TAX EFFORT IN DEVELOPING COUNTRIES: WHERE IS SRI LANKA?[1]

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Abstract

This paper investigates the problem of the declining tax/gross domestic product (GDP) ratio in Sri Lanka by estimating the tax efforts of lower-middle-income countries (LMICs). Using a panel data set from 1990-2014 with two stochastic frontier models, we reveal that Sri Lanka's tax effort declined during that period. Although the two different stochastic frontier analysis (SFA) models used in this paper produce different tax effort estimates, both models show a decline in tax effort in Sri Lanka. Estimations of personal income tax using available micro-level income data reiterate the low level of tax effort in Sri Lanka at present. We further analyze reasons for the weak tax effort in Sri Lanka and propose appropriate policy recommendations.

Keywords: Tax Effort, Stochastic Frontier Approach, Sri Lanka.

JEL Classification: H20, H21, H30, E26

INTRODUCTION

The importance of an efficient and effective revenue mobilization mechanism in facilitating economic development is of interest to policymakers worldwide. Factors affecting the government revenue potential of an economy are of critical concern, especially in developing countries, due to the fact that generating sufficient revenue to finance public spending is challenging for them. Weak revenue performance has often resulted in higher budget deficits and public debt levels which, consequently, have caused government investments in infrastructure and social welfare projects to be restricted.

In Sri Lanka, government revenue as a percentage of gross domestic product (GDP) has been declining during the past few decades; it fell from around 23% in 1990 to 11% in 2014. The main contributor to this weak revenue performance is decline in tax revenue, as tax revenue accounts for around 80% of the government's total income. With an average economic growth rate of around 5% and positive changes in the tax determinants during the period, it is disconcerting that tax share has been declining. This continuous decline has created macroeconomic imbalances, such as higher budget deficits and increased amounts of public debt.

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Against this background, this paper focuses on identifying the reasons for the decline in tax share in Sri Lanka. The study involves a panel data analysis covering 52 lower-middle-income countries (LMICs), including Sri Lanka, over a period of 25 years (from 1990 to 2014). We use two different SFA models in order to estimate the tax effort in Sri Lanka: the Battese and Coelli (1995) model, and the Kumbhakar, Lien and Hardker (2014) model. Our results show that tax effort declined during the period under both models, but in different magnitudes. We then analyzed the tax effort of Sri Lanka further using available micro-level income data.

This paper is organized as follows. The first section provides an analysis of Sri Lanka's current fiscal situation. The next section consists of a review of literature concerning tax performance and the development of the SFA model. The third section presents the data and methodology, and the fourth section discusses the results gained using the SFA models. The fifth section discusses the tax effort in Sri Lanka and the final section comprises our policy recommendations and concluding remarks.

SRI LANKA'S FISCAL PERFORMANCE

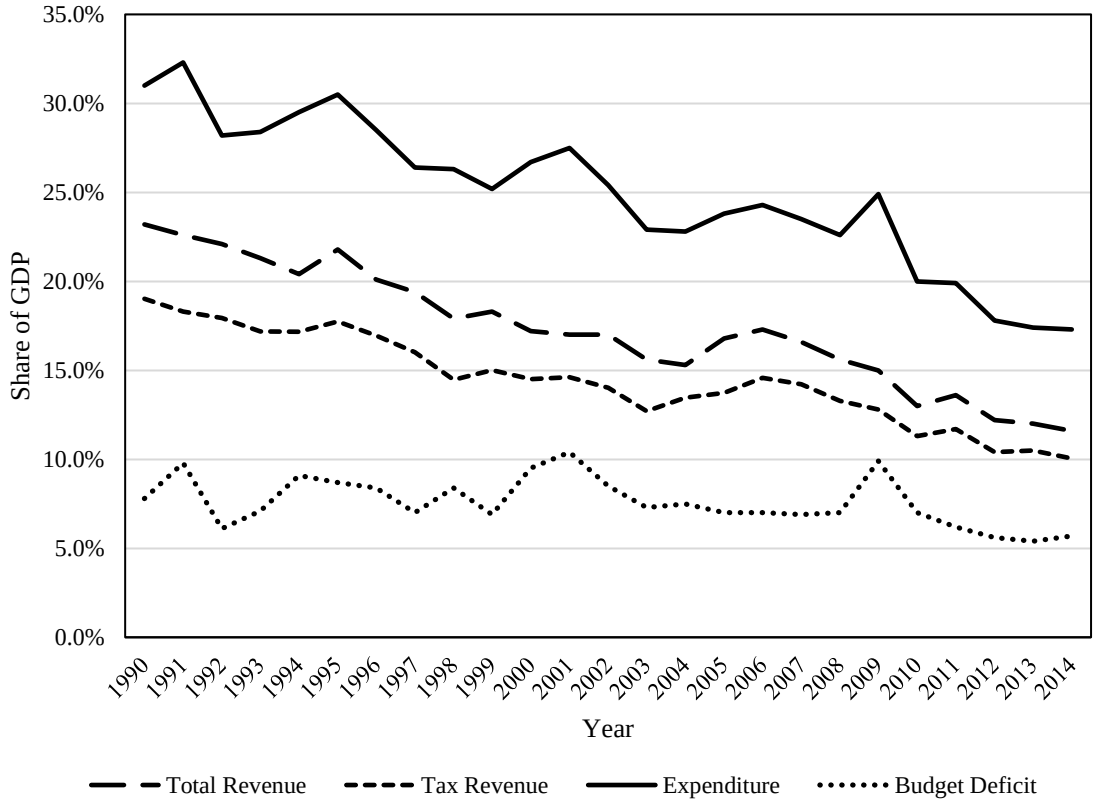
Sri Lanka was an LMIC until 2018, with an economy of around 89 billion USD.[5] Its economy has grown by, on average, 5% per year during the last 25 years, and its per capita income increased from 472 USD in 1990 to 4,102 USD in 2018.

There are several direct and indirect taxes operating in Sri Lanka. Indirect taxes, which include Value Added Tax (VAT) and trade taxes, account for more than 80% of the total tax revenue collected. Direct taxes, including personal and corporate income taxes, account for less than 20% of the total tax revenue collected (Central Bank of Sri Lanka, 2017). Personal income tax in Sri Lanka has a progressive tax rate, while corporate tax is at a flat rate of 28%. Lower rates apply to certain identified sectors, such as agriculture, education, and tourism. However, revenue generation has not kept pace with macroeconomic developments, and total government revenue and tax revenue as a percentage of GDP have declined during the last 25 years. Government expenditure has also declined during this period and the budget deficit has been on the higher side, at an average of around 8%. Figure 1 (below) shows how total revenue, tax revenue, expenditure, and budget deficit, as percentages of GDP, have changed in Sri Lanka over time.

This lackluster revenue performance during the last few decades has increased government debt to unsustainable levels. Furthermore, debt service payment has increased to around 90% of government revenue, thereby further reducing the fiscal space which, in turn, has led to further borrowing, creating a vicious cycle (Central Bank of Sri Lanka, 2017). Table A1, in the appendices, provides details of Sri Lanka's main fiscal variables.

