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**Tax reforms in Sri Lanka – will a tax
on public servants improve
progressivity?**

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1. Introduction

The need to reduce budget deficits by increasing government revenue was a challenge facing the Sri Lankan government over a long period. Amongst the various forms of revenue received by the government, tax revenue amounting to close to 90 percent of government revenue has been an important source. About 15-20 percent of tax revenue comes from income taxes. One of the key elements of the tax reforms, in the recent past, within the government has been the need to improve revenue and expand the tax base. On the other hand, present government development thrust over the next decade is to become the knowledge hub in the region¹. The promotion of knowledge based industries requires professionals and dynamic human capital.

Within this context, budget presented in parliament in November 2010 intends to create a competitive income tax regime which aims to mobilize professionals and build a knowledge reserve in the country.² With the intention of increase tax revenue while keeping the tax rates competitive, revisiting the various exemptions granted in individual, corporate and income tax has taken centre stage. Within this, the practice of income tax exemption granted to Sri Lanka's public sector employees has come under particular scrutiny. Government 2011 tax reforms, was proposed to remove the tax exception given to the public sector. At the same time tax rates have been reduced with the aim of providing lower tax regime for Pay As You Earn (PAYE) tax payers.

This study hopes to examine how taxing the public servants affect tax revenue and the tax base and how the proposed reforms redistribute taxes and income. The study will also examine how the proposed changes will affect inequity in the distribution of incomes.

The specific objectives of the study are the following:

1. How will the proposed tax reforms affect the tax revenue and the tax base.
2. How will the proposed reforms affect the redistribution of taxes and incomes?

The results show that under the tax system that existed in 2007 the government revenue from taxes amount to Rs. 12.2 billion and 9 percent of the formal sector employees were taxed. When the 2007 tax system is extended to public sector servants, the tax revenue increases to Rs. 16.5 billion and the tax base captures 15.8 percent of formal sector workers. The increase in tax base is mainly due to the public sector workers being captured in the tax net. The contribution of these workers to total tax revenue is Rs. 4.3 billion. Under the tax reforms of 2011 (the public servants are also taxed, but the tax rate and the tax free threshold is reduced), government revenue is Rs. 6.3 billion and the tax

¹Present government development policy aims to reposition Sri Lanka in the global arena as knowledge based strong middle income country with better and improved living standards. Development policy framework has identified five driving forces to make Sri Lanka a dynamic global hub -- naval, aviation, commercial, energy and knowledge hub.

² Budget speech 2011, GOSL

net captures 3.3 percent of formal employees. In this system both the tax revenue and the tax base has decreased below the levels that existed under the 2007 tax system, which did not tax public servants. This is mainly because both the tax rate was reduced and tax free threshold was increased under the 2011 tax system. The results of a simulation exercise that was carried shows that both the tax revenue and the tax base can be expanded by increasing the tax rate and lowering the tax free threshold. It must be noted that these results ignore tax evasion, which is likely to be higher when the tax rate is higher. The results also show that all tax systems considered in the study are progressive. The most progressive tax system in income redistribution is the 2007 tax system extended to the public servants.

2. Background

The prevailing budgetary context in Sri Lanka has been one of ever increasing government expenditures. Socio-political conditions in the country, particularly considering existing institutions, practices of electoral democracy and the welfare state ideology, have resulted in elected governments continuing to maintain certain services in the public sector. Free education up to tertiary level (including various school welfare programs such as free text books, uniforms and mid-day meals), free health services, and various government transfers like Samurdhi are offered by the state. Moreover, the government continues to provide for physical and social infrastructure in order to meet the country's economic development needs. As deficit-financing was quite extensively practiced by all governments so far, amortization and interest payments on public debt have emerged as another large and rather rigid component of essential annual expenditures of the government. Another way of looking at these issues would be to highlight the large proportion of government expenditure devoted for the compensation of employees in the public sector. All these have been constantly placing strong upward pressures, year after year, on current as well as capital expenditures of the government.

Important factors influencing the country's fiscal system have undergone change and transformation over the last decade, including the introduction of several ad hoc taxes, but little in terms of expanding the tax base. Despite higher rates, and greater number, of taxes, government revenue to GDP ratio has dropped to 15 - 16 percent over the period 2003-2009, as compared with 20 - 24 percent of government revenue to GDP ratio before 1995. In 2010, this dipped below 15 percent to 14.9 percent of GDP. Tax revenues have always formed the bulk (close to 90 percent) of government revenue as sources of non-tax revenue have been limited. The revenue decline noted above has largely represented a decline in tax revenues relative to GDP.

With continuously high budget deficits, growing pressures on public finances owing to continued welfare spending, infrastructure investments and reconstruction efforts in the conflict-affected North and East the need to broaden the tax base and raise more tax

revenue has become a policy priority of the government. The government's target is to ensure that the ratio of its revenue to GDP rises up to levels that prevailed in Sri Lanka about 10-15 years ago. The target has been expressed to raise this ratio to a level of around 20 percent by 2016. The government entered into an IMF Stand-by Arrangement (SBA) for USD 2.6bn in mid-2009. Along with this facility, the government has committed to raising the revenue-to-GDP ratio from 14 percent of GDP in 2009 to 16.9 percent by 2012, i.e., 2 percent over two years. In June 2009, a Presidential Commission on Taxation was appointed to investigate what policy reforms are required to achieve this goal.

2.1 Overview of Income Taxation in Sri Lanka

Income tax was first introduced to Sri Lanka in 1932 by Ordinance No. 2 of 1932. This Ordinance was amended on 20 occasions during the time up to independence in 1948. The basic principles of income tax computation in Sri Lanka have largely remained unchanged since the original Ordinance was enacted in 1932. Tax liability is based on income derived from Sri Lanka by any person whether resident or non-resident for the income tax year, which is twelve months commencing from April 1. Over the period since the introduction of the income tax, various changes, as given in Annex 1, were introduced amending the way in which income tax was charged.

The consolidated Inland Revenue Act (IRA) No. 28 of 1979 brought several changes to the taxation of personal income. Accordingly, a Pay-As-You-Earn (PAYE) system of taxation was introduced from October 1971 for all employees' remuneration. Since April 1, 1979 the unit of taxation is the individual. Income, if any, of children under 18 is aggregated with the income of the father.

2.2 Taxing Public Sector Employees

As of 2010, Sri Lanka's public sector employs around 1.1 million of the country's 7.7 million strong total employed population (DCS, 2011)³. This includes public sector officials, parliamentary legislators and other politicians. In a tax policy unique to Sri Lanka, this entire segment is exempt from paying income tax on their emoluments.

When this policy was introduced by late President J.R. Jayawardena in 1979, the initial rationale was that wages of public employees were significantly lower than private sector employees at the time. Given the low salaries, this tax exemption was seen as essential to retaining talented staff in the public sector at a time when the economy was moving in to a new phase, post-liberalization. However, given pay revisions in the public sector in recent years, it has become increasingly difficult to rationalize why this entire group of income earners should be excluded from paying tax, when they utilize public services as much as private employees do.

³ This excludes Northern province

It is in this context, and particularly considering the need to broaden the tax base and minimize tax exemptions for individuals and enterprises alike, that the debate over tax-free status to public employees has arisen. It is also morally difficult for the government to promote greater tax payer compliance, in general, while maintaining tax exempt status for its own employees. Thus, this strong contention on equitable tax treatment has sparked an economic debate on the need to revisit this tax-free status. The budget proposals for 2011 presented in November 2010 proposed to extend the income tax liability to the public sector workers.⁴ Accordingly, public sector workers are liable to pay PAYE tax since April, 2011

2.3 Personal Income Taxation (Non-corporate Income Tax)

As can be seen in Table 1, PAYE taxes are a considerable source of income for the government. Table 1 below provides some details on the number of non-corporate tax payers in 2005 *vis a vis* 2009.

Table 1: Number of Non-corporate Tax Payers

Non-corporate tax payer units	2005	2009
Individuals	325,695	552,144
<i>Of which:</i>		
Employees	205,089	351,726
Others	120,570	200,418
Joint Ventures of Partnerships	12,632	16,642
Bodies of Persons	2,262	2,106
Total	340,589	570,892

Source: Inland Revenue Department (IRD)

As seen above the number of unincorporated tax units stood at 570,892 in 2009. If individuals only, within this total, are taken (552,144) their number would amount to about 2.8 percent of the population counting the current population of the country at 20 million. If employees covered by the PAYE scheme are excluded, the percentage drops to 1 percent. The percentage of the number of taxpayers in a country out of its population would depend on a number of variables like its income levels (e.g. per capita income), degree of institutional development, people's literacy levels and so on.

The tax revenue from non-corporate tax payers and from those under PAYE schemes. The former include individuals, partnerships and bodies of persons other companies or public corporations. Revenues from these non-corporate units and from employees under the PAYE system form a small share of total income tax revenue. Non-corporate and PAYE tax revenues as percentages of GDP, total tax revenue and total government revenue for the four years, 2005-08 are shown in Table 2.

Table 2: Contribution of Non-corporate and PAYE tax

Non-corporate and PAYE tax as percentage of:	2005	2006	2007	2008
GDP	0.77	0.33	0.45	0.43
Total Tax Revenue	5.59	2.25	3.19	3.25
Total Government Revenue	4.95	2.02	2.87	2.90

Source: IRD

As could be summarised from the minute proportion of taxpaying individuals in the total population, their revenue contribution appears rather insignificant in relation to whatever national aggregate one compares it with – GDP, total tax revenue or total government revenue. There is clearly a need to broaden the tax base among individuals in society. In an inter-country comparison, the relatively low contribution of the non-corporate sector to tax revenue in Sri Lanka comes out sharply. Analysis revealed that personal income tax to GDP share in Sri Lanka is substantially lower than not only in the developed countries in the Asia Pacific region but also countries like Malaysia, Fiji, India, China, and the Philippines.

The taxable income threshold beyond which an individual becomes liable to tax rose from LKR 12,000 per annum in 1979, LKR 144,000 in 1997, and then to LKR 240,000 in 2002. The last revision to the threshold was in 2004 to LKR 300,000, and has remained at that level since then. The current applicable structure is given in Annex 2.

The PAYE tax which is a major category falling under ‘income taxes’ signifies the income component from employment. Under existed tax policy, the formal private sector and the semi-government sector become tax liable while the public sector is tax exempted.

