

The Fiscal Outlook, Resource Envelope and Revenue Prospect of Amhara Region, Ethiopia*

Surafel Melak¹, Belainew Belete², Yismaw Ayelign³, Tadele Bayu⁴,
Kassie Dessie,⁵ Lamessa Tariku⁶ & Arega Shumetie⁷

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Abstract

Achieving sustainable developing goals (SDGs) in Ethiopia in general and regional states such as Amhara, among other things, require for government to efficiently and adequately mobilize resource to finance tailored programs for the realization of the same. This study assesses the fiscal efficiency, resource envelope, and revenue prospects of the Amhara region. We employed the multidimensional fiscal performance index, moving average, and triple exponential smoothing methods. The data were sourced from the Finance & Economic Cooperation (BoFEC) and Plan & Development Bureaus. The findings revealed that the fiscal stance of the region is poor, characterized by a high deficit index, a low improvement index, and a low expenditure quality index. The performance of the region in non-tax revenue collection is better than in tax revenue collection. In terms of tax revenue, the great majority comes from direct sources, and the trend is expected to continue even for the next decade. Expenditures exceed revenues and the region heavily relies on subsidies from the federal government. Even though direct tax revenue is above indirect tax revenue, it never crosses the upper bound of the resource envelope. All these factors call for a proper attention of the regional government to improve its expenditure quality, widen the tax base, enhance allocative efficiency, and promote tax reforms.

Key Words: Fiscal Performance Index, Resource Envelope, Revenue Forecasting, Amhara Region

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¹ Assistant professor of Economics and Corresponding Author, Bahir Dar University, email: msur69@gmail.com; Surafel.Melak@bdu.edu.et

² Lecturer in Economics at Bahir Dar University, Email: belayecon@gmail.com

³ Assistant professor of Economics at, Debre Tabor University, email: yismaway@gmail.com

⁴ Lecturer, Bahir Dar University, email: tadelebayu1@gmail.com

⁵ Assistant Professor of Economics, Bahir Dar University, Email: kassiedessie@gmail.com

⁶ Researcher at Ethiopian Economics Association, Email: lamesa.tariku@gmail.com

⁷ Researcher at Ethiopian Economics Association, Email: ashueconomist@gmail.com

1. Introduction

Developing countries strive to achieve the sustainable development goals, in which sustained economic growth is one of the means (Caldeira et al., 2020; Kitessa & Jewaria, 2018). However, the necessary condition to realize the targets is financial resource mobilization from a reliable and sustained source with limited distortion on other economic activities (Birhanu, 2018; Getachew, 2019; Yesegat & Krever, 2018).

To critically understand the fiscal performance of the Amhara region, it is essential to contextualize its evolution within Ethiopia's broader fiscal framework. Historically, Ethiopia has faced persistent challenges in maintaining fiscal balance, stemming from structural bottlenecks, governance inefficiencies, and over-reliance on federal subsidies. Nationally, tax revenue collection as a share of GDP has remained significantly below the sub-Saharan African average, reflecting gaps in resource mobilization (Tamrie & Gebregziabhere, 2019). Moreover, recent developments, including the COVID-19 pandemic and prolonged armed conflict, have exacerbated fiscal pressures, leading to a sharp increase in public expenditures and a decline in the proportion of expenditure covered by domestic revenue, which fell from 70.3% in 2015/16 to 63.97% in 2020/21 (KPMG, 2021). These challenges are particularly pronounced in the Amhara region, where fiscal performance is constrained by limited revenue generation and inefficient expenditure management, as evidenced by its low Fiscal Performance Index score of 0.42 over the past 16 years (Appendix A).

Currently, the fiscal landscape of the Amhara region is characterized by a significant fiscal deficit, over-reliance on direct tax revenues, and poor expenditure quality, particularly in developmental capital expenditures. While the region's non-tax revenue collection outperforms its tax revenue, the overall efficiency remains suboptimal (Mbedzi & Gondo, 2010). Comparisons to national performance reveal that Amhara's revenue-to-GDP ratio was 27.11% in 2021/22, far above the national average of 11%, but its reliance on federal subsidies and growing expenditure demands underscore a persistent budgetary gap (Appendix C). This study seeks to fill critical knowledge gaps by analyzing fiscal performance in a multidimensional manner, providing evidence-based insights into revenue mobilization and expenditure quality. Ultimately, it aims to inform targeted interventions for addressing structural inefficiencies and enhancing fiscal sustainability in the region.

The role of resource envelope and tax revenue potential identification is significantly important to developing countries with lower borrowing capacities than developed countries. This is because, in the former, expenditure plans are frequently canceled when revenues fall short of expectations. However, these nations frequently rehash their overconfidence year after year without appropriate studies on tax resource envelope and forecasting. In other words, for a long time, the role of resource envelope and forecasting in formulating and executing fiscal policy has been given less emphasis in these countries (Mawejje & Sebudde, 2019). However, in recent years, fiscal distress has compelled local governments to pay more attention to revenue patterns, emphasizing the significance of financial forecasting in discharging their duties (Elizabeth, 2010). Although Ethiopia has made positive but uneven progress over the last two decades, most regional states still need to increase their tax-to-GDP ratios by mobilizing domestic resources to supplement donor aid, debt relief, and the achievement of poverty reduction targets.

The estimation of budgetary gaps or revenue shortfalls is one of the primary applications of intermediate-term forecasts. This is performed by separately predicting income and expenditures under a set of consistent and well-defined assumptions. If the estimates indicate a significant revenue gap, strategies can be implemented quickly to ensure that the budget will balance without the need for last-minute crisis budget modifications (Schroeder, 1980). Yet, the overall effects on government fiscal balance and welfare can be ambiguous, depending on the dynamic responses of macroeconomic variables to changes in tax rates (Choi et al., 2017).

Since resource envelopes designed for other regions or at the macro level are rarely relevant to explain the actual data in a given regional state or city administration, each region or city administration is forced to estimate its own available resources and forecast tax revenues under its jurisdiction (Giesenow et al., 2020). This is because the efficiency of the federal and local governments, tax bases, and statutory limitations differ substantially. Therefore, the second objective of this study is to provide adequate information about the resource envelope and revenue forecasts in the Amhara region.

2. Literature Review

2.1. Theoretical Literature on Debt Sustainability and Fiscal Performance

Debt sustainability is a cornerstone of fiscal stability, defined as a government's capacity to meet its current and future debt obligations without requiring substantial policy adjustments (Alt & Lassen, 2006). Theoretical discussions highlight that sustainable fiscal policies depend on effective budgetary institutions, transparency, and the allocation of public resources toward productive uses. Indicators of debt sustainability, such as the debt-to-GDP ratio and fiscal deficit trends, have evolved significantly, particularly following the 2008 global financial crisis, as governments sought innovative mechanisms to manage fiscal pressures (Bastida & Benito, 2009). Improved fiscal institutions are associated with better fiscal outcomes, as they enhance policy credibility and reduce uncertainty in fiscal management (Hagemann, 2010).

