
CAUSAL RELATIONSHIP OF TAXATION AND ECONOMIC GROWTH IN SRI LANKA

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Abstract

The fiscal deficit in Sri Lanka has been high for a long period. The average fiscal deficit was 7.9 per cent of GDP during 1992-2017 (Central Bank of Sri Lanka). However, even 7.9 per cent deficit could be a precarious phenomenon as it could act as a catalyst for financial instability in the country. Lower tax revenue has been the main reason for the high level of fiscal deficit. Since tax authority has not been successful in raising revenue through direct taxes, the tax policy has changed very frequently stressing more on indirect taxation vis-à-vis to theoretical contradiction. Moreover, the tax ratio of the country records to be declining from 19 percent in the year 1990 to 11.9 percent by year 2018. Hence, the study intends to fill the research gap of identifying the most-suited type of taxes to accelerate the GDP growth of Sri Lanka. The main objective of the study was identifying the relationship between tax revenue and economic growth in Sri Lanka where a regression analysis was used by employing OLS. Thus, initially two main models were established as linear and double log models. Model one consisted of total taxes as an independent variable with private consumption, private investments, exports and imports as other independent variables and model two consisted of dependent and independent taxes as two separate independent variables with four others. However, non-stationarity of data requiring dropping of important independent variables in the linear models and the same causing to use the second differences of the variables in the double log models, led to inability to interpret the coefficient values. Hence, co-integration was used to measure the relationship between taxes and GDP growth of Sri Lanka. Thereby, to overcome the above issues, Granger Causality Test as well as Johansen's Co-integration tests were performed respectively to measure the causal relationship between taxes and gross domestic product and measuring the long-run relationship between tax and GDP. Thus, it could be determined that the variables in the model are cointegrated depicting that these variables denote a long-run relationship than a short-run association. Thereby, it is concluded that GDP and all the independent variables (i.e. direct and indirect taxes, private consumption and investments, imports and exports) are deemed to be cointegrated in the long-run while, it could also be concluded that tax revenue as a total is also cointegrated with the GDP of Sri Lanka. Further, Granger causality runs in both ways in terms of Total Taxes and GDP, runs in only one way in terms of Direct taxes and GDP: although Direct Taxes granger cause GDP, the vice versa scenario does not hold and runs in both ways in terms of Indirect taxes and GDP. Thereby, it could be settled that total taxes as well as indirect taxes has two-way causalities with GDP while direct taxes have only a one way causality. Thereby, it could be concluded that Sri Lanka needs to re-consider its tax policies in using them as an instrument to revamp its GDP growth.

Key words: Taxation, Economic Growth, Causality

Category Number: 2, 4

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1. Background

Government revenue is one of the essential fiscal variables in any country especially in developing countries, as it will enable any government to bear up the government expenditure borne for development goals without having been to depend on external sources such as external debt and aid. Accordingly, it is noted that in Sri Lanka the government expenditure is in an increasing trend led by various development goals of the country. Thereby, observing the data on the government revenue as well as government expenditure of Sri Lanka denotes that government expenditure has always exceeded the government revenue of the country thus leading to budget deficits for the period of 1950-2015. Moreover, the government revenue as a bulk (as Rs. Millions) is noted to be increasing during the study period where the slope of the increase is at an increasing rate in the recent history.

Further, historically, tax revenue has been one of the important revenue sources in Sri Lanka. Thereby, Robert Knox (1681) through his records about Sri Lanka on his notable working titled 'An Historical Relation of Island Ceylon' records that taxes were collected three times a year and various item such as gems, wine, oil, corn, tobacco, elephant teeth etc. were taxed and the collected tax were directed to the king's exchequer.

When considering the modern tax system in Sri Lanka, the income tax was first introduced in Sri Lanka in the year 1932 where the Income Tax Department was established in the same year proceeded by Estate Duty and Stamp Duty offices being amalgamated with the department in the year 1933 at which it was renamed as Department of Income Tax, Estate Duty and Stamps.

Thereby, tax policy in Sri Lanka has changed frequently throughout the history stressing more on indirect taxation where the most current revision on indirect taxation was in the year 2002 on which the Value Added Tax (VAT) was introduced. Accordingly, VAT has been recorded as the highest revenue collector in the recent decade. Thus, it was evident that Sri Lanka has sourced its government revenue mainly through tax income which was mainly collected through indirect taxation. (80% of total tax revenue).

