

POTENTIAL MARKET SIZE ESTIMATION AND PROJECTION

FOR THE DEVELOPING
ETHIOPIAN CAPITAL MARKET

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ETHIOPIAN CAPITAL
MARKET AUTHORITY

A report prepared for
the Ethiopian Capital
Market Authority

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LIST OF ACRONYMS

BAU	Business-As-Usual
BOP	Balance of Payments
CBE	Commercial Bank of Ethiopia
ECM	Error Correction Model
ECMA	Ethiopian Capital Market Authority
ESX	Ethiopian Stock Exchange
ETB	Ethiopian Birr
ETR	Effective Tax Rate
FPP	Financial Programming and Policies
GDP	Gross Domestic Product
GFCE	Government Final Consumption Expenditure
GNFS	Gross National Financial Saving
GNS	Gross National Saving
GOE	Government of Ethiopia
HGER	Home-Grown Economic Reform
IMF	International Monetary Fund
MAPE	Mean Absolute Percentage Error
MoF	Ministry of Finance
MoPD	Ministry of Planning and Development
MTR	Marginal Tax Rate
NBE	National Bank of Ethiopia
PFCE	Private Final Consumption Expenditure
PMO	Prime Minister Office
RMSE	Root Mean Squared Error
RMSPE	Root Mean Squared Percentage Error
SOEs	State-Owned Enterprises
TYDP	Ten Year Development Plan
USD	United States Dollar
YD	Disposable Income



EXECUTIVE SUMMARY

OBJECTIVES

Developing countries face challenges to finance long-term infrastructure and fixed asset investments due to lower domestic savings, dependence on foreign savings, preference for short-term deposits, and economic volatility, necessitating the creation of enabling environments for efficient resource mobilization and allocation. Despite a basic fixed income and primary stock market, Ethiopia lacks a capital market infrastructure, placing it among a handful of African countries with limited or no stock market activity.

The country's rapidly growing economy necessitates a capital market to address the growing demand for investment, currently financed through unsustainable public measures. Lack of long-term financing for private sector investment and short-term bank deposits hampers growth in productive sectors like manufacturing and agriculture, hindering sustainable job creation. In 2021, the Ethiopia's capital market proclamation was passed establishing a regulatory framework. Cognizant of this recent developments in this sector, estimating and continuously monitoring the size and structure of the economy and available capital that can be mobilized and channeled in to the capital market is crucial to inform resource allocation, investment, policy formulation, risk management, and assess the impact of macroeconomic changes and reforms on future growth.

This paper aims to 1) project key macroeconomic variables, such as gross domestic product (GDP), gross national saving, and financial saving which can be used to estimate the potential size of the capital market; and 2) estimate Ethiopia's potential size of the developing capital market using the projected macroeconomic variables and other relevant factors.

APPROACHES

To estimate the size of Ethiopia's capital market, the study combines top-down and bottom-up approaches. It starts with a general idea from the top-down, then delves into individual components like the stock market and bond market using bottom-up data. This hybrid approach acknowledges limitations in data availability for developing countries. Additionally, the IMF's Financial Programming and Policies framework will be used as a guideline, taking into account real, external, fiscal, and monetary aspects of the economy. This comprehensive approach ensures consistency and accuracy in macroeconomic projections, ultimately informing stakeholders about investment opportunities and development strategies for Ethiopia's capital market.

SCENARIOS

Three scenarios are used to project market size:

Scenario I (Baseline): No major policy changes and continuation of the current socioeconomic climate in the next five years resulting in slow growth and limited capital market development.

Scenario II (Proactive): Successful reforms like HGER 2.0 lead to a better environment for the capital market and faster growth.

Scenario III (Deteriorating conditions): Exacerbating external or internal shocks lead to setbacks, hindering capital market development.

MAJOR RESULTS

Ethiopia's capital market shows potential for significant growth in the coming five years, but depends heavily on favorable conditions and successful policy implementations. Across all three scenarios, national savings are projected to increase, with the most optimistic scenario (Scenario II) reaching 4.6 trillion ETB by 2028. This scenario, driven by proactive reforms like HGER 2.0, boasts the fastest annual growth rate and offers several benefits: reduced foreign debt dependence, increased public investment, and a larger resource pool for the capital market.

Gross National Saving and Financial Saving	Billion ETB				
	2024	2025	2026	2027	2028
Gross National Saving					
Baseline	2,048	2,467	2,993	3,623	4,375
Scenario II	2,227	2,725	3,264	3,899	4,644
Scenario III	1,687	1,968	2,306	2,723	3,256

Gross Financial Savings

Baseline	433	529	646	789	963
Scenario II	549	702	899	1,150	1,472
Scenario III	155	311	415	448	751

Share of Gross Financial Savings from Total GNS (%)

Baseline	21	21	22	22	22
Scenario II	25	26	28	29	32
Scenario III	8	13	15	14	19

Financial savings, crucial for capital development, are also projected to grow in all scenarios. Scenario II again outperforms, reaching 1.5 trillion ETB by 2028. This significant increase, driven by the monetization of the economy and the shift towards formal savings, would enhance market liquidity, reduce capital costs, and attract diverse investors. However, achieving this scenario hinges on effective reforms promoting financial inclusion and literacy.

Scenario II also predicts a stronger capital market due to increased tax revenue and reliance on domestic financing. This reduces budget deficits, lowers business costs, and boosts investor confidence. Consequently, government's demand for treasury bonds is projected to grow substantially, reaching 745 billion ETB by 2028. This highlights the crucial role of a well-developed capital market for Ethiopia's future financial health.

Debt Market (Fixed Income Instruments)

Billion ETB

	2024	2025	2026	2027	2028
Central government					
Baseline	176	263	349	453	579
Scenario II	136	254	383	542	745
Scenario III	195	279	402	521	662
SOEs					
Baseline	189	214	236	259	285
Scenario II	192	254	279	307	338
Corporate Bond (Private sector)					
Baseline	41	46	51	56	62
Scenario II	42	55	60	66	73

Both state-owned enterprises (SOEs) and the private sector are expected to contribute to the debt market's growth. The SOE market, fueled by increased spending and deeper financial markets, could reach 338 billion ETB by 2028 in the best-case scenario. While the private sector bond market is currently non-existent, it has the potential to reach 73 billion ETB under Scenario II. These developments indicate the expanding role of the debt market in financing various sectors of the economy.

The equity market is also poised for growth, with the SOE market potentially reaching 31 billion ETB by 2028 in Scenario II¹. Even the more modest private sector growth prediction of 15 billion ETB represents a significant increase. This suggests that both public and private entities will increasingly utilize the equity market for fundraising, potentially expanding investment opportunities and fostering economic development.

Equity Market	Billion ETB				
	2024	2025	2026	2027	2028
SOEs					
Baseline	-	4	17	17	20
Scenario II	-	7	25	25	31
Private sector					
Baseline	8	10	10	12	13
Scenario II	9	11	12	14	15

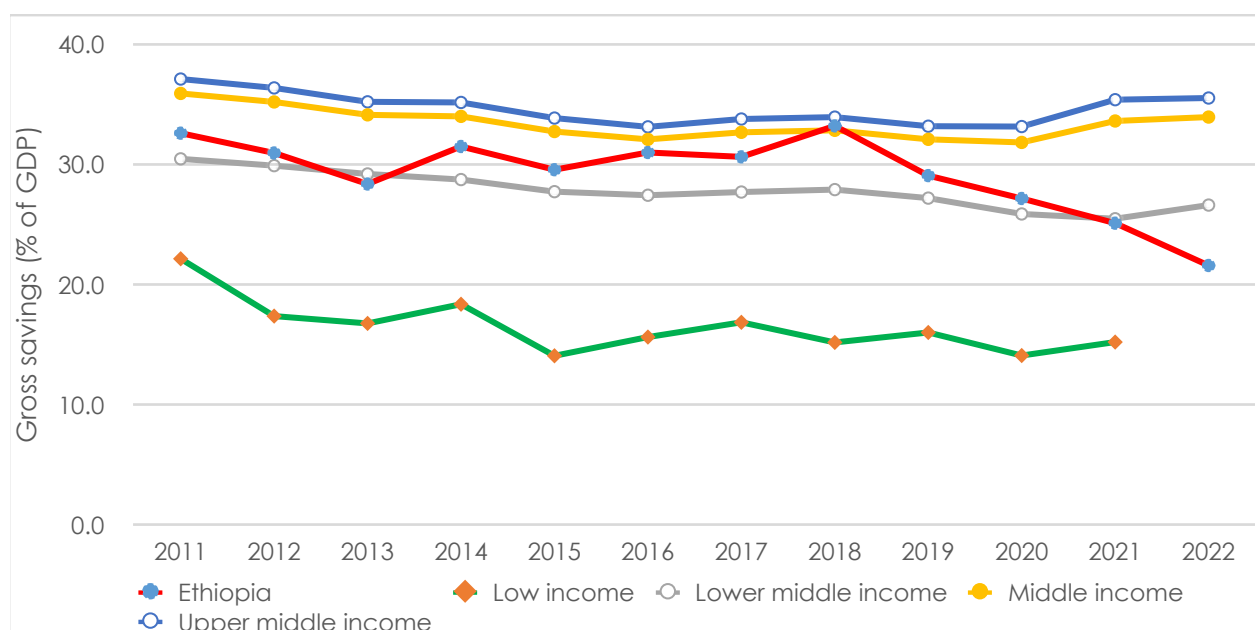
While these projections paint promising scenarios for growth in national savings, government bond demand, and equity markets, it is important to remember that these projections are conditional on successful reform implementation. Scenario II, with its thriving capital market attracting diverse investors and lowering costs, requires proactive measures like HGER 2.0. Without these reforms, the potential for sustainable economic growth and development might remain unrealized.