[5] Sri Lanka was upgraded to an upper-middle-income country (UMIC) on 1st July 2019. However, it was an LMIC for the previous 22 years (Wijewardena, 2019).

Figure 1: Sri Lanka's main fiscal variables as shares of GDP



Source: Annual reports of Central Bank of Sri Lanka.
Note: This shows that both total revenue and tax revenue as percentages of GDP have declined during the period. However, government expenditure share has also declined. The budget deficit has remained, on average, 8% of GDP.

A government's efforts to curtail its expenses may negatively affect the continuation of social welfare and infrastructure development programs. Moreover, financing higher budget deficits, either from local or foreign sources, would create several other macroeconomic imbalances. Excessive local borrowing may crowd out private sector investments, and borrowing from the Central Bank or from commercial banks could create inflationary pressure on the economy. Sri Lanka is now classified as an upper-middle-income country (UMIC) and, therefore, most concessionary foreign loans are no longer available to it. The current situation has forced policymakers to rethink the efficiency of the tax system when it comes to generating sufficient revenue to improve fiscal control.

RELATED LITERATURE

The tax literature has mainly focused on identifying the determinants of tax revenue using time series, cross-sectional, or, more recently, panel data. Lotz and Morss (1967) were the first to introduce the idea of "tax effort", estimating it as a function of the level of economic development and foreign trade. Using a cross-sectional dataset of 72 countries, with data on a three-year average of GNP per capita and foreign trade, they estimated international tax ratios for each country. Based on the results, both variables were found to be significant, but a division of countries based on income revealed that they were only significant in the case of low-income countries. However, in another study in 1970, they also highlighted the possibility

that tax collection capabilities are likely to be fully utilized in developing countries due to a higher demand for social services by the low-income population, but that the limitation of the availability of tax bases keeps the tax levels down. Shin (1969) extended the previous model by incorporating the share of agriculture, population growth, and inflation as independent variables which determine tax revenue. Interestingly, the results were different from the initial model where, in the case of low-income countries, inflation and population growth were found to be significant. Chelliah, Hessel and Margaret (1975), and Tait, Grätz and Eichengreen (1979), also estimated the tax ratio, mainly using the Lotz and Morss (1967) model with cross-country data, and produced similar results.

Leuthold (1991) first used panel data analysis for the Sub-Saharan African region to show that trade share had a positive impact on tax revenue, while agriculture share was negatively related. Stotsky and WoldeMariam's (1997) study on the same region found that low per capita income, subsistence agriculture, ill-structured tax systems, and weak tax administration contribute to poor tax performance.

Bird, Martinez-Vasquez and Torgler (2004) found that, in addition to the conventional variables, demand factors such as corruption, rule of law, and entry regulations play important roles in determining government revenue. Additionally, they argued that improving social institutions, by enhancing the rule of law and reducing corruption, for example, may take no longer and be no more difficult than changing the economic structure, such as the relative share of agriculture and share of import and export.

Furthermore, the tax literature highlights a vicious cycle that could exist whereby economic agents' unwillingness to pay taxes results in a government being unable to provide adequate and quality public services, further reducing the economic agents' incentive to pay taxes (Davoodi & Grigorian, 2007). Davoodi and Grigorian (2007) focused on the size of the informal economy as a determinant of tax revenue and their results showed that an increase in tax collection of approximately 1.5% could be expected for every 10-percentage point drop in the shadow economy ratio.

Even though trade share was considered to be a significant determinant of government revenue, it was not subject to in-depth analysis until Aizenman and Jinjarak (2009) analyzed the impact of globalization on developing countries. The effect of trade liberalization on government revenue may be ambiguous. It may sometimes have a negative impact on government revenue, as policies aimed at trade liberalization will result in reduced import and export tariffs. Conversely, trade liberalization could lead to greater economic growth and higher tax income with an increased tax base. The results also showed that an increase in trade and financial openness could have a positive impact on value added and income taxes, which are often viewed as hard to collect taxes, but have a negative impact on tariffs which are identified as easy to collect taxes. A more recent study on trade liberalization and tax revenue by Zarra-Nezhad, Ansari and Moradi (2016) showed that trade liberalization, GDP growth rate, agriculture share, official exchange rates, urbanization, and democracy have significant influences on tax revenue.[6]

The resources available for fiscal policy are inadequate in South Asian countries in particular and developing countries in general, and this will make it difficult for governments to meet

[6] Ehrhart (2009) also found that there is a positive relationship between democracy and tax collection in an analysis of 66 developing countries for the period from 1990 to 2005.

public expenditure requirements. Therefore, they only tend to focus on specific expenditures, due to political pressure (Jha, 2010). The inability of developing countries to meet their revenue targets and to increase public expenditure have resulted in significant fiscal imbalances. Therefore, governments in many developing countries constantly struggle with higher budget deficits and debt sustainability.

TAX PERFORMANCE USING THE STOCHASTIC FRONTIER APPROACH

Empirical research on stochastic frontier models was pioneered by Aigner, Knox Lovell and Schmidt in 1977. Initial studies on SFA focused on the development of a production frontier which could be estimated with the usual regression model but with two distinguishable error terms. The error term (v_{it}) represents the usual statistical noise which is beyond the control of the production firm and a second error term (u_{it}) represents the level of inefficiency or the failure to produce the maximum output for a given level of input (Alfirman, 2003). Further improvements to the model have been incorporated by researchers such as: Battese and Coelli (1988, 1995); Cornwell, Schmidt and Sickles (1990); Greene (1990); Kumbhakar and Knox Lovell (2000); Kumbhakar, Lien and Hardaker (2014); Schmidt and Sickles (1984); and Stevenson (1980).

Alfirman (2003) first used the SFA model to develop a tax frontier when he analyzed the tax potential of local Indonesian governments. He found that none of the local governments had maximized their tax potential and pointed out that the actual tax ratio was smaller than the tax potential. A similar study for Indian states was conducted by Grag, Goyal and Pal (2017), the results of which indicated that there was a significant variation in tax effort across the states and that the variation has been increasing over time. Furthermore, Vallés-Giménez and Zárate-Marco (2017) used an SFA model to estimate the tax effort of local governments in Spain. They estimated that the tax effort of Spanish local governments was between 72 and 85 percent, and that it could be further improved by intensive tax authority at the local government level and an increase in efficiency.

Fenochietto and Pessino (2010, 2013) estimated tax capacity and effort using an SFA model, initially with 96 countries covering a period of 16 years (from 1991 to 2006), and then with an extended sample of 113 countries covering a period of 22 years (from 1991 to 2012). In these studies, they tried to account for the observed heterogeneity by using the model developed by Battese and Coelli (1992, 1995). This extension to the model allowed them to obtain the maximum likelihood estimation of parameters of the stochastic tax frontier assuming a truncated normal distribution with observed heterogeneity such that corruption shifts mean inefficiency and inflation as the decay in inefficiency. They found that tax effort is different in different income groups where higher income countries have higher tax efforts. However, they also found that tax effort in lower income countries is higher than that of middle-income countries.

