higher percentage of their income as tax payments. Despite, there is lack of empirical evidence about the direct impacts of VAT on poor; significant number of studies has addressed the issues such as calculating the optimal indirect taxation, progressive and regressive nature of taxation, VAT and income distribution, consequences of VAT and VAT reforms.

Jimenez (1986) & Gemmell (1987) studied on progressive and regressive natures of different types of taxes. According to them, personal income taxes and property taxes are progressive while indirect taxes and most of corporate taxes are regressive. Especially, Jimenez (1986) indicated the impact of overall tax incident in different countries and stressed that combine impact of tax system of a country is basically regressive for lower income groups and progressive for higher income groups. Similarly, Rajemison & Younger (2000), Younger *et al* (1999), Rajemison & Younger (2000) and Sahn & Younger (1998) also confirmed that most of the indirect taxes are regressive and in turn there is a negative impact on low income groups. They elaborated that taxes on Kerosene and Paraffin are highly regressive in African countries and particularly, Ghana accounts for the most regressive taxes compared to other African nations. However, Munoz and Cho (2003) compared the tax incidence of VAT and compared it with the incidence of sales tax that was replaced by VAT. They have used Household Income, Consumption and Expenditure Survey (1999/2000) data for analysis and found that VAT is progressive when the total expenditure at national level is considered. Nevertheless, they confirmed that progressivity of VAT is lower than that of sales tax. Chernick and Reschovsk (1990) examined the tax burden of federal and state income taxes, property taxes, and sales taxes on low income households in Massachusetts and New York. The calculated tax burdens for the poor are 15.3% and 18% in Massachusetts and New York respectively. Further, they highlighted that state and local taxes account for most of the tax burden.

Clarete (1991) and Shah and Whalley (1991) have applied CGE models to investigate the distributional impacts of taxes in Philippines and Pakistan respectively. Especially, Shah and Whalley (1991) distinguished the tax impacts in rural and urban areas in Pakistan and found that there is an adverse impact on rural low-income people. Similarly, Dahl and Mitra (1991) also employed CGE models for India, China and Bangladesh to examine the distributional effects of taxes on different sectors such as formal-informal and rural-urban sectors. Ahmed and Stern (1987) examined the distributional impacts of indirect tax in India and Pakistan. In particular, they examined the impact of the replacement of excise tax with VAT. The results suggested that if the replacement and reforms are revenue-neutral, there can be a negative impact on poor. Further, this negative impact on poor was found even after exempting cereal from VAT in order to facilitate the poor.

Similar to Clarete (1991), Shah and Whalley (1991) and Dahl and Mitra (1991), Coady and Harris (2001) also used CGE models to analyze the social cost of increasing tax revenue through VAT. Their main objective was to increase the tax revenue in order to finance the subsidy programmes focused on the poor in Mexico. However, they found that any increment of VAT rate can adversely affect the poorest people in the society; despite the impact on other low-income groups is low. Ray (1999) examined the impacts of commodity tax on low income people in urban and rural areas. The study recommended having two different optimal commodity taxes for urban and rural areas in order to minimize the negative impacts on rural poor. Another study by Gibson (1998) based on Papuwa New Guinea focused on indirect tax reforms which leads to reduce the cost of living. The study has used household survey data in 1996 to identify the main items consumed by the poor in Papuwa New Guinea and the study further proposed that those items should be exempted from tax in order to reduce the living cost of the poor. Metcalf (1997) mentioned that VAT is a hidden tax which can be easily increased and therefore reduces the welfare of the poor. A policy paper based on UK by Save the Children (2000) addressed the consequences of increasing the VAT. According to them, increase of VAT adversely affects the poor; since it results to increase the prices of goods and services regardless of earnings and income of the poor. Hence, they further emphasized that increase of VAT could slow the consumption of consumers, despite it recovers the damaged economy. Specifically, this policy brief has stressed that 20% increase of VAT may cut down 47,000 jobs in UK. A study by Martinez-Vazguez (2001) highlighted the incidence of indirect tax under the impact on poor. The study has used household expenditure data, tax collection data and individual tax return data in order to calculate the tax incident. As Martinez-Vazguez (2001) found that indirect taxes make tax system more regressive. Especially, indirect taxes are highly regressive for the poor while it progressive for the rich. Gemmel and Morissey (2002) have conducted a similar study as Gibson (1998) and suggested that zero tax rates should be imposed on the goods and services those are predominantly consumed by poor. Further, they stressed that informal sector also should be tax free, since the poor highly link with the informal sector. Hossain (2003) also confirmed that revenue-free uniform tax rate is highly undesirable for the poor, since the revenue-free uniform tax is regressive in nature. However, Hossain (2003) proposed to impose basic rate of VAT in accordance with the distributional characteristics and along with exemptions for essential goods and services to ensure the progressivity of the VAT. Similarly, Emran and Stiglitz (2005) also proved the fact that revenue-neutral replacement of trade tax with VAT may cause to lower the social welfare. IMF working paper by Lockwood & Keen (2007) has addressed the determinants of adopting VAT and the revenue gained from the VAT. They have used unbalanced panel of 143 countries over 26 years. According to them, only some countries have accomplished the revenue objectives of the VAT while others are not as targeted. Further, they have identified factors such as extent of the agricultural sector; past revenue collected from VAT and the recommendations of International Monetary Fund as significant factors those affected adopting the VAT of sample countries.