The intra-country (provincial) distribution of tax payers and revenue collected from personal income taxation also remains skewed. Details on this are provided in Table A2-3 in the appendix. Table A2-4 in the appendix provides further analysis on the breakdown of tax payers and revenue generated, by total taxable income level.

2.4 Employee structure

According to the existing tax regime, public sector employees (18% of the formal sector employees) were tax exempted (see Table 3).

Table 3: Employee Breakdown

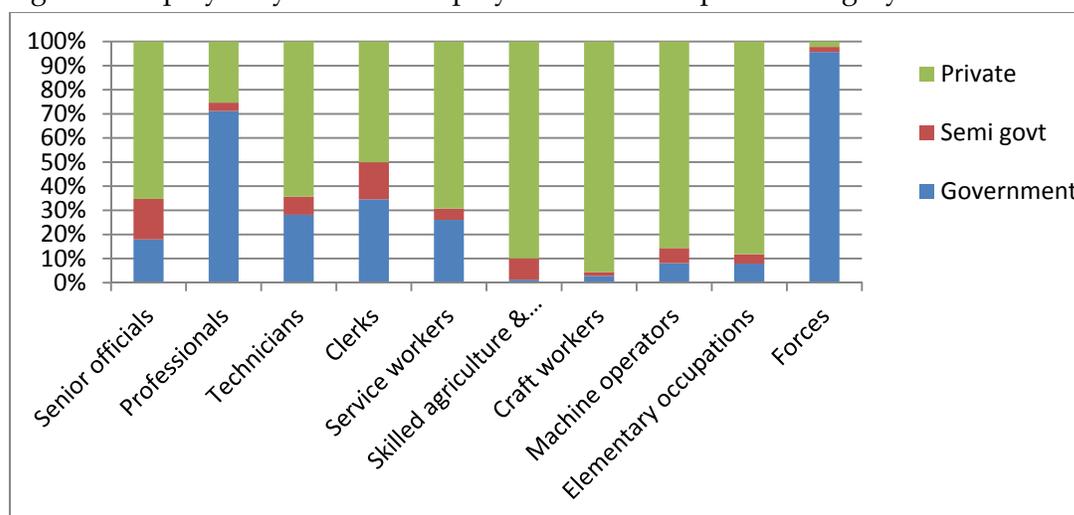
Employment sector	2006/07
Public sector	749,835
Semi government	230,019
Private sector	3,244,918
Employer	135,765
Own account worker	1,840,735
Unpaid worker	475,113

Source: own calculations using HIES 2006/07 data

Note: All employees are non-corporate tax payers.

Figure 1 compares the proportion of employed by employment sector in different occupational categories. The occupational profiles of public and private sector employees are quite distinct. Public sector workers are more concentrated in certain occupations --- 70 percent of professionals are in public sector compared with 30 percent of private and semi government sector. Also, 96 percent of defence employees are in public sector. This graph clearly shows that blue collar workers are concentrated in private sector.

Figure 1 Employee by sector of employment and occupation category

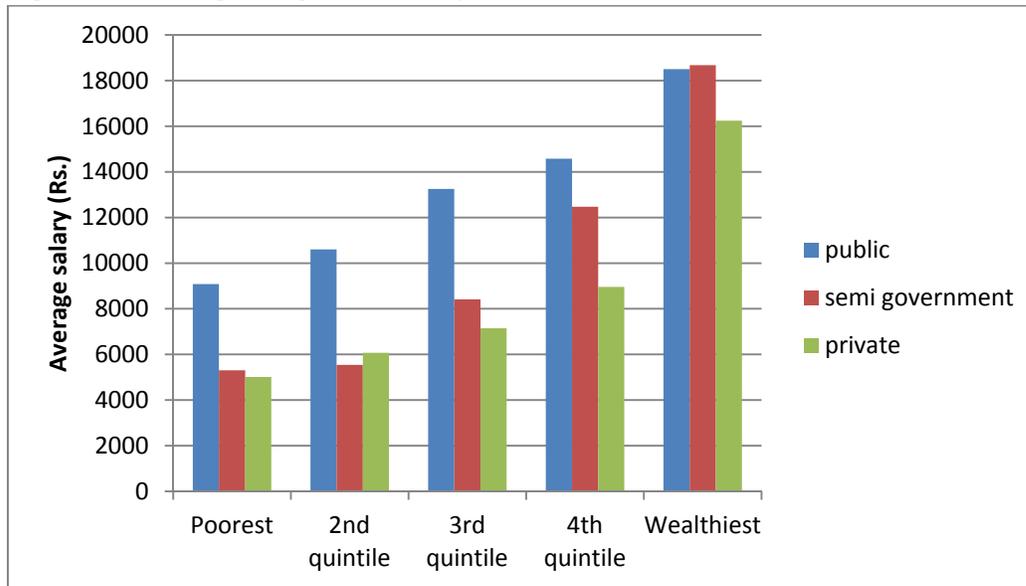


Source : Constructed using HIES 2006/07

When comparing monthly wages, public sector employees receive higher earnings (Rs. 15,322) compared to private sector workers (Rs. 7,796). Further, as presented in Figure 2

in each quintile public sector employees receive higher monthly wage compared to private and semi government sector.

Figure 2 : Average Wage Income by Income Quintile



Source : Constructed using HIES 2006/07

3. Literature Review and Scientific Contribution of the Research

As explained in the background section, the tax policy in the country has developed over time purely on a needs basis (i.e., the need to increase tax revenue) without taking into consideration equity aspects. Although some studies have examined the incidence of taxes across households for specific taxes (e.g., Coady, D. et al 2006) in Sri Lanka, the distribution of income taxes in the country and their equity are not well understood. The available literature on the efficiency and equity of income taxes in the country are mainly descriptive (see for example, Presidential Commission on Taxation, 2009).

Gemmell and Morrissey (2005) surveying the literature on the effects of taxes and reforms to tax structures on distribution and the poor in developing countries find only a few studies examining these issues. The available studies use two main approaches. The earlier studies use Average Rate Progression (ARP), which involves comparing marginal tax rates to average tax rates for selected income levels or income groups (See Gemmell and Morrissey for details of this approach). Several studies have also used concentration curves and dominance concepts to examine progressivity of taxes and tax systems. The studies using ARP approaches generally find personal income taxes to be progressive, however the results of these studies are limited by the fact that they ignore tax evasion.

This study proposes to use the second methods to assess the distributional aspects of present income tax policy in the country and relative to that the progressivity and equity

changes that will come about with the introduction of a new tax policy. In that sense the scientific contribution of the research is mainly empirical.

Assessing tax systems

“The assessment of tax systems draws on two fundamental principles; efficiency and equity. The former relates to the presence of distortions in the economic behavior of agents, while the later focuses on distributive justice”(Duclos and Araar, 2006: p 127). A tax is said to be progressive if the tax reduces the inequality in the population. In other words, a progressive tax will make the distribution of net incomes more equal than the corresponding distribution of gross incomes. A tax T1 is said to be more progressive than a tax T2 if the corresponding distribution of net incomes N1 is more equal than that of N2 (Duclos and Araar, 2006). The progressivity comparisons usually take two forms: a) Tax Redistribution (TR approach) and b.) Income Redistribution (IR approach). Progressivity of a tax system using these two approaches is usually assessed by using Lorenz and concentration curves (Duclos and Araar, 2006). In addition to the use of graphical means of assessing tax systems, progressivity indices provide a numerical means of capturing progressivity (Duclos and Araar, 2006) (see methodological section for more details).

The literature talks of two main types of equity: vertical and horizontal. In relation to taxes, vertical equity refers to the idea that individuals with greater living standards or socioeconomic status should pay a higher amount of taxes. There are two main approaches to horizontal equity. In the classical approach horizontal equity refers to the equal treatment of equals. However, implementation difficulties in identifying equals and the problems associated with using groupings of ‘near equals’ for analysis has led to different means of assessing horizontal inequity. An alternate approach to horizontal equity refers to the absence of re-ranking. That is the belief that a tax should not alter the original ranking of individuals according to their gross incomes (Duclos, Jalbert, and Araar, 2003). The literature proposes two approaches for assessing classical horizontal inequity and redistribution. These are the change-in-inequality approach and the cost-of-inequality approach (Duclos and Araar, 2006; Duclos, Jalbert, and Araar, 2003).

4. Methodology

Following Younger *et al* (1999) assuming that workers pay income tax out of their earned incomes and assuming complete inelasticity we estimate the incidence of tax across households, and the increase in government revenue in applying the existing income tax policies on public sector workers. We assume that only public sector workers and formal private sector workers are taxed. Based on these calculations, we can simulate the taxes paid by households when public sector workers are also taxed. We then use the following method to assess how the proposed tax policy change affects inequality and to assess its progressivity.

Non parametric regression curves

Non parametric regression curves represent the link between two variables without specifying beforehand a functional form. Regressions with the non parametric regression model can be performed with the local linear approach.

$$K_i(x)^{1/2} Y_i = \mu(x)K_i(x)^{1/2} + \mu'(x)K_i(x)^{1/2}(x_i - x) + v$$

A tax is said to be progressive if the introduction of a tax redistributed the living standards such that there distribution of the measure of living standards is more equitable. Lorenz and Concentration curves are popular tools used by researchers to describe the effects of income distribution and its changes following an intervention. Following Duclos and Araar (2006), if gross income is denoted by X and the tax associated with that income is denoted by $T(x)$, the income net of taxes will be given by $N(X) = X - T(X)$.

The **Lorenz curve** $L_X(\mathbf{P})$ for gross income is then formally given by:

$$L_X(p) = \frac{\int_0^p Q(q) dq}{\int_0^1 Q(q) dq} = \frac{\int_0^p Q(q) dq}{\mu_x}$$

The numerator shows the cumulative incomes received by the bottom p proportion of the population, while the denominator shows the cumulative incomes of the whole population. $L(p)$ shows the percentage of total income held by the bottom p proportion of the population, when individuals are ranked according to increasing income or living standards values.