¹ The estimation for SOEs starts from 2024. Although there is sizable bond market in the SOEs sector (e.g. for power sector), actual data is not available for years before 2024.

INTRODUCTION

Investment in infrastructure and fixed assets plays an essential role in promoting sustainable growth and development. Long-term investments are necessary for generating future income streams. These investments require financial intermediation and increased savings. However, developing countries face challenges in obtaining sufficient financing due to several reasons. First, domestic saving tends to be lower in these countries since the consumption share in income is typically larger. Gross savings is lower for lower income countries and higher for higher income countries. Savings as percent of GDP was 15% for low-income countries, 25% for lower middle-income countries, 35% for upper middle-income countries in 2021. It was 21% for Ethiopia in the same year (World Bank, 2023). See Figure 1 below.

Figure 1: Gross Savings (% of GDP)



Source: World Economic Indicators (World Bank, 2023)

Secondly, they frequently depend on foreign savings to finance their investment projects which comes in the forms of external debt with consequences that is being exhibited by African countries facing challenges to their debt. Moreover, domestic savers may prefer short-term deposits due to higher incidences of shocks and uncertainty that dissuade them from making long-term commitments. Lastly, growing economies tend to be more volatile than advanced nations, which further limits the availability of resources in local capital markets. This highlights the importance of creating enabling environments and institutions that facilitate efficient resource mobilization and allocation.

The financial sector is a critical factor for efficiently mobilizing and allocating resources. Capital markets play a significant role in this process to mobilize resources as they help channel long-term resources from savers to investors who need them to undertake long-term projects. By mobilizing resources, capital markets help to increase the overall pool of capital available for investment. Through issuing securities such as bonds and stocks, firms raise funds from the public and use them to finance their operations, expand capacity, or engage in other forms of investment. As capital markets deepen and become more sophisticated, they offer new opportunities for raising funds from diverse sources locally and internationally, thus increasing access to longer-term funds needed for long-term projects.

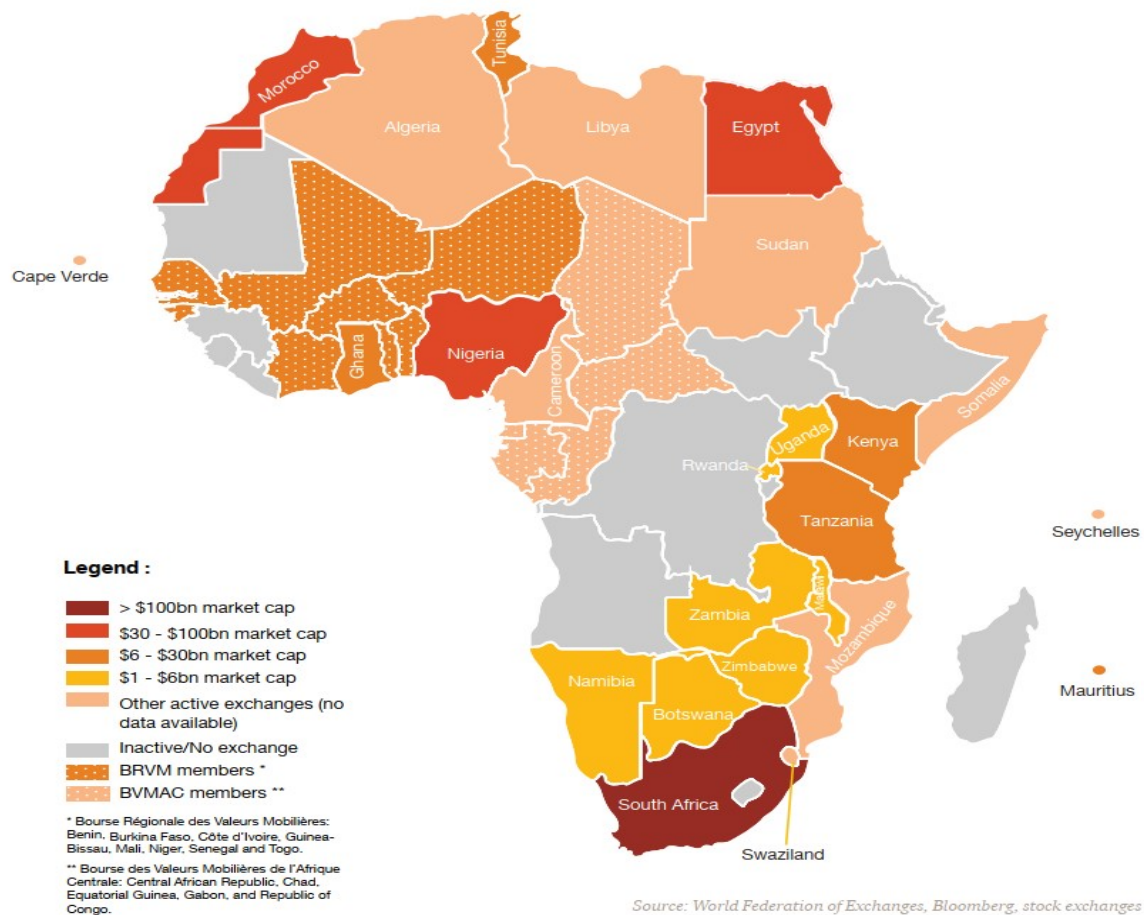
Capital markets also help for efficient allocation of capital, as they help to allocate capital to the most productive uses. Investors put their money in projects that they believe have the highest potential return. Furthermore, capital markets help to discover the prices of financial assets. This is done by allowing buyers and sellers to meet and trade financial assets. The process of price discovery helps to ensure that financial assets are traded at fair prices. This is important because it provides investors with confidence in the market and encourages investment. Developing countries benefit significantly when their financial system is able to effectively provide these roles as it leads to improved economic prospects through increased investment and growth in productive activities. Ultimately, robust financial intermediation enhances the ability of economies to grow faster and create employment opportunities for people in both rural and urban areas.

Ethiopia has a fascinating, yet interrupted, history with capital markets. Share trading existed as early as 1956 facilitating trading of company shares and government bonds. This early promise was unfortunately cut short with the socialist regime takeover in 1974, which led to nationalization of companies and the dismantling of the share market. Since the fall of the Derg regime in 1991, there have been renewed efforts to re-establish a capital market, but these attempts have not yet resulted in a fully functional exchange.

Although unregulated, Ethiopia had a relatively basic capital market activity in the form of government bonds issued by the Ministry of Finance (through the National Bank of Ethiopia) with few investors, and a primary stock market for public share companies, including banks and insurance companies. No secondary stock market exchange exists in the country. This makes the country one of the few African countries to have limited/

inactive stock exchange. Other countries with limited or no stock exchanges include South Sudan, DR Congo, Mauritania, Guinea, Sierra Leone and Angola². Figure 2 shows that the stock market in South Africa had more than USD 100 billion market cap in 2019 followed by Egypt, Nigeria, and Morocco with USD 30-USD 100 billion market cap.

Figure 2: Overview of African Stock Exchange-Dec 2019



Source: (PwC, 2020)

In 2021, the Ethiopia's first capital market proclamation was passed establishing a regulatory framework. With the recent establishment of the Ethiopian Capital Market Authority and ongoing economic reforms, Ethiopia appears poised for a fresh start in developing a robust and thriving capital market. This is a significant development, as it will help to create a more liquid, efficient and safe capital market in the country.

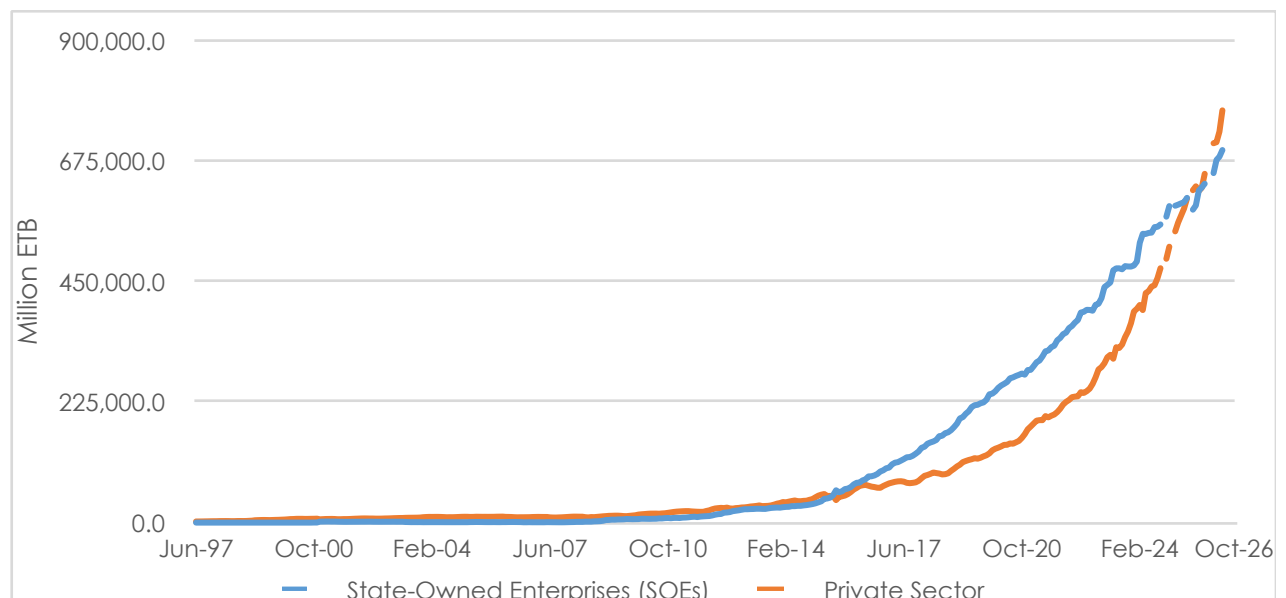
The development of a capital market in Ethiopia is important because of the country's growing economy and its need for investment. The economy has been rapidly growing largely driven by public investment in infrastructure (such as roads and energy) and housing. Thus, growth has largely been demand driven; and public investment has

² This data is until 2020. The initial announcement for the Angolan stock market and derivatives "Bolsa de Dívida e Valores de Angola" (BVDA), was made in 2006. In 2014, the Angola Stock Exchange and Derivatives (BODIVA) began. However, regular trading of corporate securities did not commence in Angola until May 2021, marking the real inauguration of the broader stock market function, when BODIVA launched the new trading and post trading platform called Capzar ATS/EDS and the first Stock Exchange Auction was held (Angolan Stock Exchange and Derivatives (BODIVA), 2023).

been financed through repressive measures including monetary financing and preferential lending. State Owned Enterprises (SOEs) borrowed long-term loans from the Commercial Bank of Ethiopia (CBE), the largest commercial bank accounting for 63% of total deposit mobilization in 2022. In 2022, more than 80% of CBE's loans went to the SOEs — about 50% of total outstanding loans (National Bank of Ethiopia, 2022). This disproportionate allocation of financial resources to the SOEs creates an unfair shortage of loanable funds to the private sector, which in turn skews long-term investment in the sector. This has however changed recently since 2021 where credit to the private sector was greater than the credit that goes to SOEs (see Figure 3 below).