A study by Amirthalingam (2010) has focused the efficiency and productivity of Sri Lanka VAT system. According to the study, both efficiency and productivity of VAT in Sri Lanka is low and there is no clear trend as well. An empirical investigation about the impacts of increasing VAT on the poor in Botswana has been carried out by Sekwati and Malema (2011). They examined the impacts of increasing the VAT rate from 10% to 12 % on consumption of poor household using the household income and expenditure data in 1993/94 and 2002/03. As they highlighted, the marginal propensity to consume of low income people is higher compared to the rich. Therefore, increase of VAT apparently affects the poor in rural areas followed by urban villages and cities.

In the light of the existing literature, it is obvious that most of the studies such as Ramsey (1972), Diamond & Mirrlees (1971), Murty & Ray (1990) and Raychaudhuni & Sinha (2004) have focused on calculation of optimal taxation while some other studies such as Jimenez (1986), Gemmell (1987), Rajemison & Younger (2000), Younger et al (1999), Rajemison & Younger (2000) and Sahn & Younger (1998) paid their attention on progressive and regressive natures of the indirect taxes. Apart from that, Chernick & Reschovsky (1990), Metcalf (1997), Martinez-Vazguez (2001) and Hossain (2003) have addressed the impacts of VAT and other indirect taxes on the poor in different countries. However, empirical investigations in the context of Sri Lanka are extremely rare and thus this study attempts to fill the existing gap in the literature.

Methodology

Data and Variables

Household Income and Expenditure Survey (HIES) is the key data source for this study. HIES (2012/13) covered the entire Sri Lanka and is the most comprehensive data set which includes income and expenditure data for approximately 20,356 households.

Calculation of Dependent Variable

This analysis contributes to the literature by extending traditional two way of poverty classification (poor and non-poor) into four categories of poverty (Extremely Poor, Poor, Vulnerable non-poor and non-poor). Initially, two-way classification of poverty (Poor and non-poor) was used and found no significant impact of VAT on poverty. Thus, four-way classification suggested by Deyshappriya (2017), which allows deeper and specific investigation, was used to capture the impact of VAT on poor.

i. **Extremely Poor**: If the household's monthly per capita expenditure is less than or equal to half of official poverty line (OPL). (HH per cap expenditure$\leq 0.5OPL$)
ii. **Poor**: If the household's monthly per capita expenditure lies between half of the official poverty line and the official poverty line. ($0.5OPL <$HH per cap expenditure$\leq OPL$)
iii. **Vulnerable Non-Poor**: If the household's monthly per capita expenditure lies between the official poverty line and 1.5 times the official poverty line. ($OPL <$HH per cap expenditure$\leq 1.5OPL$)
iv. **Non-Poor**: If the household's monthly per capita expenditure is higher than 1.5 times the official poverty line. (HH per cap expenditure$> 1.5\ OPL$)

Above four types of poverty were assigned as the dependent variable of the econometric model.

Calculation of Independent Variable Related to VAT

It is a well-known fact that share of expenditure on non-food items by the poor is significantly low compared to the rich. Similarly, the expenses on non-food items by the poor and the rich are highly heterogeneous compared to the expenses on food items by both groups. Thus, it is obvious that the real impact of VAT on poor cannot be examined when the amount of VAT is presented as a ratio of total expenditure or non-food expenditure. The main reason is, the explicit impact of VAT on poor is mainly through food items rather than non-food items. Thus, this study counts the amount of VAT which is applicable only for food items and presents as a ratio of total food expenditure. However, some of the food items are exempted from VAT and the study calculated the amount of VAT on food items by considering only the food items in which the VAT is applied.