The concentration curve graphs the proportion of a tax against the cumulative percentage of the population, ranked by living standards from the poorest to the richest. Formally, if the gross income X of a population of n individuals are arranged in ascending order such that:

$X_1 \leq X_2 \leq \dots \leq X_n$, and the taxes paid by the individuals are arranged according to the same ranking, the concentration curve for a tax T paid by the bottom p proportion of individuals are given by:

$$C_T(p) = \frac{\int_0^p T(q) dq}{\int_0^1 T(q) dq} = \frac{\int_0^p T(q) dq}{\mu_T}$$

Where $C_T(p)$ shows the proportion of total taxes paid by the bottom p proportion of the population.

In our analysis we will first use the above mentioned graphical means of describing the distributional effects of net incomes under different taxation policies.

4.1 Progressivity and Inequality Comparisons⁵

Using Lorenz and concentration curves as defined above one can determine whether a tax is progressive by using the following rules. The literature gives two main ways of assessing progressivity at the global level. The first is the tax redistribution (TR) approach, and the second is the Income-redistribution (IR) approach. Using Lorenz and Concentration curves the following rules can be used to assess progressivity at the global level.

A tax T is TR progressive if:

$$C_T(p) < L_X(p) \text{ for all } P \in]0,1[.$$

That is when the concentration curve of taxes is below the Lorenz curve then the poorer individuals pay proportionally less taxes and the tax is progressive.

A tax T₁ is more TR progressive than a tax T₂ if:

$$C_{T_1}(p) < C_{T_2}(p) \text{ for all } P \in]0,1[.$$

That is when the concentration curve for a tax T₁ is below the concentration of the curve tax T₂ the tax T₁ is more TR progressive.

A tax T is IR-progressive if:

$$C_N(p) > L_X(p) \text{ for all } P \in]0,1[.$$

That is when the concentration curve for net incomes of a tax T is above the Lorenz curve, then a Tax T is IR progressive.

And, a net tax T₁ is more IR progressive than a tax T₂ if :

$$C_{N_1}(p) > C_{N_2}(p) \text{ for all } P \in]0,1[, \text{ where } N_1 \text{ and } N_2 \text{ are corresponding net incomes.}$$

That is when the concentration curve for net incomes of a tax T₁ is above the concentration curve for net incomes of a tax T₂ then tax T₁ is IR more progressive.

4.2 Progressivity Indices

Although the above mentioned graphical presentations are useful, their use is limited. They do not provide a measure of the magnitude of progressivity that can be compared under different scenarios. Further, in some time the Lorenz and concentration curves cross and we cannot take any judgment about progressivity. In this respect, progressivity indices are useful tools as they provide the desired numerical measure of progressivity, vertical equity, horizontal inequity as well as redistributive effect of taxes. We propose to use the following indices as described in Duclos and Araar (2006, p. 145) for our analysis:

⁵ This section follows the techniques introduced in Duclos and Araar (2006).

$$IT(\rho) = \int_0^1 (L_X(p) - C_T(p))\kappa(P; \rho)dp,$$

$$IV(\rho) = \int_0^1 (C_N(p) - L_X(p))\kappa(P; \rho)dp,$$

$$RR(\rho) = \int_0^1 (C_N(p) - L_N(p))\kappa(P; \rho)dp,$$

$$IR(\rho) = \int_0^1 (L_N(p) - L_X(p))\kappa(P; \rho)dp,$$

Where $\kappa(p; \rho)$ is weight dependent on the percentile p and the parameter ρ . Commonly these indices are proposed with $\rho=2$. $IT(\rho=2)$ is known as the Kakawani index. This index measures the TR progressivity. $IV(\rho=2)$ is known as the Reynolds-Smolensky index. It measures the IR progressivity and vertical equity. $RR(\rho=2)$ is known as the Atkinson-Plotnick index, which measures re-ranking. Lastly, $IR(\rho=2)$ measures redistribution.

4.3 Measuring Living Standards and Socioeconomic Status

Any analysis that proposes to assess the distributional impacts of taxing policies must first define a means of measuring living standards. This section describes how we propose to measure living standards.

Following the recommendations of Deaton and Grosh (2000), we will use value of consumption as a proxy for measuring living standards in our study. There are three main steps for constructing a measure of living standards using consumption (World Bank, 2008; Dulos and Araar, 2006): a) aggregating different components of consumption, b) making adjustments for price differences, and c) making adjustments for household size and composition. How we will approach these steps are further detailed below.

1) Aggregating different components of consumption

For consumer durables, the value of use for the reference period will be calculated using appropriate methods (for example, methods detailed by Deaton and Zaidi, 2002).

2) Adjusting for household size and consumption

Following World Bank (2008), we define adult equivalents (AE) in a household as follows:

$$AE = (A + \alpha K)^\theta,$$

Where A is the number of adults in the household, K is the number of children, α is the 'cost of children', and θ is the degree of economies of scale. World Bank (2008) following a literature review points to the difficulties in determining α and θ . Following Deaton and Zaidi (2002) we will define a value between 0.3 and 0.5 for α and a value between 0.75 and 1.0 for θ . The sensitivity of the results for different α and θ values will be examined in the analysis.

5. Methodology Application

5.1 Data Requirements and Sources

The main source of data is the Household Income and Expenditure Survey (HIES)-2006/2007 conducted by Department of Census and Statistics. HIES household survey collects comprehensive data from households expenditure on food and non-food items, income received through different sources, household demographic features, education, labor force, as well as community characteristics. This data set is especially useful for the proposed study as it provides rich information on expenditure and income. The sample size of this survey is 21,700 housing units. Further, it covers around 27,000 of employees, of which more than 3,000 (about 12 percent) are from the public sector. The study uses secondary data on tax rates and revenue collected from various sources by the department of Inland Revenue in the analysis, for validation purposes.

5.2 Measuring living standards

Household Income and Expenditure (HIES) collects data on weekly consumption of food and drink. These include items bought in the market as well as the value of the items from home production or freely received. The survey further collects consumption information on housing, fuel and light, non-durable goods, service and consumer durables for main household. The consumption values for these items are obtained for the month prior to the survey. The survey further collects consumption information on clothing and textiles for the past six months, and durable household goods such as furniture and electronic items for the past one year. The survey also collect information on expenditures on insurances and income tax, as well expenditures on functions such as weddings and funerals.

First, data on food and non-food consumption converted to a uniform reference period. Monetary welfare index was constructed using household expenditure, and all households in the country were ranked using this index. The household size was adjusted using the equivalence scale as described in section 4. A value of 0.5 for α and 0.75 for θ were given in the analysis.

The survey year of the HIES data is for 2006/07. PAYE taxes are calculated for price adjusted monthly gross salary based on monthly salary received by individuals as reported in HIES -2006/07 data. First, under-reported income is adjusted comparable to

household monthly expenditure (see Annex 3). Then proxy income for the year of 2011 is constructed by inflating gross income of 2006/07 data⁶.

5.3 Comparison of Different Tax Systems

In this study we examine the extension of PAYE tax system to public sector as well as change of income tax system between 2007 and 2011. To examine the impact of 2011 tax revisions, 2007 and 2011 tax systems are applied for 2011 proxy income. Tax variation analysis was carried out with the aim of finding best potential tax system as it is very important in policy perspective. Accordingly five different tax systems, as specified below, are analysed in this study.

Tax system 1 - 2006/07 PAYE tax (where only the private sector and semi government employees were liable to pay a tax), henceforth referred to as the Tax system 2006/07 (TS2007-1)

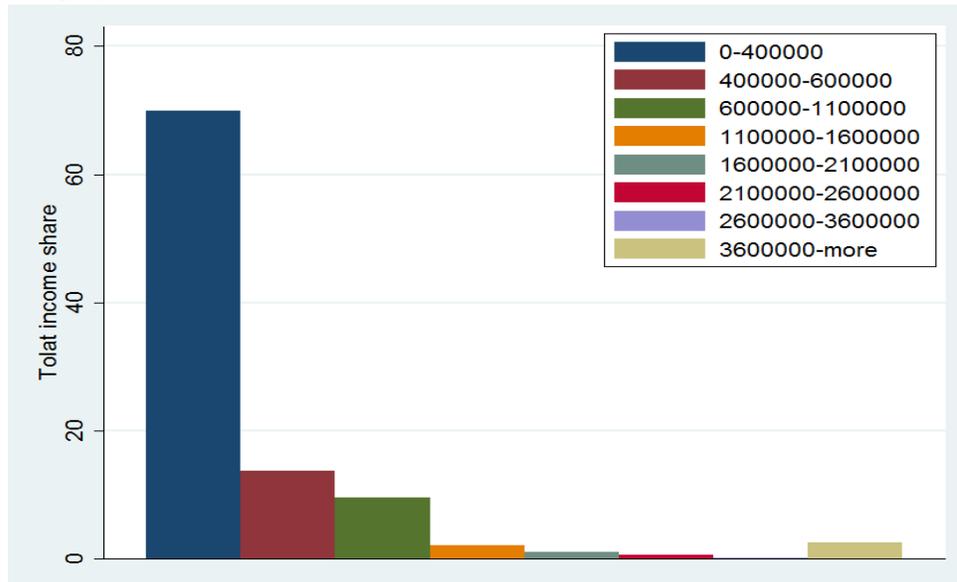
Tax system 2 - 2006/07 PAYE tax system extended to the public sector workers. In this scenario, we assume that the public sector workers are also liable to pay the PAYE tax specified for the private sector employees. We refer to this as the Tax system 2006/07 extended to public sector employees (TS2007-2).

Tax system 3 - In this scenario, we apply the new 2011 PAYE tax system, which is for both public and private sector employees. We refer to this as the Tax system 2011 (TS2011-1).

Under the TS2011-1 tax system the tax revenue has fallen far below the earlier level (Rs. 12.2 billion to Rs. 6.3 billion). This is due to two main reasons. Under the tax system introduced in 2011, the per annum tax free thresholds was increased (to Rs.600,000 from the previous Rs. 300,000) and the tax rate was reduced (see table 4). Due to the increasing the tax threshold, only small proportions (3.3 per cent) of formal sector workers (who are liable to pay tax) have incomes above the threshold of Rs. 600,000. Further, at national level, about 80 per cent of formal sector workers total annual wage income earn by the group of workers, whose annual wage income less than Rs.600,000. If the tax free threshold reduced to Rs. 400,000 then 9.5 workers who are liable to pay tax will be taxed, while around 30 per cent of formal sector annual wage earning is taxed (see Figure 3).

