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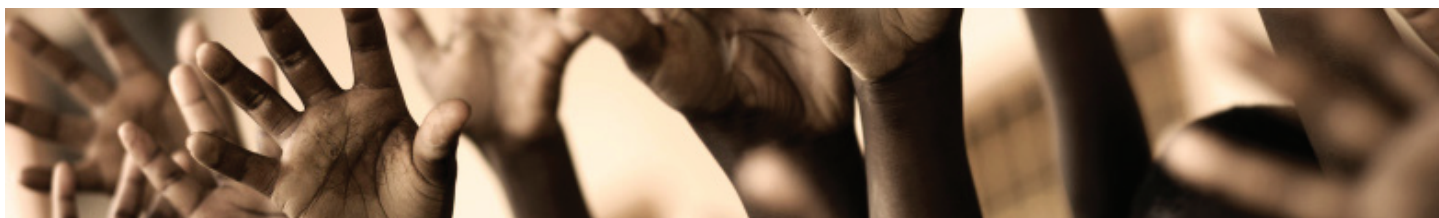
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working paper  
2012-13

# Tax reforms in Sri Lanka: will a tax on public servants improve progressivity?

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December 2012



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economic  
policy

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# Tax Reforms in Sri Lanka:

## Will a Tax on Public Servants Improve Progressivity?

### Abstract

*The Sri Lankan government implemented tax reforms in 2011, including removal of the tax exemption given to public servants and reduction of personal income tax rates in order to improve tax compliance from pay-as-you-earn (PAYE) tax payers. This study evaluates the 2007 and 2011 tax systems in order to examine the effects that taxing the income of public sector employees has on total tax revenues and the tax base. The study also compares the distributional effects of the different tax systems. Study further conducts simulation analyses to assess the most progressive means of achieving the 2007 tax revenue levels. Implications for tax evasion are also examined under different tax systems. The study finds that the 2011 tax reforms reduce tax revenue by 48 percent relative to the structure of income taxation in 2007. This decline in tax revenues occurs even though income taxes are extended to public sector workers because the 2011 tax reforms reduced the rate of income taxes across the board and increased the tax-free threshold. Our simulations show that tax revenues would have risen if the reforms were limited to introducing income taxes to public servants. The resulting (hypothetical) tax system would also have been more progressive than the tax structure resulting from the 2011 reforms. The study evaluated the distributional impacts of modifications to the 2011 tax system which would increase tax revenue to their level in 2007. More specifically, the present study finds that the most progressive way to attain this tax revenue target would be to increase tax rates on taxable income by 6 percentage points and to lower the tax-free threshold from LKR 600,000 to LKR 400,000.*

**Keywords:** comparing tax systems, distributional effects of taxes, income redistribution, tax redistribution, tax progressivity approach, income progressivity approach, tax revenue, progressivity indices, inequality effects of taxes

**JEL codes:** H20, H21, H23, H24, H30

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### Acknowledgements

This work was carried out with financial and scientific support from the Partnership for Economic Policy (PEP), which is financed by the Australian Agency for International Development (AusAID) and the Government of Canada through the International Development Research Center (IDRC) and the Canadian International Development Agency (CIDA). The authors would like to thank the PEP team for both funding and technical advice; in particular PEP resource person, Araar Abdelkrim for excellent research guidance provided throughout this project, and PEP program director Jean Yves Duclos for overall guidance, as well as reviewers and participants of the 9th PEP Network General Meeting for their very helpful comments. We also acknowledge competent research assistance by Nethmini Perera, research assistant at the Institute of Policy Studies in Sri Lanka.

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## 1. Introduction

The need to reduce budget deficits by increasing government revenues is a challenge that has long faced the Sri Lankan government. Taxes remained the most important source of public revenues (87 percent) in 2011, and about 17 percent of these tax revenues were derived from income taxes.<sup>1</sup> Another key element of the recently proposed tax reforms was to improve tax revenues by broadening the tax base and improving tax compliance.

It was in this context that the 2010 parliamentary budget sought to simplify the tax system, broaden the tax base and improve tax compliance.<sup>2</sup> Given that the general goal is to increase tax revenues while maintaining competitive tax rates, the various exemptions granted to individual and corporate income taxes has taken front stage in this debate. The income tax exemption granted to Sri Lanka's public sector employees has attracted particular attention, and the 2011 tax reforms removed this exemption. Income tax rates have also been reduced with the goals of improving tax compliance and collecting more pay-as-you-earn (PAYE) taxes.

This study examines how a proposed income tax on public servants affects total tax revenues and the tax base, as well as the effect of this tax on the distribution of incomes and taxation. The study also carries out simulations to determine the most progressive way to increase tax revenues. Since high tax rates may also influence tax evasion, we also examine tax evasion-related behavioral changes.

The results show that the government collected LKR 12.2 billion in tax revenues under the 2007 tax system. Just 9 percent of formal sector employees were taxed in that year. Under the 2011 tax system, where public servants are also taxed, government income tax revenues totalled LKR 6.3 billion and just 3.3% of formal employees were taxed. The lower tax rate and higher tax-free threshold were the main reasons for the decline in tax revenues and the tax base. We should point out that these results ignore tax evasion, which is likely to increase with the rate of taxation. The results also show that lowering the tax-free threshold and increasing tax rates from their levels in 2011 both make the tax system more progressive.

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<sup>1</sup> Central Bank of Sri Lanka, 2011, *Annual Report*.

<sup>2</sup> Central Bank of Sri Lanka, 2011, *Annual Report*.

## 2. Background

The budgetary context in Sri Lanka has been characterized by ever-increasing government expenditures. The country's socio-political conditions, notably in relation to existing institutions, electoral democratic processes and the welfare state ideology, have encouraged elected governments to maintain certain public sector activities (e.g., free education up to the post-secondary level, free health services and various government transfers). Moreover, the government continues to provide for the physical and social infrastructures required to meet the country's economic development needs. As deficit financing has been extensively practiced by all governments to date, amortization of and interest payments on public debt have emerged as another large and relatively fixed component of fixed annual public expenditures. Another important consideration is the large share of government expenditures dedicated to public sector payroll. Each of these factors exerts continuous and strong upward pressure on both current and capital public expenditures.

The country's fiscal system has undergone significant transformation over the last decade, including the introduction of several ad hoc taxes, but little has been done to expand the tax base. Despite higher rates and a greater number of taxes, the tax-to-GDP ratio has dropped from 19-22 percent prior to 1995 to 13-15 percent over 2003-2009, and sat at 14.5 percent in 2011.<sup>3</sup> Sources of non-tax revenues have traditionally been limited, and tax revenues have always formed the bulk (close to 90 percent) of government revenues. This decline in tax revenues is associated with a declining tax-to-GDP ratio.

Sri Lanka's tax-to-GDP ratio is lower than that of Vietnam, Thailand, Malaysia, Singapore, Ghana and South Africa, is higher than its South Asian counterparts (India, Pakistan and Bangladesh), and is marginally higher than that of Indonesia and the Philippines. We also find that direct taxes (on income and profits) as a share of government revenues is substantially lower in Sri Lanka than in Pakistan and India, as well as East and South East Asian countries such as China, Philippines, Malaysia, Indonesia, Thailand, Singapore and South Korea.

With continuously high budget deficits, growing pressures on public finances linked to welfare spending, infrastructure investments and reconstruction efforts in the conflict-ridden Northern Province and Eastern Province, the need to expand the tax base and raise more tax revenues has become a public policy priority. The government entered into a Standby Arrangement (SBA) with the IMF for USD 2.6bn in mid-2009. Along with this facility, the government aims to raise the revenue-to-GDP ratio from 14 percent in 2009 to 20 percent by 2016, to stand in line with the revenue-to-GDP ratios prevailing in Sri Lanka 10-15 years ago.<sup>4</sup>

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<sup>3</sup> Central Bank of Sri Lanka, 2011, *Annual Report*.

<sup>4</sup> IMF. 2010. Sri Lanka: Second and third reviews under the standby arrangement - staff report. IMF country report no. 10/333, October 2010.