CBE largely mobilizes short-term deposits. This term mismatch in CBE's portfolio is risky, as it would require raising deposits to finance the long-term lending to SOEs. Furthermore, most of these loans are guaranteed by the central government while the performance of the SOEs is inadequate to service their loans. This has created a risk on the overall public sector finance.

Figure 3: Credit to SOEs and the Private Sector



Source: National Bank of Ethiopia

Domestic and foreign trade along with the construction sectors are the major debtors to the private banking sector with mainly short to medium term loans. In 2022, only 18% of total loans went to the industry and agriculture sectors while 55% of the loan went to domestic and international trade and to housing and construction sectors (National Bank of Ethiopia, 2022). This constrains investment in more productive assets with lower liquidity and long-term returns like manufacturing and agriculture. Consequently, trade and construction received the bulk of lending and this led them contributing more to growth. Creating sustainable jobs, however, requires long-term investment in productive sectors.

Particularly important for the development of capital markets is a stable macroeconomic environment. As indicated above, stable economy is an important

prerequisite for long-term investment. However, macroeconomic instability in the form of high and sticky inflation, negative real interest rate, and misaligned exchange rate can discourage long-term saving and investment. The Ethiopian macroeconomy has been challenged by a high inflation reaching above 33% in January 2023 (Central Statistics Services, 2022). Furthermore, severe foreign exchange shortage as a result of deteriorating current account has been a binding constraint. Forex liquidity shortage has also impacted debt service leading to debt distress. Monetary financing of fiscal deficit has exacerbated inflation. Re-balancing the macroeconomy is a pre requisite to ensure a healthy development of the capital markets.

Strengthening the institutional setup for a well-functioning capital market is important. It is also imperative to continuously estimate and monitor the supply of funds flowing into capital markets; and understand the size and structure of the capital market in order to make informed decisions about resource allocation, investment, and policy formulation. By understanding the size of the capital market, policymakers, businesses, and investors can make informed decision about resource allocation, investment, and policy formulation. Estimating market sizes can also help to increase transparency in the capital market where the market serves as a signal to the market. This can lead to more efficient markets and lower costs for businesses and investors. By understanding the size and structure of the capital market, policymakers and businesses can better identify and manage risks: knowledge of market size enables investors to compare different segments of the market and select appropriate investments based on their risk tolerance and return expectations. Finally, estimating market sizes can help to identify underserved segments of the population and develop strategies to improve financial inclusion by utilizing capital market policy instruments to channel resources to targeted sectors. Apart from estimating size, it is important to monitor the effects of changes in the macroeconomy on the size of capital markets and their trajectory. This helps to simulate potential policy changes on the capital market in a country that is undergoing various reforms.

1.1 OBJECTIVES OF THE ASSIGNMENT

The primary objective of this project is to estimate the market size of the Ethiopian capital market. This involves projecting both gross and financial saving, quantifying the total resources available to different financial instruments like stocks, bonds, and derivatives traded in the capital market over a specific period. This will provide valuable insights into the overall activity and potential of the market, informing stakeholders about investment opportunities and areas for further development. Estimation and forecast of this market require us to make a projection of key major macroeconomic indicators. More specifically, in this paper, we will:

1. Project key macroeconomic variables, such as gross domestic product (GDP), gross national saving, and financial saving which can be used to estimate the size of the capital market.

2. Estimate the size of the capital market using the projected macroeconomic variables and other relevant factors.

1.2 APPROACH

The ultimate goal of the first objective is to come up with a projection of gross national saving as a difference between projected gross national disposable income and private & public consumption expenditure. Deducting the non-financial saving, we get the financial part of the national saving, which will provide a basic measure of supply of funds to the capital market. We argue that given macroeconomic imbalances in the short to medium term, the size of the capital market will be determined by the supply of funds rather than demand. High inflation rates, coupled with negative interest rates will mean that demand for funds will outweigh supply by a large margin. Therefore, the focus here will be on estimating available resources which essentially means the size of the capital market.

Once we have the resources available for investment, the second objective is to estimate market size in both the fixed-income and equity markets. These markets have different structures in terms of demand and supply of funds. The equity market already exists mainly for large private enterprises like banks with established practice of issuance of shares and attracting investment. Trading of shares is, however, less developed. The bond market is less developed except few government bonds. Corporate bonds (i.e. from the private sector) are non-existent. The development of these segments will likely follow their existing trends in the medium term as markets develop.

1.3 STRUCTURE OF THE REPORT

The rest of this report is organized as follows. Section 2 discusses recent developments in the Ethiopian macro-economy, such as GDP growth, inflation, and interest rates; analyze recent reforms, and developments of the financial sector, and their potential impact on the capital market. Section 3, we describes the general approaches used, the data sources utilized, and explain the scenario design process, including the identification of key input variables, and discuss the projection framework tool applied for projection and estimation. Section 4 discusses how the actual estimation and projection process is conducted. Analysis and discussion of key findings is presented in Section 5. The final section (Section 6) summarizes the preceding analysis, offering a comprehensive synthesis of the projected size and trajectory of the Ethiopian capital market under various scenarios.



MACRO-ECONOMIC CONTEXT

2.1. HIGH ECONOMIC GROWTH CHARACTERIZED BY MACROECONOMIC IMBALANCES

The Ethiopian economy has experienced strong economic growth over the past two decades. Data from the Ministry of Planning and Development (MoPD, 2022) shows that from 2000 to 2023, the average annual growth rate of real GDP was 8.5%. However, the growth trajectory has been uneven, with periods of rapid growth followed by periods of moderate growth. Coming from a relatively slower growth periods during 2001-2005 (and with a negative shock in 2003 due to severe drought), the economy experienced a period of higher growth rates in the second half of 2000's and first half of 2010's, with real GDP growth averaging 10.9% and 10.2% per year respectively. However, the economy experienced a slowdown in growth starting 2016, with real GDP growth falling to 7.7% for the period 2016-2020 (Table 1). This decline continued in 2021-2023 averaging 5.9% annual growth rate. This slowdown was due to a combination of factors, including Covid-19 and internal conflicts, which led to slower inflow of external finance and investment. Compared to peer countries, however, the growth performance is remarkable. For example, other non-oil producing African countries grew by less than 5% in 2021 and 2022 (IMF, 2023).

Table 1: Growth rates in the total sectoral value added in Ethiopia

Value Added	2001-2005	2006-2010	2011-2015	2016-2020	2021-2023	Overall
Total	6.6	10.9	10.2	7.7	5.9	8.5
Agriculture	5.6	8.4	6.6	4.1	5.9	6.1
Industry	8.9	10.5	22.0	15.6	6.4	13.2
Services	5.9	13.6	10.5	8.2	7.3	9.3

Source: Authors calculation based on data from MoPD

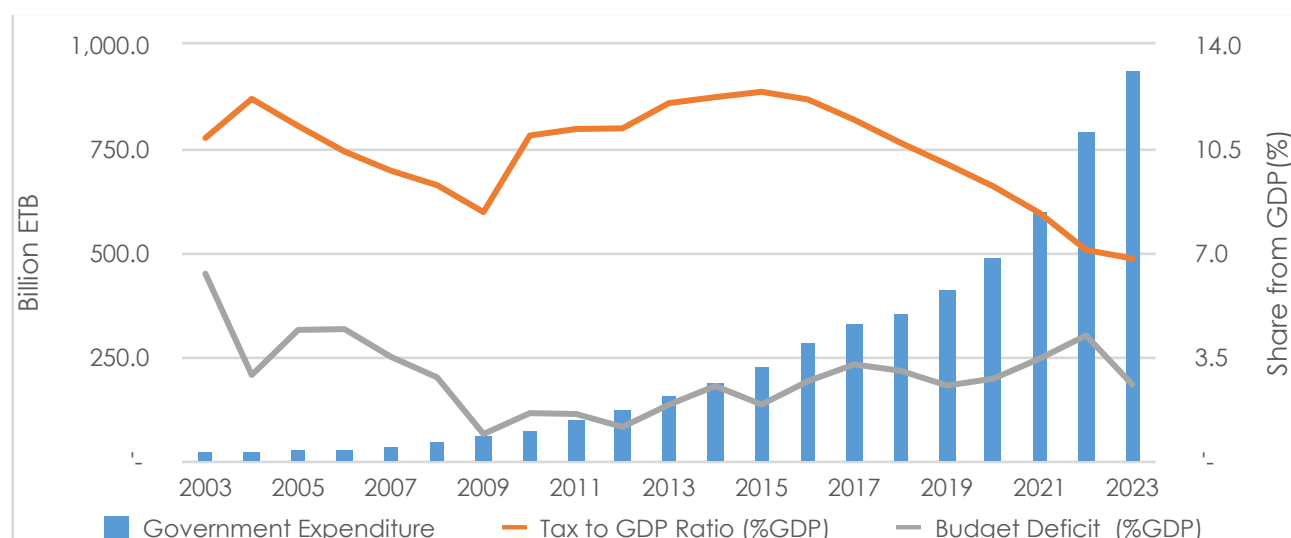
The high-growth rate of the economy in the last one and a half decades has resulted in improvements of income and significant reduction of poverty. Per-capital income increased from USD 135 in 2000 to USD 1,549 in 2023 (MoPD, 2022). Furthermore, poverty head count declined from 39 % in 2004 to 24 % in 2015 (with a 15 percentage point reduction) using the most recent available data. There has also been improvements in health outcomes and access to electricity, roads etc. (MoPD, 2018). However, growth has been demand-created and government-driven and was characterized by macroeconomic imbalances — recent increases in budget deficits, high and sustained inflation, a widening and negative trade balance, large saving-investment imbalance.