Econometric Analysis

The ordered probit model which captures ordered outcomes of dependent variable was employed to model the impact of VAT on poor. The general format of the estimated model is as follows.

$$y_i^* = x_i\beta + u_i \qquad (01)$$

Where y^* is a discrete variable which can take any value from 1- 4 and the types of poverty indicated by the dependent variable can be interpreted as follows. x_i is the set of explanatory variables which are explained in table 02.

If $y = 1$ - Household is extremely poor

If $y = 2$ – Household is poor

If $y = 3$ – Households is vulnerable non-poor

If $y = 4$ – Household is non-poor

Two models were estimated based on equation 01. The first model was estimated to capture direct impact of VAT on poor, considering VAT rate at 11%. However, VAT rate of Sri Lanka was increased from 11% to 15% in 2016. Thus, an additional amount of VAT has to be paid by households. The second model was estimated to examine the impact of increasing VAT rate from 11% to 15% on the poor. Therefore, the dependent variable of the second model was calculated by considering the additional amount of VAT paid by the households, while the independent variables remain the same.

Table 02: Description of Variables

Variable Name	Description
VAT/Expenditure Ratio	Amount of VAT on food items as percentage of total food expenditure
Age	Age of the Head of Household (HH)
HH Size	Size of the Household
Sectors (Base Category is Estate Sector)	
Urban	1 if HH lives in an area governed by Municipal Council or Urban Council and 0 otherwise
Rural	1 if HH lives in Plantation areas, which are more than 20 acres of extent and having not less than 10 residential laborers and 0 otherwise
Gender of the Head of HH	1 if Male Headed Household and 0 otherwise
Ethnicity (Base Category is Sinhala)	
SL Tamil	1 if HH is Sri Lanka Tamil and 0 otherwise
IND Tamil	1 if HH is Indian Tamil and 0 otherwise
SL Moors	1 if HH is Sri Lanka Moors and 0 otherwise

Burgher	1 if HH is Burgher and 0 otherwise
Civil Status (Base Category is Unmarried)	
Married	1 if the head of HH is Married and 0 otherwise
Widowed	1 if the head of the HH Widowed and 0 otherwise
Divorced	1 if the head of HH is Divorced and 0 otherwise
Separated	1 if the head of HH is Separated and 0 otherwise
Education (Base Category is No Schooling)	
Primary	1 if the Head of HH is educated up to grade 5 and 0 otherwise
Secondary	1 if the Head of HH education is between grade 5 – 10 and 0 otherwise
Tertiary	1 if the Head of HH education is between G.C.E. (O/L) – G.C.E. (A/L) and 0 otherwise
Degree or <	1 if the Head of the HH has University Qualifications University or above
Employment (Base Category is Unemployed)	
Government	1 if the Head of HH is employed in government sector and 0 otherwise
Semi-gov	1 if the Head of HH is employed in semi-government sector and 0 otherwise
Private	1 if the Head of HH is employed in private sector and 0 otherwise
Employer	1 if the Head of HH is an employer and 0 otherwise
Self-emp	1 if the Head of HH is self-employed and 0 otherwise
Family Work	1 if the Head of HH is a family worker/labor and 0 otherwise
Agri Land (Base Category is No Agri Land)	
Have Agri Land	1 if HH owns agriculture land and 0 otherwise
Disability (Base Category is disability)	
No disability	1 if Head of the HH is not a disabled person and 0 otherwise
Remittances (Base Category is No Remittances)	
Remittances	1 if HH receives remittances and 0 otherwise
Expenditure/Income	Income to expenditure ratio

Results and Discussion

Do the poor pay higher proportion of their expenditure on VAT than the rich?

Prior to econometric analysis, the differences in shares of expenditure that have been paid as VAT by the households in each type of poverty were examined. Table 03: summarizes the shares of monthly expenditure which have been paid off as VAT by four different poverty groups on the consumption of food and non-food items.