Domestic revenue mobilization is at the center of the policy-making discourse, particularly in developing countries (Brun & Diakite, 2016; Morrissey et al., 2016). This domestic resource focus arises from the fact that government expenditure in developing countries is increasing at a much higher rate than the growth in domestic revenue collections (Seid & Fissaha, 2020). Government expenditures increase due to rises in the price of commodities and the expanding role of government in enhancing economic activities and facilities, including infrastructure development (Ministry of Finance, 2021).

Government spending in less developed countries should be supported by financial mobilization from domestic sources. At the end of GTP-II⁸, Ethiopia had set a target of 86% coverage of government expenditure from its domestic sources. However, this remained ambitious as the actual achievement was much less than the plan; for example, by the end of GTP-II, it achieved only 60.74% of its expenditure from internal sources (Tamrie & Gebregziabhere, 2019).

2.2. Empirical Evidence in Ethiopia and Sub-Saharan Africa

Empirical studies have consistently demonstrated the challenges of achieving fiscal sustainability in developing countries, particularly in sub-Saharan Africa. For instance, Caldeira et al. (2020) found that the tax effort in the region is below

⁸ GTP-II: Growth and Transformation plan II of Ethiopia covered the 2016-2020 period and was the successor of GTP-I

potential, with average tax revenue collection at 13.2% of GDP, leaving significant untapped capacity. In Ethiopia, studies by Seid and Fissaha (2020) reveal that inefficient tax administration, a narrow tax base, and a lack of fiscal transparency hinder revenue generation. The World Bank (2020) highlighted weaknesses in asset and liability management at the federal level, compounded by low revenue execution rates and underperformance in subnational revenue collection.

In the context of Ethiopia's regions, fiscal performance disparities are evident due to variations in economic structures and administrative capacities. Mbedzi and Gondo (2010) found that municipalities like Dangila in Ethiopia struggle with inefficiencies in revenue collection and expenditure management, primarily due to poor planning, limited skilled manpower, and inadequate data systems. These findings underscore the importance of tailoring fiscal reforms to regional contexts.

2.3. Revenue Forecasting in Developing Countries: A Review

Timely, consistent, and coherent information on revenue and expenditure is an essential input in the process of planning revenue and expenditure in developing countries. Such measures will help countries avoid both ad hoc decision-making on the allocation of budgetary resources and frequently encountered problems such as revenue arrears and low-quality, untimely fiscal reports. Making actual revenue and expenditure forecasts helps decision-makers become proactive, as opposed to those without information about the resource envelope and forecasted values, who are usually reactive, event-controlled, reflexive decision-makers.

The success of a government in discharging its duties without misbehavior and information asymmetry among economic agents requires forecasted revenue documents about available resources. The majority of society is out of the tax net. The task of forecasting movements in economic activities in these countries is even more difficult, and the conventional measures of forecast accuracy are less satisfactory than for industrial countries (Artis, 1996), in which most policy actions have an asymmetrical revenue impact (Amaglobeli et al., 2022).

Today, among the few options that help to minimize fiscal opacity, conducting appropriate resource envelope and forecasting is handy and easy to implement. This is because forecasting establishes the framework for an organization's effective management and continues to be fundamental to the development of long-term planning of the State (Sun, 2005). The significance of revenue forecasting resides not only in the statistical data it provides, but also in the role it plays in setting

expenditure guidelines and informing other financial and policy processes. Effective public finance management depends on governments' capacity to anticipate macro-fiscal variables such as tax revenue with accuracy, as well as budget and expenditure credibility. This is because effective fiscal consolidation methods have an impact on how governments perform their budgetary predictions (Chakraborty et al., 2020; Villela et al., 2010).

Tax revenue forecasts serve as a beacon light on the road to government revenue and expenditure arrangements during economic volatility, as well as social and political decision changes. However, it must be noted that the values originally forecasted may or may not be realized. Such differences between the predicted and actual values are called prediction errors (Chakraborty et al., 2020), and the core point of any prediction is to minimize this error to the barest minimum. In other words, tax revenue forecasting is not as straightforward as generating financial statements; this process involves serious thinking, quality information, estimation tools, and consideration of various erratic events in micro and macroeconomic scenarios.

This study builds on the existing literature by providing a multidimensional evaluation of fiscal performance in the Amhara region. Unlike prior studies that focus on either macroeconomic or microeconomic dimensions, it employs the Fiscal Performance Index (FPI) to capture revenue efficiency, expenditure quality, and fiscal deficits comprehensively. By addressing gaps in tax forecasting and expenditure management, this study contributes novel insights into regional fiscal dynamics and highlights actionable policy recommendations to enhance fiscal sustainability.

3. Research Methodology

3.1. Data Type and Source

We used sixteen years (2006-2021) of regional data on the variables of interest from different sources of revenue. Expenditure data were solicited from the Finance & Economic Cooperation (BoFEC) BureauIBEX data management system. Data on regional GDP and population were collected from the Regional Plan & Development Bureau.

3.2. Towards the Measurement of Fiscal Performance of the Regional State

Fiscal performance of the Amhara National Regional State was evaluated using the multidimensional fiscal performance index developed by the Confederation of Indian Industry (CII). The method is meant to examine the quality of budgets at the central and state levels because a unidimensional measure of fiscal performance is inadequate to capture the achievements of the state government in budget and revenue administration. The composite index provides comprehensive results and is widely used in economic literature to evaluate the performance of the economy (Akram & Rath, 2021; Archana, 2005; Mohanty & Mishra, 2016).

FPI for the Amhara region is computed following the approach in Akram and Rath (2021) and Mohanty and Mishra (2016). The performance measurement is a multidimensional composite index based on the relative distance of measuring fiscal performance of the state government.

We constructed the index using three dimensions: deficit, revenue efficiency, and expenditure quality indices. Because of data unavailability on debt and debt sustainability at the state level, the composite index disregarded them. A description of each of these indices is given below.

- a) Deficit Index (DI): DI indicates the year's gross borrowing and debt capital receipts. The negative ratio denotes a budget surplus situation, whereas the positive ratio denotes a budget deficit scenario. It consists of two sub-indices:
 - Revenue Deficit Index (RDI): Revenue deficit expressed as a percentage of gross state domestic product (RD/GSDP). A revenue deficit is defined as the difference between revenue expense⁹ and revenue receipts over the course of a year.
 - Fiscal Deficit Index (FDI): The gross fiscal deficit is expressed as a percentage of gross state domestic product (FD/GSDP). The gross fiscal deficit is the difference between total expenditure and total revenue plus non-debt capital receipts¹⁰.

⁹Total revenue expense is those expenditures of the government that do not lead to the creation of fixed assets including interest payment on loans, salaries and pensions, subsidies, spending on different bureaus, etc.

¹⁰Non-Debt creating capital receipts is all receipt from sale of assets, recovery of loans, proceeds from sale of public enterprises) of the regional government.