INCREASING BUDGET DEFICIT

The fiscal performance of the economy has been deteriorating in recent years, with the budget deficit widening and the tax-to-GDP ratio declining (MoF, 2023). The data shows that government expenditure has been increasing steadily, while tax revenue has not kept pace with a concerning contraction compared to GDP growth. This has led to a widening budget deficit, which has averaged 3.2% of GDP over the past five years. Fiscal deficits were 2.5% in 2019 which increased to 4.2% in 2022 (Figure 4).

The decline in the tax-to-GDP ratio is a particular concern. It suggests that the government is not generating enough revenue to finance its spending, which is forcing it to rely on borrowing to make up the difference. There are several factors that have contributed to the recent deterioration in fiscal performance, including but not limited to, COVID-19 pandemic and a protracted internal conflicts. These factors have led to a sharp decline in economic activity, which reduced tax revenue. This is partly due to the shocks affecting tax-paying sectors of the economy—industry and services. The government also incurred additional spending to mitigate the impact of the pandemic on the economy and to cover costs related to the conflict.

Figure 4: Government Expenditure (Billion ETB), Budget Deficit (% GDP) and Tax-to-GDP Ratio

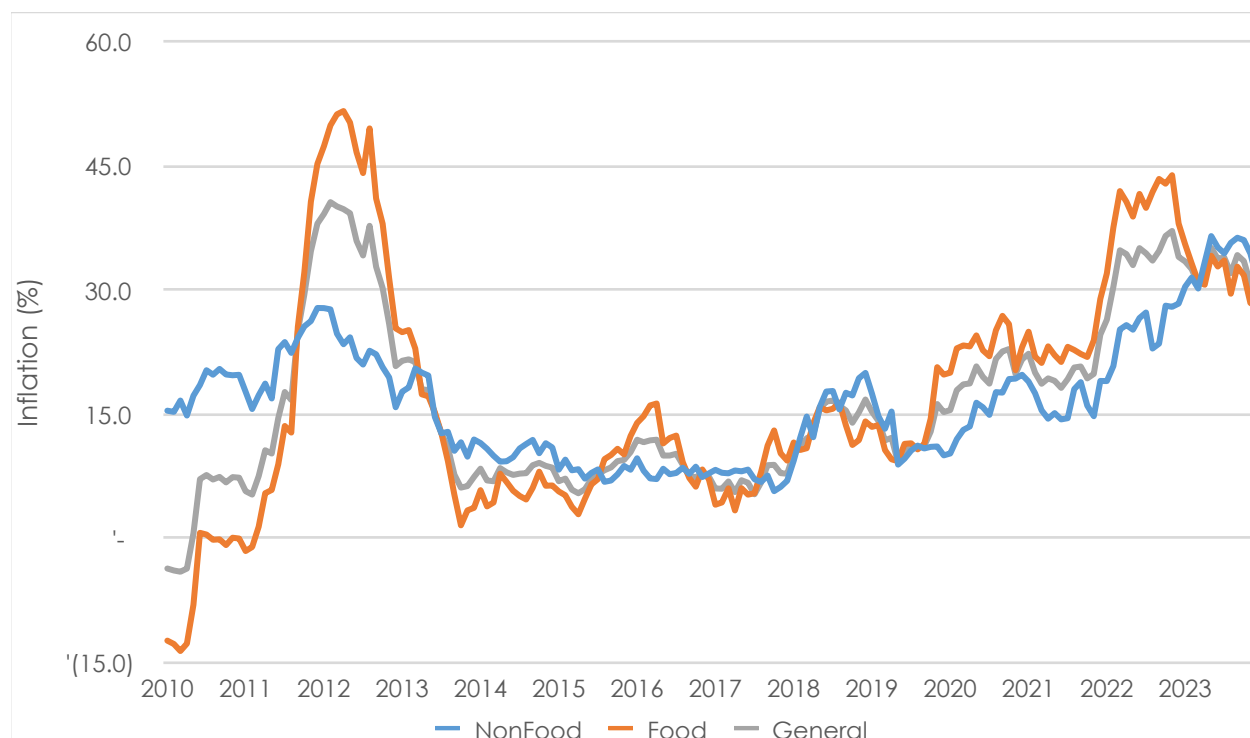


Source: Ministry of finance

HIGH AND SUSTAINED INFLATION

After a relatively stable price indices from 2013 to the end of 2016, both food and non-food inflation increased beginning from 2017. General annual inflation was 15 % in 2019 and the 2022 fiscal year annual general inflation rate was 34 % with a recent decline to 29.3% by the end of the last fiscal year (i.e. June 2023). This is much higher than the government's targets of single-digit inflation. Food inflation was 20% in 2019 and increased to 38 % in 2022. Despite a decline in food inflation in June 2023 from its highest level of 44 % in May 2022, it was a record high in the previous months starting August 2021 (38 %) to the end of the 2022 (Figure 5). Price expectations and supply disruptions (partly due to conflict) have played roles in explaining inflation from the supply side. Coupled with broad money growth, price pass-through due to depreciation of the exchange rate and global price hikes all have had an impact on inflation.

Figure 5: Food and Non-food Inflation (Compared with Similar month of previous year)



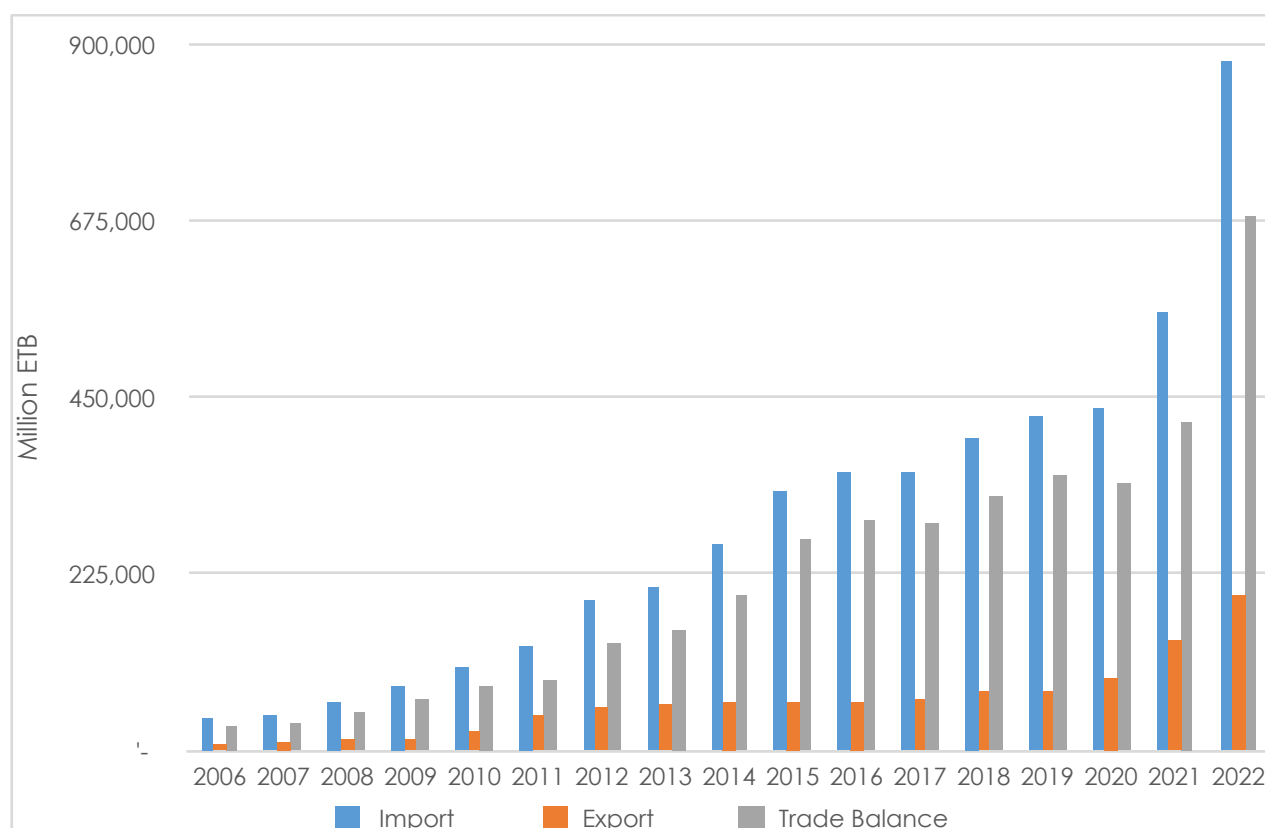
Source: Central Statistics Services

BOP DEFICITS AND FOREIGN EXCHANGE SHORTAGES

Ethiopia's widening trade deficit, with imports outpacing exports, paints a worrying picture for the country's long-term economic stability (Figure 6). While the immediate consequences like dwindling foreign reserves, inflationary pressures, and potential growth deceleration are concerning, the ripple effects can be even more sustaining.