Table 03: Shares of Monthly Expenditure, Paid Off as VAT on the Consumption of Food and Non-Food Items

Types of Poverty	VAT on food items as a share of total food expenditure	VAT on non-food items as a share of total non-food expenditure
Extreme Poor	1.41%	3.67%
Poor	1.27%	3.36%
Vulnerable Non-Poor	1.30%	3.90%
Non-Poor	1.05%	5.87%

Source: Calculated by the author based on HIES (2012/13)

According table 03, extremely poor people pays 1.41% of their monthly total food expenditure as VAT while 1.27%, 1.30% and 1.05% paid by the poor, vulnerable non-poor and non-poor respectively. Despite there are no dramatic differences among the shares paid by the households in each type of poverty, the non-poor pays the lowest share of food expenditure as VAT, compared to other three groups. In contrast, the VAT on non-food items as a ratio of total non-food expenditure is dramatically higher for non-poor category (5.87%) compared to both extreme (3.67%) and poor (3.36%) categories. For instance, non-poor people tend to enjoy the facilities at private hospitals and private schools where both charges and VAT are applied. In contrast, poor people rely on state provided free education and health facilities which are provided free of charge and without VAT. Thus, non-poor people have to pay higher share of their monthly non-food expenditure as VAT, compared to the poor.

However, the amount of VAT paid on food expenditure is more crucial in terms of the poor, as the poor people allocate a large share of their expenditure on food items. Thus, VAT adversely affects the poor through consumption of food item rather than non-food items, because the VAT to food expenditure ratio is higher for the poor compared to non-poor and also poor people spend considerably larger share of their expenditure on food items. Therefore, it is apparent that poorer people pays a higher share of their food expenditure as VAT compared to non-poor people. In contrast, the share of VAT paid out of non-food expenditure is lower for the poor compared to the rich. However, the lower share of VAT paid from non-food expenditure of poor people does not imply that poor people are less worse off compared to the rich, on the consumption of non-food items. It indicates that poor people rely mainly on the non-food items which are freely available in the market, irrespective of the quality of non-food goods and services.

Empirical Estimation of Impact of VAT on Poor

This section focuses on the results of the estimated ordered probit model. Table 04 indicates the marginal effects related to each type of poverty in percentage, along with coefficients. However, the values of marginal effects are more meaningful than the estimated coefficients and therefore this discussion is based on the values of the marginal effects. The key variable of the model explained in table 04 is “VAT/expenditure ratio” which used as a proxy for VAT. The values of the marginal effects state that 1% increase in the amount of VAT as a

share of food expenditure increases the probability of being extreme poor, poor and vulnerable non-poor by 0.0061%, 0.4942% and 1.4760% respectively, while reducing the probability of being non-poor by 1.9764%. Increase in amount of VAT as share of food expenditure can be occurred either due to increase in VAT rate or decrease in food expenditure. However, increase in VAT rate is the main factor of increasing of the amount of VAT as a share of food expenditure, since decrease in expenditure on foods is not practical. Furthermore, all the estimated coefficients for VAT variable are statistically significant at 1% level, showing the accuracy of the estimated coefficients. Thus, the estimated marginal effects emphasize that increase in VAT rate increases poverty outcomes in two ways. Firstly, rise in VAT rate increases a selected person's probability of being extreme poor, poor and vulnerable non-poor and in turn surge of poverty incidence. Secondly, increased VAT rate reduces a selected person's probability of graduating out of poverty and therefore higher poverty level may continue further. Therefore, it is confirmed that VAT increases the poverty incidence of Sri Lanka. Moreover, the results of this study are also consistent with Shah and Whalley (1991) and Save the Children (2000) in the context of Pakistan and UK respectively.