- b) Revenue Efficiency Index (REI): It is used to measure the efficiency of state's revenue collection. It is constructed from the following sub-dimension indices.
- Tax Revenue Index (TRI): It is calculated by dividing the annual tax revenue (TR) by the gross state domestic product (GSDP).
 - Non-Tax Revenue Index (NTRI): It is calculated by dividing the state's non-tax revenue by the annual gross state product (GSDP).
- c) Expenditure Quality Index (EQI): The EQI expresses the composition of expenditure and there by its quality. The development expenditures in revenue and capital accounts are made based on the overall revenue receipts available to states. A higher proportion of developmental revenue and capital expenditure in revenue receipts suggests the allocation of more resources to developmental activities. This index is made up of two minor sub-indices:
- Developmental Revenue Expenditure Index (DREI): It is calculated by dividing development revenue expenditure¹¹ by revenue collections (DRE/RR).
 - Developmental Capital Expenditure Index (DCEI): This is computed by dividing development capital expenditure¹² by revenue receipts.

Sub-dimensions are calculated from the fiscal parameter using the relative distance methodology, which accounts for both positive and negative characteristics (Mohanty & Mishra, 2016). There are three dimensions constructed from six sub-dimensions that represent the economy's performance. Some indicators, such as the revenue deficit ratio and fiscal deficit ratio, measure deprivation in the economy. Other indicators, including the tax revenue index, the non-tax revenue index, the developmental revenue expenditure index, and the developmental capital expenditure index, indicate the improvement of the economy. The improvement index is constructed from the indicators that can improve (as a favorable indicator) using four sub-dimensions: the tax revenue index, the non-tax revenue index, the developmental revenue expenditure index, and the developmental capital expenditure index. The deprivation index is an index that has an adverse effect on fiscal performance, constructed from indicators that erode the fiscal performance of

¹¹ Developmental expenditure incurred to create assets that will provide long-term public goods, including roads, hospitals, schools etc...

¹² Development capital expenditure is the outlay of government funds in the form of investments or development spending towards creation of assets for the long term.

the state, using the revenue deficit index and the fiscal deficit index. The sub-dimensions are weighted equally to construct the dimensions, and each dimension was assigned equal weight to compute the composite FPI.

$$\text{Deprivation Index (D)} = \frac{\text{Max (V)} - V}{\text{Max (V)} - \text{Min (V)}} \quad (1)$$

$$\text{Improvement Index (I)} = \frac{N - \text{Min (N)}}{\text{Max (N)} - \text{Min (N)}} \quad (2)$$

where V denotes the parameter's actual value. Max (V) and Min (V) are the maximum and minimum values of a specific parameter over a given period of time. Similarly, with the condition VN, N has been interpreted as V. The values of D and I will be on a scale of 0 to 1, with 0 representing the worst performance and 1 representing the best performance.

3.3. Forecasting Revenue of the Regional State

Forecasting future tax revenue of the region is desirable for effective planning and efficient compliance. This can enable us to estimate the tax gap. Obviously, there are competing models of time series forecasting. However, the model to be used in forecasting depends on the data availability, accuracy of the competing models, and the way in which the forecasting model is to be used. The study employed exponential smoothing models for forecasts of future tax revenue in the region. The reasons are as follows: Firstly, the intention of the study is to forecast how the revenue series will continue in the near future. In this regard, historical values of the revenue variable are crucial. Secondly, though lagged values of revenue matter, recent past information weighs more than long-term observations, and in this regard, exponential functions could be used to assign exponentially decreasing weights. This method produces “smoothed data,” which has noise removed and allows trends and patterns to be more clearly visible. Thirdly, the availability of data matters, and the main concern of the study focuses on what will happen, not why it happens or what makes it happen.

Exponential smoothing assigns exponentially decreasing weights to past observations; these weights range from 0 to 1 and decrease exponentially with each observation in the series, so that most weight is given to recent observations and less weight is given to older data points. As such, it results in smoother line plots compared to moving averages, which attempt to capture a constant relationship

between adjacent samples without taking into account variations outside of neighboring samples.

In the present study, we found that triple exponential smoothing, also known as the Holt-Winters Method, allows for more precise forecasting of time series data. This triple exponential smoothing generates three equations—one equation to estimate the level, one for trend, and one for seasonality. This method makes it possible for forecasting techniques to account for the impact of seasonality in the historical data by employing different models from other popular methods, such as moving averages (Holt, 1957).

Overall smoothing equation is given by:

$$s_t = \alpha \frac{y_t}{I_t - L} + (1 - \alpha)(s_{t-1} + b_{t-1}) \quad (1)$$

Trend Smoothing:

$$b_t = \gamma(s_t - s_{t-1}) + (1 - \gamma)b_{t-1}. \quad (2)$$

Seasonal Smoothing:

$$I_t = \beta \frac{y_t}{s_t} + (1 - \beta)I_{t-L}. \quad (3)$$

Forecast:

$$F_{t+m} = (s_t + mb_t)I_{t-L+m}. \quad (4)$$

Where: -

L denotes the seasonal period length, y is the observation, s is the smoothed observation, b is the trend factor, I is the seasonal index, F is the forecast at m periods a head and t is an index denoting a time period, and α, β and γ are smoothing parameters that must be estimated in such a way that the MSE of the error is minimized.

3.4. Assessing the Resource Envelope of the Regional State

The resource envelope is essentially an expenditure ceiling, which is determined as a percentage of available resources (revenues) and is derived by considering various factors such as inflation, economic growth rate, and debt burden at a macro level. This can be done using tabular and graphical descriptive analysis methods. To

support accurate prediction, sensitivity analysis was provided. As far as graphical illustrations are concerned, different factors and tools are available for estimating the resource envelope. The easiest and most informative way is to use moving average-based estimates of the upper and lower bounds of available budget allocation. The study used a two-year-based midpoint and estimated the lower and upper bounds of the envelope as follows.

$$UpperBounds = MA_{Direct\ Tax\ Revenue} + MA_{Direct\ Tax\ Revenue} \times 0.05 \quad (5)$$

$$LowerBounds = MA_{Direct\ Tax\ Revenue} - MA_{Direct\ Tax\ Revenue} \times 0.05 \quad (6)$$

Where: $-MA$ is a two-period moving average value of direct tax revenue from 2004 to 2032.

4. Result and Discussion

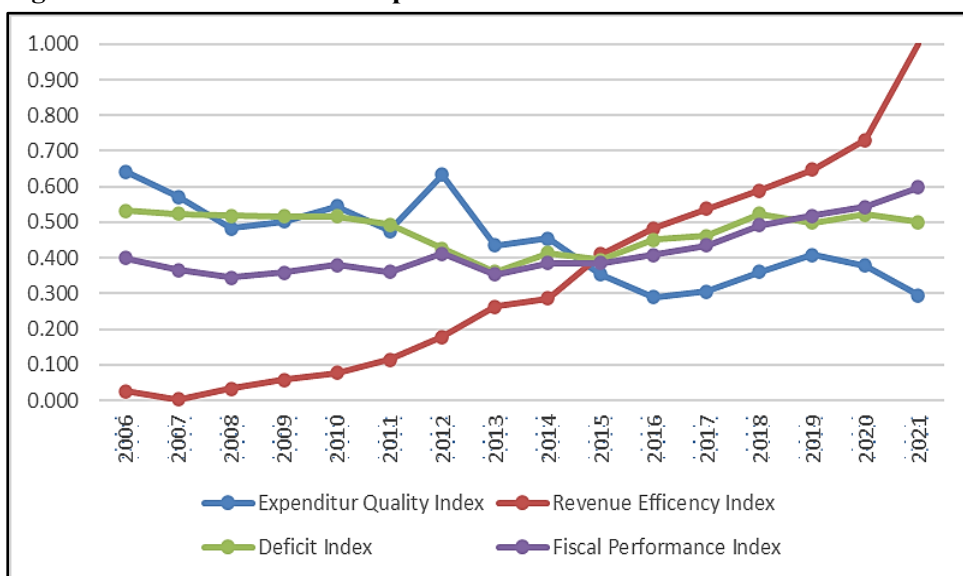
4.1. Fiscal Performance of the Amhara National Regional State