## **2.1 Overview of income taxation in Sri Lanka**

Income tax was first introduced to Sri Lanka by Ordinance No. 2 of 1932. This ordinance was amended 20 times prior to independence in 1948. The basic principles of income taxation in Sri Lanka have remained broadly similar since the original ordinance was enacted in 1932. Taxes are paid on income earned by any person in Sri Lanka, whether resident or non-resident in the income tax year commencing on April 1. Various changes have been introduced to the income tax system over the years, and are presented in Annex 1.<sup>5</sup>

The consolidated Inland Revenue Act (IRA) No. 28 of 1979 introduced several changes to personal income taxation. A pay-as-you-earn (PAYE) system of taxation on remuneration of all employees was thus introduced in October of 1979. The unit of taxation has been the individual since April 1, 1979.<sup>6</sup>

## **2.2 Taxing public sector employees**

In 2010, 1.1 million of Sri Lanka's 7.7 million employed individuals were engaged in the public sector (DCS, 2011).<sup>7</sup> This figure includes public sector officials, parliamentary legislators and other politicians. In a tax policy unique to Sri Lanka, this entire segment of the labour force had been exempt from paying income tax on their salaries. The initial rationale of this policy, introduced by the late President J.R. Jayawardena in 1979, was that public sector wages were significantly lower than in the private sector at the time. Given the low salaries, this tax exemption was seen as essential to retain talented staff in the public sector during the process of liberalizing the economy. However, rising salaries in the public sector have made it increasingly difficult to rationalize the exemption of this entire group from paying income taxes, particularly given that they use public services just as much as private employees do.

The debate over the tax-free status of public employees arose in a context where the tax base needs to be broadened and individual and business tax exemptions need to be reduced. It is also ethically awkward for the government to promote improved tax compliance while it continues to exempt its own employees from income taxes. This important question of equitable tax treatment sparked an economic debate on the need to revisit this tax-free status. The 2011 budget, presented in November 2010, thus proposed to require public sector workers to face income taxation as is the case for private sector employees. Accordingly, public sector workers have been obliged to pay PAYE tax since April, 2011.

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<sup>5</sup> Based on author's work for the Presidential Commission on Taxation 2009.

<sup>6</sup> *ibid.*

<sup>7</sup> This excludes the Northern province.

## 2.3 Personal income taxation (non-corporate income tax)

Table 1 below provides some details on the number of non-corporate tax payers in 2007 compared to 2010. We can see here that PAYE taxes are an important source of government income.

**Table 1: Number of non-corporate tax payers**

Non-corporate tax payers	2007	2010
<b>Individuals</b>	163,438	192,451
<b>Employees (PAYE taxation)</b>	324,268	530,213
<b>Partnerships</b>	15,373	16,578
<b>Bodies of persons</b>	1,932	1,107
<b>Total</b>	<b>505,011</b>	<b>740,349</b>

Source: Inland Revenue Department (IRD), Performance Report (various years)

The number of non-corporate tax units stood at 740,349 in 2010. Among these, the number of individuals and employees (722,664) amounted to just 3.6 percent of the country's current population of 20 million. This percentage drops to less than 1 percent if employees covered by the PAYE scheme are excluded. These percentages generally vary with a country's average income, the degree of institutional development, its' level of literacy and so on.

### ***Tax revenues from non-corporate tax payers, PAYE taxation***

Non-corporate taxpayers are comprised of individuals, partnerships and bodies of persons who are not 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 revenues. Non-corporate and PAYE tax revenues as percentages of GDP, total tax revenues and total government revenues over 2004-2010 are shown in table 2.

**Table 2: Contribution of non-corporate and PAYE taxes**

	Non-corporate tax revenue as percentage of:		
	Tax revenues	Total government revenues	GDP
<b>2004</b>	15.35	8.12	1.21
<b>2005</b>	11.32	5.91	0.91
<b>2006</b>	13.01	6.89	1.12
<b>2007</b>	16.72	9.12	1.44
<b>2008</b>	18.24	9.59	1.42
<b>2009</b>	20.62	10.41	1.51
<b>2010</b>	14.30	7.39	1.08

Source: IRD, Performance Report (various years)

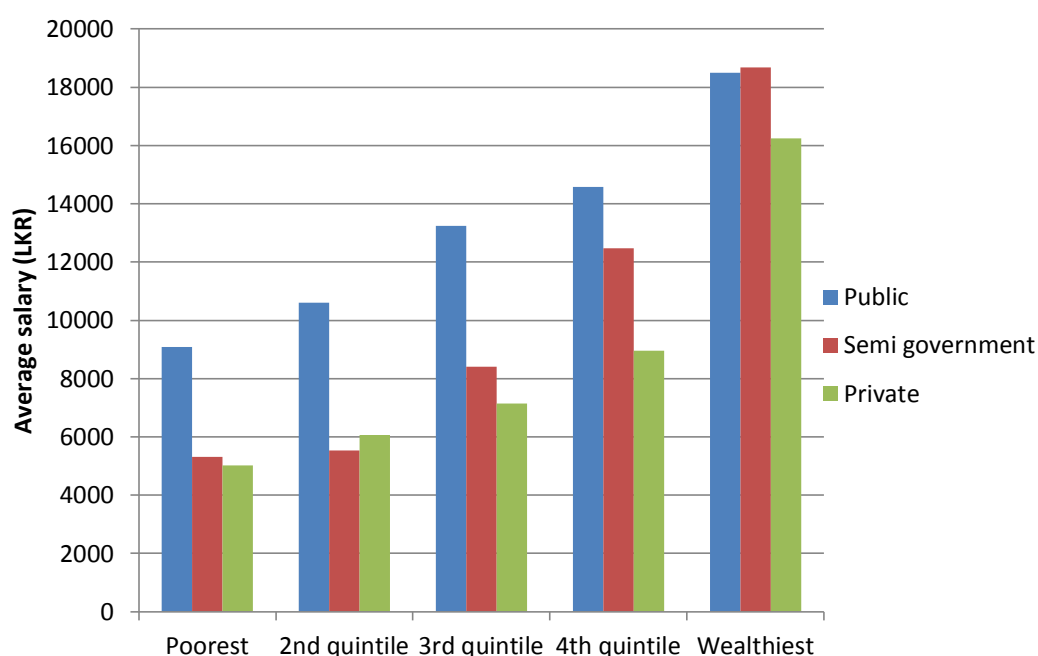
Since non-corporate tax payers are a small share of the population, we can expect their contribution to public revenues to be small, whether considered in relation to GDP, total tax revenues or total government revenues. This situation points to a need to broaden the tax base by bringing more individuals into the system. The annual income threshold for income taxes rose from LKR 12,000 in 1979 to LKR 144,000 in 1997 and then to LKR 240,000 in 2002. The most recent revision to this threshold occurred in 2004, to LKR 300,000, and remained at that level until 2011, when it was increased to LKR 600,000.<sup>8</sup>

PAYE taxes are paid on employment income. Until the 2011 reforms, employees in the formal private sector and in the semi-government sector were liable to pay taxes while employees in the public sector were exempt from paying income taxes.

## 2.4 Employee structure

Under the tax regime prior to 2011, public sector employees (18 percent of employees in the formal sector) were exempt from income taxes, even though average income is much higher in the public sector (LKR 15,322) than in the formal private sector (LKR 7,796). In figure 1, we can see that the higher end of each income quintile tends to be dominated by public sector employees, and private and semi-government sector employees earn less in almost every segment of the population.

**Figure 1: Average wage income by income quintile**



Source: Own calculations using Department of Census and Statistics' Household Income and Expenditure Survey (HIES) 2006/07 data

<sup>8</sup> Based on written correspondence with the Inland Revenue Department, February-April 2010.

### 3. Literature Review

As explained in the background section, changes in Sri Lankan tax policy have generally aimed to increase tax revenues without considering impacts on equity. Some studies have examined the incidence of specific taxes on Sri Lankan households (e.g., Coady et al, 2006), but the distribution of income taxation and its effects on equity remain poorly understood. The available literature on the efficiency and equity of income taxes in the country are mainly descriptive (e.g., Presidential Commission on Taxation, 2009).

Gemmell and Morrissey (2005) survey the literature on the effects of taxes and tax reforms on income distributions and on the poor in developing countries, and are limited by the scant number of studies examining these issues. Existing studies use two main approaches. Earlier studies focus on the average rate progression (ARP), which compares marginal and average tax rates for selected income levels or income groups (see Gemmell and Morrissey for more details on this approach). Several studies have also used concentration curves and dominance concepts to examine the progressivity of taxes and tax systems. Studies using ARP approaches generally find personal income taxes to be progressive, but the results of these studies are limited by the fact that they ignore tax evasion. This study proposes to use the second method (concentration curves and dominance) to assess distributional aspects of current Sri Lankan income tax policy in order to determine the distributional effects of a new tax policy. In this sense, the scientific contribution of this study is mainly empirical.

“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 latter focuses on distributive justice” (Duclos and Araar, 2006: p 127). A tax is progressive if it reduces inequality in a population, i.e., if net incomes are more equally distributed than gross incomes. Similarly, Essama-Nssah (2008) states that a tax can be considered as progressive if the average tax burden of an income earning unit increases with its income. The larger total tax liability faced by a more prosperous household in this situation would result from both a higher effective tax rate and their higher level of income.

