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Finding Optimal Proportion of Budgetary Sources to Fund Government Expenditure

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Abstract - *This study aims to address the economic crisis in Sri Lanka, which is believed to be caused by fiscal indiscipline and balance of payment issues. The research solely focuses on resolving fiscal indiscipline. The primary objective is to identify the optimal proportions of budgetary sources that can minimize the adverse effects, preserving macroeconomic stability. The study considers the budget deficit as the new norm and seeks to determine the best budgetary source combinations that satisfy both inflation and debt sustainability targets. Predictive time series models are used to determine the amounts of budgetary sources for the next five years. Subsequently, an algorithm is employed to optimize the predicted amounts based on inflationary and debt sustainability targets that is set by the user. Considering the feasibility factor, the optimum budgetary source amount of a particular source cannot exceed 150% or cannot be less than 50% of the previous year's amount. Ultimately, this research aims to provide decision-makers, The Central Bank of Sri Lanka, and the government of Sri Lanka with the necessary information to make informed decisions to preserve the macroeconomic stability*.

Key Words: Economics, Machine Learning, Time Series Models, Monte Carlo Simulation

1.INTRODUCTION

Since Sri Lanka gained independence in 1948, its economy has encountered numerous challenges, with fiscal indiscipline being a prominent issue [1]A key challenge is the persistent budget deficit, referring to the disparity between government revenue and expenditure. Over time, this deficit has significantly increased and led to an economic crisis in the country. The prevailing fiscal imbalance has caused a substantial rise in public debt, rendering it unsustainable and damaging Sri Lanka's credibility in the international market.

The Central Bank plays a critical role in this crisis, as it is obligated under the current Central Bank Act [2] to provide funds to the government upon request. This power is often utilized to finance the budget deficit through the issuance of securities to the Central Bank and acquiring money created by the Central Bank, a practice commonly referred to as 'money printing'. While some economists argue that budget deficits are necessary for economic growth [3], others caution that excessive money printing and borrowing can lead to inflationary pressures and a high debt burden in the long term.

In essence, this debate reflects a clash of two economic ideologies. One side argues against encouraging a budget deficit, emphasizing its potential to cause fiscal instability and hinder sustainable growth. The other side contends that strict fiscal policies can impede economic growth. In reality, most countries around the world maintain a budget deficit, and Sri Lanka is no exception. Regardless of the ideological stance, it is widely agreed that preserving macroeconomic stability is crucial for fostering a growing and consistently performing economy [4]. The following studies provide insights into the importance of preserving macroeconomic stability from various perspectives.

2. LITERATURE REVIEW

Tatiana Vasylieva, Sergij Lyeonov, Oleksii Lyulyov, and Kostiantyn Kyrychenko conducted a comprehensive study on the role and impact of macroeconomic stability on economic growth in European countries for the period spanning from 2000 to 2016 [4]. Utilizing a modified Cobb–Douglas production function, their research findings concluded that a 1% improvement in macroeconomic stability has a more positive influence on GDP growth compared to foreign direct investments. This underscores the importance of implementing appropriate macroeconomic policies by governments to foster economic growth in the studied countries.

Several studies have been undertaken to explore solutions for preserving macroeconomic stability, with a primary focus on understanding the influence of budgetary sources and budget deficits on macroeconomic variables like

inflation and economic growth. Uncovering the effects of various economic attributes on the overall economy plays a crucial role in mitigating adverse consequences and optimizing favorable outcomes, representing one approach to sustaining macroeconomic stability. Numerous studies conducted in different regions across the globe have aimed to ascertain the correlation between fiscal deficits and macroeconomic variables, including economic growth and inflation. The majority of these studies tend to indicate a negative impact of fiscal deficits on macroeconomic variables. However, there exist studies with contrasting results, suggesting a positive or non-significant effect of fiscal deficits on these variables.

For instance, Nguyen Tung (2020) [5] investigated the effects of fiscal deficits on economic growth in an emerging economy using data from Vietnam. The study employed an Error Correlation model to assess the impact of fiscal deficits on economic growth, revealing a negative and significant influence in both the short and long run. Cebula (1995) [6] explored the impact of budget deficits on the U.S. economy's growth using quarterly data from 1955 to 1992 and found that budget deficits led to a reduction in the economic growth rate. The study also confirmed that income tax had detrimental effects on economic growth. This implies that an increase in the budget deficit leads to a higher tax ratio, generating additional revenue to offset previous deficits, thereby restraining economic growth.