Computed values of the FPI corresponding to each fiscal year¹³ and the average composite index for the 16 fiscal years (2005/2006 - 2020/21) are presented in Appendix A, whereas their visual representation is presented in Figure 1. Overall, the fiscal performance index score is below 0.5, with a low of 0.34 for the year 2008. This implies that the fiscal performance of the regional government over the past 16 years is poor, characterized by a high level of deficit, poor expenditure quality, and a low revenue efficiency index.

Despite this general picture, the fiscal performance index shows a slight improvement between 2006/07 and 2019/20, and even after 2019, the aggregate index was found to be above 0.5. This is due to the fact that since 2019, the revenue efficiency and expenditure qualities of the state have outweighed the adverse influences of the fiscal and revenue deficits of the region (see Figure 4).

¹³ Ethiopian fiscal year covers the period from July 8-June 7 of every year.

Figure 1: Distribution of fiscal performance index and its dimension



Source: Authors' computation

Trends in the developmental revenue expenditure index and the developmental capital expenditure index throughout the reference period move together with the fragility of the fiscal performance of the region (Figure 2 and Appendix B). This is due to high volatility, poor planning, and uncertainty in mitigating macroeconomic shocks. When the developmental capital expenditure index increased from 0.4 to 1, the aggregate fiscal performance of the region increased from 0.36 to 0.4 for the period 2011 to 2012. A sharp decline in the developmental revenue expenditure index from a value of 0.5 to 0 led to a reduction in the fiscal performance of the region from 0.36 to 0.35 for the years 2011 to 2013.

In 2015, the crossing of all indexes—Deficit Index, Revenue Efficiency Index, and Expenditure Quality Index—indicates a unique fiscal scenario where these critical dimensions of fiscal performance aligned at similar levels. This convergence likely reflects a pivotal transition in the fiscal dynamics of the Amhara region, characterized by structural changes or adjustments in fiscal policies.

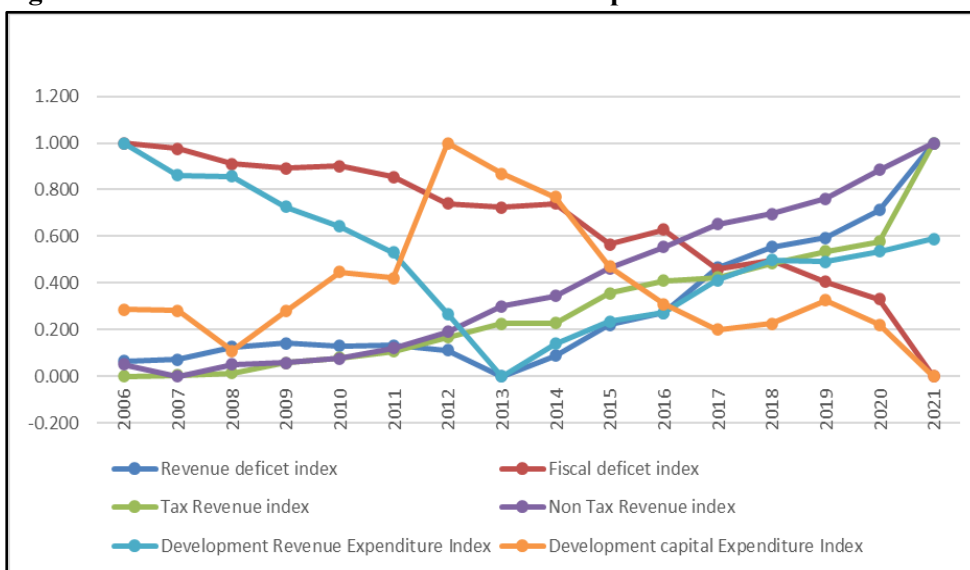
From the data, the Expenditure Quality Index and Revenue Efficiency Index were at low but relatively similar levels, while the Deficit Index was at a peak (0.53) due to high fiscal deficits resulting from inadequate revenue collection and inefficient expenditure practices (Appendix A). This scenario suggests that fiscal management in 2015 was strained, with revenue mobilization failing to keep pace with

expenditure demands, resulting in an overall low Fiscal Performance Index (FPI) of 0.401. The alignment of the indexes in 2015 could signify:

- A baseline for fiscal performance: The convergence of indexes at low levels may indicate the starting point for subsequent fiscal adjustments or reforms.
- Economic or policy shifts: Potential changes in economic conditions or governance policies could have reset the fiscal balance across these dimensions.
- Measurement recalibration: The alignment could also reflect changes in the methodology or metrics used for evaluating fiscal performance, bringing all dimensions to a comparable level.

This crossing point serves as a critical benchmark for understanding the region's fiscal trajectory and highlights the need for targeted interventions to address inefficiencies in revenue collection and expenditure quality.

Figure 2: Distribution of sub-dimension of fiscal performance index



Source: Authors' computation

Tax revenue index (tax revenue to the region's GDP ratio) and the non-tax revenue index (non-tax revenue to the region's GDP ratio) have shown consistent improvement over time. The region shows outstanding performance in non-tax revenue collection compared to tax revenue collection for the 2012–2021 periods. The fiscal deficit index (excess of expenditure over revenue receipts of the region to

GDP ratio) was significantly higher, with an average score of 0.66. This indicates that the region is performing poorly and is vulnerable to both fiscal and revenue deficits. The proportion of the gross fiscal deficit to the region's GDP was found to be higher and positive over the reference periods. Therefore, in the region, there is a significant fiscal deficit, which essentially represents debt capital receipts or gross borrowing for the 2006–2021 periods.

The revenue deficit index measures the performance of the state in revenue expenditure over revenue receipts relative to the region's GDP over the year. The revenue deficit is lower than all other sub-dimensions, mainly from 2013 to 2016, and the revenue deficit index turned out to be zero in 2013 and sustainably increased from 2013 to 2016. This occurs when actual revenue and/or actual expenditure amounts diverge from planned revenue and expenditure amounts. The region's FPI was found to be 0.42 on average over the period 2006-2014, with a deprivation index (deficit index = 0.48) and improvement index scores (revenue efficiency index = 0.34 and expenditure quality index = 0.45) (Appendix B). Therefore, the fiscal performance of the regional government is below standard (0.5) because of its poor performance in managing fiscal balance, revenue collection, and expenditure management. The poor fiscal performance of the region is a result of low revenue efficiency, low developmental revenue expenditure, high capital expenditure, and high fiscal deficit ratios. The result is in line with the findings of Mohanty and Mishra (2016) regarding India, mainly for the states of Kerala, Punjab, and West Bengal.