Theoretically, Musgrave (1969) argues that economic development of developing countries will increase the share of direct taxes in total tax revenue. However, Sri Lanka was deemed to have an over dependence on indirect taxation (more than 80% of the total tax revenue being flown through indirect taxes) and has been unable to change its tax structure irrespective of the political debate over the changing of the tax structure.

Moreover, literature records the argument of Kaldor (1963) who argues that for a country to become developed it needs to collect taxes at 25-30 percent of GDP. However, according to Amirthalingam (2010), that the tax ratio in Sri Lanka which was 19.02% in the year 1990 has declined to 10.1 in 2014 and slightly increased to 11.9 in 2018.

Hence, it is noted that this research study has been carried out in a background where tax policy of Sri Lanka has faced frequent changes since its inception irrespective of the governmental change. Thereby, it was evident that policy makers and policy implementors of the country had not considered any economic relationships which may have prevailed between taxation and economic growth of the country. This in turn have led the low government income being recorded to be low vis-à-vis to other countries leading to higher debt percentages.

1.1. Research Problem

According to the history in tax revenue collection, although the governments in Sri Lanka has frequently changed its tax structures with the aim of increasing the tax revenue which will enable to reduce the budget deficit of the country, it had not been successful due to various reasons. The most recent incident of this frequently changing tax policy of the country records with the change in the present government who had given the promise of changing the tax structure into a direct taxation base vis-à-vis to the existing indirect taxation base. However, it was noted that despite the said promise on changing the tax structure of the country to a one towards direct taxation, the tax change in the policy was directed towards an indirect tax base. Moreover, irrespective of the above frequent change in the tax policies in Sri Lanka, the economic growth rates recorded by the Central Bank of Sri Lanka is deemed to be increasing. This could indicate that although the economic growth rates were increasing, the tax policy had not been stabilized (i.e. not directed towards direct taxation or indirect taxation continuously, rather change from a direct to indirect and vice versa very frequently) in the country which may denote that there is no relationship between taxation and economic growth in Sri Lanka. Thus, it was identified that the tax policy of Sri Lanka had no stability and is very often used as a political tool than as a tool for economic growth. Further, it was noted that although theory suggested certain standards in taxation to be adopted to ensure the growth of a country, no studies have been carried out in Sri Lanka to measure whether there is a relationship between the taxes of Sri Lanka and the growth rates of Sri Lanka. However, in various other developed as well as developing countries it was noted that a causal relationship was identified both as positive as well as negative between taxation and its economic growth through which various scholars had developed varying recommendations on most suited and growth enhancing tax structure. Thus, the study intended to fill this research gap of measuring the causal relationship between taxation and economic growth of Sri Lanka.

1.2. Objective of the study

This study intends to assess tax revenue and measure the causal relationship between tax revenue and economic growth in Sri Lanka

1.3. Limitations of the study

The study faces few limitations where one of the main limitations is the method of regression being limited to Ordinary Least Squares out of various other alternative regression mechanisms. Furthermore, limited access to secondary data was another limitation which made the study period limited to 1980-2015 as information on taxes in years prior to the year 1980 were not accessible. This limitation may have caused several other statistical limitations, triggered by limited data being used for regression analysis especially the data being economic time series data. Moreover, the study involved literature survey on empirical evidence on tax structure at which the researchers had to face many accessibility

limitations to several scholarly articles. Time limitation could also be stated as one of the limitations of the study as the time period was limited to one year.

2. Literature Review

2.1. Theoretical Foundations of Taxation

This section mainly focus on the two main theories put forward by Kaldor (1963) and Musgrave (1969) regarding the importance of taxation and the relationship between tax system and economic development and economic growth of a country.

Accordingly, Kaldor (1963) argues that for a country to become developed it needs to collect taxes at 25-30 percent of GDP. Secondly, Musgrave's (1969) argument is based on the state of the economy of the country. Accordingly, Musgrave divides economic development into two periods as early period which is when the economy is underdeveloped and the later period when the economy is developed. Thereby, the scope to use direct taxation during the early period is much limited owing to the fact that majority of the population resides in rural areas and hence engaged in subsistence agriculture, thus leading to inability to estimate their personal incomes, leading to a critical role played by indirect taxes in the developing economies during their early stage of economic development. It is further revealed that ratio of indirect taxes to total taxes is inversely related to per capita income due to the inappropriateness of the economic structures of the low-income economies for imposition of direct taxes whereas indirect taxes can be readily imposed in these countries. Specifically, there exists a relationship between the level of economic growth and development and the tax structure. Indeed, it has been argued that the level of economic development has a very strong impact on a country's tax base.