A persistent trade imbalance can hinder domestic industries, stifling their growth and hindering their ability to compete globally. As imported goods flood the market, local manufacturers struggle to find customers, leading to potential job losses, reduced investment, and decreased innovation. This creates a vicious cycle, further weakening the domestic production capacity and exacerbating the reliance on imports. Fluctuations in global commodity prices, changes in foreign trade policies, or even geopolitical tensions can disrupt essential import flows, affecting domestic production and potentially fueling further economic instability.

Figure 6: Imports, Exports and Trade Balance in Ethiopia

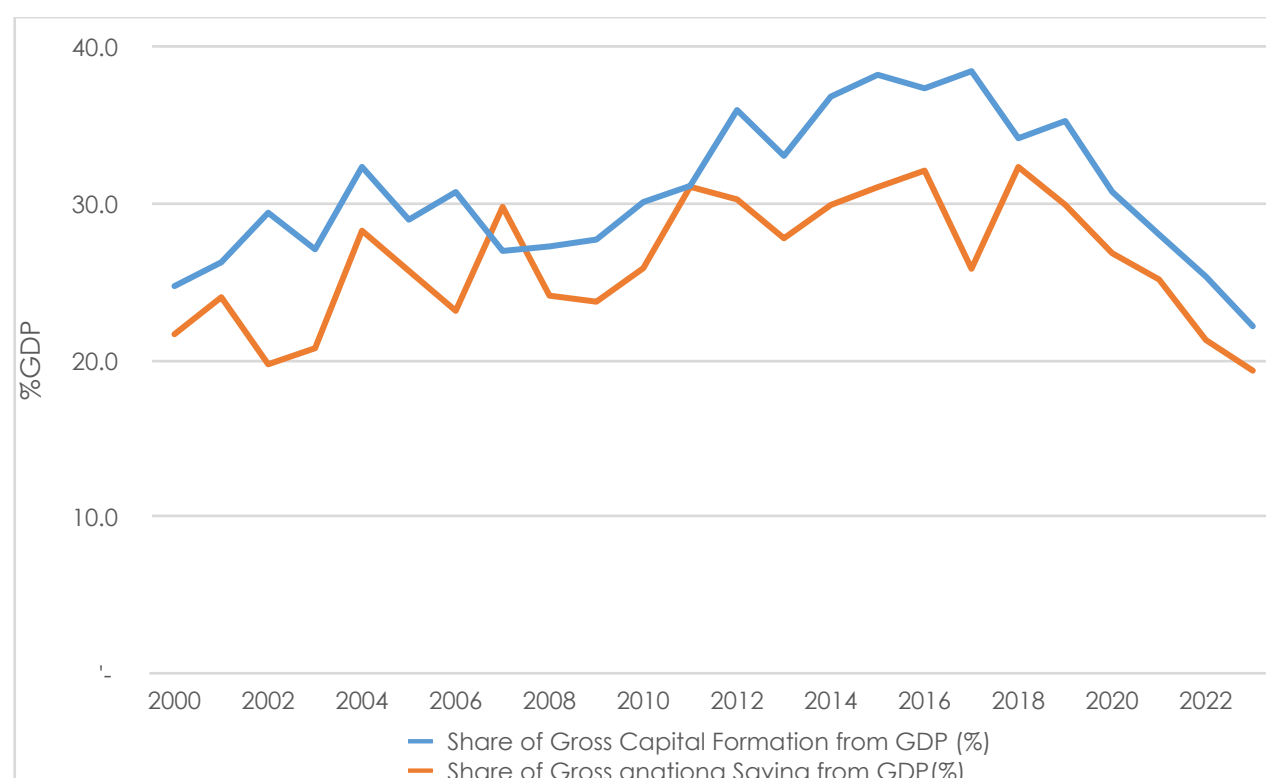


Source: National Bank of Ethiopia

LOW AND DECLINING INVESTMENT AND SAVING TO GDP RATIO

After moderate increases until 2016, gross capital formation (as % of GDP) and gross national saving (as % of GDP) have been declining in recent years. The data shows that gross capital formation declined from 38% of GDP in 2015 to 22.2% of GDP in 2023. Gross national saving also declined from 32% of GDP in 2016 to 19.3% of GDP in 2023 (Figure 7). The recent decline in investment and saving is a concern and could have a negative impact on economic growth in general, and limits the supply of resources that goes to the capital market.

Figure 7: Gross Capital Formation (% GDP) and Gross National Saving (% GDP)



Source: Ministry of Planning and Development 2.2. Responses to Macroeconomic Imbalances: HGER 1.0 & HGER 2.0

2.2. RESPONSES TO MACROECONOMIC IMBALANCES: HGER 1.0 & HGER 2.0

In response to these imbalances, the Government of Ethiopia initiated a new economic reform in 2019, —the Home-Grown Economic Reform (HGER) — to tackle these challenges “through a comprehensive and well-synchronized set of measures” (Office of the Prime Minister, 2019). The Government designed the macro-financial reforms of the HGER to stabilize the economy, address financial sector vulnerabilities and improve access to finance. The objectives of these reforms include price stability, debt burden reduction, reduction of financial sector vulnerabilities, and improved access to finance to the private sector.

The reforms encompassed public sector finance and SOE reforms — aimed at maintaining a prudent fiscal policy, enhancing domestic resource mobilization, and improving debt management. The ultimate objectives of these reforms were to bring price stability and to reduce debt distress. It also encompasses monetary-financial reforms designed to address foreign exchange shortage, strengthen monetary policy framework, reduce financial sector vulnerabilities and improve access to finance (Ministry of Finance, 2020). While these later sets of reforms help to bring price stability and reduction of debt distress, they also reduce financial sector vulnerability and improving access to finance.

However, these reforms were challenged by a number of shocks that led to a delay and in certain cases a reversal of reforms (such as direct advances, fiscal deficits and foreign exchange reforms). Some of these challenges include COVID-19, internal conflicts and external shocks. The pass-through effect and the slowdown in certain economic sectors due to Covid-19 coupled with increased need for government expenditure led to the relaxation of prudent fiscal and monetary measures. The conflict in the northern part of Ethiopia presented the second major economic shock that resulted in lower level of tax collection and need for increased government expenditure.

While most of these reforms have implications for capital market development, we will focus mainly on those reforms that relate to the financial sector, including but not limited to capital market development. Modernizing the operations of CBE and DBE to the level of industry best practices was one of the objectives of the reform. To reduce excessive borrowing of SOEs from public banks (i.e. Commercial Bank of Ethiopia (CBE), and delays and cost overruns of public projects undertaken by the SOEs posed a challenge to public banks' balance sheets (especially CBE), an asset quality review has been undertaken by CBE to account for potential risks to the SOE loans. To upgrade NBE's financial regulatory framework to international standards, NBE started implementing Basel II & III, a crisis management system, and multifactor stress testing. Regulation for establishing a deposit insurance fund has been approved by the council of ministers. Furthermore, Liabilities & Assets Management Corporation (LAMC) was formed to reduce (eliminate) the risk of SOE loans that are not being serviced in the financial sector. The aim is to generate resources, including from the privatization proceeds, to rebuild the health of the Commercial Bank of Ethiopia's balance sheet.

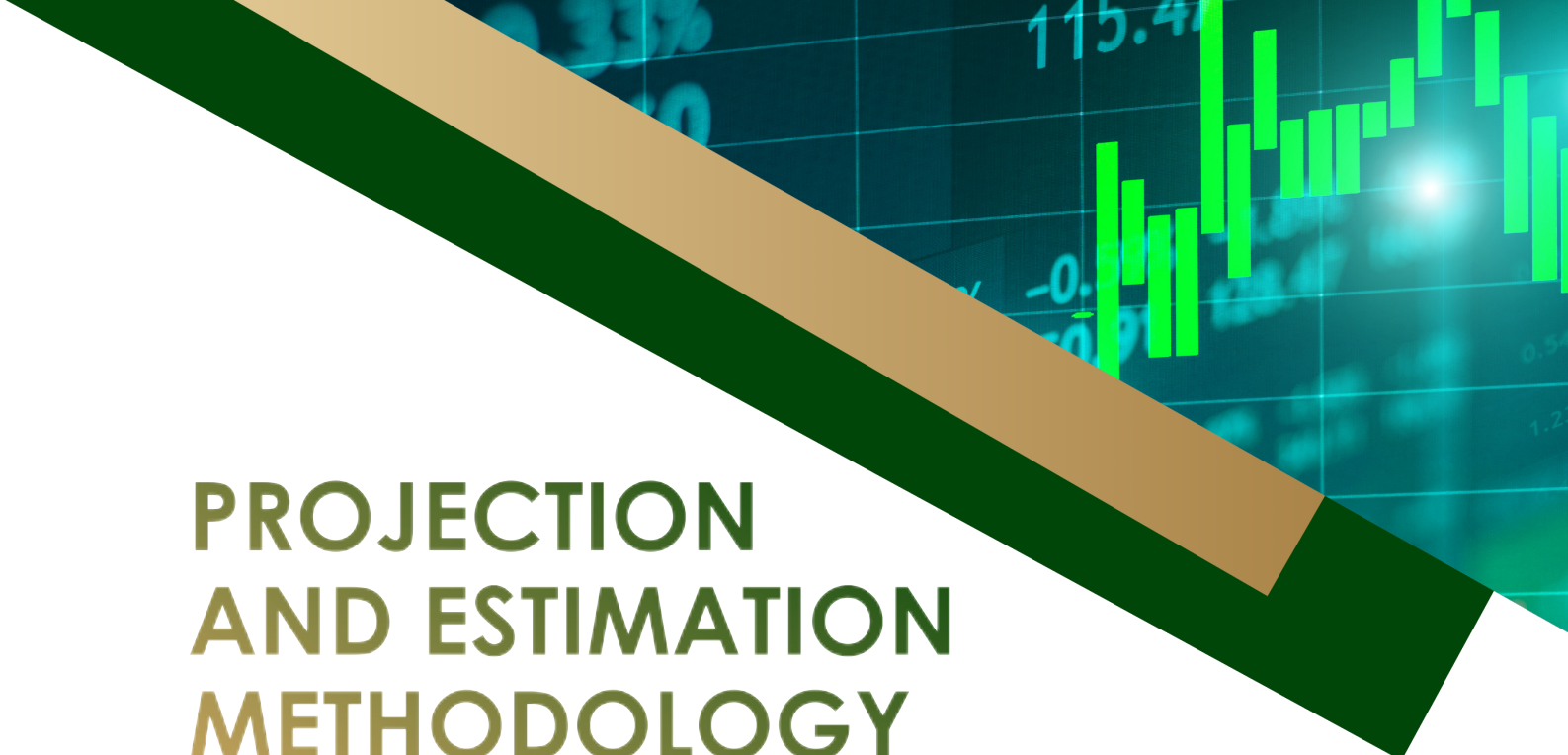
In addition to launching a market-based T-bills market in 2019, directive for inter-bank money market was also approved by the national bank of Ethiopia. The House of Peoples Representatives passed first Capital Market Proclamation in July 2021 with the objectives of "supporting the development of the national economy through mobilizing capital, promoting financial innovation, and sharing investment risks" (FEDERAL NEGARIT GAZETTE, 2021). The proclamation entails the establishment of capital market authority, establishment of a Securities Exchange (called The Ethiopian Securities Exchange) and the licensing of capital market providers.