⁶ prices were adjusted using CCPI, January 2007 to January 2011 as survey period was July 2006-June 2007

Figure 3 : Distribution of formal sector worker’s annual wage income by income category



Source: Constructed using HIES 2006/07

In order to examine how the effect of changes to the tax free threshold and the tax rate on tax revenue and the resulting distributional effects on the population we introduce the following two variations to the tax system introduced in 2011:

Tax system 4 -In this scenario we lower the tax free threshold of the 2011 tax system to those in the annual income range Rs. 400,000 - Rs. 600,000. Under this variation these individuals are taxed at a 2 per cent rate (under TS2011-1 these individuals are not taxed). We refer to this variant of the 2011 tax system as TS2011-2.

Tax system 5 - In this scenario, we not only lower the tax free threshold, we also increase the tax rates. As in TS2011-2 those in the Rs.400,000 to Rs.600,000 income range are taxed at 2 per cent. For those earning more than Rs.600,000 the tax rate is increased by 2 units of the 2011 tax rates (see Table 4). This tax system is referred to as TS2011-3.

The tax structure under the different scenarios described above is given in table 4. More details of the applied tax procedure and applicable tax tables are given in Annex 3.

Table 4: Tax structures 2007, 2011

Annual income range		Income tax systems							
Min	Max	TS2007-1/ TS2007-2		TS2011-1		TS2011-2		TS2011-3	
		Base tax	Tax rate (%)	Base tax	Tax rate (%)	Base tax	Tax rate (%)	Base tax	Tax rate (%)
0	326208	0	0.00	0	0.00	0	0.00	0	0.00
326220	400000	0	4.60	0	0.00	0	0.00	0	0.00
400000	600000	3394	4.60	0	0.00	0	2.00	0	2.00
600000	652164	12594	4.60	0	4.00	4000	4.00	4000	6.00
652176	869556	14994	9.20	2087	4.00	6087	4.00	7130	6.00
869568	937500	34993	13.80	10782	4.00	14782	4.00	20173	6.00
937512	1074996	44368	15.00	13499	4.00	17499	4.00	24249	6.00
1075008	1100000	64990	20.00	18998	4.00	22998	4.00	32498	6.00
1100000	1275000	69989	20.00	20000	8.00	24000	8.00	33997	10.00
1275012	1474992	104989	25.00	33998	8.00	37998	8.00	51497	10.00
1475004	1600000	154984	30.00	49996	8.00	53996	8.00	71495	10.00
1600000	1975044	192482	30.00	60000	12.00	64000	12.00	83995	14.00
1975056	2100000	304996	35.00	105001	12.00	109001	12.00	136501	14.00
2100000	2600000	348726	35.00	120000	16.00	124000	16.00	153993	18.00
2600000	3600000	523726	35.00	200000	20.00	204000	20.00	243993	22.00
3600000	more	873726	35.00	400000	24.00	404000	24.00	463993	26.00

Source: Constructed using tax tables published by the Inland Revenue Department of Sri Lanka, various reports.

6. Results

The study examines the impact on tax revenue, tax base and the distribution of incomes for the five tax systems (i.e., TS 2007-1, TS 2007-2, TS 2011-1, TS2011-2 and TS2011-3) as described above. The results are discussed below.

6.1 Tax Base

Under TS2007-1, which only taxes the private and semi-government sectors 9 percent of formal sector workers pay taxes. When the 2007 tax system is extended to the public sector workers (i.e., tax system TS2007-2) the proportion of formal sector workers paying taxes increase to 15.8 percent (See table 5).

According to the new 2011 tax system TS2011-1, all formal sector employees above a certain threshold are liable to pay taxes. Although the TS2011-1 extended to the public sector workers, only about 3.3 per cent of the formal sector employees are liable to pay PAYE taxes. This is mainly due to the increase of the tax threshold under TS2011-1 (the per annum tax free threshold is increased to Rs. 600,000 from Rs. 300,000, previously). Under the tax variations to the 2011 tax system, (i.e., TS2011-2 and TS2011-3) (which lowered the per annum tax threshold to Rs. 400,000 from the existing Rs. 600,000) 9.5 per cent of the formal sector workers are liable to pay PAYE taxes.

With regards to the tax liability by occupation category, under all considered tax variations nearly half of the senior officials are liable to pay PAYE taxes except for the TS2011-1 tax system. In the TS2011-1 system only 34 per cent of the senior officials are liable to pay PAYE tax. This is mainly due to the increased tax threshold. When the 2007 tax system is extended to the public sector workers (i.e., tax system TS2007-2) the tax liability of professionals and forces has considerably increased due to the higher proportion of public sector workers in these two occupation categories (71 per cent of professionals and 96 per cent of forces are in the public sector).

Table 5 Comparison of Tax Liability of Tax Systems

	TS2007-1	TS2007-2	TS2011-1	TS2011-2	TS2011-3
Tax liability as a % of formal employees					
Sri Lanka	9.0	15.8	3.3	9.5	9.5
<i>Occupation category⁷</i>					
Senior officials	51	63	34	51	51
Professionals	12	46	10	30	30
Technicians	23	35	6	20	20
Clerks	17	28	5	17	17
Service workers	7	16	2	8	8
Skilled agriculture & Fishery	1	2	0	1	1
Craft workers	7	8	1	4	4
Machine operators	12	15	2	8	8
Elementary occupations	2	4	0	2	2
Forces	1	46	9	29	29

Source: Constructed using HIES 2006/07

6.2 Tax Revenue

Estimated per annum tax revenue under TS2007-1 is be Rs. 12.2 billion. When the tax system is extended to the public sector workers (i.e., tax system TS2007-2) the tax revenue increases by Rs. 4.3 billion (See Table 6) to 16.5. Under TS2011-1, tax revenue is reduced by Rs. 5.9 billion to Rs. 6.3 billion, compared to TS2007-1. (See Annex 3 for details). This is mainly owing to reduced tax base arising from increased tax free threshold and the lowered tax rates. When the TS20011 tax free threshold is reduced to Rs. 400,000 (TS2011-2), the annual tax revenue is Rs. 7.3 billion, about Rs. 1 billion more than the tax revenue under TS2011-1. Under TS2011-3 (when the tax free threshold is reduced and the tax rates are increased) Tax revenue is RS. 8.5 billion, a Rs. 2.2 billion increase compared to TS2011-1 (See Table 6)

6.3 PAYE tax distribution

The tax distribution of the five PAYE tax systems, across the different groups of population -- by income quintile, region as well as occupation category is presented in Table 6. According to the results distribution of five tax systems are alike. Around 90 per cent of the PAYE tax is paid by the richest quintile while 3-7 per cent is paid by the

⁷according to the ISCO - 88 classification, one digit occupation category

formal sector workers of 4th income quintile. Further, 4th income quintile PAYE tax contribution is higher under TS2007-1 and TS2007-2 tax systems, due to the lower threshold level compared to 2011 tax variations. Smaller percentage of workers in the poorest quintile, also pay PAYE tax. The reason may be due to the fact that although these workers are liable to pay PAYE tax based on their wage income they may reside in poor households.⁸

With regards to the regional distribution, around 80 per cent of PAYE tax is paid by Western province PAYE tax payers. This is mainly due to the fact that close to 50 percent of GDP comes from the Western province. With regards to the economic activity, major portion of the PAYE tax revenue (80%-90%) comes from the first three major occupation categories -- senior officials, professionals and technicians.⁹

Table 6 Comparison of Annual Tax Revenue of Tax Systems

	TS2007-1	TS2007-2	TS2011-1	TS2011-2	TS2011-3
Tax Revenue (Rs. in millions)					
Government	-	4,300.0	1,332.0	1,680.0	1,980.0
Semi-government	1,160.0	1,160.0	247.2	391.2	490.0
Private	11,000.0	11,000.0	4,728.0	5,196.0	6,030.0
Total	12,160.0	16,460.0	6,307.2	7,267.2	8,500.0
Distribution of PAYE tax(%)					
<i>Income quintile</i>					
poorest	0.4	0.3	0.2	0.2	0.3
2nd quintile	0.3	0.3	0.0	0.2	0.2
3rd quintile	0.8	1.0	0.1	0.4	0.4
4th quintile	5.7	7.2	3.2	4.5	4.7
richest	92.8	91.1	96.5	94.7	94.5
<i>Province</i>					
Western	84.2	78.7	86.1	83.2	82.6
Central	4.5	5.5	3.9	4.7	4.8
Southern	3.5	3.9	2.1	2.7	2.9
Eastern	3.8	5.4	5.1	5.0	5.0
N Western	2.2	3.0	1.5	2.2	2.3
N Central	0.3	0.9	0.2	0.5	0.5
Uva	0.6	1.1	0.4	0.7	0.8
Sabaragamuwa	0.9	1.5	0.6	1.0	1.0
<i>Occupation category</i>					
Senior officials	28.3	23.4	24.6	23.6	24.1
Professionals	32.4	39.1	47.9	45.0	43.8
Technicians	19.8	16.8	15.4	16.0	16.1
Clerks	5.5	7.1	4.8	5.5	5.8
Service workers	2.5	3.1	1.6	2.2	2.3
Skilled agriculture & Fishery	0.7	0.6	0.4	0.5	0.5
Craft workers	4.2	3.3	1.6	2.3	2.4

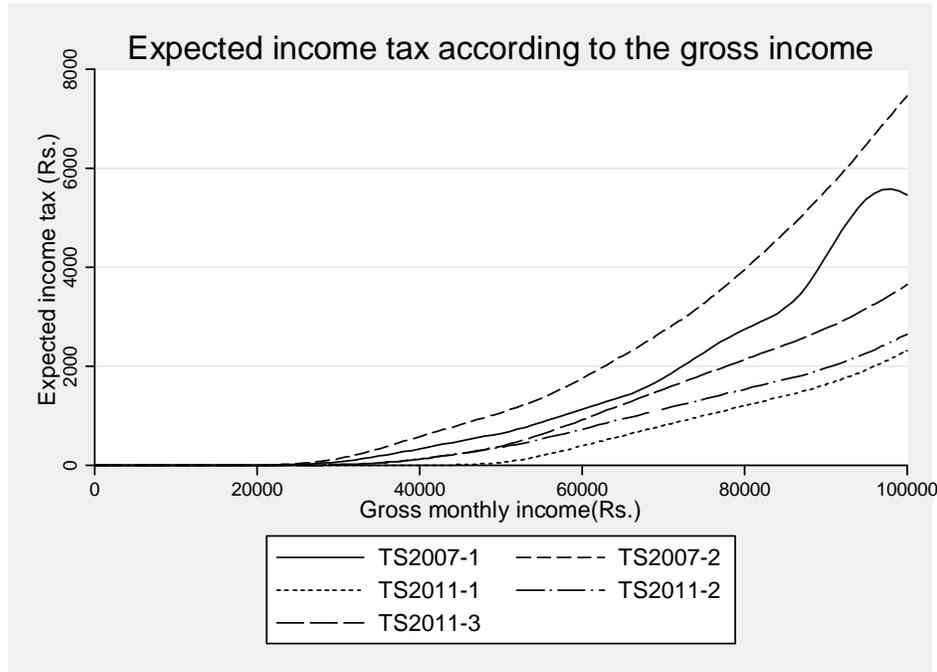
⁸ Taxes are determined for individuals, while poverty levels are defined for households.