The literature provides two main approaches to assessing the overall progressivity of a tax system. The first is the tax redistribution (TR) approach, and the second is the income redistribution (IR) approach (Duclos and Araar, 2006). Progressivity of a tax system using these two approaches is usually assessed using Lorenz and concentration curves (Duclos and Araar, 2006). In addition to the use of graphical approaches to assessing tax systems, progressivity indices provide a numerical way to measure progressivity (Duclos and Araar, 2006).

## 4. Methodology

Following Younger et al (1999), we assume that workers pay income taxes on earned income and that income is perfectly inelastic with respect to tax rates in order to estimate the incidence of taxation across the income distribution. We assume that only formal private sector and semi-government workers were previously taxed; these assumptions allow us to simulate the taxes paid by households when public sector workers are brought into the income tax system.

### 4.1 Measuring living standards and socioeconomic status

In order to study the distributional effects of taxes, first we need to select a suitable way to rank households and then examine how different tax systems affect different groups of individuals. This section describes how we measure living standards.

Following the recommendations of Deaton and Grosh (2000), we use consumption as a proxy measure of living standards in our study. We follow two of the main steps used by the World Bank (2008) and by Duclos and Araar (2006) to construct a measure of living standards using consumption: ) aggregate the different components of consumption and b) adjust for household size and composition. More detail on our approach to these steps follows.

#### a) Aggregate different components of consumption

For consumer durables, we use reference period data and appropriate methods for this calculation (for example, as detailed by Deaton and Zaidi, 2002).

#### b) Adjust for household size and composition

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,  $\alpha$  is the 'cost of children' and  $\theta$  is the degree of economies of scale. A literature review produced by the World Bank (2008) points to the difficulties in determining  $\alpha$  and  $\theta$ . Deaton and Zaidi (2002) define  $\alpha$  as taking values between 0.3 and 0.5 (we use the higher end of this range) and  $\theta$  as taking values between 0.75 and 1.0 (we use the lower end of this range).

We then use the following method to assess how the proposed tax reform affects the income distribution.

### 4.2 Assessing tax systems

A tax is said to be progressive if it leads to a more equitable measure of living standards. This can be considered in terms of its effects on the distribution of taxation or its effects on the

distribution of income. Lorenz curves and concentration curves are popular tools used by researchers to describe the effects of a tax and of tax reforms on these distributions.

The **Lorenz curve**  $L_X(P)$  for gross income is 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 and the denominator shows the cumulative incomes of the entire population.  $L(p)$  shows the percentage of total income held by the bottom  $p$  proportion of the population, when individuals are ranked by income or living standards.

The **concentration curve**  $C_T(P)$  graphs the total share of taxes paid by a cumulative percentage of the population, ranked from poorest to richest according to living standards. 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 taxes paid are allocated across the distribution following the same ranking. The concentration curve for a tax  $T$  paid by the bottom  $p$  proportion of individuals is thus 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  $C_T(p)$  is the share of total taxes paid by the bottom  $p$  proportion of the population.

Our analysis begins with this graphical approach to describing the distributional effects of different taxation policies on net incomes.

### 4.3 Progressivity and inequality comparisons<sup>9</sup>

As described in the literature review, there are two main ways to assess the overall progressivity of a tax: the tax redistribution (TR) approach and the income redistribution (IR) approach. We use Lorenz and concentration curves together with the following rules to assess the whether a tax is progressive and its effects on the income distribution.

Following Duclos and Araar (2006), if gross income is denoted by  $X$  and the tax associated with that income is denoted by  $T(x)$ , income net of taxes is given by  $N(X) = X - T(X)$ .

A tax  $T$  is TR progressive if:

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<sup>9</sup> This section follows the techniques introduced in Duclos and Araar (2006).

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

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

A tax  $T_1$  is more TR progressive than a tax  $T_2$  if:

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

That is, tax  $T_1$  is more TR progressive when the concentration curve for tax  $T_1$  sits below the tax  $T_2$  concentration curve.

A tax  $T$  is IR progressive if  $C_N(p) > L_X(p)$  for all  $P \in ]0,1[$ . That is, when the net income concentration curve of a tax  $T$  is above the Lorenz curve, then tax  $T$  is IR progressive.

Finally, net tax  $T_1$  is more IR progressive than tax  $T_2$  if  $C_{N_1}(p) > C_{N_2}(p)$  for all  $P \in ]0,1[$ , where  $N_1$  and  $N_2$  are the net incomes associated with the two taxes. That is, when the concentration curve for net incomes of a tax  $T_1$  is above the concentration curve for net incomes of a tax  $T_2$  then tax  $T_1$  is IR more progressive.

#### 4.4 Progressivity indices

While these graphical representations are useful, they are of limited use because they do not provide a measure of progressivity that can be compared across scenarios. Furthermore, we cannot make any conclusive statements about progressivity in cases where the Lorenz and concentration curves cross. Progressivity indices are useful tools which provide the desired numerical measures of progressivity, vertical equity, and horizontal inequity as well as any redistributive effects of taxes. We adopt the following indices, as described in Duclos and Araar (2006, p. 145), for our analysis:

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

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

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

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

where  $\kappa(p; \rho)$  is a weight that varies with percentile  $p$  and the parameter  $\rho$ . These indices commonly use  $\rho=2$ .  $IT(\rho=2)$  is known as the Kakwani index, a measure of TR progressivity.  $IV(\rho=2)$  is known as the Reynolds-Smolensky index, and measures IR progressivity and vertical equity.  $RR(\rho=2)$  is known as the Atkinson-Plotnick index, a measure of reranking. Finally,  $IR(\rho=2)$  measures redistribution.

### Nonparametric regression curves

We calculate expected tax payments as a function of gross income using non-parametric regression curves, as detailed in Araar and Duclos (2009). Nonparametric regression curves link two variables without a priori specifying a functional form. The nonparametric regression model can be determined following the local linear approach, and in our case is defined as:

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

### Labour participation model

Individual employment status is estimating using a multinomial logit model, as in Maddala (1983). We assume that each individual faces a utility function which depends on preferences determined by personal and household characteristics, as well as labour market characteristics that affect overall labour demand and the expected wage rate that he or she can receive on the job:

$$(1) U_{ij} = U(X_i, W_{ij}, Z_j)$$

where  $i$  indexes individuals and  $j$  indexes occupations. The wage of an individual is a function of the same (or a subset of) individual ( $X_i$ ) and occupational ( $Z_j$ ) characteristics:

$$(2) W_{ij} = f(X_i, Z_j).$$

Substituting (2) into (1) and assuming a linear functional form yields:

$$(3) U_{ij} = \alpha X_i + \beta Z_j + \epsilon_{ij}$$

Individual  $i$  then maximizes expected utility  $E(U_{ij})$  by selecting an occupation in sector of activity  $j$ . The observed selection by the individual would be an outcome of rationing by the labour market and potential employers as well as individual preferences.

## 5. Application of the methodology

### 5.1 Data requirements and sources

The main source of data is the nationally representative Household Income and Expenditure Survey 2006-2007 (HIES) conducted by the Sri Lankan Department of Census and Statistics. The HIES survey collects comprehensive household data on food and non-food expenditures, sources

of income, household composition, educational attainments, employment status, as well as community characteristics. This dataset is especially useful for the present study because it provides a wealth of information on income and expenditures. The survey covers 21,700 housing units with a total of 27,000 employees, more than 3,000 (11.6%) of which are from the public sector, 1,000 (3.7%) from the semi-government sector and more than 13,500 (50%) from the private sector. For validation purposes, our analysis uses secondary data on tax rates and the various sources of revenues collected by the Inland Revenue Department (IRD).

## **5.2 Measuring living standards**

The HIES collects data on weekly food and beverage consumption. These include items purchased in the marketplace, the value of items both produced and consumed by the household, and gifts. The survey also covers household consumption of energy, non-durable goods, services and consumer durables in the month preceding the survey. The survey also includes consumption of clothing and textiles in the previous six months and of durable household goods such as furniture and electronic items in the previous year. Expenditures on insurances and income tax, and on social functions such as weddings and funerals, are also included in the survey.

In order to make the data tractable for the purpose of this study, we first convert data on food and non-food consumption to a common reference period. A monetary welfare index was constructed using household expenditures in order to rank households. Household size was adjusted using the equivalence scale described in section 4. A value of 0.5 for  $\alpha$  and 0.75 for  $\theta$  were given in the analysis.

## **5.3 Calculation of PAYE taxes from survey data**

PAYE taxes were calculated using individual-level data on monthly salaries from the HIES. The IRD calculates taxes on each employee's gross salary, inclusive of all allowances. The sum of employment income and other payments (bonuses and arrears) found in HIES data are considered as the gross salary in our analysis. PAYE taxes are calculated on a monthly basis using the tax bands and rates presented in table 3 below.