To support the development of mobile banking to promote financial inclusion, directives on mobile money issuers and agents was issued. Mobile money issuer and agent licenses were granted. A National Digital Finance Strategy has also been prepared and approved by the Council of Ministers. The established institutions are in the process of commencing operation but it would take time to see the bulk of long-term financing needs addressed through them. To enhance financial inclusion the movable asset collateral registry system has been operationalized allowing for broader access to finance.

The government undertook two policy changes to address gaps in government financing that contributed to reducing inflationary pressure. In December 2019, MOF took steps to limit direct advances and converted the stock of debt from direct

advance into a 25-year bond with 10-year grace period. Furthermore, the government introduced a market-based auction for treasury bills, and the stock of treasury bills was converted to a three-year treasury note.

Building on the achievements of HGER and its gaps, HGER 2.0 was launched in 2023 to establish macro-economic stability, create a conducive investment and trade environment, improve productivity in key sectors, build capable and efficient civil service and adapt to climate change, and strengthen resilience (Ministry of Finance, 2023). HGER 2.0 is aimed at re-instituting some of the reversed policies of prudent monetary and fiscal policies along with a coherent plan for recovery from shocks. One of the pillars of HGER 2.0 is to improve private sector access to finance through liberalization, improvement of the stability and resilience of the banking sector, and improvement of the financial inclusion to better serve productive sectors.



PROJECTION AND ESTIMATION METHODOLOGY

3.1. GENERAL APPROACH

The best approach to forecasting macroeconomic variables and estimating the size of the capital markets will depend on the specific circumstances. The methods for projection of macroeconomic variables (and estimation of capital market size) combines both bottom-up and top-down approaches. Top-down approaches start with the overall state of the economy and then use economic theory and statistical methods to forecast the individual macroeconomic variables. For example, a top-down approach might use a macro-econometric model to forecast real GDP growth, inflation, and unemployment (M. Gudmundsson, 2000; Patrick Higgins, 2016). This has been used in several contexts and economies (Valadkhani, 2004). This approach uses a number of factors, such as the level of economic activity, national saving and the savings rate, and financial development of the economy to estimate the size of the capital market. This approach is relatively simple and easy to implement. Furthermore, it does not require a lot of data on the individual components of the capital market or on market participants.

Bottom-up approaches start with the individual components of the economy and then add them up to get an overall forecast (Esteves, 2013). This approach forecasts macroeconomic variables and estimates the size of the capital market by starting with the individual components of the capital market. It then estimates the size of the overall market by adding up the sizes of the individual components. For example, a bottom-up approach to forecasting GDP growth might start by forecasting the growth of each sector of the economy, such as agriculture, manufacturing, and services. The approach would then add up the growth forecasts for each sector to get a forecast for overall GDP growth. This approach is more data-intensive than the top-down approach. It requires data on the size of the existing stock market, bond market, and money market, as well as data on the number and size of market participants. It can be more accurate than the top-down approach, especially if the data is reliable and up to date.

This study employs a hybrid approach that combines elements of both top-down and bottom-up approaches. The choice of which methodological approach to use will depend on a number of factors, such as the data availability, the purpose of the forecast, and the resources available. It starts with the top-down approach to get a general idea of the size of the capital market. It then uses the bottom-up approach to estimate the size of important individual components of the capital market, such as the stock market, bond market, and money market. This hybrid approach is a good compromise between the top-down and bottom-up approaches and is a good choice for estimating the size of the capital market in a developing country where data is limited. Ultimately, combining rigorous technical skills with sound judgment regarding real-world conditions improves the prospects of good projection.

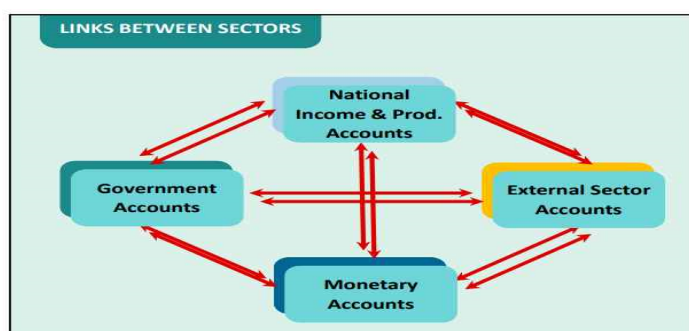
3.2. FINANCIAL PROGRAMMING AND POLICIES (FPP)

A comprehensive and consistent framework, Financial Programming and Policies (FPP), developed by the International Monetary Fund (IMF) was developed to help countries design and implement macroeconomic policies to achieve their economic goals (IMF, 2019). The FPP framework is a comprehensive approach that takes into account the interrelationships between the real, external, fiscal, and monetary and financial sectors of the economy.

FPP is a framework to analyze the current state of the economy, forecast where the economy is heading, and identify economic policies that can change the course of the economy. The IMF published the first version of the FPP framework in 1977. The framework has been revised and updated several times since then, most recently in 2019.

The framework is the design of a set of macroeconomic policies aimed at achieving desired macroeconomic objectives; and accounts the main sectors of the economy, namely, real, fiscal, external, and monetary & financial sectors (Figure 8). FPP framework takes into account the accounting identities and behavioral relationships between these sectors. Accounting identities are relationships between economic variables that must hold true at all times.

Figure 8: Linkages between Sectors in Financial Programming and Policies Framework



FPP uses accounting identities to ensure that the macroeconomic projections are consistent (Figure 9). On the other hand, behavioral relationships are relationships between economic variables that are determined by the behavior of economic agents, such as consumers, businesses, and governments. For example, the consumption function states that consumption spending is positively related to disposable income (i.e. as disposable income increases, consumption spending is expected to rise). By taking into account the accounting identities and behavioral relationships between economic sectors, the IMF's FPP framework provides a comprehensive and consistent way to project macroeconomic variables and to assess the impact of different policy options.

This framework will be used as a general guideline. We also use statistical models in this project—univariate time series and error correction models to get coefficients of growth rates and elasticities—depending on the context of the macro-economic variable.

Figure 9: Accounting Identities

$$\begin{aligned}
 GDP &= Cp + Ip + Cg + Ig + (X - M), \quad Cg + Ig = G, \quad Cp + Ip = C \\
 GNI &= GDP + Y_{nf} = Cp + Ip + Cg + Ig + (X - M) + Y_{nf} \\
 GNDI &= GNI + TR_f = Cp + Ip + Cg + Ig + (X - M) + Y_{nf} + TR_f \\
 GNDI - (C = Cp + Cg) &= Ip + Ig + (X - M) + Y_{nf} + TR_f = S \\
 GNS &= GNDI - (C = Cp + Cg) = (Ip + Ig = I) + (X - M) + Y_{nf} + TR_{nf}
 \end{aligned}$$

GDP= Gross Domestic Product

Cp = Private Consumption

Cg = Government Consumption

Ip = Private Investment

Ig = Government Investment

X = Exports of goods and nonfactor services

M = Imports of goods and nonfactor services

Yf = Net primary income from abroad

TRf = Net secondary income from abroad

S = Gross national saving

IMF's FPP framework has advantages over other macro projection approaches. FPP framework ensures that all macroeconomic projections are consistent with each other. It is a comprehensive framework which takes into account the interrelationships between the real, external, fiscal, and monetary and financial sectors of the economy. This makes it a more realistic and accurate representation of the economy than other macroeconomic models, which may only focus on one or two sectors. FPP framework is

transparent, and it is easy to understand how the projections are made. This is important for policymakers and other stakeholders need to understand the basis for the projections. It is also a flexible framework and can be adapted to different country circumstances. It is a well-documented framework with a long track- record of success. The FPP framework has been used by the IMF and other institutions to help countries design and implement successful macroeconomic policies for decades. This implies there is a large community of experts who are familiar with it, and can provide support. This can be helpful for policymakers who are new to using the framework or who need assistance with specific issues.