Apart from the main variable, other demographic, economic and social factors are also included into the model to obtain more roust estimation. The results highlight that bigger household size increases the probability of falling into all types of poverty while reducing the probability of being non-poor. Considering the sectoral disparity in poverty outcomes in Sri Lanka, the results indicate that staying in urban sector reduces the probability of being extreme poor (0.022%), poor (2.09%) and vulnerable non-poor (7.23%) while increasing the probability of being non-poor (9.35%) compared to staying in estate sector of Sri Lanka. However, a selected household in rural sector associates with higher probabilities of falling into each type of poverty compared to estate sector. This is mainly due to largest share of poor people (86.8%) are living in the rural sector while only 7.6% of poor are in the estate sector. In terms of ethnicity and poverty, statistically significant results have been found only for Sri Lankan Tamils and Moors. In general, it indicates that Sri Lankan Tamils are poorer than that of Sinhalese and however Sinhalese are poorer than that Sri Lankan Moors. As table 04 indicates, education has become more crucial factor in explaining poverty in Sri Lanka. The households with higher educational attainments have significantly low probability of being extreme poor, poor and vulnerable non-poor while having higher probability of being non-poor, compared to the households with no education. More specifically, if the head of household has tertiary education, the household's probabilities of being extreme poor, poor and vulnerable non-poor are lowered by 0.05%, 3.94% and 15.68% respectively, compared to the household with no education. Similarly, if the head of household has tertiary education, the household has 19.66% of higher chance of being a non-poor household compared that no education household. Similar to higher educational attainments, having agricultural lands and receiving international remittances, being an employer and employed in government, semi-government also reduce likelihood of falling into each poverty level while increasingly the probability of being non-poor significantly. In fact, the estimated results for correlates of poverty other than VAT are also similar with Deyshappriya (2017), Sen (1999), Laderchi (2001), Siddhisena and Jayathilaka (2006), Gunewardena (2007) and Newhouse et al (2016) who found that educational attainments, employment status, household size, geographical location, access to basic services and ethnicity as the key determinants of absolute poverty in many developing countries including Sri Lanka. Especially, Deyshappriya (2017), De Silva (2008), Adam and Jane (1995) and Rodriguez and Smith (1994) stressed that additional year of schooling reduces the probability of being poor. Similarly, De Silva (2008), Gunewardena *et al.* (2007) and Newhouse et al (2016) highlighted that poverty in estate and rural sectors are significantly higher than that of urban sector. Apart from that, Adam and Jane (1995), Grootaert (1997), De Janvry and Sadoulet (2000) and Mukherjee and Benson (2003) revealed that poverty is considerably low when the head of household is a wage employee.

Table 04: **Ordered Probit Regression Result (When VAT rate = 11%)**

Variables	**Coefficients**	**Marginal Effects (Percentages)**			
		Extreme Poor (Y=1)	**Poor (Y=2)**	**Vulnerable Non-Poor (Y=3)**	**Non-Poor (Y=4)**
VAT/Expenditure Ratio	-0.0804*** (-5.59)	0.0061*** (2.92)	0.4942*** (5.50)	1.4760*** (5.54)	-1.9764*** (-5.56)
Age	0.0024** (2.31)	-0.000018** (-1.97)	-0.0150** (-2.30)	-0.4483** (-2.31)	0.0600** (2.31)
Household Size	-0.2302*** (-31.37)	0.0174*** (3.60)	1.4148** (22.91)	4.2249*** (28.27)	-5.6571*** (-31.00)
Sector (Estate)					
Urban	0.4420*** (7.12)	-0.0218*** (-3.32)	-2.0903*** (-8.91)	-7.2256*** (-8.14)	9.3378*** (8.42)
Rural	-0.1157** (-1.99)	0.0078* (1.86)	0.6685** (2.11)	2.0755** (2.03)	-2.7518** (-2.05)
Gender (Female)					
Male	0.0912** (2.28)	-0.0075* (-1.81)	-0.5878** (-2.18)	-1.7008** (-2.24)	2.2962** (2.23)
Ethnicity (Sinhalese)					
Sri Lanka Tamil	-0.2247*** (-7.28)	-0.0237*** (3.07)	1.6366*** (6.24)	4.3401*** (6.96)	-6.0004*** (-6.80)
India Tamil	0.0426 (0.66)	-0.0030 (-0.69)	-0.2522 (-0.68)	-0.7714 (-0.67)	1.0266 (0.67)
Sri Lanka Moors	0.0822** (1.99)	-0.0055* (-1.94)	-0.4735** (-2.11)	-1.4735** (-2.04)	1.9525** (2.06)
Burgher	0.1362 (0.42)	-0.0081 (-0.53)	-0.7355 (-0.48)	-2.3811 (-0.44)	3.1248 (0.45)
Civil Status (Single)					
Married	0.1811* (1.88)	-0.0167 (-1.42)	-1.2326* (-1.70)	-3.4302* (-1.83)	4.6796 (1.80)
Widowed	0.2709*** (2.72)	-0.0152** (-2.52)	-1.4028*** (-3.22)	-4.6389*** (-2.94)	6.0570*** (3.01)
Divorced	0.1867 (1.01)	-0.0103 (-1.33)	-0.9620 (-1.23)	-3.2005 (-1.10)	4.1729 (1.12)
Separated	-0.0164 (-0.14)	0.0013 (0.14)	0.1025 (1.14)	0.3030 (0.41)	-0.4067 (-0.14)
Education (No Schooling)					
Primary	0.2642*** (5.16)	-0.0159*** (-3.10)	-1.4234*** (-5.79)	-4.5956*** (-5.46)	6.0350*** (5.57)
Secondary	0.7034*** (13.77)	-0.0783*** (-3.55)	-4.9747*** (-11.10)	-13.019*** (-13.70)	18.0718*** (13.23)
Tertiary	1.3490*** (19.63)	-0.0396*** (-3.48)	-3.9442*** (-22.70)	-15.679*** (-33.55)	19.6624*** (35.90)
Degree or <	1.6310*** (9.84)	-0.0233*** (-3.30)	-2.9201*** (-22.82)	-13.849*** (-37.73)	16.7922*** (41.15)
Agri Land (No Agri Land)					
Agri Land	0.1831*** (5.40)	-0.0176*** (-2.69)	-1.2738*** (-4.73)	-3.4923*** (-5.21)	4.7837*** (5.09)
Employment (Unemployed)					
Government	0.4258*** (6.44)	-0.0182*** (-3.30)	-1.8609*** (-9.09)	-6.7399*** (-7.72)	8.6191*** (8.08)
Semi-government	0.3999*** (4.79)	-0.0165*** (-3.37)	-1.7219*** (-7.08)	-6.3000*** (-5.78)	8.0386*** (6.07)
Private	-0.1107*** (-3.10)	0.0091** (2.30)	0.7096*** (2.97)	2.0599*** (3.06)	-2.7786*** (-3.04)
Employer	0.8344*** (6.82)	-0.0206*** (-3.33)	-2.4822*** (-15.71)	-10.597*** (-11.99)	13.0998*** (13.03)
Self-employment	0.0972*** (2.72)	-0.0068** (-2.26)	-0.5737*** (-2.82)	-1.7582*** (-2.76)	2.3388*** (2.78)
Family Worker	0.1159 (0.47)	-0.0072 (-0.57)	-0.6380 (-0.53)	-2.0412 (-0.49)	2.6865 (0.50)