Cyan, Martinez-Vazquez and Vulovic's (2013) study includes a critical analysis of the traditional methods of tax effort estimation using an SFA model. Their findings show that there was no change in the determinants of tax revenue due to the change in econometric model. However, they argued that the SFA model is important for analyzing inefficiencies, as it provides an additional dimension which can help those participating in policy discussions to identify factors that influence inefficiency. Langford and Ohlenburg (2015) examined the tax capacity and effort of 85 non-resource-rich countries during a 27-year period (from 1984 to 2010). They focused on the determinants of tax capacity, either directly or as environment

variables, and found that a higher manufacturing share, higher levels of education, and a higher share of imports were associated with higher tax potential or tax capacity. In the second stage of their analysis, they found that level of corruption, better security and legal systems, and making the state more responsive to its citizens' wishes are associated with higher tax efforts.

Brun and Diakite (2016) compared two different SFA models: those of Battese and Coelli (1995), and Kumbhakar, Lien and Hardker (2014). Their results showed that lower income countries made higher tax efforts over the period, even though that started to decline toward the end, and the inefficiencies in tax systems depend more on policy decisions. Nerudova and Dobranschi (2019) also used Battese and Coelli's (1995) model and Kumbhakar, Lien and Hardker's (2014) model to estimate the Value Added Tax (VAT) gap in the European Union (EU). In this analysis, Battese and Coelli's (1995) model addressed the heteroscedasticity issue, assuming that inefficiency is affected by exogenous factors which are not part of input variables in the SFA model. The Kumbhakar, Lien and Hardker (2014) model separated the time-varying inefficiencies and country-specific inefficiencies, which addressed the issue of country heterogeneity. The results showed that the SFA estimates were different to the estimates produced when using the top-down method to calculate the VAT gap. Additionally, the results produced using Battese and Coelli's (1995) model showed that low value imports tend to go unreported, and VAT inefficiency decreases when value increases. The results produced using Kumbhakar, Lien and Hardker's (2014) model, meanwhile, showed that the persistent VAT gap is higher than the time-varying VAT gap.

DATA AND METHODOLOGY

Sample and Data

According to the World Bank's (2016) classification, countries with a gross national income (GNI) per capita of between 1,026 US dollars and 4,035 US dollars are considered to be LMICs. This study analyzes all 52 LMICs (according to the World Bank's definition) and covers a period of 25 years (from 1990 to 2014). A full list of the countries included is available in Table A2 in the appendices.

The dependent variable for our analysis is government tax revenue as a percentage of GDP, taken from the December 2015 government revenue dataset published by the International Centre for Tax and Development (ICTD). The tax/GDP ratio includes all of the tax revenue collected by the government through different types of taxes, but excludes resource revenue and social contributions.

Guided by previous studies in the tax literature, we include a range of explanatory variables that influence tax/GDP ratio. The level of economic development is proxied by GDP per capita (Constant 2010 US Dollars). Output composition is represented by agriculture share and manufacturing share of GDP, and trade openness is represented by the import and export shares. Other economic variables include inflation, external debt stock as a percentage of GNI, and domestic credit provided by financial sector.

Furthermore, we include urbanization, age dependency, the Gini coefficient, and education level as non-economic variables. It is important to note that education level can be considered to be a widely used explanatory variable of tax capacity with a positive relationship. Cyan et al. (2013) put forward a different argument in respect of the relationship between tax revenue and education level, claiming that educated people are more aware of tax laws and use that

knowledge to avoid taxes. Some studies have used public expenditure on education as the variable by which to represent education level (Fenochietto & Pessino, 2013). However, more recent studies use UN Education Index (Cyan et al., 2013; Langford & Ohlenburg, 2015) to represent the level of education which is a more relevant and a comprehensive measure of education level. Thus, this study also uses the United Nations' Education Index to represent the level of education. Data for all the independent variables, with the exception of the Education Index, were obtained from the World Development Indicators (WDI) while the Education Index data was collected from the United Nations Development Program (UNDP).

Finally, shadow economy estimates by Medina and Schneider (2018) have been used as the exogenous variable in Battese and Coelli's (1995) model. Appendix Table A3, in the appendices, displays the descriptive statistics of all the explanatory variables.

Stochastic Frontier Approach

In comparison with a simple regression model, the SFA model differs in terms of estimation of the error term. In a simple regression model, the error term fully represents the inefficiency, which can be either positive or negative. This indicates that a country can deviate from the average estimated tax revenue by underperforming or overperforming. The SFA model, however, estimates a non-negative error term, which ensures that the actual revenue cannot exceed the optimal maximum revenue (Pessino & Fenochietto, 2010; Cyan et al., 2013). Therefore, use of SFA model allows us to estimate the tax effort of Sri Lanka and investigate the variance of tax effort over time. Additionally, Sri Lanka's tax effort could be compared with the tax effort estimations of other LMICs with similar economic backgrounds. In this study, we estimate tax effort by using two SFA models: Battese and Coelli's (1995) inefficiency model, and the latest innovation, Kumbhakar, Lien and Hardker's (2014) model. Battese and Coelli's (1995) model allows us to test the effect of exogenous factors, while Kumbhakar, Lien and Hardker's (2014) model allows us to separate time-varying inefficiency and country-specific inefficiency. We use statistical software (STATA) for the estimation process, using the method explained by Kumbhakar, Wang and Horncastle (2015).

The stochastic tax frontier for the panel dataset could be defined as:

$$Y_{it} = \exp(\beta X_{it} + v_{it} - u_{it}) \quad (1)$$

Where Y_{it} is the tax/GDP ratio for *i-th* (*i*= 1, 2… N) Country at *t-th* (t= 1, 2… T) time period:

X_{it} is the vector of input variables affecting tax/GDP ratio;
β is the vector of unknown parameters.

The composite error term could be decomposed into two parts; v_{it} and $u_{it,}$ where u_{it} is the inefficiency term which is non-negative. According to the structure of this paper, this inefficiency is interpreted as the lack of tax effort.

v_{it} is the statistical noise or the random shock that takes either a positive or negative value. Additionally, v_{it} follows a normal distribution with mean μ and varianceσ^2. Both v_{it} and u_{it} are statistically independent. Jondrow, Knox Lovell, Materov and Schmidt (1982) introduced the most commonly used method, by which estimates of v_{it} and u_{it} can be separated from the

estimated composite error; and, going by the literature, this study also uses the same method to separate the tax inefficiency and statistical noise. According to the model, technical efficiency is the ratio of actual to potential output (Kumbhaker & Knox Lovell, 2000) and, as in this study, tax effort is the ratio of actual tax revenue to estimated tax capacity, and is expected to be between zero and one. This means that when a country's actual tax/GDP ratio is getting closer to its tax capacity, the tax effort approaches one. Thus, the tax effort is given by:

$$\text{Tax Effort} = \frac{Y_{it}}{exp(\beta X_{it}+v_{it})} = \frac{exp(\beta X_{it}+v_{it}-u_{it})}{exp(\beta X_{it}+v_{it})} = exp(-u_{it}) \quad (2)$$