The region's revenue-to-GDP ratio was 27.11 percent for the 2021/22 fiscal year, which is high compared to the national average of 11 percent in the same year. However, a more suitable measure of revenue performance is the ratio of revenue to non-agricultural GDP because the agricultural sector remains virtually untaxed due to long-standing norms (Appendix C). Accounting for this, the revenue-to-GDP ratio is roughly 7.02% and 58.99% of adjusted GDP to agriculture in 2006 and 2021, respectively. The region's capability of revenue collection, measured by the share of tax and non-tax revenue to state GDP, shows a notable increment over the study period. In this regard, the region collected only a small proportion of tax and non-tax revenue. For instance, in 2021/22, the region collected only 11.81% and 27.11% of the adjusted state GDP in the form of tax and non-tax revenue (Appendix C).

On the other hand, revenue in per capita terms shows a sustainable increment from 2017 to 2021 (Appendix C). This implies the region has untapped potential to generate revenue over the years. As expected, one can notice that from the biggest fluctuation in value appears in the expenditure quality index, which experiences a

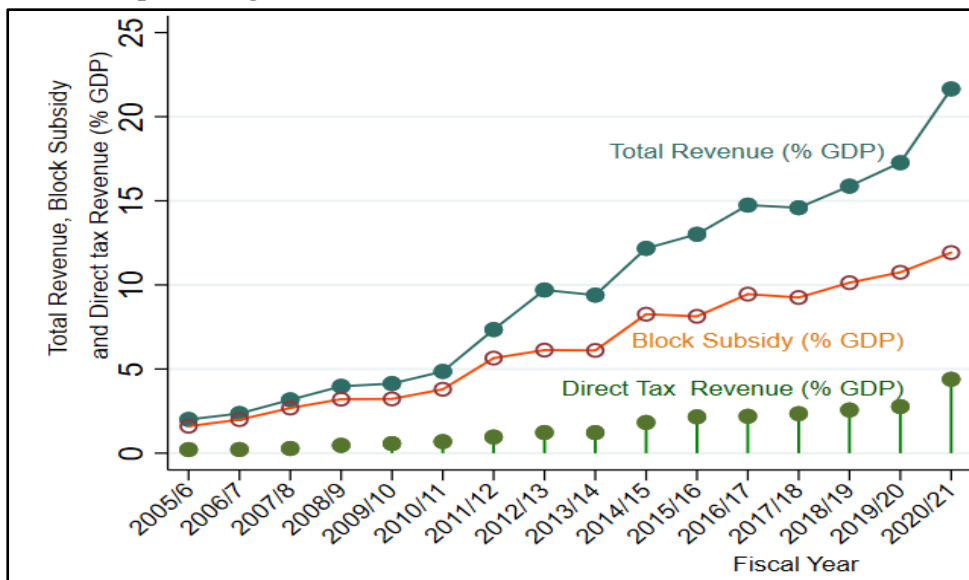
sharp decline, falling to 0.29 in 2021, and going higher to 0.64 in 2006 and 0.63 in 2012. The deficit index also shows the lowest score of 0.34 in 2013 and rises to 0.53 in 2006 and 0.52 in 2020. The revenue efficiency index remained low and stable until 2011, and began to rise steadily since then, peaking at 1 in 2021. Finally, the revenue efficiency index sharply declined from 0.03 to 0.003 during the period from 2006 to 2007 and remains at modest and steady levels, having begun to improve moderately in 2011 and having sharply improved since 2018, peaking at 1 in 2021 (Appendix A).

The improvement index, which is a composite index of revenue efficiency and expenditure quality indices, has a positive effect on fiscal performance. The quality of expenditure is central to the dynamics of subnational fiscal austerity. Investments in public infrastructure, human capital, science, and technology can boost growth and welfare by increasing capital and labor productivity. While the revenue efficiency of the region reveals its effectiveness in collecting both tax and non-tax revenue, higher revenue efficiency means a higher revenue-to-GDP ratio. Both the revenue efficiency and expenditure quality indices have improved over the reference periods. The expenditure quality index exceeded the revenue efficiency index until 2016, but the expenditure quality index was surpassed by the revenue efficiency index of the region after 2016. The efficiency of revenue collection by the regional government makes a substantial contribution to its fiscal performance; its effectiveness in non-tax revenue collection has been significantly better over the years 2006 to 2021 (Figure 2).

4.2. Forecasting Revenue of the Amhara region

The growth rate of total revenue as a percentage of the regional Real Gross Domestic Product (RGDP) between 2005/2006 and 2020/21 was 9.82%, indicating that the overall revenue of the government has been increasing at a positive rate. In contrast, the growth rate of subsidies from the federal government as a percentage of RGDP was lower, at 6.48%, in the same period, between 2005/2006 and 2020/21. On the other hand, the direct tax revenue as a percentage of RGDP for the region grew at a higher rate, reaching 19.91%, highlighting the significant role of direct taxes in the overall regional government revenue. In general, Table 1 shows that the Amhara region government has diversified revenue sources, with some sources growing at a faster rate than others. The growth rate of tax revenues between 2014/15 and 2021/22 varied significantly: direct tax revenues grew at a rate of 3.22%, indirect tax revenues at 6.04%, non-tax revenues at 1.98%, and block subsidy (MOFEC) at 1.37%. Overall, the total revenue growth rate was 2%.

Figure 3: Trends of total revenue, block subsidy and direct tax revenue as a percentage of RGDP



Source: Authors' computation

In the future, the growth rate of tax revenues is forecasted considering different scenarios (Table 1). Under a pessimistic scenario, tax revenue in the region will decline, which may imply a recession or economic downturn that could result in job losses and a reduction in income for individuals and business firms. In addition, tax evasion, tax havens, and government policy changes, such as reducing tax rates or increasing tax exemptions, may also lead to a reduction in direct tax revenue. On the other hand, the realistic (average) scenario, which includes steady economic growth and low unemployment, may result in an increase in regional tax revenue. This would lead to an increase in income for individuals and businesses, resulting in higher tax revenues. Moreover, the implementation of effective tax enforcement measures, such as closing tax loopholes and cracking down on tax evasion, could also lead to an increase in direct tax revenue. Government policy changes, such as increasing tax rates or decreasing tax exemptions, could also result in an increase in tax revenue. The last option, the optimistic scenario, assumes a rapid acceleration of economic growth due to successful government policies related to taxation and other fiscal reforms, which may result in a larger taxable base and ultimately an increase in tax revenue.