Disability (Non-disable)					
Disabled	0.1029*** (4.20)	-0.0076*** (-2.73)	-0.6234*** (-4.25)	-1.8778*** (-4.21)	2.5088*** (4.24)
Remittances (No Remittances)					
Remittances	0.4810*** (9.88)	-0.0195*** (-3.36)	-2.0263*** (-13.47)	-7.4628*** (-4.21)	9.5086*** (12.84)
Cut1	-3.1936				
Cut2	-1.5802				
Cut3	-0.6368				
Prob > chi^2	0.0000				
Pseudo R^2	0.1335				
Observations	20536				

Source: Calculated by the author based on HIES (2012/13)

*** - Significant at 1% level

** - Significant at 5% level

* - Significant at 10% level

The estimated ordered probit model is statistically significant at 1% level and therefore the model is statistically appropriate to examine the impacts of VAT on the poor.

Apart from the regression analysis, figure 04 clearly depicts that average probability of being extremely poor, poor and vulnerable non-poor is significantly higher for the group of households whose VAT/expenditure ratio is above the average level. Similarly, average probability of being non-poor is lower for the households' whose VAT/expenditure ratio is higher than the average VAT/expenditure. Therefore, it is apparent that higher VAT rate, increases the probability of falling into one of the categories of poverty, while reducing the probability of being in non-poor category.

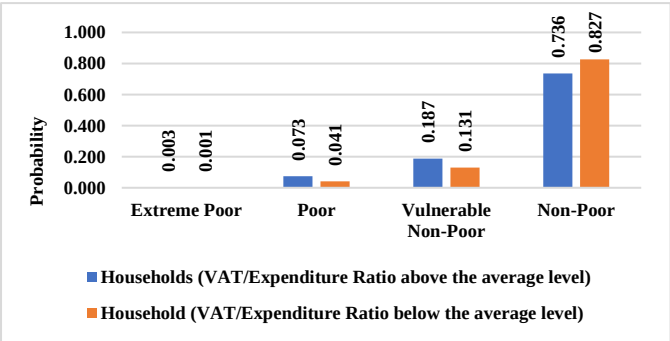


*Figure 04: **Average Household Probability of Falling into Each Type of Poverty***
Source: Created by the author based on HIES (2012/13)

Impact of Changing the VAT Rate from 11% to 15%

Above table 04 summarizes the impact of VAT on poor when the VAT rate is at 11%. However, VAT rate of Sri Lanka was increased from 11% to 15% in 2016 and thus, an additional amount of VAT has to be paid by households. Table 05 indicates the impact of paying additional amount of VAT for food items on poverty. The analysis used the same dependent variable and set of independent variables as in the table 04. However, the independent variable 'VAT/Expenditure Ratio' was calculated by considering the additional amount of VAT paid by the households for food items.