3.3. DATA SOURCES UTILIZED

NATURE AND SOURCE OF DATA

Creating an accurate and comprehensive baseline projection for macroeconomic variables using IMF's FPP framework requires accessing multiple sources of official statistics covering diverse aspects of the economy. Annual time series data was gathered encompassing four vital categories: government finances (or fiscal data) from the Ministry of Finance; balance of payments, monetary and financial sector data from the National Bank of Ethiopia; and national income accounts from the Ministry of Planning and Development.

Each dataset supplies unique perspectives essential for generating dependable baseline and variant projections. While the Ministry of Finance furnishes critical details pertaining to government tax revenues, expenditures, borrowing, and debt management activities critical for evaluating the Ethiopia's fiscal stance, the National Bank of Ethiopia collects harmonized data reporting residents' transactions plus counterpart foreign transactions involving residents abroad. Finally, the Ministry of Planning and Development provides national accounts detailing the size and structure of output, employment, saving, investment, and other aggregates measuring total economic production across different industries. These data repositories represent essential foundations for building a solid macroeconomic projection facilitating the process for making medium-term capital market projection.

DATA QUALITY AND CONSISTENCY CHECKS

In this project, we ensure that our projections and estimates are accurate and consistent with accounting identities set out in international compilation standards like System of National Accounts, Balance of Payments Manual and others. This process begins with checking the consistency of data inputs across four main sectors: the real sector, fiscal sector, external sector, and monetary sector. The goal is to confirm that these accounts balance (apart from some statistical differences). Whereas data quality plays an important role in achieving reliable forecasts, incorporating

appropriate economic reasoning helps strengthen the validity and robustness of the eventual projection.

3.4. SCENARIOS DESIGN

BASLINE SCENARIO (BUSINESS AS USUAL-BAU SCENARIO)

The first scenario (i.e. baseline scenario) represents the foundation for other alternative scenarios. This initial projection involves specifying initial conditions and key assumptions. This scenario assumes unchanged macro/structural policies and no further reforms implemented (e.g. no exchange rate policies change, no monetary tightening etc.) Macroeconomic and structural policies (i.e. fiscal, monetary and exchange rate policies) remain unchanged. More importantly, the baseline scenario assumes a continuation of the current socioeconomic climate in the next five years. While the country grapples with the aftereffects of these past difficulties, with lingering social tension still present, this scenario portrays a future where these challenges persist without significant policy interventions or reforms.

SCENARIO II

Scenario II paints a contrasting picture, assuming proactive government measures to tackle existing conflicts and social tensions. This proactive approach aims to foster a more stable and peaceful environment, potentially paving the way for positive economic and social developments.

- **Implementation of HGER 2.0 policies:** The HGER 2.0 policies are a set of reforms designed to accelerate economic growth and development. The policies focus on improving the investment climate, promoting industrialization, and developing the agricultural and the financial sector.
- **Establishment of macroeconomic stability:** Macroeconomic stability is essential for sustained economic growth. It means that inflation is low and predictable, the currency is stable, and the government budget is balanced.
- **Creation of a conducive investment and trade environment:** A conducive investment and trade environment is one that is attractive to foreign and domestic investors. It means that there are clear and transparent rules and regulations, a strong legal system, and good infrastructure.
- **Increase in productivity across key sectors:** Increasing productivity across key sectors is essential for economic growth and is assumed to be achieved through technological innovation, better skills and training for workers, and improved management practices.

Generally, Scenario II assumes a condition where a better economic performance and a conducive environment for the Ethiopian capital market will be created than Scenario I. If these reforms are successful, we expect the economy to grow at a faster rate in the coming years driven by strong investment and export growth. Furthermore, if the government is able to implement the necessary reforms, the country could experience a period of sustained economic growth and development, and the current account deficit could be narrowed, national savings increased.

SCENARIO III

Scenario III assumes a deteriorating situation where the economy will be further hit by both international and domestic shocks. International shocks could include fuel price increases, cereal price changes, or a global recession. Domestic shocks could include drought, floods, or intensified conflicts. If these shocks occur, the economy would likely experience a slowdown in growth and inflation could increase. The current account deficit could also further widen. The shocks would also have a negative impact on employment and poverty.



PROJECTION AND ESTIMATION

A projection is made for real GDP, private consumption, government consumption, GDP deflator, national saving, financial saving, tax revenue, government expenditure, government financing, external loans, and direct advances. The following table (Table 2) outlines the key economic variables that will be projected over the next five years (2024-2028). By projecting these variables, we aim to gain a comprehensive understanding of the expected trajectory of the economy over the medium term and the available financial resources that will be going to the capital market.

Table 2: The list of variables and their description

Variable	Description
Real GDP	The total value of goods and services produced in Ethiopia in a given period, adjusted for inflation.
Real Private Final Consumption Expenditure (PFCE)	The total value of goods and services purchased by households for their own use in each year, adjusted for inflation.
Real Government Final Consumption Expenditure (GFCE)	The total value of goods and services purchased by the government in each year, adjusted for inflation.
GDP Deflator	A measure of the average change in prices over a given period. It is the ratio of nominal GDP and real GDP and hence help us convert the projected real values of the above variables to nominal values.
Gross National Saving	The total amount of savings generated in each year.
Financial Saving	The portion of gross national saving that is held in financial institutions, such as banks.
Tax Revenue	The total amount of taxes collected by the government in each year.
Government Expenditure	The total amount of spending by the government in each year.
Government Financing	The methods used by the government to finance its spending, such as borrowing from banks or issuing bonds.
External Loan	The amount of money borrowed by the government from foreign lenders in each year.

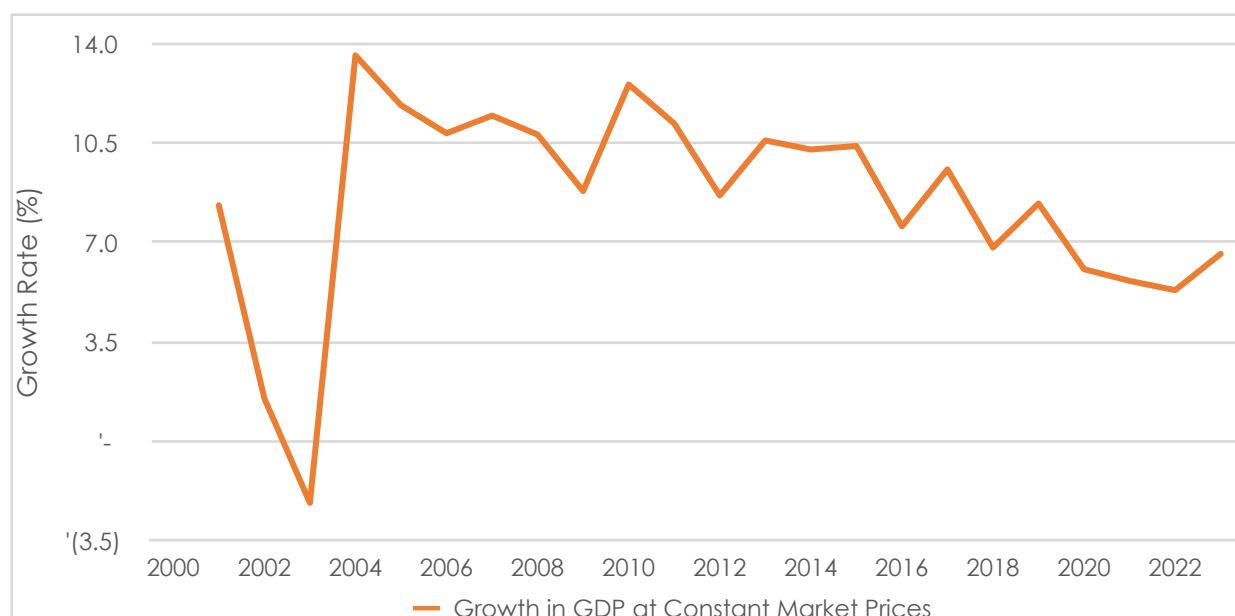
Direct Advance	The amount of money borrowed by the government from the central bank in each year.
Debt Market: Central Government Bond	The total value of government bonds issued by the government in each year.
Debt Market: Private Sector and SOE sector	The total value of bonds issued by private companies and SOEs in each year.
Equity Market: Private and SOEs sectors	The total value of shares of private companies and SOEs traded on the Stock Exchange in each period.

4.1. BASELINE

4.1.1. REAL GDP

Despite two decades of robust growth, Ethiopia's economic trajectory has shifted over time, from early-millennium modest and fluctuating growth to rapid expansion in mid-2010s and to a recent deceleration. More importantly, growth has been relatively slowing with an average growth rate of 7.7% from 2016-2020 and 5.9% from 2021-2023 (Figure 10).

Figure 10: Growth Rate of Real GDP (%)



Source: Authors calculation based on data from MoPD

In its Ten Year Development Plan (TYDP) from 2020-2030 (MoPD, 2021), the Government of Ethiopia projected growth rates of GDP to be 9.2% during 2020/21-2024/25, 10.9% during 2025/26-2029/30 with an average projected growth rate of 10% during the ten year period (Table 3).

Table 3: Projected Growth rates (%) of GDP by major economic sectors

	Average			
	2015/16-2020/21	2020/21-2024/25	2025/26-2029/30	2020/21-2029/30
Agriculture	4.1	5.5	6.2	5.9
Crop production	4.8	4.6	4.6	4.6
Animal production	2.5	8.5	10.1	9.3
Industry	15.2	11.4	14.6	13
Manufacturing	13.0	18.4	22.9	20.6
Construction	17.3	8.5	9.2	8.9
Service	8.2	10.4	10.7	10.6
Wholesale & retail trade	8.9	11.3	11.8	11.6
Transport & Communication	11.5	14.6	14.8	14.7
Financial Intermediation	12.5	9.9	7.8	8.8
Gross domestic product	8.2	9.2	10.9	10

Source: FDRE Ministry of Planning and Development

The projections in the TYDP seem to follow trends of past growth (that includes higher growth rates from 2004-2015 — an average 9.5%). The economy experienced high growth for most of the years, but slower growth in recent years.