Battese and Coelli's (1995) model assumes that the tax inefficiency term is a function of explanatory variables beyond government control. This could be specified as:

$$u_{it} = \delta Z_{it} + W_{it} \quad (3)$$

where $Z_{it}$is the exogenous variables and W_{it} is a set of random variables that could be defined by the truncation of normal distribution with zero mean and variance σ^2. Conversely, Kumbhakar, Lien and Hardker's (2014) model considers two subcomponents of u_{it} which separate the country effect from the inefficiency. Therefore, under that model, the equation could be specified as:

$$Tax_{it} = \alpha + \beta X_{it} + \mu_i + v_{it} - \eta_i - u_{it} \quad (4)$$

As explained by Kumbhakar et al. (2015), this model has four subcomponents of the error term. μ_i is the country effect and v_{it} is the standard statistical white noise. The final two components – $\eta_i > 0, u_{it} > 0$ – are inefficiency terms which represent persistent country-specific inefficiency and time-varying technical inefficiency respectively. Kumbhakar et al. (2015) recommend using a three-step procedure to estimate the components of the error term using panel data. The first step is to run a standard generalized least squares (GLS) model with random effects to estimate the country effects and error term. In the second step, time-varying inefficiency u_{it} is predicted using the estimates of the error term obtained in the first step. They use the standard stochastic frontier technique for this purpose and the prediction is computed using the formula proposed by Jondrow et al. (1982). In the third step, country-specific inefficiency η_i is estimated using the same stochastic frontier model used in step two and using the country effects estimated in the first step. Finally, overall technical efficiency (TE) is calculated as:

Overall TE = Time-varying TE x Persistent TE

RESULTS AND DISCUSSION

Main Results

We first checked the validity of using the SFA model by examining whether the residuals of ordinary least squares (OLS) estimation have a negative skew. As shown in Table A4, in the appendices, the skewness of the error term is -0.06, which is consistent with the SFA model specification.

Then, as discussed in the previous section, we used Battese and Coelli's (1995) model to estimate the tax effort of LMICs. The first part of Table 1 (below) shows the results of the Battese and Coelli (1995) SFA model frontier estimation and the second part shows the inefficiency model, where inefficiency is determined as a function of the shadow economy. As per the coefficients of the frontier, the GDP per capita is positive and significant, reiterating the fact that higher income levels generate higher tax revenue. Considering the argument that level of tax share could affect GDP, we also estimated all of our models without GDP as a dependent variable and the tax effort estimates did not change significantly (Figure A1 in the appendices). Agriculture share has a negative relationship with tax revenue with a significance level of 10%. This is particularly evident in developing countries due to their subsistence nature and the lower productivity of their agriculture sectors. However, manufacturing share has a positive and significant relationship with tax revenue, as it is a well-organized sector with proper financial record-keeping mechanisms.

Both import and export shares have shown positive and significant relationships with tax revenue. The benefits of international trade have helped countries to achieve higher economic growth, which has led to higher tax revenues. The convenience of taxing imports and exports through customs has also resulted in higher tax revenues. The level of development in the financial sector, as represented by the domestic credit provided by the financial sector as a percentage of GDP, is also a significant determinant of tax revenue, with a positive relationship. As a newly identified tax determinant, this shows that development in the financial sector is vital in increasing tax revenue in developing countries, as it allows financial transactions to be recorded through financial systems where the information gathered could be used for tax purposes. Inflation and external debt are not significant variables in determining tax revenue in LMICs.

Education level is a significant and positive determinant of tax share, and this is in line with previous tax literature, which argues that a well-educated society can better understand the importance of paying taxes to the provision of public goods. Urbanization and age dependency are not determinants of tax revenue, but income inequality is positively related to tax revenue in the case of LMICs at a significance level of 10%. Previous studies, which have mainly focused on developed countries, have found that income inequality has a negative relationship with tax revenue. This may be because developed countries mostly depend on income taxes, which results in more equal income distribution in larger tax bases. However, in developing countries, tax revenue mainly consists of indirect taxes, or taxes on goods and services based on consumption.

Table 1: Estimation using Battese and Coelli's (1995) model

Stochastic tax frontier model (truncated-normal)		
Dependent variable: lnTax share		
lnGDP per capita	0.141***	(0.044)
lnAgriculture share	-0.082*	(0.049)
lnManufacture share	0.112***	(0.031)
lnImport share	0.281***	(0.048)
lnExport share	0.097**	(0.041)
lnExternal debt	-0.026	(0.022)
lnDomestic credit	0.056***	(0.022)
Inflation	0.000	(0.000)
lnEducation Index	0.221***	(0.068)
lnUrban population	-0.052	(0.037)
lnAge dependency	-0.032	(0.104)
lnGini	0.175*	(0.101)
Constant	0.353	(0.615)
Inefficiency model		
Mu		
lnShadow	0.135*	(0.078)
Constant	-0.075	(0.286)
Usigma		
lnShadow	1.512	(1.231)
Constant	-8.907*	(4.702)
Vsigma		
Constant	-2.891***	0.377
N	610	
Log likelihood	-124.7	
Sigma_v(σ_v^2)	0.056***	(0.021)

Source: Authors' estimation.

Note: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01. Sigma_u squared is a function of variables, therefore, STATA does not provide transformation values. All variables are in natural logarithms except inflation. The results show a similar relationship with tax share as in the tax literature. The tax inefficiency model shows that size of the informal economy is positively related with the tax inefficiency. Tax effort for Sri Lanka based on Battese and Coelli's (1995) model is in Table 4.

Estimates of the shadow economy as the exogenous variable of the inefficiency term are positive, showing that the existence of a larger informal sector leads to more inefficiency in the tax system. However, Kumbhakar et al. (2015) stress that the impact of independent variables on inefficiency should be interpreted carefully, as the maximum likelihood estimate of Mu (μ) is not very informative due to the nonlinear relationship between E (μ) and the external determinants. Tax efficiency under the Battese and Coelli (1995) model was then estimated using the formula presented by Jondrow et al. (1982).

The second model we used was that of Kumbhakar, Lien and Hardker (2014), which is the latest SFA model and tries to overcome the problems of previous SFA models. Table 2 shows the results of using this: the first column presents the estimated time-varying tax inefficiency results and second column shows the country-specific tax inefficiency results. The results show that all of the time-varying inefficiency terms are significant, but only the V-sigma term is significant in persistent tax inefficiency. Comparison of the lambda values shows that the variation in the total error term due to the time-varying inefficiency is relatively high. As with the previous model, we used Jondrow et al.'s (1982) formula to predict both time-varying efficiency and country-specific efficiency values. Finally, we calculated overall tax efficiency by multiplying these two subcomponents.