Table 05: Impact of Paying Additional Amount VAT on Poverty

Variables	Coefficients	Marginal Effects (Percentages)			
		Extreme Poor (Y=1)	**Poor (Y=2)**	**Vulnerable Non-Poor (Y=3)**	**Non-Poor (Y=4)**
VAT/Expenditure Ratio	-0.2269*** (-5.65)	0.0171*** (2.93)	1.3942*** (5.56)	4.1638 *** (5.60)	-5.5750*** (-5.62)
Age	0.0024** (2.31)	-0.000018** (-1.97)	-0.0150** (-2.30)	-0.4481** (-2.31)	0.0600** (2.31)
Household Size	-0.2302*** (-31.37)	0.0174*** (3.60)	1.4146** (22.91)	4.2248*** (28.27)	-5.6567*** (-31.00)
Sector (Estate)					
Urban	0.4416*** (7.12)	-0.0218*** (-3.32)	-2.0883*** (-8.90)	-7.2188*** (-8.13)	9.3388*** (8.41)
Rural	-0.1160** (-1.99)	0.0078* (1.86)	0.6699** (2.11)	2.0805** (2.04)	-2.7582** (-2.06)
Gender (Female)					
Male	0.0913** (2.28)	-0.0075* (-1.81)	-0.5883** (-2.18)	-1.7026** (-2.25)	2.2985** (2.23)
Ethnicity (Sinhalese)					
Sri Lanka Tamil	-0.2247*** (-7.28)	-0.0236*** (3.07)	1.6361*** (6.24)	4.3394*** (6.96)	-5.9991*** (-6.80)
India Tamil	0.0428 (0.66)	-0.0030 (-0.69)	-0.2534 (-0.69)	-0.7755 (-0.67)	1.0320 (0.67)
Sri Lanka Moors	0.0826** (1.99)	-0.0055* (-1.94)	-0.4754** (-2.12)	-1.4801** (-2.04)	1.9611** (2.06)
Burgher	0.1364 (0.42)	-0.0081 (-0.53)	-0.7362 (-0.48)	-2.3839 (-0.44)	3.1282 (0.45)
Civil Status (Single)					
Married	0.1812* (1.88)	-0.0167 (-1.42)	-1.2333* (-1.70)	-3.4319* (-1.83)	4.6817 (1.80)
Widowed	0.2710*** (2.72)	-0.0152** (-2.52)	-1.4028*** (-3.22)	-4.6397*** (-2.94)	6.0577*** (3.01)
Divorced	0.1869 (1.01)	-0.0103 (-1.33)	-0.9627 (-1.23)	-3.2035 (-1.10)	4.1765 (1.13)
Separated	-0.0163 (-0.14)	0.0013 (0.14)	0.1018 (1.14)	0.3012 (0.41)	-0.4043 (-0.14)
Education (No Schooling)					
Primary	0.2641*** (5.16)	-0.0159*** (-3.10)	-1.4228*** (-5.79)	-4.5940*** (-5.46)	6.0328*** (5.57)
Secondary	0.7031*** (13.77)	-0.0782*** (-3.55)	-4.9714*** (-11.10)	-13.0132*** (-13.69)	18.0629*** (13.22)
Tertiary	1.3485*** (19.62)	-0.0396*** (-3.48)	-3.9427*** (-22.70)	-15.675*** (-33.54)	19.6572*** (35.88)
Degree or <	1.6303*** (9.84)	-0.0233*** (-3.34)	-2.9193*** (-22.82)	-13.847*** (-37.70)	16.7894*** (41.12)
Agri Land (No Agri Land)					
Agri Land	0.1831*** (5.39)	-0.0176*** (-2.68)	-1.2731*** (-4.73)	-3.4912*** (-5.20)	4.78195*** (5.09)
Employment (Unemployed)					
Government	0.4259*** (6.44)	-0.0182*** (-3.30)	-1.8608*** (-9.09)	-6.7404*** (-7.72)	8.6193*** (8.09)
Semi-government	0.4000*** (4.79)	-0.0165*** (-3.37)	-1.7219*** (-7.08)	-6.3007*** (-5.78)	8.0391*** (6.07)
Private	-0.1106*** (-3.10)	0.0091** (2.30)	0.7085*** (2.97)	2.0572*** (3.06)	-2.7748*** (-3.04)
Employer	0.8342*** (6.82)	-0.0206*** (-3.33)	-2.4816*** (-15.71)	-10.595*** (-11.98)	13.0973*** (13.03)
Self-employment	0.0973***	-0.0068**	-	-1.7592***	2.3399***