Our estimate of 2006/07 revenues from PAYE taxation is much lower than actual revenues. We adjust (underreported) income to be consistent with monthly household expenditures. Then, to compare the effects of the 2007 and 2011 tax systems, we use the CPI to adjust 2007 gross income data to 2011 prices in order to construct a proxy for 2011. PAYE taxes were thus calculated under different scenarios on the basis of price-adjusted monthly gross salaries received by individuals after adjusting for underreported income.

## **5.4 Structure of taxation**

The structures of taxation in the 2007 and 2011 tax systems are given in table 3.

**Table 3:** Structure of taxation, 2007 and 2011

Annual income range (LKR)		Income tax systems			
Min	Max	TS2007-1/ TS2007-2		TS2011-1	
		Base tax	Tax rate (%)	Base tax	Tax rate (%)
0	326208	0	0.00	0	0.00
326220	400000	0	4.60	0	0.00
400000	600000	3394	4.60	0	0.00
600000	652164	12594	4.60	0	4.00
652176	869556	14994	9.20	2087	4.00
869568	937500	34993	13.80	10782	4.00
937512	1074996	44368	15.00	13499	4.00
1075008	1100000	64990	20.00	18998	4.00
1100000	1275000	69989	20.00	20000	8.00
1275012	1474992	104989	25.00	33998	8.00
1475004	1600000	154984	30.00	49996	8.00
1600000	1975044	192482	30.00	60000	12.00
1975056	2100000	304996	35.00	105001	12.00
2100000	2600000	348726	35.00	120000	16.00
2600000	3600000	523726	35.00	200000	20.00
3600000	> 3600000	873726	35.00	400000	24.00

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

## 6. Results

### 6.1. Comparison of different tax systems

This study examines effects of the 2011 tax reforms, which include extension of PAYE taxation to public sector employees. First, we calculate the impact of the 2011 tax reforms by comparing the 2007 and 2011 tax systems with our 2011 income proxy. Second, we examine the impact of extending PAYE taxation to public sector workers by introducing public sector income taxation to the 2006/07 tax system. This results in three different tax systems, two actual systems and one for the purpose of analysis as specified below.

**Tax system 1** – The actual 2006/07 PAYE tax system, where only private sector and semi-government employees were liable to pay income tax. This 2006/07 tax system is referred to as TS2007-1.

**Tax system 2** – This is the new 2011 PAYE tax system, which includes public, formal private sector and semi-government employees. We refer to the 2011 tax system as TS2011-1.

**Tax system 3** – This tax system only differs from the 2006/07 PAYE tax system in that public sector employees are also taxed, at the same rates as outside the public sector. We refer to this as tax system as TS2007-2.

The study examines the impacts of each of the three tax systems (TS2007-1, TS2011-1 and TS2007-2) on the tax base, tax revenues, the distribution of incomes and taxes and the progressivity of these systems. The results are discussed below.

### 6.1.1. Tax base

Under TS2007-1, which only taxes the formal private and semi-government sectors, 9 percent of formal sector workers pay taxes (table 4). Under the new 2011 tax system TS2011-1, all formal sector employees above a certain threshold are liable to pay taxes. Although TS2011-1 taxes public servants' income, only 3.3% of formal sector employees are liable to pay taxes due to the increase in the annual tax-free threshold from LKR300,000 to LKR 600,000.

When the 2007 tax system is extended to public sector workers (TS2007-2), the proportion of formal sector workers paying taxes rises to 15.8 percent (table 4).

With regards to the tax liability by occupation, half of senior officials are liable to pay PAYE taxes for income earned in the private sector under the TS2007-1 tax system whereas this figure is just 34% under the TS2011-1 system. This difference is due to the increased tax threshold. Since the public sector employs the majority of professionals (71%) and security forces (96%), a much higher share of these two groups are liable to pay taxes under the TS2007-2 scenario.

**Table 4: Percentage of formal employees liable to pay taxes under three tax systems**

	TS2007-1	TS2011-1	TS2007-2
<b>Total in Sri Lanka</b>	<b>9.0</b>	<b>3.3</b>	<b>15.8</b>
<b>By occupation<sup>10</sup></b>			
Senior officials & managers	51	34	63
Professionals	12	10	46
Technicians & associate professionals	23	6	35
Clerks	17	5	28
Service workers & shop & market sales workers	7	2	16
Skilled agriculture & fishery workers	1	0	2
Craft & related workers	7	1	8
Plant & machine operators & assemblers	12	2	15
Elementary occupations	2	0	4
Security forces	1	9	46

**Source:** Own calculations using HIES 2006/07 data; classifications following the ILO's ISCO.

<sup>10</sup> Following the ISCO-88 classification, at the one digit level.

### 6.1.2 Tax revenues

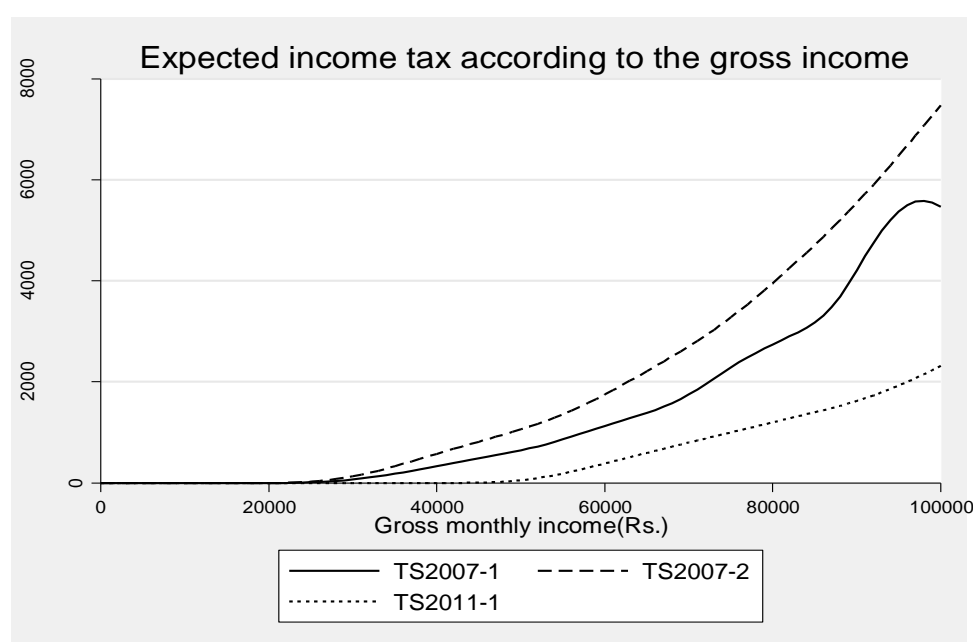
We estimate annual tax revenues under TS2007-1 to be LKR 12.2 billion, as compared to 6.3 billion with TS2011-1. This LKR 5.9 billion gap results the increased tax-free threshold and lowered tax rates, both of which reduce the tax base. Tax revenues in the TS2007-2 scenario, where the 2006/07 tax system is extended to public sector workers, rise by LKR 4.3 billion to LKR 16.5 billion.

### 6.2. PAYE distribution of taxation

We find that each quintile pays a similar amount of taxes in each of the three tax systems, indicating that the systems have a similar impact on the distribution of taxation. Around 90 percent of PAYE taxes are paid by the richest quintile while 3-7 percent (depending on the scenario) is paid by the formal sector workers in the fourth income quintile. More PAYE taxes are paid by the fourth quintile under the TS2007-1 and TS2007-2 tax systems because the threshold is lower than in the 2011 tax system. A limited number of workers in the poorest quintile pay PAYE taxes, a situation that occurs because taxes are determined at the individual level and poverty is determined at the household level.

Figure 2 presents nonparametric regression curves of gross monthly income and expected monthly income taxes paid under each of the three tax systems. We can see that expected income taxes are much lower in 2011 than in 2007. This is mainly due to the fact that the 2011 tax reforms reduced PAYE tax rates from a range of 4.6 - 35 percent in 2007 to 4 - 24 percent in 2011 and also increased the annual tax-free threshold from LKR 300,000 to LKR 600,000. Amongst the tax systems that we compare, TS2007-2 yields the highest income tax.

**Figure 2: Expected income taxes by gross monthly income**



Source:

Authors' calculations using HIES 2006/07 data.

### 6.3. Progressivity of taxes

In this section we examine the progressivity of different tax systems. A household's economic status depends on both wage income and household size, so we account for the second of these by considering income per adult equivalent. In section 0, we examine the inequality in net income among workers and among the population as a whole for each tax system. In section 0, we examine income tax progressivity using progressivity curves, and in section 0 we measure progressivity using progressivity indices.