Ghura and Dhaneshwar (1995) [7] investigated the effects of macroeconomic policies on nominal income growth, inflation, and output growth using data from 33 countries in Sub-Saharan Africa spanning from 1970 to 1987. The results suggested that an increase in the budget deficit ratio adversely affected output growth in those countries during that period.

Contrary to the aforementioned studies, some research has yielded contrasting results, indicating a positive or insignificant relationship between fiscal deficits and economic growth. Velnampy and Achchuthan (2013) [8] similarly found no significant relationship between fiscal deficits and economic growth in Sri Lanka in their study, which utilized data from 1970 to 2010. Ahmad (2013) [9] analyzed data from Pakistan for the period 1971-2007 and found a positive, albeit statistically insignificant, relationship between fiscal deficits and Gross Domestic Product (GDP). Pelagidis and Desli (2014) [10] discussed the potential of fiscal policy to support economic growth in Europe, suggesting that a budget deficit might lead to higher business profits, ultimately supporting economic growth. Their findings indicated a positive relationship between fiscal deficits and capital profitability, challenging the notion of a dogmatic aversion to budget deficits as inherently harmful. According to Eminer (2015) [11] the impact of a budget deficit on economic growth depends on whether it is geared toward productive or non-productive spending. In either case, the interpretation of 'productive spending' is relative and contingent upon the discretion of policymakers. Moreover, the full realization of the impact of budget deficits is dependent on the policy's duration, whether in the short or long run.

Numerous studies have been conducted to establish the relationship between various budgetary sources, including taxation, borrowing (both foreign and domestic), monetary financing, and macroeconomic variables. For instance, Mario Situm (2009) [12] conducted research titled 'The Effects of Money Printing on Inflation Accounting,' concluding that money printing leads to moderate inflation in the short term and rapid inflation in the long run. Thomas I. Palley (2015) [13] critically analyzed Modern Monetary Theory, which posits that excessive money supply through printing does not exert inflationary pressure on the economy.

Discussion of the "Understanding the Economic Issues in Sri Lanka's Current Debacle" paper by Soumya Bhowmick [14] discusses Sri Lanka's increased vulnerability to economic shocks as a result of its high levels of external debt. The debt issue has also had an adverse impact on the economy's stability, making it challenging for the government to borrow funds at affordable rates and invest in crucial public services.

'A Policy Perspective Analysis from Quantile Regression' by Md. Shahinuzzaman et al. (2021) [15] investigates this link, highlighting the influence of foreign debt. Their findings suggest that the impact of external debt on South Asia's economic growth is nonlinear. It has a beneficial and considerable impact on growth at lower levels, mostly through funding important expenditures like infrastructure and human resources. Higher levels of debt, however, have a negative and severe impact because of possible problems such difficulties paying off the debt, a decline in the value of the currency, and the crowding out of private investment. The authors advise using external debt sparingly, avoiding excessive accumulation, and making sure it finances profitable investments for the best possible economic growth.

A critical gap in current research lies in the absence of a systematic approach to overcome the macro-economic instability. The current literature, as discussed, primarily focuses on identifying the impact of fiscal deficits or budgetary sources on macroeconomic variables such as inflation and economic growth. Its goal is to comprehend the causes of macroeconomic instability and determine whether these factors have a negative or positive effect on the economy. While the results of these studies do indicate whether fiscal deficits, money printing, or taxation are detrimental or beneficial to the economy, they often lack a systematic approach to mitigate harm or maximize benefits. Hence, it can be argued that the current literature falls short in providing systematic solutions to maintain macroeconomic stability. Therefore, there is a gap in the existing literature that needs to be filled with systematic approaches to ensure and enhance macroeconomic stability.

Furthermore, as it is found, there are not many studies done in the Sri Lankan context when it comes to identifying the impact of budgetary sources on the economy, hence there is a gap in the existing literature to come up with a study to identify the impact of budgetary sources on the economy in the Sri Lankan context.

3. METHODOLOGY

The main goal of this research study is to develop a method for determining the best ratio of budgetary sources to fund government spending. The ideal budgetary source quantities need to be realistic and not exceed beyond 150% or less than 50% of what they were the year before, therefore, to achieve this it is crucial to predict future budgetary source amounts for five years utilizing a time-series modelling strategy. The best ratios to fund government expenditure for the following five years will subsequently be determined by an algorithm created in this research, considering specified conditions or targets that can be defined by the user.