⁹ according to the ISCO - 88 classification, one digit occupation category

Machine operators	2.0	1.9	0.6	1.2	1.3
Elementary occupations	4.7	4.0	2.9	3.3	3.3
Forces	0.0	0.7	0.3	0.5	0.5
	100	100	100	100	100

Source: Constructed using HIES 2006/07

Figure 4: Expected Income Tax by Gross Monthly Income



Source: Constructed using HIES 2006/07

Figure 4 presents non parametric regression curves between gross monthly income and expected monthly income tax under the five tax systems described earlier. The graph shows that drastic reduction in expected income tax between 2007 and 2011. This is mainly due to the fact that the 2011 tax reforms reduced the tax rates on PAYE taxes ranging from 5 to 35 percent to 4 to 24 percent and increased the tax free threshold annual income from Rs. 300,000 to Rs. 600,000. Further expected income tax, under two 2011 tax variations (TS2011-2 and TS2011-3) is lower compared to the expected income tax under TS2007-1. Amongst the different tax systems compared, TS2007-2 yields the highest income tax.

6.4 Progressivity of Taxes

In this section we examine the progressivity under different tax systems. First, in section 6.4.1, we begin by examining the inequality in net-income across the workers and across whole population for different tax systems. Second, in section 6.4.2, we examine progressivity of income taxes using progressivity curves and in section 6.4.3, we measure the progressivity using progressivity indices.

6.4.1 Inequality

In this section we analyze the effect of different tax systems on the distribution of net incomes of the population and that of the formal sector workers. Table 7 presents the Gini Index (GI) for the workers using gross and net incomes of workers and GI for the whole population using per adult equivalent expenditures with and without income taxes. In general, inequality reduces with taxes indicating that taxes are progressive. The results show that the inequality under TS2007-1 is less than under TS2011-1. Results also show that extending the tax to public servants improves equity (i.e., inequality is less under TS2007-2 compared to TS2007-1). Further, lowering the tax threshold also reduces inequality at the margin (i.e., inequality is less under TS2011-2 compared to the inequality under TS2011-1). Lowering the threshold and increasing tax rates (i.e., TS2011-3,) further reduces the inequality compared to the inequality under TS2011-1.

Table 7: Gini Index

	Population	Workers
Without tax	0.3223	0.4138
With tax		
TS2007-1	0.3150	0.4060
TS2007-2	0.3132	0.4033
TS2011-1	0.3185	0.4097
TS2011-2	0.3180	0.4091
TS2011-3	0.3173	0.4083

Source: Own calculations.

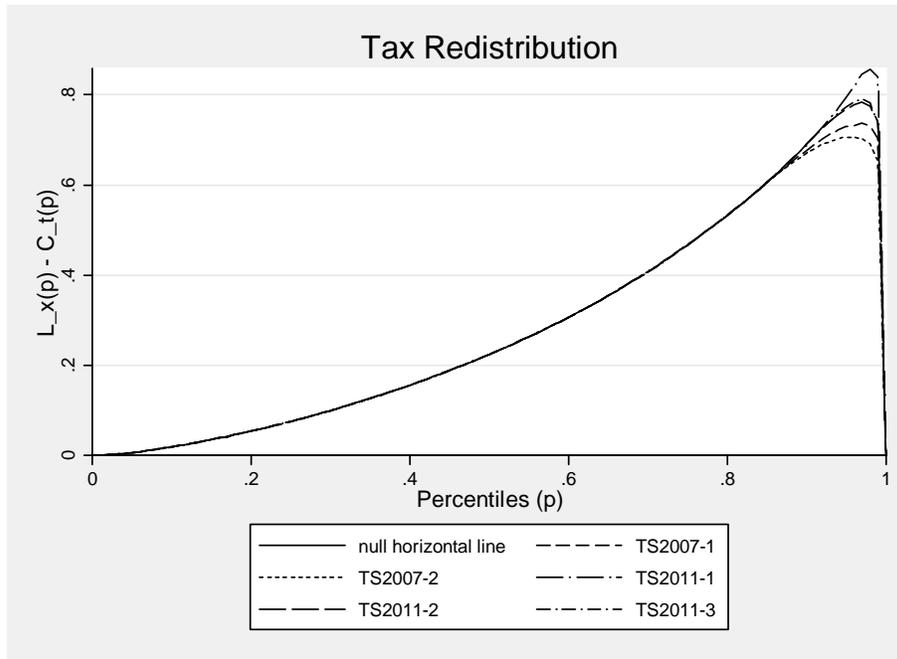
To be noticed here that income taxes do not substantially reduce the inequality between workers and their impacts on inequality for the whole population is not that large. This is mainly due to the fact that tax base is small under PAYE tax system.

6.4.2 Redistribution of Taxes and Incomes

In this section, the actual distribution of taxes and net incomes are evaluated to determine how different tax systems are progressive and inequality reducing. As described in the methodology section, progressivity of income taxes can be examined using two approaches. Figure 5 presents the results of the Tax Redistribution (TR) approach while Figure 6 presents results of the Income Redistribution (IR) approach.

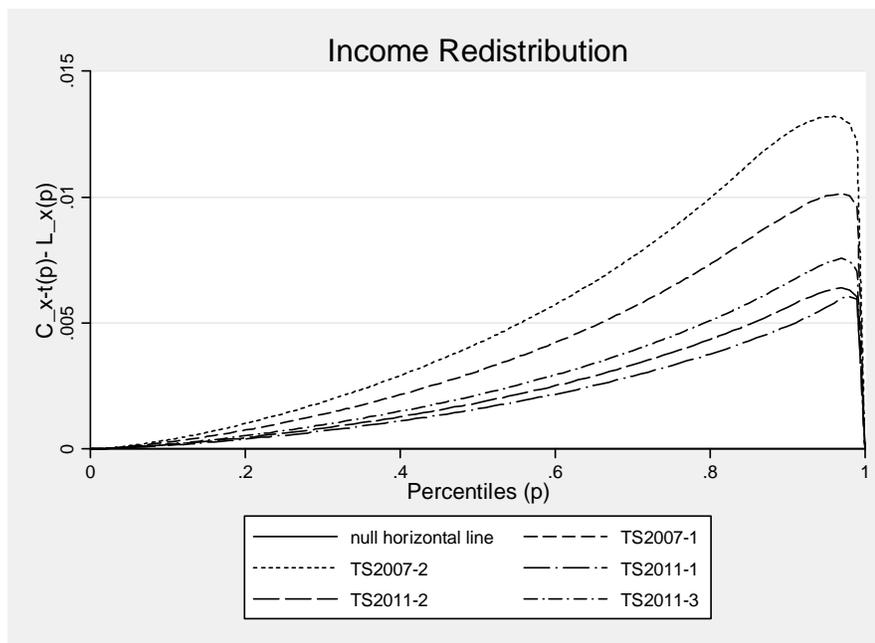
The results under each approach show that all taxes are progressive: In figure 5 we see that the $L_X(p) - C_T(p) > 0$ for all $P \in]0,1[$ for five tax systems considered. In figure 6 we see that $C_N(p) - L_X(p) > 0$ for all $P \in]0,1[$ for five tax systems, again indicating the progressivity of taxes. This is expected considering the progressive structure of each of the taxes (see Table4).

Figure5 : Tax Redistribution (TR)



Source: Constructed using HIES 2006/07

Figure6 : Income Redistribution (IR)



Source: Constructed using HIES 2006/07

When comparing 2007 and 2011 tax systems as shown in figure 5, TS2007-1 lies below the TS2011-1, indicating that under the Tax Redistribution (TR) approach, TS2011-1 is more progressive than TS2007-1. In terms of Income Redistribution (IR), in figure 6, TS2007-1 is above the TS2011-1 curve, indicating that under the IR approach TS2007-1 is more progressive than TS2011-1. In other words, TS2011-1 is more progressive under the tax redistribution approach while TS2007-1 is more progressive under income redistribution approach. When extending the analysis for all tax systems considered it is clear that TS2007-2 is the most progressive tax system under income redistribution approach. As shown in figure 6, TS2007-2 curve lies above all other income redistribution curves.

TS2011-2 and TS2011-3 tax simulations were conducted to examine how changes to the tax free threshold and the tax rates affect tax revenue and the distributional effects. As seen in graph 5 and graph 6, both 2011 tax simulations, in terms of income redistribution approach, TS2011-2 and TS2011-3 are more progressive than TS2011-1.

6.4.3 Tax Progressivity Indices

The progressivity of the different tax systems are examined for the workers and the whole population using per adult equivalent expenditures and taxes. Table 8 presents the progressivity indices for the workers using tax, gross and net incomes of workers and Table 9 for the whole population using per adult equivalent expenditures with and without income taxes and per adult equivalent income taxes.

The Kakwani index of progressivity is based on the Tax Redistribution (TR) approach and equals twice the area between the Lorenz curve and the concentration curve of a tax. A positive value shows a progressive tax system, where the progressivity increases for higher values. As seen in Table 8 and Table 9, under both considered methods (i.e. for workers and whole population) all considered tax systems are TR progressive.