2.2. Impact of Taxation on Economic Growth

The researchers conducted a literature analysis on empirical evidence on impact of taxation on economic growth of a country.

Accordingly, Padda and Akram (2009) denotes that the tax policies adopted by South-Asian countries have only transitory impact on their economic growth and that transitory impact of changes in the tax rate for Pakistan as well as India is negative and short-termed while it is positive for the immediate first year proceeded by negative effect on economic growth of Sri Lanka.

Moreover, Alesina and Ardagna (2010), found out that fiscal stimuli based on tax cuts will be favourable for economic growth and adjustments on tax side are less likely to stimulate economic recessions. Further it was found out that fiscal adjustment based on spending side and not increasing taxes will ensure reduced deficits and debt to GDP ratios.

Further, Reed (2008) has found that the relationship between taxes and income growth for forty-eight continental U.S. states for the period of 1970-1999 is significantly negative in both contemporaneous changes and lagged levels of taxes. Consequently, even though the estimated effects are revealed to vary, depending on the variable specifications, estimation procedure, time periods, region and state, negative statistical significant relationship of tax and growth is robust for all the above mentioned dimensions.

Furthermore, Widmalm (2001), using data of 1965-1990 from a pooled cross-sectional data of 23 OECD countries denotes that correlation between average tax rate and economic growth is statistically insignificant while it was also noted that tax progressivity is bad for economic growth.

Impact of taxation to economic growth of United States (US) has been a popular research topic where several scholars have carried out studies resulting in varying outcomes. Thereby, Barro and Redlick (2011) using long-term macroeconomic data of United States concludes that changes in average marginal income-tax rates on real GDP growth is significantly negative. Polson and Kaplan (2008) reveals that higher marginal tax rates are negatively related with economic growth in states while tax regressivity have a positive impact on economic growth. This outcome is confirmed by Romer and Romer (2010) that a tax increase has a very large, sustained and highly significant negative impact on the output.

Further, pooled annual data of U.S. during the period 1972-1998 revealed that higher tax rates do not show significant impact in the long-run, but negatively affect the short-run state economic growth as well as the state output levels. (Tomljanovich, 2004)

Further, of the many statistical studies, several scholars have concluded that there is no relationship between taxes and economic growth of the country. This includes Bloom (1955), Carlton (1979, 1983) and Thompson and Mattila (1959) etc. Furthermore, Canicio and Zachary (2014) conducting a research using time series data for the period of 1980-2012 found-out that for Zimbabwe, there was no causal relationship between tax revenue and economic growth.

On the other hand, many scholars reveal that there is a negative relationship between the two variables. Accordingly, Gemmell et al. (2011), through analysis of OECD countries confirms a priori inference of Dalgaard and Kreiner's (2003; pp. 83 as cited by Gemmell et al.) finding that higher tax rates have a significant negative impact on the growth rate which is also roughly offset by significant positive growth impact of productive government expenditure financed through higher taxes, thus resulting a small overall net effect. Moreover, Gemmell reveals that those taxes which are recognized as distortionary through various theoretical bases, have persistent effects on GDP growth.

Ahmad et al. (2013) investigating the impact of tax revenue on the economic growth of Pakistan, reveals that taxes are negatively affected to the economic growth of Pakistan where 1% increase in taxes will lead to 0.08% decrease in GDP.

Additionally, time series-cross sectional analysis of 48 states reveals that an increase in the state and local taxes have a significant negative impact on the economic growth of the economy specifically when the revenue is used to finance the country's transfer payments rather than productive economic services. It is further revealed that if the increase in taxes are used as the source of financing to increase the public services such as education, infrastructure, public health and safety, the favourable impact on location and production decisions provided by enhanced services may counter-balance the disincentive effects of the associated taxes. (Helms, 1985)

In an attempt to study South African experience on relationship of taxation and economic growth, using data of 1960-2002, Koch et. al. (2005) concludes that decreased tax burden is highly related with increased economic growth as well as contrary to the theoretical research, decreased indirect taxation relative to direct taxation is strongly correlated with increased economic growth.