	(2.72)	(-2.26)	0.5739*** (-2.82)	(-2.77)	(2.78)
Family Worker	0.1161 (0.47)	-0.0072 (-0.57)	-0.6394 (-0.53)	-2.0464 (-0.49)	2.6929 (0.50)
Disability (Non-disable)					
Disabled	0.1029*** (4.19)	-0.0076*** (-2.73)	-0.6228*** (-4.25)	-1.8763*** (-4.21)	2.5067*** (4.23)
Remittances (No Remittances)					
Remittances	0.4810*** (9.88)	-0.0195*** (-3.36)	-2.0258*** (-13.47)	-7.4619*** (-12.18)	9.5072*** (12.84)
Cut1	-3.1956				
Cut2	-1.5825				
Cut3	-0.6391				
Prob > chi^2	0.0000				
Pseudo R^2	0.1335				
Observations	20536				

Source: Calculated by the author based on HIES (2012/13)

*** - Significant at 1% level

** - Significant at 5% level

* - Significant at 10% level

The amount of VAT which individuals have to pay increases with the rise of VAT from 11% to 15%. Therefore, the amount of VAT paid on food items also increases. Ultimately, rise in VAT rate increases probabilities of being extreme poor, poor and vulnerable non-poor by 0.017%, 1.39% and 4.16% respectively, while decreasing the probability of being non-poor by 5.57%. Therefore, it is obvious that increase in VAT rate by 4% further worsens the well-being of individuals by increasing the level of poverty. Sekwati and Malema (2011) also found that increase in VAT rate adversely affects the poor in the context of Botswana. They examined the impacts of increasing the VAT rate from 10% to 12 % on consumption of poor household using the household income and expenditure data in 1993/94 and 2002/03. As they highlighted, the marginal propensity to consume of low income people is higher compared to the rich. In addition to the variable related to VAT, the relationships between four types of poverty and all other independent variables are almost same as the model estimated in table 04. The overall significance of the estimated model is established at 1% level while Pseudo R^2 (0.1335) confirms the goodness of fit of the model.

Conclusion and Recommendations

This paper attempts to model the impact of VAT on poverty in Sri Lanka, by considering the amount of VAT paid by the household on the consumption of food items. In fact, VAT can be considered as one of the key indirect taxes in Sri Lanka which has remarkably contributed to government revenue, though it adversely affects low income groups in the country. Apart from that, poverty incidence of Sri Lanka at national level shows a dramatic reduction since 1995/96 and currently only 4.1% of population are below the national poverty line. However, the poverty reduction is not even across all the sectors and therefore estate and rural sectors account for significantly higher poverty rate than urban sector and also national level. The empirical investigation confirms that VAT essentially increase the probability of being extreme poor, poor and vulnerable non-poor by 0.0061%, 0.4942% and 1.4760% respectively, while reducing the probability of being non-poor by 1.9764%. Apart from that, the recent hike in VAT rate from 11% to 15% increases households' likelihood of being poor further. More specifically, rise in VAT rate by 4% increases probabilities of being extreme poor, poor and vulnerable non-poor by 0.017%, 1.39% and 4.16% respectively, while decreasing the probability of being non-poor by 5.57%. Therefore, it is timely important to rethink about the current VAT rate and also overall tax structure in Sri Lanka. VAT exemption for both food and non-food items should be rationalized and continued further, considering requirements of the poor and low-income groups. Similarly, a hybrid VAT rate which consists of lower VAT rate for essential food and non-food items and higher VAT rate for luxury food and non-food items may also be a better remedy to lessen the adverse impact of VAT on the poor, while ensuring higher VAT revenue for government. However, the study strongly recommends a gradual shift from indirect to direct taxes in order to ensure both welfare of low income groups and higher tax revenue for the government.

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