Table 1: Actual and forecasted growth rate of different revenue types in Amhara Region

Source of Revenue	Actual	Forecasted values under different scenarios		
	2014/15- 2021/22	2022/23- 2031/32	2022/23- 2031/32	2022/23- 2028/29
		Pessimistic	Realistic	Optimistic
Direct tax revenues	3.52	-0.91	5.85	22.32
Indirect tax revenues	6.04	-0.46	1.44	2.33
Non-tax revenues	1.98	-0.77	0.93	2.53
Block subsidy (MOFEC)	1.37	-0.84	0.57	2.20
Total revenue	2.00	-0.27	4.39	5.16

Source: Authors' computation

The future growth rate of tax revenues is uncertain and will depend on various factors such as economic conditions and government policies. The pessimistic scenario predicts a decrease in tax revenue growth, while the average and optimistic scenarios predict an increase in growth. It's important to keep an eye on tax revenues as they can provide insight into the overall sustainable growth of the economy. Here, non-pessimistic scenarios consider that the regional government will ensure the tax system is fair and justified, promoting economic growth, reducing the unfair burden on certain groups or areas over others, and making a concerted effort to expand the tax base. Additionally, it is assumed that the government will consider the different types of income and sectors being taxed to achieve better results next year than in previous years.

Figure 4 shows the trends and predictions of direct tax revenue from 2006/2007 to 2031/32, wherein the values after 2021/22 are predictions based on three different scenarios: optimistic, average, and pessimistic. The projected percentage change in direct tax revenue under different scenarios highlights the potential effects of various factors on the regional economy. In 2022/23, the pessimistic scenario predicts a significant reduction of 22% in direct tax revenue, while the average and optimistic scenarios predict increases of 15% and 52%, respectively. This suggests that the economic conditions in 2022/23 may be uncertain, and the outcome will likely depend on various factors such as the effectiveness of government policies, the performance of key industries, and national economic conditions. In 2030/31, the pessimistic scenario predicts a larger reduction of 34% in direct tax revenue, while

the average and optimistic scenarios predict increases of 16% and 67%, respectively. This suggests that the economic conditions in 2030/31 may be even more uncertain, with a wider range of potential outcomes. On the other hand, the predictions based on the three scenarios will result in positive growth in 2026/27. However, the rate of increase will be significantly different for the three scenarios. This suggests that the economic conditions in 2026/27 may be more favorable, and the regional government may be able to increase its revenue through tax policies and other measures. Overall, these projections highlight the importance of careful economic planning and the need to consider a range of possible outcomes in making decisions.

Figure 4: The trends in direct tax revenue under alternative scenarios

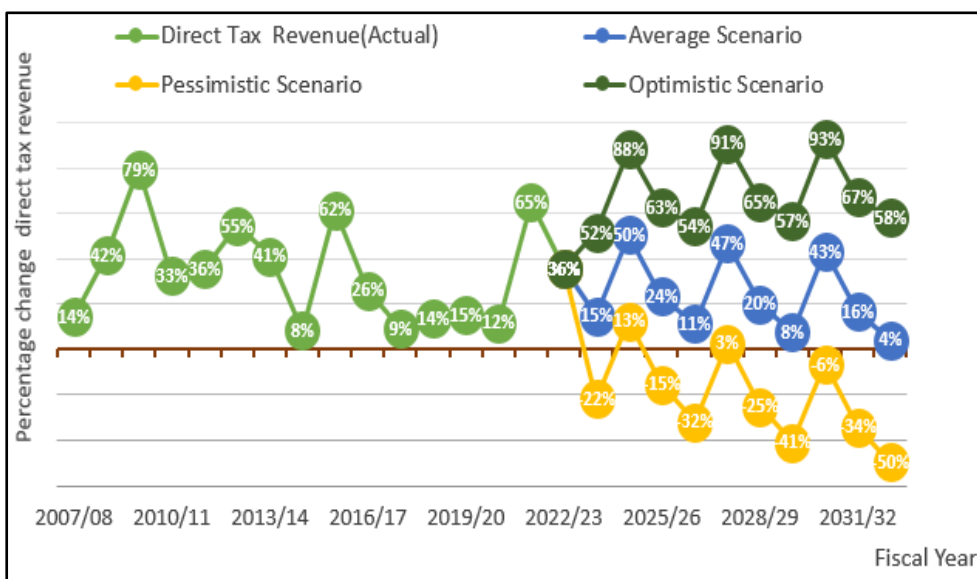
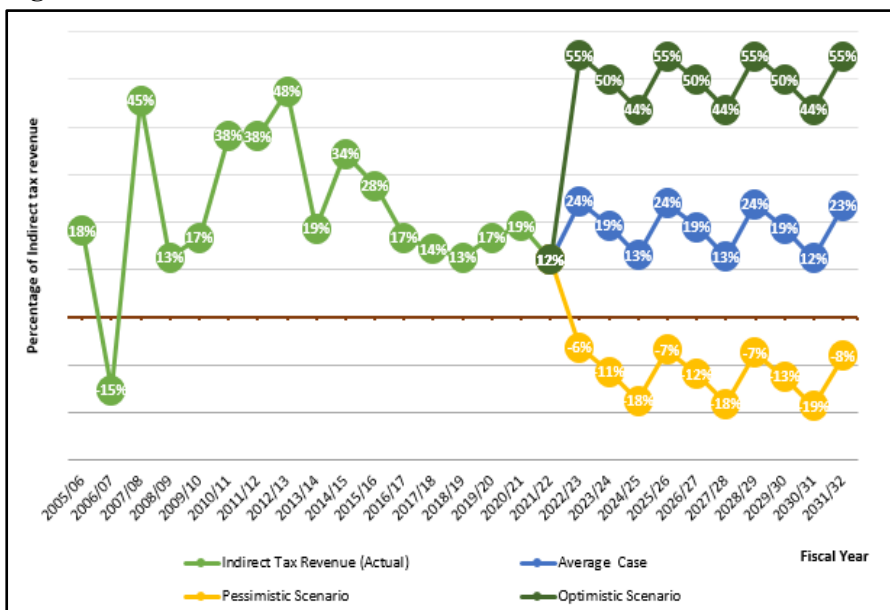


Figure 5 presents a detailed analysis of the trends in indirect tax revenue from 2006/07 to 2031/32. The values presented after 2022/23 are forecasted, providing a glimpse into the potential growth or fluctuations in indirect taxation over the upcoming 10 years. The pessimistic scenario estimates that revenue will decrease by 6% in 2022/23, with a further reduction of 19% by 2030/31. On the other hand, the realistic scenario forecasts a 24% increase and an additional 144% increment in the aforementioned fiscal years, likely due to an increase in the prices of goods and services. Lastly, the optimistic forecast projects the revenue to grow by 55% in 2022/23 and an additional 673% by 2031/32 from its 2022/23 value. Overall, the forecasted values highlight the potential effects of different courses of action on

indirect taxation, and it is clear that the future of indirect taxation is highly dependent on the actual course of action chosen. The projected reduction in revenues under the unlikely pessimistic scenario presents a compelling argument for the importance of maintaining a strong and stable economy to ensure continued growth in tax revenues.