Table 2: Time-varying and persistent tax inefficiency estimates using the SFA model

	Time-varying inefficiency (half-normal)		Persistent inefficiency (half-normal)	
Dependent variable	ε_i		α_i	
Constant[1]	0.068***	(0.019)	-0.002	(0.261)
Usigma				
Constant	-4.932***	(0.556)	-12.152	(285.468)
Vsigma				
Constant	-4.315***	(0.118)	-2.220***	(0.055)
N	657		657	
Log likelihood	426.8		-202.8	
Sigma_u(σ_u^2)	0.007*	(0.004)	0.000	(0.002)
Sigma_v(σ_v^2)	0.013***	(0.002)	0.108***	(0.006)
Lambda (λ)	0.540		0.000	

Source: Authors' estimation.
Note: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01. Tax effort in Sri Lanka based on this model is presented in Table 4.
[1] As recommended by Kumbhakar et al. (2015), a new variable which takes the value of 1 was introduced as constant, since it is required in order to run the standard SFA in STATA.

As an alternative to the two SFA models discussed above, we also tried using the true fixed-effect model proposed by Greene (2005) and the results are presented in Table A5 in the appendices.

Robustness Check

In this section, we adopt the method introduced by Karakaplan and Kutlu (2017) to check whether the exogenous variable of Battese and Coelli's (1995) SFA model is correlated with the two-sided error term. Karakaplan and Kutlu's (2017) model assumes a normal/half normal distribution in SFA estimation and the results are presented in two parts, where the first part assumes that variables are exogenous, and the other part assumes that variables are endogenous. The literature on the shadow economy considers the cost of starting a business to be an appropriate instrumental variable for use in shadow economy estimations, as higher startup costs lead to a larger shadow economy (Dreher & Schneider, 2010; Buehn & Schneider, 2011). Furthermore, the cost of starting a business has no direct impact on tax share. Instead, it has an indirect impact through variances in the shadow economy. Therefore, we use business startup costs as a percentage of GNI per capita as the instrumental variable for the size of shadow economy.

The first column of Table 3 below (Model EX) shows the results obtained under an assumption that explanatory variables are exogenous. The results in the second column (Model EN) assume that the shadow economy is correlated with the two-sided error term. According to the results, the endogeneity test does not reject the null hypothesis, meaning that the size of shadow economy variable is correlated with the error term. However, the mean and median efficiency estimations under these two models do not show significant differences. Additionally, Table A6, in the appendices, shows the efficiency estimations of exogenous and endogenous models for Sri Lanka, which do not show a significant difference.

As another robustness check, we re-estimated tax efficiency using Kumbhakar, Lien and Hardker's (2014) model by leaving out GDP per capita. Since our dependent variable is tax as a share of GDP, we wanted to check whether or not excluding GDP per capita could affect our baseline results. The tax efficiency estimates for Sri Lanka using Kumbhakar, Lien and Hardker's (2014) model with and without GDP per capita are shown in Figure A1 in the appendices. The results show that there is no significant difference in tax efficiency estimates under different specifications.

Table 3: Endogeneity test for the shadow economy using the SFA model

	Model EX		Model EN	
Dep.var: lntax share				
Constant	2.316*	(0.917)	1.338	(0.965)
lnGDP per capita	0.265***	(0.068)	0.240***	(0.070)
lnAgriculture share	0.149***	(0.038)	0.180***	(0.040)
lnManufacture share	0.019	(0.031)	0.037	(0.035)
lnImport share	0.122**	(0.043)	0.088	(0.047)
lnExport share	0.024	(0.031)	0.006	(0.032)
lnExternal debt	-0.019	(0.015)	-0.001	(0.019)
lnDomestic credit	0.025	(0.016)	0.033	(0.017)
Inflation	-0.000	(0.000)	-0.000	(0.000)
lnEducation Index	-0.124	(0.093)	-0.105	(0.097)
lnUrban population	0.253**	(0.094)	0.387***	(0.100)
lnAge dependency	-0.381***	(0.112)	-0.267*	(0.115)
lnGini	-0.159*	(0.071)	-0.076	(0.083)
Dep.var: ln(σ^2_u)				
Constant	0.753	(0.668)	-0.315	(0.781)
lnshadow	0.009	(0.172)	0.363	(0.210)
Dep.var: ln(σ^2_v)				
Constant	-4.133***	(0.059)		
Dep.var: ln(σ^2_w)				
Constant			-4.183***	(0.060)
eta1 (lnshadow)			0.258*	(0.127)
eta endogeneity test			**X2=4.12**	**p=0.042**
Observations	610		589	
Log likelihood	284.94		375.05	
Mean tech efficiency	0.3349		0.3151	
Median tech efficiency	0.3013		0.2632	

Source: Authors' estimation.
Note: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01. Cost of business start-up procedures as a percentage of per capita GNI was used as an instrumental variable for the size of shadow economy.

Since our main concern is to examine the tax effort in Sri Lanka, we devote the next section to a discussion about Sri Lanka's tax efficiency estimates.

SRI LANKA'S TAX EFFORT

Table 4 (below) shows the tax effort estimates of Sri Lanka under Battese and Coelli's (1995) and Kumbhakar, Lien and Hardker's (2014) SFA models. According to Battese and Coelli's (1995) model, tax effort is a single tax efficiency estimation considered as a function of size of

the shadow economy, while according to Kumbhakar, Lien and Hardker's (2014) model, tax effort is the multiplication of time-varying and persistent tax efficiencies.

Table 4: Tax effort estimates of Sri Lanka

Year	BC (95) model	Kumbhakar, Lien & Hardaker model		
		Residual	Persistent	Total
1990		0.970	0.998	0.968
1991	0.737	0.968	0.998	0.966
1992	0.710	0.964	0.998	0.963
1993	0.692	0.961	0.998	0.960
1994	0.677	0.958	0.998	0.957
1995	0.675	0.959	0.998	0.957
1996	0.662	0.955	0.998	0.953
1997	0.639	0.947	0.998	0.945
1998	0.611	0.932	0.998	0.930
1999	0.617	0.935	0.998	0.934
2000	0.590	0.922	0.998	0.920
2001	0.601	0.929	0.998	0.927
2002	0.576	0.927	0.998	0.925
2003	0.560	0.914	0.998	0.912
2004	0.566	0.921	0.998	0.920
2005	0.571	0.925	0.998	0.923
2006	0.583	0.933	0.998	0.931
2007	0.579	0.927	0.998	0.925
2008	0.573	0.909	0.998	0.907
2009	0.588	0.913	0.998	0.911
2010	0.596	0.920	0.998	0.918
2011	0.568	0.896	0.998	0.894
2012	0.566	0.892	0.998	0.891

Source: Authors' estimation using Battese and Coelli's (1995) and Kumbhakar, Lien and Hardker's (2014) SFA models.
Note: Both models show that tax effort has declined during the period in Sri Lanka. When compared to Kumbhakar, Lien and Hardker's (2014) model, Battese and Coelli's (1995) model shows a greater decline in tax effort.