The methodology is partitioned into discrete sections, each of which will be elaborated upon in detail to illustrate how the work will be executed.

3.1 Data Collection

The research study utilized data sourced from the Central Bank of Sri Lanka. The dataset encompasses historical data spanning from 1990 to 2022, extracting crucial features such as Year, Foreign Borrowing, Tax Revenue, Domestic Borrowings, Inflation, and Monetary Financing. The investigation collected a total of 32 records for external and domestic borrowings and tax amounts for the relevant year. Furthermore, the research gathered monthly data for monetary financing from 1996 to 2022, resulting in 312 records for monetary financing.

3.2 Preprocessing and Transformation

Given that there are only 32 data records in the original dataset, the datasets for domestic borrowings, total tax amount, and external borrowings were first oversampled by dividing yearly records into quarterly records.

Following that, two methods were suggested:

• Dividing each yearly record by four.

• Dividing each yearly record into quarters while accounting for seasonal tendencies.

The study then went on to divide the yearly data into quarters, consider seasonal variations, and use the mean seasonal decomposition. Given that the focus of this study is on financial time series data, it is crucial to take data volatility and trends into account to make accurate forecasts. The first method was disregarded because it excluded seasonal data. Since monthly data is available for monetary financing, no oversampling was performed for that dataset.[15]

3.3 Model Building and Training

Three statistical models and one neural network are used for each budgetary source in this paper to predict their amounts (monetary financing, taxes, domestic borrowings, and foreign borrowings) for the next five years. The selection of these models was based on their characteristics and history in handling financial data. The model is finalized based on the performance metrics, Mean Squared Error (MSE), Mean Absolute Error (MAE) and Mean Absolute Percentage Error (MAPE). In financial and time series analysis identifying the best model is difficult due to trends and volatility, but in order to choose the finalize the best model's statistical metrics must be used, that is where MAE, MSE and MAPE is used in this study. Once the best model is selected, decided upon the lowest error metrics, models undergo a hyperparameter tuning process to enhance its performance beyond its initial set of parameters.

3.3.1 LSTM

LSTM, a type of RNN, excels in time-series predictions like stock price forecasts and natural language processing. Its memory cell and gating mechanisms control information flow, making it effective in learning and remembering complex patterns in extended sequences. Unlike traditional RNNs, LSTMs do not rely on simplifying assumptions. Standardized data was used for the LSTM model. [16]

3.3.2 FB Prophet

Prophet is a user-friendly forecasting tool developed by Facebook for quick and accurate time series predictions in various domains. It handles daily observations with patterns on different timescales, including holidays and special events, and requires minimal data pre-processing. However, it may require manual input for seasonality, as it does not always handle it automatically. [17]

3.3.3 Exponential Smoothing (Holt-Winters)

The Holt-Winters Exponential Smoothing model is a popular time series forecasting technique that adapts to changes in level, trend, and seasonality by exponentially weighting past observations. It's useful for predicting consistent patterns and trends in business and economics. [18]

3.3.4 Triple Exponential Smoothing

Triple Exponential Smoothing, also known as the Holt-Winters method, is a powerful time series forecasting technique that captures changes in level, trend, and seasonality using three different smoothing factors. It is useful for predicting data with complex patterns, making it valuable in inventory management, demand forecasting, and finance where accurate predictions of long-term trends and

short-term seasonality are essential for decision-making. [18]

3.3.5 ARIMA

ARIMA is a valuable time series modelling technique used in economics. It combines Auto Regression (AR), Moving Average (MA), and Integration (I) to predict future values, analyse past errors, and make a series stationary. It can capture complex temporal patterns, trends, and seasonality in economic data, making it useful for modelling and forecasting a variety of economic phenomena such as stock prices and GDP trends. It is a fundamental tool for understanding and predicting economic fluctuations and trends. [19]

3.3.6 SARIMA

The Seasonal Autoregressive Integrated Moving Average (SARIMA) model is useful for time series forecasting, especially with seasonal and complex data. SARIMA is an extended version of ARIMA which captures and perform well is seasonal data which more like to be suitable in time series data such as predicting economic related data. [20]

3.3.7 GARCH

GARCH is a specialized time series model used in economics to model and forecast financial volatility. Unlike traditional models, GARCH recognizes the dynamic nature of volatility and captures its clustering during turbulent periods and subsiding during calm ones, aiding in risk management, option pricing, and portfolio optimization.