The Reynolds-Smolensky Index (RSI) of progressivity is based on the Income Redistribution (IR) approach and equals twice the area between the concentration curve of net incomes and the Lorenz curve of gross incomes. A value above zero for RSI shows progressivity of the taxes. The results show that under both considered methods (i.e. for workers and whole population) all five tax systems are IR progressive (see Table 8 and Table 9). All five values are very close to zero, indicating there is little difference between gross and net incomes. This is due to the very small number of people who are taxed. In both methods, tax system TS2007-2 is more IR progressive which has the highest RSI compared to the other four tax systems.

The Atkinson-Plotnick horizon inequity, measures re-ranking effects of the tax systems. Atkinson-Plotnick results are zero for all tax systems. This indicates no re-ranking or no horizontal inequality under the non-classical definition of HI.

Table 7: Tax Progressivity Indices for the Workers Population(using gross and net incomes of workers)

Progressivity indices	TS2007-1	TS2007-2	TS2011	TS2011-2	TS2011-3
Kakwani progressivity index	0.5661	0.5608	0.5814	0.5738	0.5741
Reynolds-Smolensky progressivity index	0.0078	0.0105	0.0041	0.0047	0.0055
Atkinson-PlotnickHoriz. Inequity	0.0000	0.0000	0.0000	0.0000	0

Source: Constructed using HIES 2006/07

Table 8: Tax Progressivity Indices for the whole population (using per adult equivalent expenditures without and with income taxes)

Progressivity indices	TS2007-1	TS2007-2	TS2011	TS2011-2	TS2011-3
Kakwani progressivity index	0.6111	0.5892	0.6484	0.6234	0.6227
Reynolds-Smolensky progressivity index	0.0073	0.0091	0.0038	0.0043	0.005
Atkinson-PlotnickHoriz. Inequity	0.0002	0.0008	0.0001	0.0001	0.0001

Source: Constructed using HIES 2006/07

6.5 Proposed revision for 2011 tax system

As discussed in previous sections, under the 2011 tax reforms (i.e. TS2011-1 tax system) the tax revenue has fallen far below the 2007 tax system (Rs. 12.2 billion to Rs. 6.3 billion). This is due to two main reasons. Under the tax system introduced in 2011, the per annum tax free thresholds was increased (to Rs.600,000 from the previous Rs. 300,000) and the tax rate was reduced to 4% to 24% (a decrease from earlier rate that ranged from 5 % to 35%). In this section, we examine how changes to the tax free threshold and changes to the tax rate influences tax revenue and income distribution. These changes are done under two scenarios as described below.

Scenario 1

Tax rates of 2011 PAYE tax revision (TS 2011-1) is increased by i units where $i = 1, 2, \dots, 10$; while keeping the threshold level constant (i.e. tax free threshold annual income is Rs. 600,000).

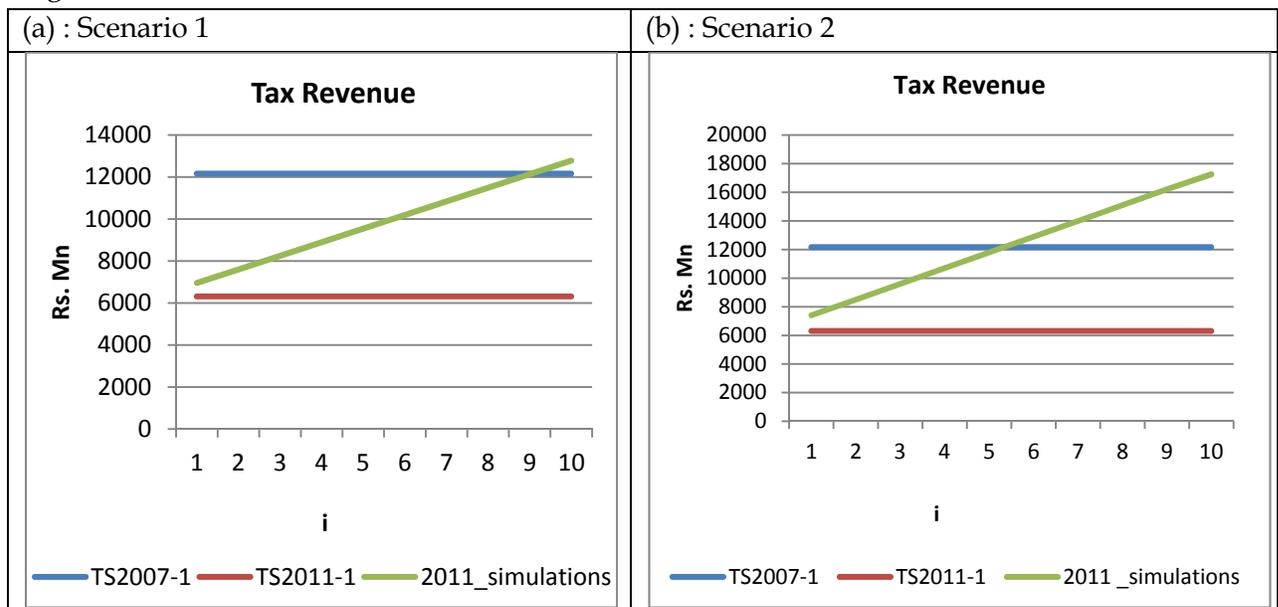
Scenario 2

Tax rates of TS 2011 tax system is increased by i units where $i = 1, 2, \dots, 10$; while lowering the threshold level from Rs. 600,000 to Rs. 400,000. For Rs. 400,000-Rs 600,000 band, i per cent tax rate is imposed, for each i .

6.5.1 Tax revenue

Figure 7 shows the variation of total PAYE tax revenue applying the two 2011 tax simulation scenarios compared to tax revenue under 2007 existed tax system (TS 2007-1) and current 2011 tax system (TS 2011-1). As illustrated in Figure 7 (a), according to the scenario 1, increase of 2011 PAYE tax rates by 9 units while leaving the same 2011 threshold level (i.e. Rs. 600,000) is sufficient to recover the tax revenue decrease due to the 2011 tax revisions. According to the scenario 2, an increase of tax rate by 6 units and reducing threshold level Rs. 600,000 to Rs. 400,000 is sufficient to recover the decrease in tax revenue due to the 2011 tax revision (TS-2011-1) (see Figure 7 b).

Figure 7: 2011 tax variations



Source: Constructed using HIES 2006/07

6.5.2 Tax base

Table 9 presents the distribution of PAYE tax payers according to the above two discussed scenarios. Tax payer base under scenario 1 does not change the 2011 PAYE tax payer base, as under scenario 1 threshold level same as TS 2011 threshold level. Tax revisions suggested under scenario 2, expand the 2011 PAYE tax payer base from 140,236 to 400,017 due to that lowering the threshold level (i.e. from Rs. 600,000 to Rs. 400,000) has resulted the increase of the tax liability of employees.

Under both proposed scenarios of tax revisions of 2011 PAYE tax system, the tax burden of poor quintiles are less affected as 97 per cent of tax payers under scenario 1 and 94 per cent of tax payers under scenario 2 are in 4th and richest quintile. This implies that the potential increase in income tax rate and lowering the threshold level as suggested under scenario 2 will influence the poor only marginally.

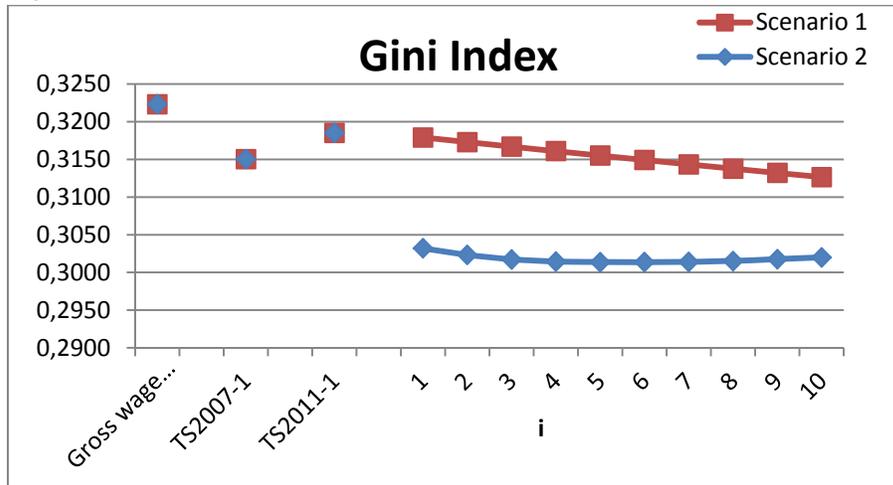
Table 9 : Distribution of PAYE tax payers

	scenario 1	scenario 2	base 1/ base 2
Total	140,236	400,017	2.85
Government	46,832	161,319	3.44
Semi-government	22,141	51,239	2.31
Private	71,262	187,459	2.63
<i>Income quintile</i>			
Poorest	881	2,254	2.56
2nd quintile	357	4,557	12.75
3rd quintile	2,005	16,761	8.36
4th quintile	13,071	75,705	5.79
Richest	123,921	300,740	2.43
<i>Occupation category</i>			
Senior officials	32,167	48,640	1.51
Professionals	37,012	108,199	2.92
Technicians	25,787	82,018	3.18
Clerks	13,677	42,425	3.10
Service workers	7,307	27,777	3.80
Skilled agriculture & Fishery	949	3,644	3.84
Craft workers	8,680	29,465	3.39
Machine operators	5,785	24,616	4.26
Elementary occupations	6,361	25,516	4.01
Forces	2,511	7,716	3.07

Source: Constructed using HIES 2006/07

6.5.3 Tax redistribution

Figure 8 : Gini Index



Source: Constructed using HIES 2006/07

currently married	2.053	7.8	***	1.635	5.1	***	1.931	6.9	***
previously married	1.129	3.1	***	1.388	4	***	1.506	4.5	***
Education			***						
less than primary	-1.873	0.2	***	0.685	2	***	0.652	1.9	***
below secondary	-1.785	0.2	***	0.181	1.2	**	0.618	1.9	***
GCE (O/L)	-1.044	0.4	***	-0.214	0.8	**	0.349	1.4	***
GCE (AL) & above									
Household Characteristics									
hh employed rate	5.189	179.2	***	4.707	110.7	***	5.516	248.6	***
hh dependent rate	-4.025	0	***	-5.137	0	***	-4.757	0	***
Income group									
Poorest	-1.045	0.4	***	0.647	1.9	***	-0.362	0.7	**
2nd quint	-0.594	0.6	***	0.368	1.4	***	-0.364	0.7	***
3rd quint	-0.302	0.7	**	0.355	1.4	***	-0.109	0.9	
4th quint	-0.067	0.9		0.022	1		-0.12	0.9	
richest									
Location									
Western									
Central	1.139	3.1	***	-0.227	0.8	**	0.629	1.9	***
Southern	0.2	1.2	*	-0.407	0.7	***	0.469	1.6	***
Eastern	0.644	1.9	***	-0.289	0.7	**	0.378	1.5	**
North Western	0.102	1.1		-0.561	0.6	***	0.369	1.4	***
North Central	0.473	1.6	***	-0.748	0.5	***	0.9	2.5	***
Uva	0.671	2	***	-0.673	0.5	***	0.901	2.5	***
Sabaragamuwa	0.096	1.1		-0.468	0.6	***	0.304	1.4	**
Constant									
No of observations	31668								
Pseudo R2	0.246								

Source: Constructed using HIES 2006/07

6.7 Determinants of income tax

Table 11 presents the results of Tobit regressions (left censored at zero) for income tax TS2011-1 and TS2011-3. According to the findings generated income tax of both tax systems follow the same trend. Semi government sector contribute more and private sector contribute less to both the considered tax systems when compared to the public sector contribution.