According to the estimations produced using Battese and Coelli's (1995) SFA model, Sri Lanka's tax effort decreased from around 74% in 1991 to around 57% in 2012. This represents a significant decline of around 17% over the course of 21 years. During the same period, actual tax share declined from 18.3% to 10.4%. However, according to Kumbhakar, Lien and Hardker's (2014) model, Sri Lanka's total tax effort declined from 97% in 1990 to 89% in 2012, which is around 8 percentage points. Moreover, Kumbhakar, Lien and Hardker's (2014) model shows that Sri Lanka has a higher country-specific persistent tax efficiency, while time-varying tax efficiency has declined during the period. Although both SFA models show a decline in estimated tax efficiency, the estimated values produced differ. This result is similar

to that produced by Nerudova and Dobranschi (2019), who also recorded substantially different estimates of the VAT gap in EU countries using the same SFA models. However, no form of decline in tax effort can be considered to be acceptable, as this could be the main contributor to the decline in tax share in Sri Lanka during the last few decades. Furthermore, Table A7, in the appendices, shows the tax effort of countries for the latest available year under both of the SFA models. Sri Lanka was seen to have the third lowest tax effort under Kumbhakar, Lien and Hardker's (2014) model, only ranking higher than Nigeria and the Republic of the Congo. Under Battese and Coelli's (1995) model, Sri Lanka has the fourth lowest tax effort, only ranking above the Republic of the Congo, Guatemala, and Nigeria.

Personal Income Tax Analysis Using Micro-Level Data

Table 6: Estimation of personal income tax - 2009 and 2012

Description	**2009**	**2012**
Estimated personal income tax for the sample (Rs. Mn)	187	115
Number of taxpayers in the sample (1)	2,206	1,305
Sample size (2)	**21,305**	**21,768**
Percentage of taxpayers in the sample (1)/(2)	10.35%	6.00%
Employed population (Mn)	7.14	8.12
Estimated personal income tax of employed population (Rs. Mn) (3)	62,629	42,993
Actual personal income tax collected (Rs. Mn) (4)	28,229	21,413
Average tax per person (Rs.)	84,713	88,340
Average effective tax rate	11.26%	7.24%
Performance of personal income tax (4)/(3)	45%	50%

Source: Authors' calculation using HIES income data for 2009 and 2012.
Note: Estimation of personal income tax was conducted using the income data from the HIESs. This analysis considered a sample of 21,305 (2009) and 21,768 (2012) people earning from employment in Sri Lanka. The estimated amounts of personal income tax payable by the sample using 2009 and 2012's tax rates were used to estimate the amount of potential personal income tax payable at country level, which was then compared with the actual amounts of personal income tax collected in these years by the Inland Revenue Department. This estimation also provides evidence of lower tax effort in personal income tax category.

To further analyze Sri Lanka's declining share problem, we carried out an independent estimation of personal income tax payments. The estimation was done using the limited available micro-level income data from the Household Income and Expenditure Surveys (HIESs) conducted by the Department of Census and Statistics (DCS) for 2009 and 2012. We used the personal income data of the employed members of each household as recorded in the two surveys and estimated the potential amount of personal income tax payable by applying the personal income tax rates that prevailed in the applicable years, as shown in Table A8 in the appendices. According to our estimation, the percentage of people in the sample paying tax

decreased from 10.4% in 2009 to 6.0% in 2012, mainly due to an increase in the tax-free threshold. The effective tax rate also decreased from 11.26% in 2009 to 7.24% in 2012 due to changes made to personal income tax rates from 2009 to 2012. Next, we estimated the potential amount of personal income tax payable at country level by comparing the percentage of people in the sample who paid tax and the total employed population of the country. Then we compared the estimated potential amount of personal income tax payable with the actual amount of personal income tax collected by the local revenue authority. Accordingly, the estimated potential amount of personal income tax payable for 2009 was 62.6 billion Sri Lankan Rupees while actual amount collected was 28.2 billion Sri Lankan Rupees, showing that only 45% of the potential personal income tax payable was collected. For 2012, the estimated amount of potential personal income tax payable was 43 billion Sri Lankan Rupees while the actual amount collected was 21.4 billion Sri Lankan Rupees, representing a performance level of 50%. This estimation again emphasizes the observation that Sri Lanka's tax effort is low. Table 6 (above) shows a summary of our estimation of personal income tax.

Lower tax effort in developing countries in general and, more specifically, in Sri Lanka could be due to several problems in the tax system. Cyan et al. (2013) argue that factors such as corruption, tax morale, and political fractionalization could affect tax efficiency. Additionally, Zárate-Marco & Vallés-Giménez (2019) consider variables such as financial and non-financial budget expenditure, regional inefficiencies, and economic cycles. However, in the case of Sri Lanka, data is not readily available for most of these variables. Therefore, we used several local studies which provided anecdotal evidence that could be related to the decline in tax effort. One such concern relating to the tax system is the use of unplanned and ad hoc tax concessions and tax incentives (Kelegama, 2010b). The motivation for employing such concessions and incentives is that these tax incentives can attract investment. However, such tax concessions have a direct, as well as indirect, impact on tax revenue. This direct impact is the revenue loss from the firms and individuals who are directly targeted by the concessions.

Additionally, these concessions create opportunities for other firms and individuals to take advantage of the system by misreporting or even using rent-seeking behavior, which impacts the tax effort. Although the direct impact of tax concessions is estimated to be around 1% of GDP (Presidential Tax Commission, 2010), the indirect impact is hard to estimate. Another important concern is the complicated tax system and weak tax administration (Waidyasekera, 2017) which impacts the tax effort and discourages taxpayers from voluntary compliance. In the case of Sri Lanka, weak tax administration is a result of several problems, such as lack of coordinated information systems between government agencies, lack of talented human capital, and the amount of bureaucracy in government services. Tax authorities should be equipped with the information systems necessary to cross-check information, tax invoices, and other transaction-related documents in order to detect underreporting or fraud, particularly in countries with sophisticated taxation instruments, such as VAT. These prolonged tax effort-related problems have resulted in a decline in tax share in Sri Lanka and the policy changes that have been made during the past few decades haven't delivered any significant results in respect of reversing the trend.

CONCLUSION AND POLICY RECOMMENDATIONS

The continuous decline in tax/GDP ratio in Sri Lanka from the early 1990s has emerged as a critical concern for policymakers. It has adversely impacted the Sri Lankan economy, as the government has been forced to curtail critical welfare and capital expenditure projects something which, in turn, could negatively impact the growth momentum. The lack of fiscal

space has resulted in Sri Lanka missing out on an important opportunity to achieve robust economic growth.

Given this background, a more sustainable solution would be to increase local revenue to an optimal level. In light of the government's commitment and the positive changes to macroeconomic conditions in the country, it is surprising that the tax/GDP ratio has been in a continuous decline. Therefore, the purpose of this study was to identify the possible causes by estimating the tax effort of LMICs, and comparing Sri Lanka's tax performance with other members of the LMIC group.

Tax effort estimates from the two SFA models used showed that Sri Lanka has recorded a decline in tax effort during the period studied. Additionally, Sri Lanka is among the worst performers in terms of tax effort within LMICs. An independent estimation of personal income tax for the years 2009 and 2012, using HIES data, reiterated the decreasing tax effort levels, whereby the actual tax collected was only around 50% of the estimated potential personal income tax payable.