#### 6.3.1. Inequality

In this section we analyze the effect of different tax systems on the net income distribution across the population and among workers in the formal sector. Table 5 presents before- and after-tax Gini coefficients for the entire population (per adult equivalent) and for formal sector workers. In each case, inequality is lower after taxation, indicating that these tax systems are progressive. The results show that inequality is lower in the TS2007-1 system than in TS2011-1 and that extending the tax to public servants improves equity (inequality is lower in TS2007-2 than in TS2007-1). Income taxes paid by workers affect household welfare, but the tax reforms have a smaller impact on inequality at the household level than at the worker level. In both cases, the small tax base in the PAYE system limits these inequality-reducing effects.

**Table 5:** Gini index, gross and net incomes: formal workers and entire population

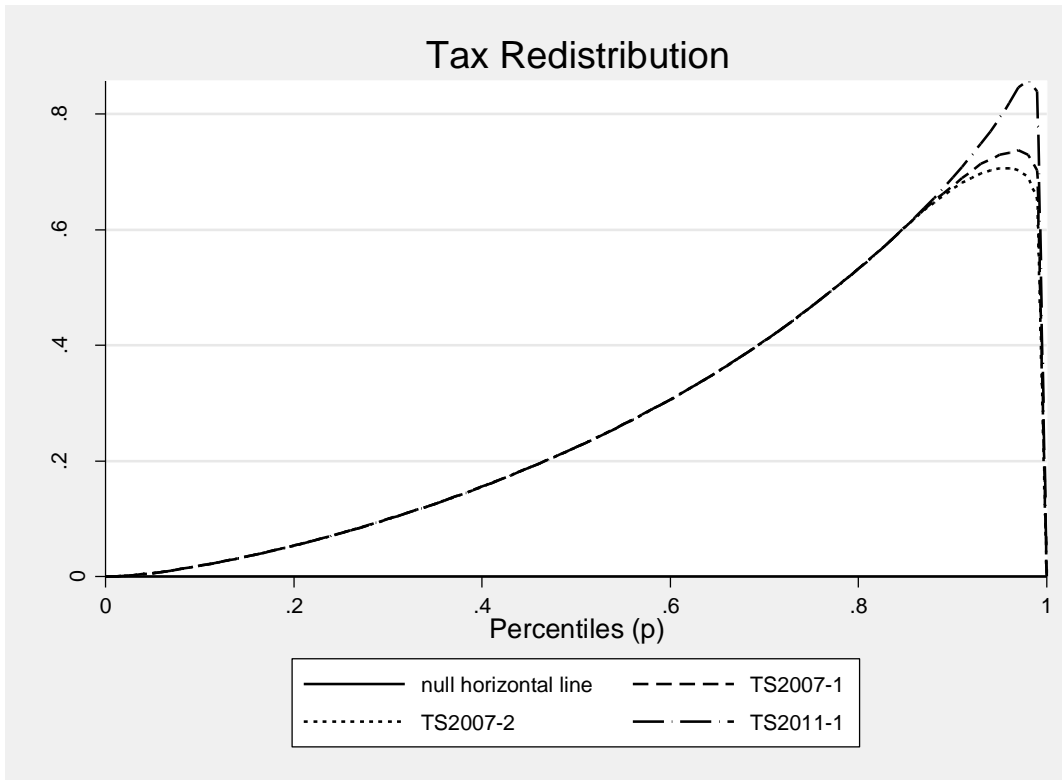
	Entire population	Formal workers
<b>Before taxes</b>	0.3223	0.4138
<b>After taxes</b>		
<b>TS2007-1</b>	0.3150	0.4060
<b>TS2007-2</b>	0.3132	0.4033
<b>TS2011-1</b>	0.3185	0.4097

Source: Authors' calculations using HIES 2006/07 data.

#### 6.3.2 Redistribution of taxes and incomes

In this section, we evaluate the actual distribution of taxes and net incomes in order to determine the progressivity and income equity in each tax system. As described in the methodology section, the progressivity of an income tax can be examined using two approaches. Accordingly, figure 3 presents the results of the tax redistribution (TR) approach and figure 4 presents results of the income redistribution (IR) approach.

**Figure 3: Tax redistribution (TR)**

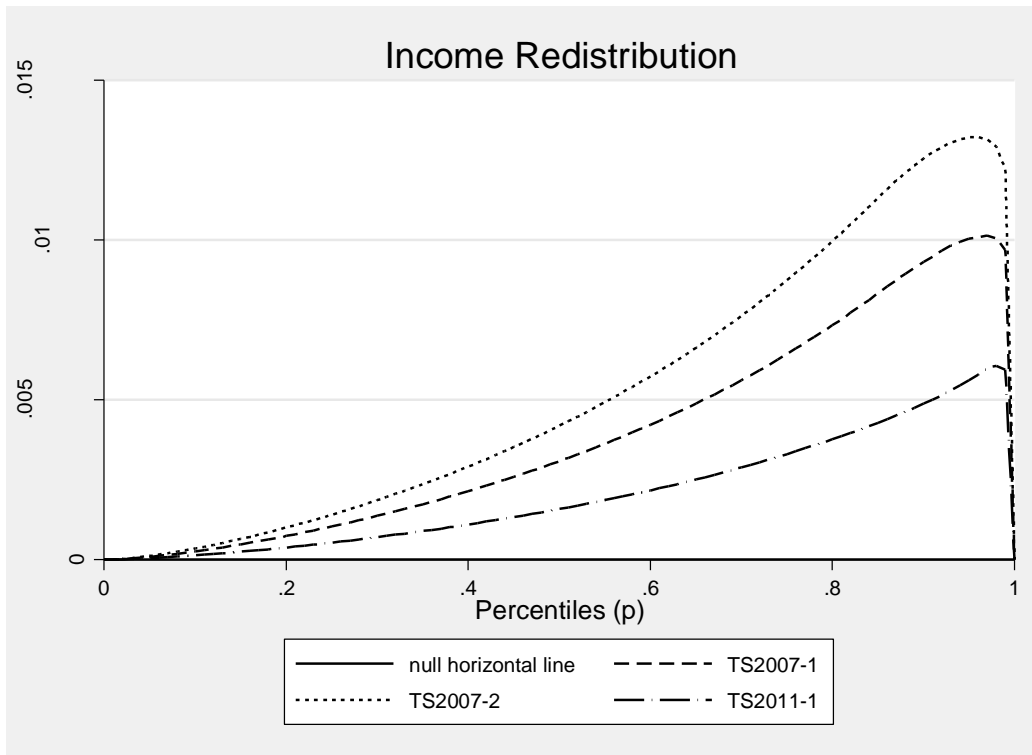


Source: Authors' calculations using HIES 2006/07 data.

The results of the TR approach indicate that all three tax systems are progressive. In figure 3 we see that the  $L_X(p) - C_T(p) > 0$  for all  $P \in ]0,1[$  under each of the tax systems considered in this study. In other words, the poor pay a smaller share of their income in taxes than the non-poor. This is an expected outcome given the progressive tax structures shown in table 3. The TS2007-1 curve lies below the TS2011-1 curve, indicating that the TR approach finds TS2011-1 to be the more progressive of the two tax systems. Tax redistribution is most progressive in TS2011-1 because the tax base is very small, with just 3.3% of formal sector workers being taxed as compared to around 16% of formal sector workers in TS2007-2.

The progressivity of taxes and inequality in net income are closely linked: a tax is progressive if a poor person's share of net income is higher than his or her share of gross income. The fact that  $C_N(p) - L_X(p) > 0$  for all  $P \in ]0,1[$  for all three tax systems in figure 4 indicates that the IR approach finds each of these tax systems to be progressive.

**Figure 4: Income redistribution (IR)**



Source: Author's calculations using HIES 2006/07 data.

The highest curve in figure 4 belongs to TS2007-2, indicating that the IR approach finds this tax structure to be the most progressive of the three. The next most progressive is shown to be TS2007-1, followed by TS2011-1. This implies that net income is more equally distributed under the TS2007-2 system.

### 6.3.3 Tax progressivity indices

The progressivity of the three tax systems was examined for workers using gross and net income (table 6) and for the population as a whole using per adult equivalent expenditures and taxes (table 7).

The Kakwani progressivity index uses the TR approach and is equal to twice the area between the Lorenz curve and the concentration curve of a tax or tax system. The more positive the index, the more a tax system is progressive. In the tables below, this index indicates that all three tax systems are TR-progressive regardless of whether looking at workers or the population as a whole. The Kakwani index is highest under TS2011-1, suggesting that this system is the most TR-progressive of the three.

The Reynolds-Smolensky index (RSI) follows an IR approach and is equal to twice the area between the net income concentration curve and the gross income Lorenz curve. A strictly positive value indicates that a tax system is progressive. This index finds all three tax systems to

be progressive, both for workers and the population as a whole, although the RSI finds TS2007-2 to be the most progressive of the three systems. The index values are nearly zero under each tax system, indicating that there is little difference between gross and net incomes. This is due to the very small number of people who are taxed.