On the other hand, Szarowska (2013), studying 24 European Union (EU) member states revealed that GDP growth rate is positively affected by consumption taxes while it is being negatively affected by labour taxes while lag effects were also affected to the growth rate. Further Szarowska revealed that a two-way causality is present between implicit tax rate of consumption and GDP growth rate.

Harberger in year 1964 as cited by Jorgenson and Yun (1990) brought-up a conjecture that although theory predicts the mix of direct and indirect taxes as an important determinant of long-run growth and investment, tax-policy is an ineffective instrument in influencing growth in practice. This proclamation has been examined by several scholars such as Mendoza et. al. (1997). Accordingly, Mendoza et.al. using a time-series panel for 18 OECD countries develops two models where the basic model (where human capital is a tax-free and a non-market activity, leisure is raw time and physical capital enters in the production of human capital), reveals that growth increases as taxes are reduced while investment rate increases when the factor income taxes reduce or consumption taxes increase. Further it is simulated that reduction in taxes by 10 percentage points is economically significant and will increase in investment rate by 0.5-1.5 percentage points while its growth impact is insignificant.

Hence, it can be concluded that empirical evidence on the impact of taxation has resulted in varying outcomes.

3. Methodology

3.1. Type of Data

Secondary data obtained through various sources such as the annual reports of Central Bank of Sri Lanka, Department of Census and Statistics, Department of Inland Revenue as well as through various databases such as the World Bank Database and Trading Economics.

3.2. Method of data analysis

The study involved a quantitative design where several models were established to assess the relationship between tax revenue and economic growth in Sri Lanka. Accordingly, two forms, linear and double-log forms were used to establish the models where the double log form was used to avoid the inherent correlation issue of growth rates of economic data. (Gujarati, 2009)

The study was based on the following macroeconomic equation.

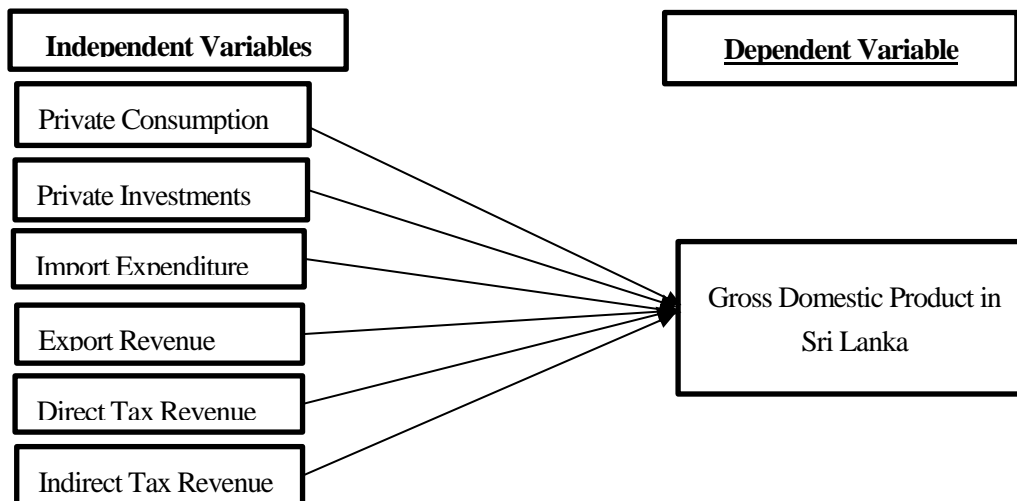
$$Y_d = C + I + G + (X - M) \quad (1)$$

Where :

Abbreviation	Variable name of the equation	Representative variable used for model construction
Y _d	National Disposable Income	GDP
C	Consumption	Private Consumption
I	Investments	Private Investments
G	Government	Tax Revenue
X	Exports	Export Revenue
M	Imports	Import Expenditure

However, tax revenue was analysed using its two major categories, direct and indirect taxes as the study intended to analyse its relationship between tax structure and the economic growth of Sri Lanka. Thereby, the conceptual framework of the study can be depicted as below:

Figure 1 : Conceptual Framework



Moreover, the researchers constructed two models under each form where model one tested the relationship between tax revenue (as a whole) and economic growth of SL while model two tested the relationship between the economic growth and tax structure (direct tax revenue and indirect tax revenue variables considered separately).