More educated employees also pay higher taxes compared to less educated. This is mainly due to the fact that better educated are in better paid occupations. In both tax systems, employees of all the other occupation categories contribute less compared to senior officials and professionals occupation category.

With regards to the industry contribution to the two tax systems, employees of Financial, Real Estate and Financial Services contribute more for both tax systems

compared to public administration and defence category, where most public sector workers employed.

With compared to the richest quintile other quintiles make lesser contribution. Also with compared to the employees of Western province, employees of other provinces make less contribution in both tax systems.

Table 11 : Covariates of income tax TS2011-1 and TS2011-3

	TS2011-1			TS2011-3		
	Coef.	P>t	dy/dx	Coef.	P>t	dy/dx
male	5.60	0.00	0.004	3.27	0.00	0.022
age	1.09	0.00	0.001	0.80	0.00	0.006
Age2	-0.01	0.00	0.000	-0.01	0.00	0.000
Education						
less than primary	-7.28	0.00	-0.004	-5.18	0.00	-0.025
below secondary	-3.66	0.00	-0.003	-3.03	0.00	-0.024
GCE (O/L)	-2.88	0.00	-0.002	-1.64	0.00	-0.011
GCE (AL) & above (base)						
employment sector						
Public (base)						
semi government	3.42	0.00	0.005	1.73	0.00	0.018
Private	-0.22	0.82	0.000	-0.76	0.08	-0.006
Occupation category						
Senior officials & Professionals (base)						
Technicians	-4.52	0.00	-0.003	-2.08	0.00	-0.013
Clerks & Forces	-5.32	0.00	-0.003	-3.07	0.00	-0.016
Service workers,	-6.06	0.00	-0.003	-3.72	0.00	-0.019
Skilled agriculture & Fishery,						
Craft workers & Machine operators	-6.48	0.00	-0.005	-3.25	0.00	-0.022
Elementary occupations	-7.07	0.00	-0.005	-4.29	0.00	-0.028
Industry category						
Agriculture and Forestry, Fishing , Mining	3.50	0.04	0.004	0.68	0.35	0.006
Manufacturing	3.08	0.01	0.004	0.96	0.06	0.008
Electricity, Water & Sanitation, Construction						
hotels, transport & communication	1.54	0.17	0.002	0.09	0.85	0.001
wholesale & retail trade	-1.12	0.45	-0.001	-0.66	0.30	-0.005
Financial, Real Estate & Fin Servivces	4.49	0.00	0.007	2.44	0.00	0.028
public administration and defence (base)						
Other	-2.41	0.01	-0.002	-1.85	0.00	-0.012
Income group						
Poorest	-13.99	0.00	-0.007	-11.51	0.00	-0.053
2nd quint	-17.70	0.00	-0.008	-10.64	0.00	-0.046
3rd quint	-13.78	0.00	-0.006	-8.49	0.00	-0.036
4th quint	-8.05	0.00	-0.004	-4.58	0.00	-0.024
richest (base)						
Location						
Western (base)						
Central	-0.96	0.29	-0.001	-0.95	0.03	-0.007
Southern	-3.89	0.00	-0.002	-2.17	0.00	-0.013
Eastern	0.44	0.77	0.000	1.10	0.05	0.010
North Western	-1.45	0.20	-0.001	-1.21	0.01	-0.008

North Central	-4.20	0.01	-0.002	-2.20	0.00	-0.013
Uva	-3.43	0.01	-0.002	-2.29	0.00	-0.013
Sabaragamuwa	-3.97	0.01	-0.002	-2.03	0.00	-0.013
N	17979			17979		
censored observations (left, 0)	17406			16247		
R square	0.2466			0.2405		

Source: Constructed using HIES 2006/07

Note : marginal effects are constructed using pr(a,b) option of predict

7. Conclusions and Policy Recommendations

The Sri Lankan government introduced tax reforms in 2011, given the need to improve tax revenue and expand the tax base, while keeping the tax rates competitive to mobilize professionals and build a knowledge reserve in the country. This study using 2006/07 HIES data assesses how the proposed tax reforms affect tax revenue and the tax base, and examines its effects on the distribution of taxes and net incomes.

The results indicate that 2011 tax reforms reduce tax revenue and the tax base. This is mainly because, under the 2011 tax system the tax rate is reduced and the tax free threshold is increased. Simulation exercises carried out using different tax rates and tax free thresholds indicate that, the most tax revenue is received when the 2007 tax rates and the tax free threshold is extended to the public servants. However, these results ignore tax evasion. Extending the study to include tax evasion could change the results of the study.

The results also indicate that compared to the 2007 tax system (TS2007-1), inequality increases under the current system (TS2011-1). The simulation exercises carried out shows that income redistribution of the TS2007-2 (i.e. keeping the 2007 tax rates and extending the tax to the public servants) is most progressive (as inequality is least under this system (i.e., TS2007-2)) and it will yield the most revenue for the government. This system considerable increases the tax liability of white collar employees.

According to the findings of tax simulation analysis carried out for 2011 tax system, increasing the existing tax rates for each tax band by 9 units while keeping threshold level constant can achieve the tax revenue of the existed 2007 tax system. In this proposed method tax base remain the same tax base of TS 2011-1. On the other hand, increase of tax rates by 6 units and lowering the tax free threshold (from Rs. 600,000 to Rs. 400,000) can achieve the tax revenue of the existed 2007 tax system. Further, this method considerably improves the equity.

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Annex 1 (A1) - Overview of the progress in income taxation in Sri Lanka

Income tax was first introduced to Sri Lanka in 1932 by Ordinance No. 2 of 1932. This Ordinance was amended on 20 occasions during the time up to independence in 1948.

The basic principles of income tax computation in Sri Lanka have largely remained unchanged since the original Ordinance was enacted 1932. Tax liability is based on income derived from Sri Lanka by any person whether resident or non-resident for the income tax year, which is twelve months commencing from April 1.

Until 1972, when the PAYE system for employees was introduced, the income was collected only after an assessment was made on the basis of the information furnished in a tax payer's return. In subsequent changes, a number of new taxes appeared on the tax scene in which the method of collecting income tax in advance has been adopted, e.g. withholding taxes on the interest paid by banks and financial institutions, on discounts of treasury bills (since 1993), on interest on treasury bonds (since 1977) and so on. The latest innovation of this type of tax has been the economic service charge (ESC) on the turnover of prescribed business entities.

Until 1978 income tax on individuals was based on the family unit. In 1978 this changed, and saw the beginning of the system of treating the husband and the wife as separate persons for tax purposes. However, income of minor children in a subsisting family unit continued to be assessed to the father.

The consolidated IRA No. 28 of 1979 brought several changes to the taxation of personal income. Until then tax was charged on the preceding year's income. However a current year Pay-As-You-Earn (PAYE) basis was adopted from October 1971 for all employee remuneration.

Yet individuals were considered as part of a family unit if they were married and had children. Allowances were given for earned income (earned income relief). They also varied according to the size of the family.

Since April 1, 1979 each individual is being taxed separately. Income, if any, of children below 18 years of age is being aggregated normally with the income of the father

Tax Holiday for Public Sector Employees

Since 1979 employees in the public sector have been entitled to a tax holiday.

The Budget Speech of November 1979 presented after two years from the announcement of the policy reforms towards liberalization in 1977, had announced, in the word of the Minister of Finance, a "a far reaching and revolutionary change in the Public Service" (p. 45) in the form of exemption of public servants from all income tax on their official

emoluments. The following was the rationale presented in this Budget Speech for this change: "The Public Service has been going through a difficult period. The apathy and lethargy in certain sections of the Public Service has been the direct result of a lack of proper motivation and incentives to give one's best due to the poor salary and working conditions. As a consequence there has been a drain of talent both to foreign countries and to the private sector at home. There is no reason for as to why Sri Lankans who work so hard abroad should not give of their best at home provide conditions are made favourable for them" (p.44).

In order to make conditions within the public sector attractive two sets of proposals were implemented with effect from 1979/80. Firstly, some increase in salaries was granted to public servants. Given the budgetary constraints this increase was considered inadequate. Secondly, there, public servants were made tax free as from the year of assessment 1979/80. The period in which these actions were taken was a turning point in several respects.

A major policy change, revolutionary in nature when compared to overall policy in Sri Lanka prior to this period, was being implemented. The commitment of public servants, particularly the highly qualified and skilled segments of the service, was needed for successful implementation of these policies.

At present, the official emoluments of public sector employees and parliamentarians are not exempt and form part of their taxable income. But the tax on such emoluments is relived in full by means of a tax credit, which is equal to that part of the tax attributable to such emoluments, and so, effectively no tax is payable on these emoluments.