The Atkinson-Plotnick index of horizontal inequity measures re-ranking effects of the tax systems. This index is zero for all tax systems, indicating that none of the tax systems analyzed in the present study lead to re-ranking.

**Table 6: Tax progressivity indices, formal sector workers**

Progressivity indices	TS2007-1	TS2007-2	TS2011
Kakwani Progressivity index	0.5661	0.5608	0.5814
Reynolds-Smolensky progressivity index	0.0078	0.0105	0.0041
Atkinson-Plotnick horiz. inequity	0.0000	0.0000	0.0000

Source: Own calculations using HIES 2006/07 data.

**Table 7: Tax progressivity indices, entire population**

Progressivity indices	TS2007-1	TS2007-2	TS2011
Kakwani Progressivity index	0.6111	0.5892	0.6484
Reynolds-Smolensky progressivity index	0.0073	0.0091	0.0038
Atkinson-Plotnick horiz. inequity	0.0002	0.0008	0.0001

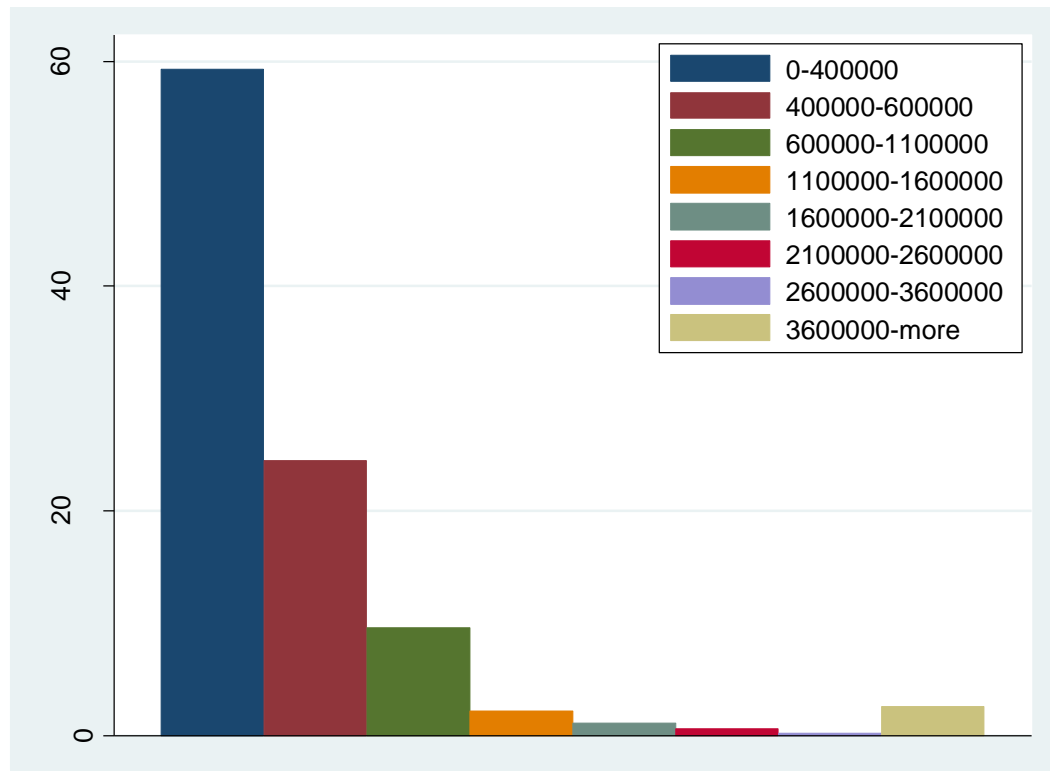
Source: Own calculations using HIES 2006/07 data.

## 7. Tax simulation analysis

As discussed in previous sections, the 2011 tax reforms (TS2011-1) lead to a significant decline in tax revenues relative to the 2007 tax system, from LKR 12.2 billion to LKR 6.3 billion. There are two main reasons for this outcome. The 2011 tax reforms doubled the annual tax-free threshold to LKR600,000 and reduced marginal tax rates, which now range from 4-24 percent as compared to the previous range of 5-35 percent. Only 3.3% of formal sector workers earn enough to face tax liabilities under the new system.

More than 80% of all wages in the formal sector in Sri Lanka are earned by workers with an annual income of less the LKR 600,000 (figure 5). This number would fall to about 70 percent if the tax-free threshold were reduced to LKR 400,000. In this hypothetical situation, 9.5 percent of formal sector workers, representing about 30% of formal sector wages, would be taxed.

**Figure 5:** Annual wage income (LKR) by income category in formal sector



Source: Authors' calculations using HIES 2006/07 data.

The tax simulation performed in this section thus aims to determine the most progressive means to increase tax revenues. We take the 2011 tax system as a point of reference to examine how changes to the tax-free threshold and the tax rate influence total tax revenues and the income distribution. The two scenarios described below simulate these changes.

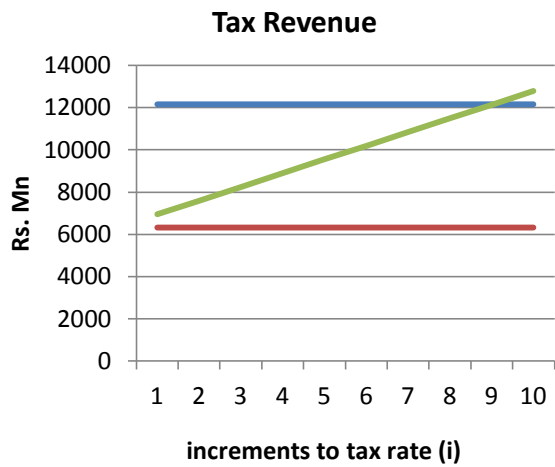
**Scenario 1** - Tax rates in the 2011 PAYE tax system (TS2011-1) are increased by  $i$  units where  $i = 1, 2, \dots, 10$ . For example, if the tax rate under TS2011-1 was  $t$  then the new tax rate will be  $t+i$ . The tax-free threshold is held at LKR 600,000 in this scenario.

**Scenario 2** - Tax rates in TS2011-1 are increased by  $i$  units where  $i = 1, 2, \dots, 10$ . The tax-free threshold is lowered from LKR 600,000 to LKR 400,000. The new tax band (LKR 400,000-600,000) faces a tax rate of  $i$ .

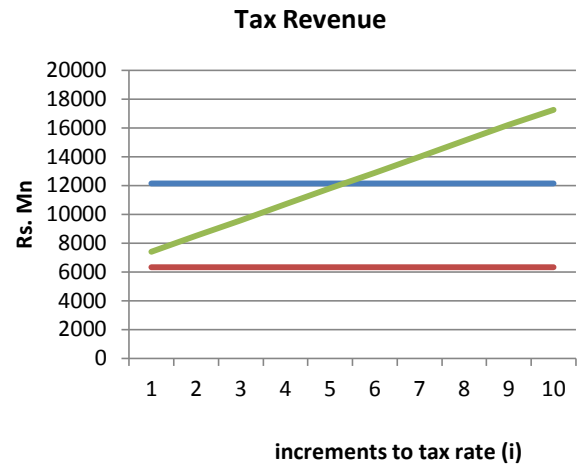
Figure 6 shows how tax revenues respond to changes in the tax rate in the two scenarios described above and compares the results with tax revenues under the actual 2007 and 2011 tax systems. Here, we can see that the 2007 level of tax revenues can be attained through a 9 percentage point increase in the tax rate in scenario 1 and though a 6 percentage point increase in the tax rate in scenario 2.