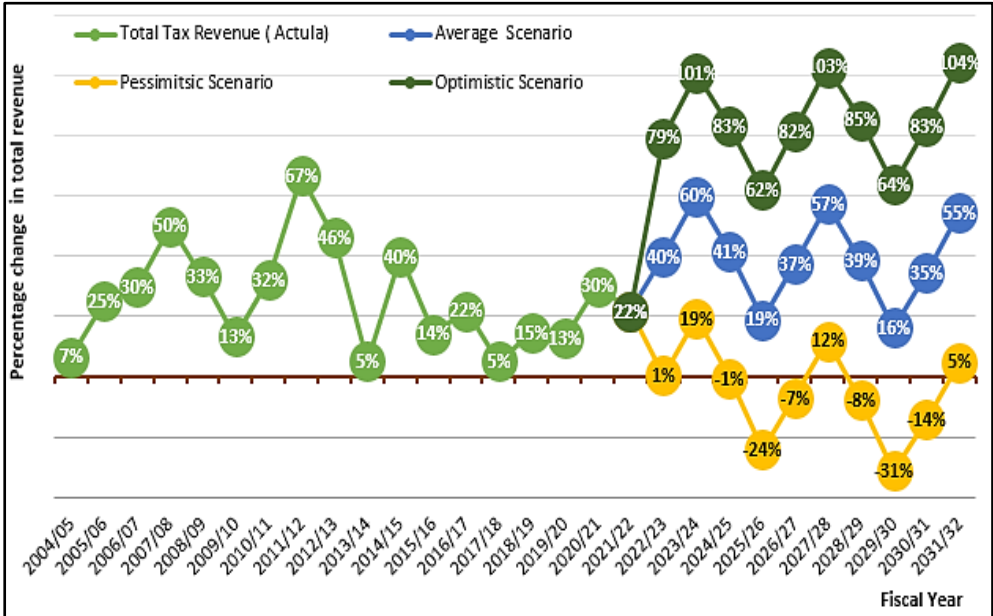
Figure 5: Trends in indirect tax revenue under alternative scenarios



Source: Authors' computation

Figure 6 presents actual growth (2006/05 and 2021/22) and forecasted growth (2022/23-2031/32) in total tax revenue. As shown in the figure, the percentage change in total tax revenue is expected to be the lowest in 2025/26, with a decline of 31%. The highest change in total tax revenue will be recorded in 2031/32, with a growth of 5%. The average or realistic scenario predicts a moderate change in total tax revenue, having the highest growth rate of 60% in 2023/24 and the lowest growth rate of 16% in 2029/30. The optimistic scenario predicts the highest growth of 104% in 2030, with the next highest (103%) in 2027/28, and the lowest growth of 62% in 2026 and 64% in 2029/30.

Figure 6: Trends of total tax revenues under different scenarios

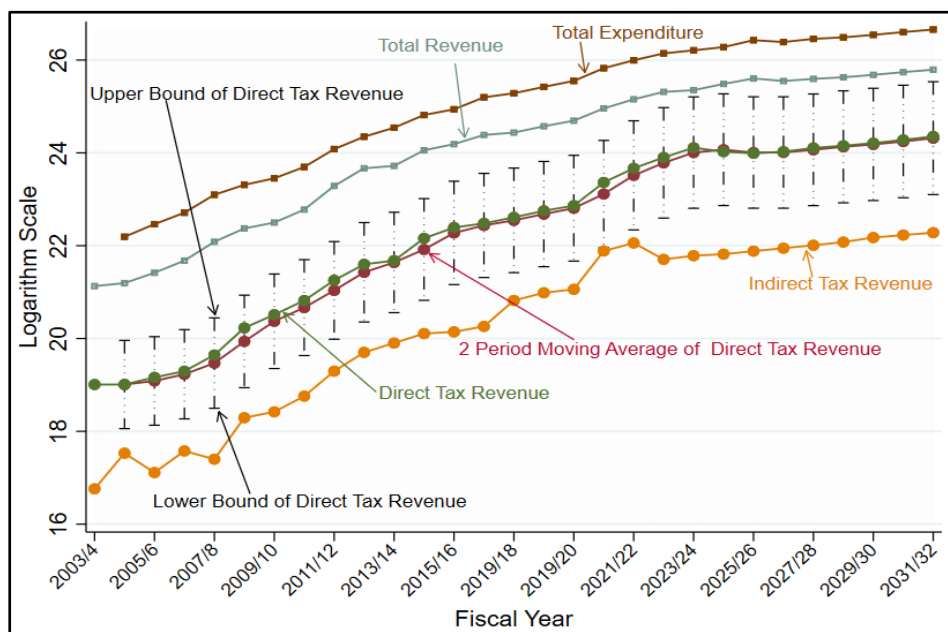


Source: Authors’ computation

4.3. The Revenue Envelope of Amhara Region

presents the moving average envelope of revenue sources in the Amhara region from 2006/5 to 2031/32. The values after 2021/22 are projected revenues based on actual data from 2004/5 to 2021/22.

Each point on the graph represents a future forecasting milestone in terms of timeline and revenue sources. The actual values of direct tax, indirect revenue, and total tax revenue are then plotted relative to their estimated values from earlier milestones in order to create an envelope curve that indicates whether a designated level of resources has been met or exceeded over time compared to the total expenditure, which is colored red at the top.

Figure 7: Moving average revenue envelope of Amhara Region

Source: Authors' computation

Direct tax revenue is expected to increase significantly in the short run and is intended to account for a significant proportion of the region's total revenue. In contrast, the projection for indirect tax revenue suggests only a moderate increment. This highlights the relative importance of direct taxes compared to indirect taxes when it comes to the region's revenue. In terms of actual amounts, the region's direct tax revenue is estimated to grow significantly, while indirect tax revenue will experience only a moderate increment. This suggests that direct taxes will be the main source of revenue for the region compared to indirect taxes. Therefore, a significant amount of intervention may be necessary to ensure that both sources of revenue are properly accounted for in the region's pool of revenue. In the forecasted period, the growth of indirect tax revenue is likely to remain below the pessimistic threshold of the direct tax revenue growth. Nevertheless, the expected growth of indirect tax revenue is projected to increase over time, albeit at a slower rate compared to the rate for direct tax revenue.

Even though direct tax revenue is above indirect tax revenue, it never crosses the upper bound of the figure, as its growth is steady and follows its own two-period moving average. However, the accuracy of forecasts can be limited by unpredictable factors such as changes in tax policies and government actions, as well as fluctuations

in price levels. The length and quality of the time periods studied can also affect the accuracy of predictions. This should prompt regional policymakers to design appropriate domestic revenue mobilization schemes, and the region should not be complacent about the trends in all tax categories.

In the coming decade, persistent and increasing tax revenues accompanied by a much higher expenditure demand are likely to be seen. Yet, the forecast of direct and indirect tax revenue paints an interesting picture of the future. Unless tremendous policy initiatives are introduced, the region's revenue will continue to face steep challenges, shaped by the lingering effects of two powerful forces: the slow increase in direct and indirect tax revenues and the sharp upsurge of expenditure demand well above total revenue. Unfortunately, this means that the region will not be able to generate enough revenue over the next ten years to cover its expenditure, resulting in a reliance on federal government subsidies.