The following table shows how algorithms were utilized in modelling the budgetary sources. [21]

Table-1: machine learning models

Models	Monetary	Tax	Domestic	Foreign
ARIMA		X		X
SARIMA	X		X	
Triple Exponential Smoothing	X			
Exponential Smoothing		X	X	X
FB Prophet	X		X	
GARCH		X		X
LSTM	X	X	X	X

3.4 Simulation

1) Defining Formula: To realize the objectives outlined in the research paper and achieve the optimal budgetary source ratios, it's essential to meet the established targets of maintaining inflation at or below 5 percent for the next five years and reducing the debt to GDP ratio from the previous year. These targets must be incorporated into the Monte Carlo simulation through a specified formula. To accomplish this, a regression model is utilized to establish the relationship between inflation and budgetary sources. In this model, inflation is the dependent variable, while budgetary sources are considered the independent variables. Therefore, multiple linear regression is the recommended approach. [22]

The sample equation for the regression model is shown below.

$$y = B0 + B1x1 + B2x2 + B3x3 + B4x4 + E$$

In this equation:

- y represents the dependent variable.
- x1, x2, x3, and x4 are the four independent variables: monetary financing, taxation, domestic borrowings, and foreign borrowings.
- B0 is the intercept (constant) term.
- B1, B2, B3, and B4 are the coefficients associated with each independent variable, representing the change in y for a unit change in the corresponding x variable, holding other variables constant.
- E represents the error term, which captures the variability in y that is not explained by the independent variables.

The debt to GDP ratio is taken as follows,

Debt-GDP ratio = (current total government debt + foreign debt + domestic debt + money printing) /GDP

3.5 Monte Carlo Simulation

Upon designing the equations, a Monte Carlo simulation is implemented to simulate various scenarios[23]. It is imperative that the budgetary sources utilized in these simulations fall within a specific value range, as sudden deviations from realistic budgetary sources may lead to economic shocks. For this study, the lower boundary is set at 50 percent of the budgetary source value, while the upper boundary is established at 150 percent of the budgetary source value. This approach enables a prediction of budgetary sources for the next five years, which will subsequently be optimized without introducing or

considering inputs as random values. The inputs for this optimization will be predicted budgetary source values and a predetermined GDP predicted for the next five years.

The GDP of the following year is determined using the formula [22]:

Next year's GDP = current GDP * (1+ inflation rate) * (1+real GDP growth rate)

The inflation rate & the current GDP for a given year is derived from the forecasting models, and the real GDP growth rate is extracted from the IMF Extended Fund Facility program [23]. Upon completion of the simulation iterations, the outcomes are organized to align with the targeted conditions, yielding the optimal budgetary source amounts required for funding government expenditures. By employing these optimal amounts, the ideal ratio of budgetary sources can be defined.

4. RESULTS AND DISCUSSIONS

In this research, individual budgetary source amounts were predicted to eliminate random values when running the simulation. It is important to note that individual budgetary source amounts should not exceed 150% of their current value when passed as an input to the simulation. This is because extremely high individual amounts are not feasible for the government to adhere to. To address this issue and avoid random values, the paper has focused on employing time series models.

Performance metrics such as MSE, MAE, and MAPE were utilized to determine the best model, and the model producing the lowest error metrics was selected. However, there is still an uncertainty in finalizing the model, since models selected based on performance metrics may overfit. Therefore, the paper plotted the actual testing data and the predicted testing data, and models whose graphs demonstrate irrelevant plots were rejected.

The Monetary Financing model, which produced lower error metrics, was rejected due to poor graph performance, while the SARIMA model was deemed the best model for monetary financing because predicted data based on SARIMA model did not show an unusual behavior. The same test was conducted to determine the best model in taxation, domestic borrowing, and foreign borrowing. These models did not exhibit any signs of overfitting once verified with graphs, and the models producing the lowest error metrics were considered as the final models.