**Figure 6: 2011 tax variations**

**(a) : Scenario 1**



**(b) : Scenario 2**

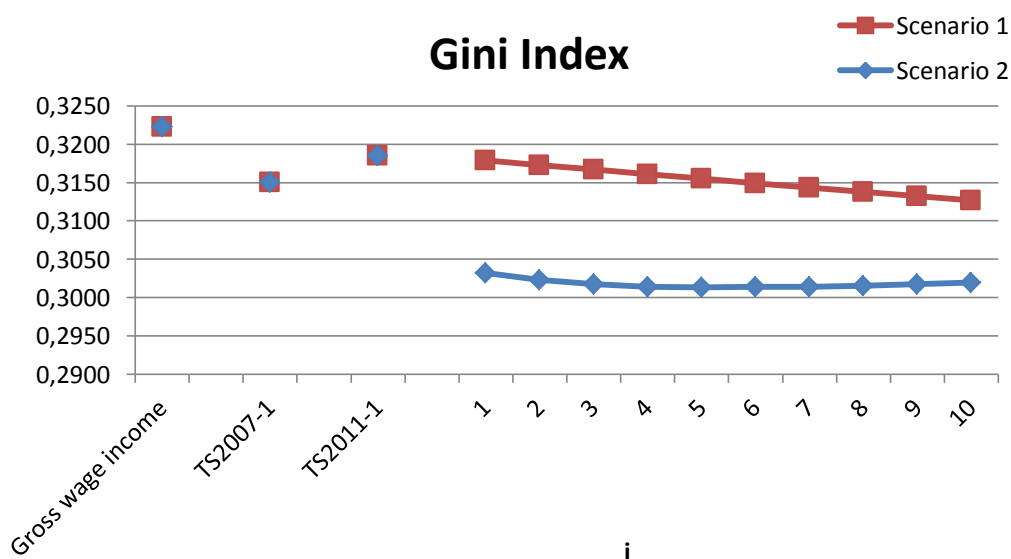


Source: Own calculations using HIES 2006/07 data.

In scenario 1, the number of individuals facing tax liabilities remains the same as in TS2011-1 because the tax-free threshold remains the same. The reduction in the threshold in scenario 2 leads to an increase in the number of Sri Lankans in the formal sector facing tax liabilities, from 140,236 to 400,017.

## 7.1. Inequality effects of proposed tax systems

**Figure 7: Gini index in scenarios 1 and 2**



Source: Own calculations using HIES 2006/07 data.

Figure 7 shows the Gini coefficients for the tax simulations in the two scenarios. For the tax rates and tax-free thresholds considered in this study, income inequality decreases when tax rates are higher and when the tax-free threshold is lower. The large simulated decrease in the threshold leads to a considerable decline in the Gini measure of income inequality.

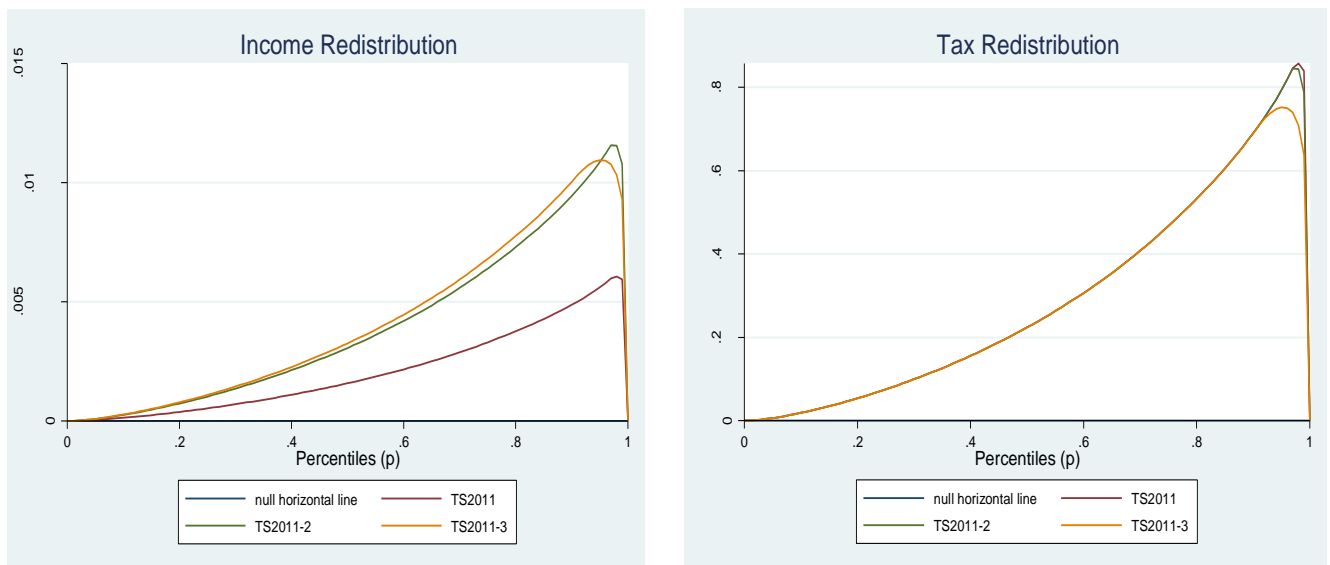
## 7.2 Redistributive effects of proposed changes to 2011 tax system

In the previous subsection, we discussed two ways to raise 2011 tax revenues to their 2007 level. Here, we evaluate the progressivity and distributional effects of these changes.

**Tax system 4** – In this scenario, we increase 2011 PAYE tax rates by 9 percentage points and leave the tax-free threshold unchanged at LKR 600,000. We refer to this variant of the 2011 tax system as TS2011-2.

**Tax system 5** – In this scenario, we increase 2011 PAYE tax rates by 6 percentage points for all taxed individuals and lower the tax-free threshold from LKR 600,000 to LKR 400,000. We refer to this tax system as TS2011-3.

**Figure 8:** Distributional effects of proposed revisions to the 2011 tax system



Source: Own calculations using HIES 2006/07 data.

The TS2011-2 and TS2011-3 scenarios allow us to examine how changes to the tax-free threshold and tax rates affect the IR and TR curves. As shown in figure 8, both of these tax systems are progressive whether using the IR or the TR approach. The IR approach indicates that both TS2011-2 and TS2011-3 are more progressive than TS2011-1, but does not allow us to conclude which of the two new scenarios is strictly more progressive because the TS2011-2 and TS2011-3 IR curves cross. The figure does, however, clearly show TS2011-2 to be the most progressive system at the higher end of the income distribution.

The TR approach finds that both TS2011-1 and TS2011-2 are more progressive than TS2011-3, primarily because more Sri Lankans are liable to pay income taxes in the last of these tax systems. The negligible contribution of the poorest quintile to the pool of taxpayers also increases following the reduction in the tax-free threshold in TS2011-3.

**Table 8:** Covariates of income taxes collected, TS2011-1, YS20112 and TS2011-3 (tobit regressions)

	TS2011-1			TS2011-2			TS2011-3		
	Coef.	P>t	dy/dx	Coef.	P>t	dy/dx	Coef.	P>t	dy/dx
<b>Male</b>	5.60	***	0.004	6.58	***	0.004	3.76	***	0.022
<b>Age</b>	1.09	***	0.001	1.28	***	0.001	0.94	***	0.006
<b>Age-squared</b>	-0.01	***	0.000	-0.01	***	0.000	-0.01	***	0.000
<b>Education</b>									
Not completed primary	-7.28	***	-0.004	-8.51	***	-0.004	-6.03	***	-0.026
Primary, not completed secondary	-3.66	***	-0.003	-4.27	***	-0.003	-3.52	***	-0.024
GCE (O/L)	-2.88	***	-0.002	-3.36	***	-0.002	-1.88	***	-0.011
GCE (AL) and higher (reference)									
<b>Employment sector</b>									
Public (base)									
Semi-government	3.42	***	0.005	4.04	***	0.005	1.96	***	0.017
Private	-0.22		0.000	-0.31		0.000	-0.94	*	-0.007
<b>Occupation</b>									
Senior officials and professionals (reference)									
Technicians	-4.52	***	-0.003	-5.28	***	-0.002	-2.33	***	-0.013
Clerks and forces	-5.32	***	-0.003	-6.22	***	-0.003	-3.50	***	-0.016
Service workers	-6.06	***	-0.003	-7.08	***	-0.003	-4.25	***	-0.019
Skilled workers <sup>1</sup>	-6.48	***	-0.005	-7.56	***	-0.005	-3.68	***	-0.022
Elementary occupations	-7.07	***	-0.005	-8.28	***	-0.005	-4.92	***	-0.028
<b>Industry category</b>									

Agriculture and forestry, fishing, mining	3.50	**	0.004	4.07	**	0.004	0.74		0.005
Manufacturing	3.08	**	0.004	3.59	**	0.004	1.05	*	0.008
Services <sup>2</sup>	1.54		0.002	1.80		0.002	0.08		0.001
Wholesale and retail trade	-1.12		-0.001	-1.35		-0.001	-0.78		-0.005
Financial, real estate and fin. ser.	4.49	***	0.007	5.25	***	0.007	2.78	***	0.027
Public administration and defence (reference)									
Other	-2.41	**	-0.002	-2.86	**	-0.002	-2.16	***	-0.012
Income group									
Poorest	-13.99	***	-0.007	-16.42	***	-0.007	-13.44	***	-0.054
2nd quintile	-17.70	***	-0.008	-20.78	***	-0.008	-12.38	***	-0.046
3rd quintile	-13.78	***	-0.006	-16.14	***	-0.006	-9.84	***	-0.037
4th quintile	-8.05	***	-0.004	-9.44	***	-0.004	-5.27	***	-0.024
Richest (reference)									
Location									
Western (reference)									
Central	-0.96		-0.001	-1.11		-0.001	-1.10	**	-0.007
Southern	-3.89	***	-0.002	-4.55	***	-0.002	-2.50	***	-0.014
Eastern	0.44		0.000	0.47		0.000	1.30	**	0.011
North Western	-1.45		-0.001	-1.68		-0.001	-1.40	**	-0.008
North Central	-4.20	**	-0.002	-4.90	**	-0.002	-2.52	***	-0.013
Uva	-3.43	**	-0.002	-3.94	**	-0.002	-2.64	***	-0.013
Sabaragamuwa	-3.97	**	-0.002	-4.60	**	-0.002	-2.33	***	-0.013
N	17979			17979			17979		
Censored observations (left, 0 )	17406			17406			16247		
R square	0.2466			0.2412			0.2334		

Source: Own calculations using HIES 2006/07 data.