5. Concluding Remarks and Policy Implications

The findings of this study reveal that the fiscal performance of the Amhara region has been below the standard threshold (0.5) for most of the past 16 years, with an average Fiscal Performance Index (FPI) of 0.42. This poor performance is attributed to persistent fiscal and revenue deficits, coupled with inefficiencies in revenue collection and expenditure quality. The region's heavy reliance on federal subsidies, alongside volatile expenditure patterns and limited efforts to mobilize domestic resources, has constrained its fiscal sustainability. Notably, while the region has demonstrated better performance in non-tax revenue collection, its tax revenue remains significantly below its potential, indicating the need for structural reforms to expand the tax base and enhance compliance mechanisms.

The trend analysis shows improvements in the revenue efficiency index since 2018, primarily due to efforts in direct tax collection and better management of non-tax revenues. However, the expenditure quality index remains volatile, reflecting inconsistencies in the allocation of resources toward developmental priorities. These findings align with studies emphasizing the role of institutional efficiency and fiscal transparency in improving fiscal performance (Alt & Lassen, 2006; Hagemann, 2010). Furthermore, the analysis underscores the importance of addressing structural inefficiencies and adopting data-driven approaches to enhance fiscal management at the regional level.

To achieve sustainable fiscal performance, the regional government of Amhara should prioritize the following interventions:

- *Enhance Revenue Mobilization:* Expanding the tax base is critical. This can be achieved by incorporating the informal sector into the tax system, improving tax compliance, and investing in digital tax administration systems. Addressing tax evasion through stronger enforcement mechanisms and public awareness campaigns can further enhance revenue collection.
- *Improve Expenditure Quality:* Allocating a greater share of resources toward developmental expenditures, such as infrastructure and social services, is essential. A shift from non-productive spending (e.g., excessive administrative costs) to developmental priorities will boost economic growth and public welfare.
- *Promote Fiscal Transparency and Accountability:* Strengthening budgetary processes, enhancing the transparency of fiscal data, and involving stakeholders in fiscal decision-making will improve governance and fiscal discipline. The adoption of independent fiscal councils can help ensure policy consistency and minimize deficits.
- *Leverage Forecasting Tools:* Utilizing advanced forecasting techniques, such as triple exponential smoothing, can provide accurate revenue and expenditure projections, enabling proactive fiscal planning and minimizing resource gaps.
- *Reduce Dependency on Federal Subsidies:* While subsidies remain an important fiscal source, the region must strive to reduce its reliance on external funding. Diversifying revenue streams through innovative financing mechanisms, such as public-private partnerships, can provide additional resources for development.

These targeted reforms, informed by the findings of this study, will help the Amhara region address its fiscal challenges, improve resource allocation, and achieve sustainable development outcomes. The study also highlights the need for continuous monitoring and evaluation of fiscal performance to ensure the efficacy of policy measures.

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Appendix

Appendix A: Distribution of Fiscal Performance index (FPI) and its dimensions

Year	Expenditure Quality Index	Revenue Efficiency Index	Deficit Index	Fiscal Performance Index
2005/06	0.643	0.026	0.533	0.401
2006/07	0.571	0.003	0.523	0.366
2007/08	0.483	0.032	0.518	0.345
2008/09	0.503	0.058	0.517	0.359
2009/10	0.545	0.077	0.516	0.379
2010/11	0.476	0.114	0.493	0.361
2011/12	0.633	0.179	0.425	0.412
2012/13	0.434	0.263	0.362	0.353
2013/14	0.454	0.287	0.415	0.385
2014/15	0.353	0.410	0.394	0.386
2015/16	0.291	0.483	0.451	0.408
2016/17	0.306	0.538	0.462	0.435
2017/18	0.361	0.590	0.524	0.492
2018/19	0.409	0.648	0.499	0.519
2019/20	0.378	0.731	0.521	0.544
2020/21	0.295	1.000	0.500	0.598
	0.45	0.34	0.48	0.42

Appendix B: Distribution of Fiscal Performance Index (FPI) and its sub-dimensions

Year	Revenue deficit index	Fiscal deficit index	Tax Revenue index	Non-Tax Revenue index	Development Revenue Expenditure Index	Development capital Expenditure Index	Fiscal Performance Index
2005/06	0.066	1.000	0.000	0.051	1.000	0.286	0.401
2006/07	0.072	0.975	0.005	0.000	0.861	0.281	0.366
2007/08	0.126	0.910	0.015	0.050	0.856	0.110	0.345
2008/09	0.143	0.892	0.058	0.058	0.725	0.280	0.359
2009/10	0.131	0.901	0.079	0.076	0.643	0.447	0.379
2010/11	0.132	0.855	0.108	0.121	0.532	0.421	0.361
2011/12	0.111	0.740	0.167	0.190	0.267	1.000	0.412
2012/13	0.000	0.723	0.226	0.300	0.000	0.869	0.353
2013/14	0.089	0.740	0.228	0.345	0.140	0.768	0.385
2014/15	0.221	0.567	0.356	0.464	0.236	0.470	0.386
2015/16	0.273	0.629	0.410	0.555	0.272	0.309	0.408
2016/17	0.465	0.458	0.424	0.652	0.412	0.199	0.435
2017/18	0.553	0.495	0.484	0.696	0.497	0.225	0.492
2018/19	0.595	0.404	0.535	0.761	0.492	0.327	0.519
2019/20	0.712	0.331	0.578	0.885	0.536	0.221	0.544
2020/21	1.000	0.000	1.000	1.000	0.589	0.000	0.598
Average	0.29	0.66	0.29	0.39	0.50	0.39	0.42

Source: Authors; Computation

Appendix C: Revenue Performance of Amhara Region

Year	Revenue in billions	Revenue % GDP	Revenue % non-agri GDP	Non tax % non-agri GDP	Tax % non-agri GDP	Per Capita revenue
2005/06	2.25	2.25%	7.02%	0.41%	0.73%	
2006/07	2.91	2.64%	8.70%	0.32%	0.86%	
2007/08	4.29	3.48%	11.95%	0.45%	1.06%	
2008/09	5.86	4.48%	15.27%	0.47%	1.82%	
2009/10	6.82	4.78%	15.10%	0.47%	2.04%	
2010/11	9.06	5.64%	15.43%	0.49%	2.17%	
2011/12	14.81	8.37%	21.83%	0.59%	2.87%	
2012/13	21.88	11.17%	28.14%	0.75%	3.55%	
2013/14	23.19	10.89%	27.01%	0.82%	3.52%	
2014/15	32.72	14.22%	34.81%	1.00%	5.09%	
2015/16	37.48	15.24%	35.86%	1.11%	5.56%	
2016/17	45.21	17.09%	40.03%	1.25%	5.71%	1804.3
2017/18	49.00	17.43%	40.46%	1.31%	6.37%	2139.1
2018/19	55.57	18.77%	42.25%	1.37%	6.78%	2280.1
2019/20	62.86	20.48%	45.38%	1.53%	7.17%	2544.4
2020/21	86.42	27.11%	58.99%	1.68%	11.81%	2833.0
	107.04					

Source: Authors' computation