Thereby, the study involved construction of the following two main models using the two forms :

Model 01:

$$GDP = \beta_0 + \beta_1(PVTCONS) + \beta_2(PVTINVEST) + \beta_3(TT) + \beta_4(EXP) + \beta_5(IMP) \quad (2)$$

Model 02:

$$GDP = \beta_0 + \beta_1(PVTCONS) + \beta_2(PVTINVEST) + \beta_3(DT) + \beta_4(IDT) + \beta_5(EXP) + \beta_6(IMP) \quad (3)$$

Where

- | | | |
|-----------|--------|---------------------------------|
| PVTCONS | —————> | Private Consumption Expenditure |
| PVTINVEST | —————> | Private Investments |
| DT | —————> | Direct Taxes |
| IDT | —————> | Indirect Taxes |
| TT | —————> | Total Taxes |
| EXP | —————> | Export Income |
| IMP | —————> | Import Expenditure |

Further, as the initial step of regression analysis, the researchers conducted the stationarity test using the Augmented Dickey Fuller (ADF) test while Ramsey's RESET Test, Akaike's Information Criterion (AIC) and Schwarz Criterion (SC) was conducted to test for any specification biases of the models. Furthermore, overall significance was measured through goodness of fit while the three main classical assumptions, multicollinearity, autocorrelation and heteroskedasticity were also tested.

Moreover, Granger Causality test has also been carried out to know the direction of the relationship between each time series while co-integration analysis (using Johansen cointegration test) was conducted due to the results of stationarity test indicating that there is stationarity issue in the data set.

4. Results and Discussion

The study involved construction of two main models where ADF test resulted in to exclude model one in linear form and models with limited number of independent variables too.

Accordingly, model 02 of linear form resulted that at 95% significance level, the direct taxes of Sri Lanka does have a significant impact on the Sri Lankan economy where the OLS equation formed can be given as below.

$$GDP = 19,744.78 + 0.716 (PVTCONS) - 5.7(DT) \quad (4)$$

Accordingly, the two models of the log form can be given as below :

Model 01:

$$GDP = 0.0009 + 0.627 (PVTCONS) + 0.131 (PVTINVEST) - 0.023(TT) + 0.192 (EXP) - 0.223(IMP) \quad (5)$$

Model 02 :

$$GDP = 0.0016 + 0.624 (PVTCONS) + 0.132 (PVTINVEST) - 0.032(DT) - 0.003(IDT) + 0.192 (EXP) - 0.223(IMP) \quad (6)$$

However, the p-values suggest that with 95% confidence level, both the tax revenue as a whole as well as direct and indirect taxes as separate variables does not have a significant influence over the GDP of the country. Moreover, despite this insignificance, the interpretations were less meaningful as the second differences were taken to avoid the stationarity issue. Hence, the usability of the above models were questionable in the practical sense. Further, Ramsey's RESET test results, AIC and SC criteria suggested that the linear model has specification error and thus the log models have the better specification. Thus, the overall significance was tested for the double log model where both double log models were identified to have an impact on the GDP.

The testing of classical assumptions denoted that both linear and double log models have multicollinearity and autocorrelation issue, although none of them have evidence to prove that they have the heteroskedasticity issue.

Ganger causality test which was conducted to identify the direction of the relationship between each time-series resulted in the following findings:

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1. Granger causality runs in both ways in terms of Total Taxes and GDP
 2. Granger causality runs in only one way in terms of Direct taxes and GDP : although Direct Taxes granger cause GDP, the vice versa scenario does not hold
 3. Granger causality runs in both ways in terms of Indirect taxes and GDP

As the final step, the researchers conducted co-integration analysis as it was evident that the data lacks from stationarity issue as well as the study used economic data which requires co-integration analysis to identify any long-term relationship of the data. Thus, the findings of the Johansen Cointegration test denotes that total taxes as well as direct and indirect taxes are cointegrated with the GDP of Sri Lanka.

Thereby, it can be concluded that the two models established using the two forms does not provide sufficient evidence to be used to measure the causal relationship between tax revenue and economic growth. Hence, the researchers by using Johansen cointegration concludes that there is a long-term relationship among the tax revenue (total, direct and indirect) and GDP of Sri Lanka.

Henceforth, the main policy recommendation which could be arrived at based on the findings of the study is that, Sri Lanka needs to be considerate when changing the tax structure as it was found out that the both direct and indirect taxes have a long-term impact on the GDP of the country. Therefore, the policy makers should be more careful in changing the tax policy and consider the real economic impact than being more politically-driven. Further, Sri Lanka should be more focussed on raising government revenue through other sources too rather than depending on tax revenue.

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