Table-2: monetary financing model performance

Algorithms	MSE	MAE	MAPE
SARIMA	0.016	0.011	87.38
Triple Exponential Smoothing	0.015	0.010	100.03
FB Prophet	0.057	0.160	37.39
LSTM	0.0077	0.173	85.74

Table-3: taxation model performance

Algorithms	MSE	MAE	MAPE
ARIMA	2.83	1.65	99.8
Exponential Smoothing	0.037	0.187	15.2
GARCH	1.557	1.246	100
LSTM	0.411	0.425	33.56

Table-4: domestic borrowing model performance

Algorithms	MSE	MAE	MAPE
SARIMA	1.017	0.671	89.565
Exponential Smoothing	1.318	0.789	90.81
FB Prophet	0.551	0.283	88.6
LSTM	1.073	0.918	87.34

Table-5: foreign borrowing model performance

Algorithms	MSE	MAE	MAPE
ARIMA	2.33	1.78	78.95
Exponential Smoothing	2.24	1.73	89.53
GARCH	2.22	1.90	83.54
LSTM-Bidirectional	1.97	1.38	83.04

4.1. Deriving an Inflation Equation

Inflation is a significant target outlined in this paper, with the aim of achieving an optimal ratio of budgetary resources. Modelling inflation in relation to budgetary sources poses a challenge due to the absence of a deterministic model to establish the correlation of inflation and budgetary

resources. As a result, a regression algorithm is utilized to identify the relationship between inflation and resources, as it is the only feasible method. However, the regression model is typically created to predict the dependent variable based on the independent variables. In this study, the dependent variable, inflation, is fixed, and the goal is to deduce the behavior of the independent variables [24]. Thus, using the regression model to derive the relationship between inflation and budgetary sources is an attempt to convert a statistical model into a deterministic model. Linear Regression, Ridge Regression, Elastic Net Regression, and Support Vector Regression were employed to model inflation with respect to budgetary sources. Support Vector Regression was identified as the most effective model, with the least error metrics produced. This model was selected based on its performance metrics, and the paper verified it for any potential overfitting by plotting the actual testing and predicted testing and rejecting models that displayed significant, irrelevant behavior. The table below displays the regression models and their corresponding performance metrics.

Table-6 shows the regression models and the respective performance metrics.

Table-6: regression model results

Algorithms	MSE	MAE	MAPE
Linear Regression	22.25	4.09	51.54
Ridge Regression	19.32	3.62	43.83
Support Vector Regression	21.22	3.48	42.24
Elastic Net Regression	21.22	3.54	43.42

The equation derived from the Support Vector Regression:

- Inflation = (0.49161396 * domestic) - (0.99352259 *foreign) - (1.003063746*taxation) - (0.65601281*money) + 7.13781158

4.2 Monte Carlo Simulation

Once the formulas are derived for debt sustainability and inflation, the values of budgetary sources are initialized by considering the predicted value for the given year. As mentioned in the methodology, considering the feasibility factor, the minimum value for a respective budgetary source is taken as 50 percent of predicted value, while maximum value for a respective budgetary source is taken as 150 percent of predicted value. This range can be changed based on the requirement. The simulation is run for 100,000 iterations and generate the budgetary sources within the defined boundaries and their respective inflation and debt to GDP ratio values based on the defined relationships. Subsequently, results are optimized by an algorithm, in which inflation is set between the lower bound (4.99 percent), and upper bound (5.01 percent) and debt to GDP ratio should be less than previous year's ratio. Furthermore, the results obtained from the algorithm are optimized by considering the minimum value of inflation and debt to GDP ratio. This output is taken as the optimized values of budgetary sources to fund the government expenditures for the given year.

To evaluate the performance of the optimization algorithm few test cases are implemented. Following is a summary of those test cases. For the period of 2014-2019 the following set of inflation rate, debt-to-GDP ratio, and the expenditure amounts (in million) are given as inputs to the application to check whether the algorithm provides us the actual budgetary source amounts.

Table-7: application inputs

Year	Inflation rates	Debt-GDP ratio	Expenditure (million)
2014	5.7	71.3	1,786,450
2015	6.0	78.5	2,284,380
2016	5.5	74	2,326,387
2017	4.5	72.2	2,565,025
2018	4.0	78.4	2,680,743

The following set of budgetary source amounts are given as outputs by the application. This can be compared with the actuals.

Table-8: application outputs in LKR Millions

Year	Money Printing	Tax Revenue	Foreign Borrowing	Domestic Borrowing
2014	1,471,284.31	229,531.67	31,686.89	53,947.11
2015	1,900,786.47	290,321.38	28,584.49	64,687.65
2016	2,028,266.19	218,650.53	47,090.53	32,379.74
2017	2,280,703.84	222,890.52	33,911.42	27,519.23
2018	2,227,633.59	384,158.16	28,976.39	39,974.84
2019	2,986,514.83	129,697.22	88,966.30	124,808.63

By comparing the actual amounts, the following error rates are calculated for each budgetary sources in each year.