From a policy perspective, the findings of this study provide valuable insights which could inform the development of future policies designed to overturn the declining tax share. Tax effort should be increased in order to harness the higher available tax capacity, mainly by introducing policies to address the weak tax effort. In particular, for Sri Lanka, one of the policy recommendations is to revise the exemption schemes. As Kelegama (2010a) suggests, certain exemptions for key income groups, such as professional and government employees, should be corrected, and the range of exemptions provided to the corporate sector should be reconsidered. Lack of information sharing between different regulatory authorities, such as the Inland Revenue Department, the Customs department, the Land Registry, and Department of the Registrar of Companies, hinder the efficiency in the taxation system and create opportunities for taxpayers to evade tax. Therefore, the government should invest in advanced communication and information technology to facilitate automation and increase connectivity between government agencies. Moreover, the legal structure of the revenue authority should be strengthened by minimizing the ability to provide penalty waivers and grants at officers' discretion, something that leads to rent-seeking behaviors. These policy recommendations could, generally, be applicable to any developing country facing the challenge of increasing revenue performance.

Finally, as with all studies based on empirical analysis, this study suffers from some minor shortcomings, mainly due to a lack of data availability from all LMICs. Having access to reliable and continuous data on institutional variables could further enhance the output of the SFA model. Notwithstanding the above, it is expected that the findings of this study will be useful in providing an accurate evaluation of the problem of declining tax/GDP in Sri Lanka, and informing the design of policies to overcome the current situation and to achieve sustainable revenue growth and increase the living standards of the people through the supply of quality public services.

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APPENDICES

Table A1: Sri Lanka's main fiscal variables as a share of GDP

Year	Total Revenue	Tax Revenue	Expenditure	Budget Deficit	Debt
1990	23.2%	19.0%	31.0%	7.8%	96.6%
1991	22.6%	18.3%	32.3%	9.8%	98.5%
1992	22.1%	18.0%	28.2%	6.1%	95.4%
1993	21.3%	17.2%	28.4%	7.1%	96.9%
1994	20.4%	17.2%	29.5%	9.1%	95.1%
1995	21.8%	17.8%	30.5%	8.7%	95.2%
1996	20.1%	17.0%	28.5%	8.4%	93.3%
1997	19.4%	16.0%	26.4%	7.0%	85.8%
1998	17.9%	14.5%	26.3%	8.4%	90.8%
1999	18.3%	15.0%	25.2%	6.9%	95.1%
2000	17.2%	14.5%	26.7%	9.5%	96.9%
2001	17.0%	14.6%	27.5%	10.4%	103.3%
2002	17.0%	14.0%	25.4%	8.5%	105.6%
2003	15.6%	12.7%	22.9%	7.3%	102.3%
2004	15.3%	13.5%	22.8%	7.5%	102.3%
2005	16.8%	13.7%	23.8%	7.0%	90.6%
2006	17.3%	14.6%	24.3%	7.0%	87.9%
2007	16.6%	14.2%	23.5%	6.9%	85.0%
2008	15.6%	13.3%	22.6%	7.0%	81.4%
2009	15.0%	12.8%	24.9%	9.9%	86.2%
2010	13.0%	11.3%	20.0%	7.0%	71.6%
2011	13.6%	11.7%	19.9%	6.2%	71.1%
2012	12.2%	10.4%	17.8%	5.6%	68.7%
2013	12.0%	10.5%	17.4%	5.4%	70.8%
2014	11.6%	10.1%	17.3%	5.7%	71.3%

Source: Central Bank of Sri Lanka.
Note: This table shows that there was a clear decline in revenue and tax share in Sri Lanka over the years studied. As a result of weak revenue performance, there was a decline in government spending. Budget deficit always remained above 5% of GDP and debt share was also higher, giving lower fiscal space for the government.

Table A2: List of all LMICs

Armenia	Guatemala	Mongolia	Swaziland
Bangladesh	Honduras	Morocco	Syrian Arab Republic
Bhutan	India	Myanmar	Tajikistan
Bolivia	Indonesia	Nicaragua	Timor-Leste
Cape Verde	Kenya	Nigeria	Tonga
Cambodia	Kiribati	Pakistan	Tunisia
Cameroon	Kosovo	Papua New Guinea	Ukraine
Congo Rep.	Kyrgyz Republic	Philippines	Uzbekistan
Côte d'Ivoire	Lao PDR	Samoa	Vanuatu
Djibouti	Lesotho	São Tomé and Principe	Vietnam
Egypt	Mauritania	Solomon Islands	West Bank and Gaza
El Salvador	Micronesia, Fed. Sts.	Sri Lanka	Yemen, Rep.
Ghana	Moldova	Sudan	Zambia

Source: World Bank

Table A3: Descriptive statistics

Variable	No of Obs.	Mean	Std. Dev.	Min	Max
Tax share	1079	15.27	7.36	1.73	62.83
Per capita GDP	1234	1,695.10	902.22	186.90	4,329.25
Agriculture share	1158	22.61	11.01	3.06	63.01
Manufacturing share	1133	14.12	7.79	0.38	45.67
Import share	1155	47.53	24.86	0.12	193.24
Export share	1155	32.91	16.66	0.18	100.95
Urbanization	1275	39.92	16.71	12.98	77.26
Age dependency ratio	1276	75.20	16.01	34.55	118.78
Inflation	1092	29.14	301.27	-18.11	7,485.49
External debt	1099	70.99	78.85	0.24	1,111.27
Domestic credit	1143	34.08	27.25	-52.6	248.9
Education Index	550	0.49	0.13	0.16	0.80
Gini coefficient	302	28.34	8.78	4	65
Size of shadow economy	960	37.89	10.94	12.02	71.34

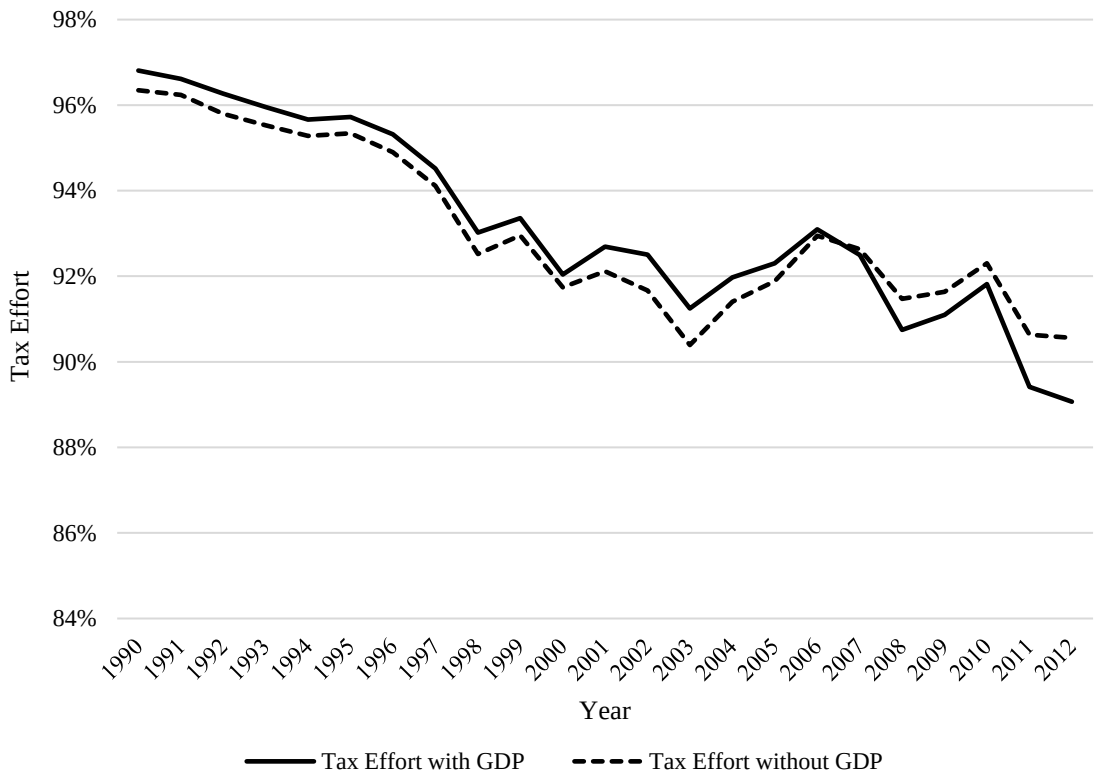
Source: ICTD, World Development Indictors, UNDP, Medina and Schneider (2018).
Note: Education Index and Gini coefficient have been interpolated before using in SFA analysis.