An extended effect of the tax credit is that the relevant individual pays tax at a higher marginal rate on his other incomes, if any. Meanwhile some government institutions such as certain public corporations and the Central Bank, and state owned banks bear in full the tax payable (including tax on tax) by their employees. In effect then the public sector employees (inclusive government employees per se, public corporation employees including those of the Central Bank, and employees of state-owned banks) are for all intents and purposes not paying income tax

Thirty years have passed since the tax holiday was introduced. With better salaries and special incentive schemes for some, retaining the exemption which private sector employees see as entrenched tax immunity, requires a different rationale. Equity in taxation is an essential condition its acceptance by those who are visibly in the vanguard of economic progress of the country. They are no longer confined to the public sector

This existing tax holiday is under Section 8(1) (a) and (b) of the IRA No.10 of 2006

Annex 2 (A2) - Treatment of Income Sources in Taxation

Different income sources theoretically have different procedures when treating for taxation. This study focuses on examining the possible outcomes of expanding the tax base to taxing the official emoluments of government servants, who are presently tax exempted, *vis-a-vis* the tax revenue currently collected only by the employees in the formal private sector and semi-government sector. Hence, the analysis of the treatment of 'income from employment' in taxation is examined here.

In taxation, 'income from employment' is captured through pay-as-you-earn (PAYE) tax, which is computed and deducted at source. All the benefits received in money in the course of employment are captured in computing this tax.

The study uses data from the Household Income and Expenditure Survey 2006/07 (latest) which covers 3 income components under employment:

- Wages/ Salaries
- Tips, Commissions, Overtime pay, etc.
- Bonus, Arrears payment

Tax, according to IRD practice, is calculated on each employee's gross salary (total appearing in the salary slip inclusive of all allowances). Hence, the total of the first two components of the employment income in HIES are considered as the gross salary in our analysis. PAYE taxes are calculated on a monthly basis using the following tax bands and the corresponding tax rates (Table A2.1).

Table A2.1 Structure of PAYE tax in 2006/07

Monthly Income Range	Tax Rate
Tax free threshold Rs.27,184	0%
1 st band: Rs. 27,185 - 54,347	4.6%
2 nd band: Rs. 54,348 - 72,463	9.2%
3 rd band: Rs. 72,464 - 78,125	13.8%
4 th band: Rs. 78,126 - 89,583	15%
5 th band: Rs. 89,584 - 106,250	20%
6 th band: Rs. 106,251 - 122,916	25%
7 th band: Rs. 122,917 - 164,587	30%
Balance: Rs. 164,588 & above	35%

Source: Inland Revenue Department

Budget 2011 brought about revisions to income tax structures, where the new structure for PAYE tax is yet to be gazetted. However, the new structure for personal income tax has been released, in which the taxable income threshold has been raised from LKR

300,000 in 2004 to LKR 500,000 in 2011, while the tax bands also have been expanded and the income slabs have been reduced (Table A2.2).

Table A2.2 Latest structure of PAYE tax (2011/12)

Taxable Income Range	Tax Rate
Tax free threshold Rs.50,000	0%
1 st band: Rs. 50,001 - 91,667	4%
2 nd band: Rs. 91,668 - 133,333	8%
3 rd band: Rs. 133,334 - 175,000	12%
4 th band: Rs. 175,001 - 216,667	16%
5 th band: Rs. 216,668 - 300,000	20%
Balance: Rs. 300,001 & above	24%

Source: Inland Revenue Department

Extending our analysis to incorporate the latest tax revisions (2011), we have also carried out simulations using the latest PAYE structure.

Table A2-3: Distribution of personal income tax revenue by province

Year		Western	Southern	S'gamuwa	Central	Uva	Eastern	Wayamba	North-Central	Northern	Absolute Numbers
2005	Revenue	80.8	4.2	3.7	6.2	1.0	0.6	2.1	1.4	0.1	3627
	Files	60.6	7.8	6.8	8.7	3.4	1.5	5.7	2.7	2.7	135653
2006	Revenue	80.0	4.7	3.0	5.8	1.1	0.7	2.4	1.9	0.4	6868
	Files	61.3	7.6	6.4	9.1	3.3	1.5	5.3	3.1	2.4	155362
2007	Revenue	66.7	7.0	5.1	10.7	1.7	0.7	5.4	2.4	0.1	4083
	Files	62.9	7.5	6.3	9.3	2.7	1.4	4.7	3.2	2.1	180527
2008	Revenue	68.4	7.2	4.8	9.8	1.8	0.8	4.5	2.7	0.1	4898
	Files	65.1	7.6	1.5	10.1	3.0	1.5	5.4	3.9	1.8	208777
2009	Revenue	67.9	6.6	4.7	10.1	2.0	0.9	4.6	3.1	0.2	5439
	Files	61.4	7.6	6.0	9.7	3.0	1.6	5.1	3.8	1.7	229487
Population		28	12	9	13	6	8	11	6	6	

Notes: 'Revenue' indicates the personal income tax collected from each province, while 'Files' refer to the personal income tax files registered within that province

Source: IRD

Table A2-4: Analysis of income tax of individuals on level of income (year of assessment 2007/08)

Taxable Income Range (LKR)	No. of Taxpayers	%	Total Taxable Income	%	Gross Income Tax Payable	%
0 - 300,000	245,531	62.30	28683309528	20.84	116955431	1.39
300,001 - 600,000	93,314	23.68	38905363278	28.27	562806767	6.70
600,001 - 800,000	25,027	6.35	17319944018	12.58	548617867	6.53
800,001-1,000,000	11,143	2.83	9843878424	7.15	473843378	5.64
1,000,001-1,200,000	5,637	1.43	6137661540	4.46	418277407	4.98
1,200,001 - 1,400,000	3,382	0.86	4228872853	3.07	368388337	4.39
1,400,001 - 1,900,000	4,321	1.10	8643465865	6.28	868003199	10.33
Above 1,900,000	5,781	1.47	23865968601	17.34	5043352166	60.4
Total	394,136	100.0	137628464107	100	8400244552	100.0

Notes: (1) the total of 394,136 comprises include PAYE returns of 351,726 employees and other person income tax returns. (2) The average effective income tax rate, namely LKR 8.4 Mn as a percentage of LKR 137.6 Mn is 6.1%

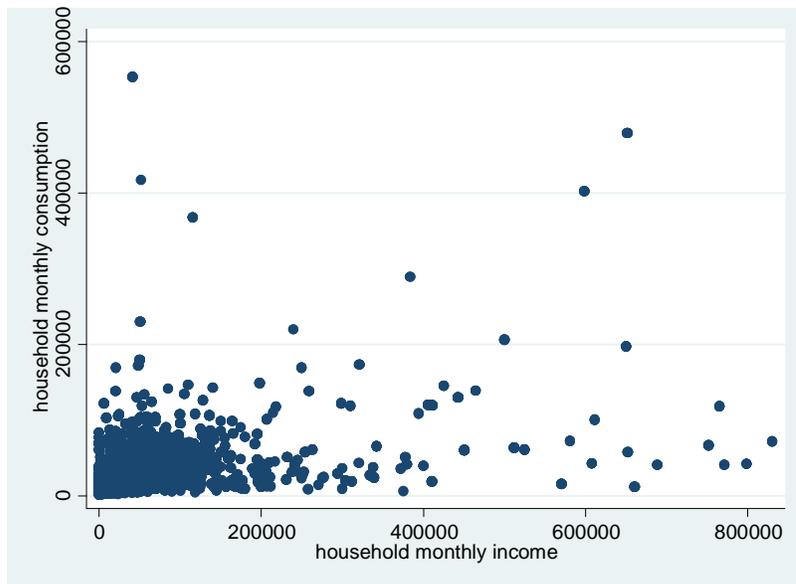
Source: IRD

Annex 3(A3) - Methodological Issues

Registered PAYE tax payers in 2006/07 was amounted to 253,553, while estimated PAYE tax payers from HIES 2006/07 data was around 103,929. Further, estimated PAYE tax revenue amounted to Rs. 4,525 Mn, while according to the IRD the actual figure remains Rs. 7,313 Mn.

Probable reason is under reporting the wage income in household surveys.

Variable	Obs	Mean	Std. Dev.	Min	Max
HH monthly consumption	81335	18794.1	16355.99	1173	666106.3
HH monthly income	81335	21686.17	60260.04	0	4369650



Source: Constructed using HIES 2006/07

Probable solutions

Scenario-1

Inflate the underreported wage income

Weighting factor -- actual tax revenue / estimated tax revenue = 1.616

Table A3.1: Estimated taxable employees -- 2006/07

Employment sector	No. of employees
Government	266,508
Semi government	61,557
Private	211,867
Private + Semi government	273,423

Source: Constructed using HIES 2006/07

Table A3.2: Estimated PAYE annual revenue

Employment sector	Rs. Mn
Government	3,264
Semi government	1,028
Private	12,480
(Private + Semi government)	13,508

Source: Constructed using HIES 2006/07

Though adjusted wages gives a reasonable estimate for number of tax payers the estimated tax revenue is overestimated.

Scenario-2

Household total income is adjusted comparable to household monthly expenditure.

Household monthly expenditure - Freely received food, own house rent, purchasing durables and adhoc expenses (weddings, funerals) are excluded

Household monthly income - Household total monthly income is considered with excluding adhoc income.

Household income is adjusted – weight factor (hh monthly expenditure/hh total income)

Household income is adjusted only if infla factor > 1

Table A3.3: Estimated taxable employees -- 2006/07

Employment sector	No. of employees
Government	82,367
Semi government	38,617
Private	123,747
(Private + Semi government)	162,364

Source: Constructed using HIES 2006/07

Table A3.4: Estimated PAYE annual revenue

Employment sector	Rs. Mn
Government	1,476
Semi government	424
Private	6,108
(Private + Semi government)	6,532

Source: Constructed using HIES 2006/07

According to the adopted adjustment under scenario 2, number of PAYE tax payers and PAYE revenue is somewhat closer to actual figures. Therefore this study adopted the scenario 2 to adjust the underreported household income, whereas the estimation of this study is probably downward biased.

Table A3.5

PAYE	Actual*	Estimated-HIES	scenario -1	scenario-2
Tax payers	253,553	103,929	273,423	162,363
Tax Revenue (Rs. Mn)	7,313	4,525	13,508	6,532

Source: Constructed using HIES 2006/07

Note: *IRD Performance Reports