Table-9: error rates in LKR Millions

Year	Money Printing	Tax Revenue	Foreign Borrowing	Domestic Borrowing
2014	14,811,577.69	820,830.33	180,836.11	324,773.89
2015	17,809,329.41	1,065,458.10	208,218.12	528,011.47
2016	21,206,229.77	1,245,038.33	344,823.22	216,031.30
2017	23,887,469.17	1,447,287.69	405,332.07	266,731.76
2018	25,331,902.58	1,328,159.37	294,558.77	397,258.99
2019	28,295,488.17	1,605,227.78	453,674.70	771,639.37

Based on the test case results, it is evident that the application does not yield the intended outputs of the study, indicating potential issues with the methodology employed to achieve the desired results. Primarily, these results are derived through the use of time series model predictions, simulations, and an optimization algorithm which includes the relationship between budgetary sources and inflation that is defined using a statistical model as part of an experimental effort to establish a deterministic model.

It's worth noting that the accuracy of this result may be influenced by the performance of the time series models employed to predict future budgetary sources, which are subsequently optimized. As demonstrated in Table 1, the time series models, even after fine-tuning, are not perfect, even though exhibiting reasonable performance. One significant limiting factor is the insufficient historical data available for constructing robust time series models, a critical requirement for identifying patterns. Unfortunately, the limited data provided by institutions such as the CBSL and World Bank presents a constraint beyond the control of this study.

Furthermore, the attempt to define a deterministic model using a statistical model in the experimental process could significantly impact the application's outcomes, particularly as it contributes substantially to the optimization process. While this is not a proven fact, the utilization of the statistical model to establish a relationship between inflation and budgetary sources may have influenced the study's results. However, there is room for improvement in this aspect; enhancing the statistical model to better approximate the desired deterministic model could be explored in a separate study, potentially contributing to the existing literature.

Another factor to consider is the study's deliberately narrowed scope, which focuses on a manageable subset of variables. Specifically, the study examines the impact of budgetary sources solely on inflation rates and the debt-to-GDP ratio. The macroeconomic landscape, however, is considerably more intricate, with numerous interconnected variables such as exchange rates, interest rates, balance of payments, unemployment rates, and more, all influencing macroeconomic stability. Omitting these variables from the study's purview could potentially have implications for the results.

Additionally, predicting economic behavior is inherently challenging due to the multifaceted nature of external influences. Political decisions, ideological shifts, pandemics, conflicts, and other factors play substantial roles in shaping economic outcomes, which are inherently difficult for machine learning models to capture. The unpredictability of these external factors makes it challenging to discern patterns and forecast economic futures.

Nevertheless, if these obstacles can be overcome in some manner, this study holds the potential for further refinement and enhancement to provide a systematic solution for preserving macroeconomic stability, not only in Sri Lanka but also in both affluent and economically challenged countries worldwide.

5.CONCLUSION

In conclusion, this research paper presents an innovative approach to address the prevailing economic crisis in Sri Lanka caused by fiscal indiscipline. By focusing on finding a solution for fiscal indiscipline, the study identifies the optimal proportions of budgetary sources, including taxation, borrowing, and monetary financing, to minimize their negative effects on the economy. The research utilizes time series models and an algorithm to optimize budgetary source amounts, considering inflation and debt sustainability targets. The study contributes to macroeconomic stability by providing decision-makers with insights into maintaining a balanced fiscal policy.

To enhance the study's scope and achieve more realistic results, consideration of other macroeconomic variables such as GDP growth, exchange rates, imports, exports, etc. can be beneficial in optimizing budgetary sources. Additionally, efforts can be made to improve the regression model built to establish the relationship between budgetary sources and inflation, aiming for a deterministic model that provides more accurate results.

Regarding time series models predicting budgetary source amounts, the limited sample of available data might affect prediction accuracy. A more comprehensive dataset would yield better predictions, though given the Sri Lankan context, this is the best available sample.

However, external factors like politics, weather, conflicts, pandemics, etc., significantly influence economics, making it challenging to predict precise outcomes based solely on available data. Therefore, ample room exists to further enhance this study with innovative approaches in the future.

In summary, this research paper contributes significantly to the economic discourse in Sri Lanka. It serves as a valuable reference for policymakers and economists working towards

addressing fiscal indiscipline and fostering sustainable economic growth. Through adopting the proposed approach, Sri Lanka can pave the way to overcome its economic crisis and establish a foundation for a more stable and prosperous future.

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