Table A4: Skewness test of the statistical noise

ε_{it}				
	Percentiles	Smallest		
1%	-0.336	-0.625		
5%	-0.177	-0.613		
10%	-0.131	-0.492	Obs.	657
25%	-0.076	-0.430	Sum of Wgt.	657
50%	-0.003		Mean	-1.29e-10
		Largest	Std. Dev.	0.127
75%	0.066	0.394		
90%	0.145	0.402	Variance	0.016
95%	0.220	0.494	**Skewness**	**-0.061**
99%	0.340	0.556	Kurtosis	6.022

Source: Authors' estimations.

Figure A1: Sri Lanka's tax effort estimates with and without per capita GDP (KLH, 2014. model)



Source: Authors' estimation using Kumbhakar, Lien and Hardker's (2014) model.
Note: This figure shows that there is no significant deference with and without GDP per capita in the model, as explained in second part of the robustness check section.

Table A5: Results using Greene's (2005) true fixed-effect model

Dependent Variable lnTaxshare	Stochastic Tax Frontier Model (Exponential)	
lnGDP per capita	0.207***	(0.055)
lnAgriculture share	0.144***	(0.036)
lnManufacture share	0.026	(0.029)
lnImport share	0.106***	(0.039)
lnExport share	-0.003	(0.029)
lnExternal debt	-0.019	(0.014)
lnDomestic credit	0.023	(0.014)
Inflation	-0.000	(0.000)
lnEducation Index	-0.214**	(0.083)
lnUrban population	0.389***	(0.081)
lnAge dependency	-0.447***	(0.104)
lnGini	-0.213***	(0.066)
Inefficiency Model		
Usigma		
lnShadow	2.589***	(0.078)
Vsigma		
Constant	-4.548***	(0.096)
N	608	
Log likelihood	431.7	
Sigma_v(σ_v^2)	0.103***	(0.005)

Source: Authors' estimations.
Note: Standard errors in parentheses; * p<0.1, ** p<0.05, *** p<0.01. As an alternative method, we used Greene's (2005) true fixed-effect model and the results also show that the size of the shadow economy is positively related to tax inefficiency.

Table A6: Efficiency estimates for Sri Lanka using Karakaplan and Kutlu's (2017) method

Year	Model EX	Model EN
1991	0.2845	0.2700
1992	0.2846	0.2713
1993	0.2846	0.2731
1994	0.2846	0.2738
1995	0.2846	0.2734
1996	0.2847	0.2754
1997	0.2847	0.2759
1998	0.2847	0.2776
1999	0.2847	0.2786
2000	0.2848	0.2811
2001	0.2847	0.2787
2002	0.2847	0.2779
2003	0.2848	0.2788
2004	0.2848	0.2796
2005	0.2848	0.2792
2006	0.2848	0.2788
2007	0.2847	0.2769
2008	0.2847	0.2786
2009	0.2847	0.2752
2010	0.2849	0.2851
2011	0.2850	0.2892
2012	0.2851	0.2923

Source: Authors' estimations.
Note: Tax effort estimates for Sri Lanka using Karakaplan and Kutlu's (2017) method under EX and EN models showed that there is no significant difference.

Table A7: Tax effort in LMICs

Country	Latest year	BC (95) model	KLH model
Armenia	2012	0.705	0.941
Bangladesh	2012	0.619	0.937
Bhutan	2012	0.694	0.962
Bolivia	2012	0.823	0.968
Cabo Verde	2006	0.691	0.935
Cambodia	2012	0.600	0.951
Cameroon	2013	0.704	0.948
Congo, Rep.	2005	0.473	0.890
Cote d'Ivoire	2013	0.705	0.937
El Salvador	2012	0.596	0.949
Ghana	2013	0.663	0.948
Guatemala	2012	0.531	0.927
Honduras	2012	0.577	0.913
Kenya	2013	0.718	0.927
Kyrgyz Republic	2013	0.717	0.955
Lao PDR	2010	0.716	0.960
Lesotho	2013	0.872	0.958
Mauritania	2012	0.667	0.923
Moldova	2013	0.694	0.912
Mongolia	2013	0.766	0.941
Morocco	2012	0.733	0.925
Nicaragua	2012	0.626	0.946
Nigeria	2007	0.542	0.868
Pakistan	2013	0.712	0.941
Papua New Guinea	2004	0.792	0.955
Philippines	2012	0.610	0.922
Solomon Islands	2005	0.736	0.945
Sri Lanka	**2012**	**0.566**	**0.891**
Swaziland	2011	0.655	0.924
Tajikistan	2012	0.711	0.937
Tunisia	2012	0.666	0.926
Ukraine	2013	0.723	0.930
Vietnam	2012	0.726	0.897
Zambia	2010	0.663	0.910

Source: Authors' estimations using Battese and Coelli's (1995) model) and Kumbhakar, Lien and Hardker's (2014) model. Note: The results show that tax effort in Sri Lanka is lower than in other LMICs.

Table A8: Personal Income Tax Rates - 2009 and 2012

Description	**2009**	**Description**	**2012**
Tax Free Allowance - Rs.	300,000	Tax Free Allowance - Rs.	500,000
First Rs. 400,000	5%	First Rs. 500,000	4%
Next Rs. 400,000	10%	Next Rs. 500,000	8%
Next Rs. 400,000	15%	Next Rs. 500,000	12%
Next Rs. 500,000	20%	Next Rs. 500,000	16%
Next Rs. 500,000	25%	Next Rs. 1 million	20%
Next Rs. 500,000	30%	Balance	24%
Balance	35%		

Source: Department of Inland Revenue of Sri Lanka.