Notes: Significance at 1% (\*\*\*), 5% (\*\*) and 10% (\*) percent levels; marginal effects are constructed using pr(a,b) option for prediction

<sup>1</sup> Skilled agriculture and fishery workers; craft workers and machine operators

<sup>2</sup> Electricity, water and sanitation; construction; hotels; transport and communication.

## 8. Tax evasion

Tax evasion is a common problem faced by tax collectors. Tax evasion is likely to be higher when the tax rate is higher. One way to evade taxes is to exit sectors that are taxed. In the long run, high tax rates may cause workers to leave the formal sector. In his paper on "Effects of taxes on Economic Behaviour" Feldstein (2008) discussed the effects of taxes on economic behavior. His paper addresses the importance of identifying the revenue effect of tax changes when considering tax reforms. Accordingly, in this section we address tax evasion and tax avoidance (such as by moving into the informal sector) in response to the proposed tax reforms.

In this section we investigate the socio-economic determinants of the economic sector a worker chooses to enter in order to understand how changes to the tax rates may influence this choice. As described in the methodology section, we assume that individual utility functions which depend on individual preferences (determined by personal and household characteristics), labour market characteristics that affect labour demand, and expected wages in different occupations.

An individual's employment status is estimated using a multinomial logit model that compares the characteristics of labour force participation in different public and private sectors and of employers and own-account workers, to the unemployed (considered as the reference category). Explanatory variables were selected on the basis of the relevance to the study's theoretical model as well as data availability. Individual characteristics, household characteristics and community characteristics were also included, following Arunatilake and Jayawardena (2008).

The results (see table 9) show that public sector employees differ from private sector employees in terms of education level, income and region of residence. Being male, being aged 25-55, being married and being a head of a household all increase the likelihood of being employed. Individuals with a low level of education (below A-level) are less likely to be in the public sector, and those who have not completed secondary level schooling are more likely to be self-employed or employed in the private sector. Individuals residing outside the Western province are less likely to be engaged in the private sector than to be unemployed (odds ratio < 1). Individuals from other provinces are more likely to be in the public sector or to be self-employed than to be unemployed. Those from the richer income quintiles are more likely to be in the public sector, possibly due to the fact that individuals in wealthier households are more likely to pursue higher education and are in a better position to wait for employment opportunities in the public sector.

The above results show that individuals in the informal sector (employers and self-employed) are similar to those in the public salaried sector in most respects except for education level. Individuals in the informal sector are also more likely to come from rural areas, and thus have less

access to infrastructure. This finding shows that Sri Lanka's informal sector largely consists of individuals with below secondary education who work in the informal sector due to a lack of opportunity in their region. The results strongly suggest that formal sector employment opportunities outside the Western province are largely limited to the public sector. Employment opportunities are not equally distributed across provinces: the opportunity to participate in private salaried employment was most available to individuals in the Western province. Education level and community-level labour market conditions seem to play a major role in determining the individual's sector of economic activity.

The above results indicate that a Sri Lankan individual's sector of participation is largely determined by supply side factors such as access to education, access to formal sector employment and location. Further, anecdotal evidence suggests that securing formal sector employment is competitive and difficult. As such, it is unlikely that individuals will change the economic sector they are engaged in to avoid taxes. Of course this may not be the case for established professionals who can have their own enterprises, such as doctors or lawyers with a private practice or teachers giving private lessons. Better information on these practices is needed to assess the possibilities for income tax avoidance by these groups of people.

**Table 9:** Results of the labour force participation model (multinomial logit)

Variable Description	Public			Private			Employer/own account worker		
	Coef.	Odds ratio	P>Z	Coef.	Odds ratio	P>Z	Coef.	Odds ratio	P>Z
<b>Individual Characteristics</b>									
Male	0.863	2.4	***	1.08	2.9	***	1.055	2.9	***
<b>Age group</b>									
15-24									
25-34	1.839	6.3	***	0.937	2.6	***	1.455	4.3	***
35-44	3.257	26	***	1.83	6.2	***	2.761	15.8	***
45-54	3.05	21.1	***	1.247	3.5	***	2.435	11.4	***
> 55	1.49	4.4	***	-0.051	1		1.72	5.6	***
Household head	1.131	3.1	***	1.254	3.5	***	1.128	3.1	***
<b>Marital status</b>									
Never married									
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	***
<b>Education</b>									
Not completed primary	-1.873	0.2	***	0.685	2	***	0.652	1.9	***
Not completed 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) and above									
<b>Household characteristics</b>									
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. observations	31668								
Pseudo R2	0.246								

Source: Own calculations using HIES 2006/07 data.

Note: Significance at 1% (\*\*\*), 5% (\*\*) and 10% (\*) percent levels.

## 9. Conclusions and policy recommendations

The Sri Lankan government introduced tax reforms in 2011 to increase tax revenues, broaden the tax base and improve tax compliance to collect more taxes. This study uses HIES 2006/07 data to assess how the proposed tax reforms affect tax revenues and the tax base, and examines its effects on the distribution of taxation and net incomes. The study also conducted a simulation analysis to examine the most progressive means of changing the 2011 tax system to increase tax revenue, at least to the level that existed in 2007.

The results indicate that the 2011 tax reforms reduce tax revenues and the pool of tax payers relative to the 2007 tax system. This is mainly because the 2011 reforms reduced income tax rates and increased the tax-free threshold. Among the scenarios considered in this paper, tax revenues are highest under the system with 2007 tax rates and taxation of public servants' income (TS2007-2). The tax liability of white collar employees is much higher in this scenario than in the other tax systems that we consider.

The results also indicate that inequality is higher under the current system (TS2011-1) than the 2007 system (TS2007-1), while inequality is lowest under TS2007-2. Each of the three tax systems considered are progressive in terms of both the redistribution of income and taxation. In other words, the poor pay a smaller amount of taxes than the non-poor relative to their gross income in each of the three systems, and the share of net income retained by the poor is higher than their share of gross income. TS2011-1 is more progressive according to the tax redistribution (TR) approach, whereas TS2007-2 is more progressive according to the income redistribution (IR) approach. It is worth noting that TS2007-2 yields more tax revenues than the other three systems.

The results empirically show that the 2011 reforms (TS2011-1) reduce tax revenues and the pool of tax payers as a result of the increased tax-free threshold and reduced tax rates. This suggests that the recent tax reforms in Sri Lanka have no capacity to address the government's need for more revenues unless they are revised. This led us to investigate modifications to the 2011 tax reforms to resolve this revenue shortfall. According to the findings of the tax simulation analysis, the best means to return to the level of revenues collected in 2007 is to increase income tax rates on all taxable income by 6 percentage points and to lower the tax-free threshold from LKR 600,000 to LKR 400,000. This method marginally affects the poor but considerably improves equity. The contribution to taxes at the individual level does not change much across different alternatives to the 2011 tax system considered: in all three systems examined, the individuals in the semi-government sector continue to contribute the highest level of taxes followed by those in the public and private sectors. This indicates that the proposed changes will not affect who is

covered by the tax system, although it will alter the extent to which workers in different sectors are affected.

Systematic assessment of any policy reforms prior to implementation is a key determinant of a policy's success or failure. An increase in tax rates can lead to tax evasion. This study was therefore extended to investigate potential obstacles to the success of the 2011 tax reforms. The issues of tax evasion and tax avoidance (such as by shifting from the public sector to the informal sector) in response to the tax reform were examined using a sector participation model. The results indicate that an individual's sector of participation is largely determined by supply side factors such as access to education, access to formal sector employment and location. It is unlikely that individuals will move to another economic sector to avoid taxes because employment in the formal white collar sector is highly competitive, making it an unrealistic option for most of those outside the Western province to change their sector of activity. However, selected group of highly trained professionals may be able to avoid taxes by providing private services.

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