Given the lower growth rates in the recent years, projection of real GDP should take into consideration the context the country is and the challenges it is currently facing. The economy recovered from Covid-19 pandemic. However, the recovery was likely to be uneven, with some sectors, such as tourism and hospitality, taking longer to recover than others. It is also recovering from internal conflict in Tigray, which disrupted economic activity in the region and led to a displacement of millions of people in neighboring regions. The impact could have a lag effect of a significant negative impact on the economy. Current conflicts in other parts of the country will also have their own impact in the next few years.

High growth trajectories will be achieved only if a proper corrective policy measures towards these challenges is put into place and further economic reforms implemented. This is in line with Scenario II (see below) where we assume the government is committed to implement these planned reforms and no shock impedes such efforts of the government. A recent projection of the Ethiopian economy by the IMF shows that the economy will grow by 6.2% by 2024, 6.5% by 2025, 6.7% by 2026, 6.8% by 2027, and 7% by 2028 (IMF, 2023).

Given the above-mentioned factors, in this baseline setup, projection for the economy over the next five years is expected to grow, but at a slower pace than in the past years, growing 5% in 2024-2025 and by 6% by 2026-2028. This is a more realistic forecast, given the current economic situation.

A forecast error analysis was made based on the difference between actual consumption and forecasted consumption. This analysis was made for 1) forecasts of TYDP (MoPD, 2021), 2) computations based on trend growth rates and 3) expert guesses that takes into account the different factors for slowing down recent growth rates.

Table 4: Forecast Error Analysis

Forecast Error*	RMSE	RMSPE	MAPE
GDP grows at trend growth rate	103,195	4.4	7.51
Governemnt forecasts (TYP)	129,765	5.5	9.49
Industry expert guess	40,434	1.7	2.41

*RMSE: Root Mean Square Error, RMSPE: Root Mean Squared Percentage Error, MAPE: Mean Absolute Percentage Error

4.1.2. REAL PRIVATE FINAL CONSUMPTION EXPENDITURE (PFCE)

Changes in real PFCE are dependent on several factors. It depends on disposable income ($YD +$) in the current period, expectations (consumer confidence indexes, employment growth), wealth (stock market performance, housing prices) (+), uncertainty (precautionary saving) (-), availability of credit (+), real interest rate (substitution effect (-) and income effect (+)).

$$C_p = f(YD, YDe, \text{wealth}, \text{real interest rate}, \text{uncertainty}, \text{credit})$$

Estimation and forecast of C_p by incorporating all these factors in the context of multivariate regression model is fraught with lack (poor quality) of data and issues of simultaneity bias due to inverse relationship between explanatory variables (*i.e.* YD , YDe , wealth, real interest rate, uncertainty, credit etc.) and the outcome variable (C_p). Furthermore, we need reliable forecasts of the explanatory variables. For example, in the case of consumption forecast, we need to have a forecast of income etc.

We employ two approaches to forecast consumption expenditure. Constant ratio of private consumption to real GDP, and an error correction model-which uses deviations from long-run equilibrium to guide the short-term dynamics of a system. These approaches are preferred for their simplicity and consumption of available data over other more sophisticated forecasting models — structural and VAR models (IMF, 2019).

A. CONSTANT RATIO OF PFCE TO REAL GDP

The average ratio of real PFCE to real GDP is 69% from 2000-2022 with a higher rate during the recent periods. This remained more or less constant over this period with small differences during the years 2014-2018 (67%), and 2019-2023 (72%).

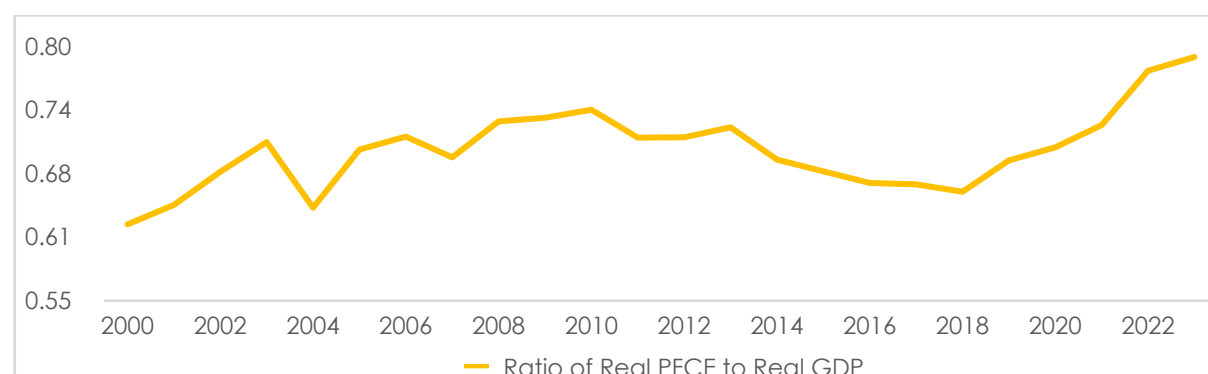
Table 5: Average ratio of real private consumption to real GDP

Period	Average
2000-2013	0.69
2014-2018	0.67
2019-2023	0.72
Overall	0.70

Source: Computed based on data from MoPD

The ratio of final private consumption expenditure to real GDP is a measure of how much of a country's GDP is spent on final goods and services by households. It is a key indicator of economic activity and consumer demand. There are a number of reasons why the ratio may remain relatively constant over time. One reason is that households tend to have relatively stable preferences for consumption goods and services. This means that their spending patterns do not change significantly from year to year, even when their income changes. Another reason for the constancy of the ratio is that households are typically risk averse. This means that they tend to save more money when their income is uncertain. This can help to offset the effects of income fluctuations on consumption spending. Government policies are also important in providing social safety nets may help to smooth consumption over time.

Figure 11: Ratio of real PFCE to real GDP



Source: Drawn based on data from MoPD

We use the ratio of real private consumption to GDP for forecasting assuming constant consumption to GDP ratio. Using this constant, a forecast of private consumption expenditure is made by multiplying future values of real GDP by the ratio of private consumption and real GDP using the following formula.

$$RPC_{t+1} = RGDP_{t+1} * \left(\frac{RPC_t}{RGDP_t} \right)$$

Where RPC_{t+1} $RGDP_{t+1}$ is future real private consumption expenditure and real GDP at $t + 1$, and RPC_t $RGDP_t$ their current values.

B. ERROR CORRECTION MODEL

An error correction model (ECM) is a type of time series model that is used to model non-stationary variables. Non-stationary variables are variables that exhibit a trend or seasonal pattern over time. ECMs are able to capture the long-run and short-run relationships between non-stationary variables. We estimate a co-integrating relationship between the variables. A co-integrating relationship is a long-run relationship between two or more non-stationary variables. Estimation of an ECM is made using the co-integrating relationship as the error correction term.

$$\Delta \ln(\text{RPC}_t) = c + \mathcal{B} * \Delta \ln(\text{RGNDI}_t) - \lambda * [\ln(\text{RPC}_{t-1}) - \delta * \ln(\text{RGNDI}_{t-1})] + \varepsilon_t$$

$$\Delta \ln(\text{RPC}_t) = c + \mathcal{B} * \Delta \ln(\text{RGNDI}_t) - \lambda * (\text{ECT}_{t-1}) + \varepsilon_t$$

In this specification, a regression of real consumption expenditure (RPC_t) is done on real gross national disposable income RGNDI_t . The coefficient, $\mathcal{B}$, is short-run dynamic coefficients of the model's adjustment to long-run equilibrium, and the speed of this adjustment is captured by λ_t . ECT_{t-1} is the error correction term –lagged value of the residuals obtained from the co-integrating regression of the dependent variable on explanatory variables and which contains the long-run information derived from the co-integrating relationship. Since the above specifications are in logarithms, we consider λ_t as elasticity of consumption with respect to real disposable income.

Table 6: Results of Error-Correction Model Estimation

Long run relationship							
Number of Obs							21
F Stat							55414
Prob > F							0.00
R-squared							1.00
Adj R-squared							1.00
Root MSE							0.03

	Coef.	Std. Error	t-stat	Pvalue	ll	up	df
lnDY	0.9866	0.00	235.40	0.00	0.98	1.00	19
_cons	(0.12)	0.05	(2.26)	0.04	(0.24)	(0.01)	19

Short Run Relationship							
	Coef.	Std. Error	t-stat	Pvalue	ll	up	df
D.lnDY	0.93	0.06	15.03	0.00	0.80	1.06	17
L.error	(1.36)	0.24	(5.64)	0.00	(1.86)	(0.85)	17
_cons	0.01	0.01	0.81	0.43	(0.02)	0.04	17

The results of the ECM estimation is presented in table 6. The value of λ is 0.98. We use this coefficient to forecast future values of private consumption expenditure using the following formula:

$$\text{RPC}_{t+1} = \text{RPC}_{t+1} * (1 + \text{GDPgrowthrate}_{t+1} * \lambda / 100)$$

A better model from the above two methods of forecasting was chosen based on a criteria given by a forecast error. Forecasts of private consumption with the error correction model provides us with the lower root mean square error.

Table 7: Comparison of Forecasts of Private Consumption

Forecast Error	RMSE	RMSPE	MAPE
Constant ratio of real PFCE to Real GDP	332,045	18	28.60
Error Correction Model	148,707	8	12.80

4.1.3. REAL GOVERNMENT FINAL CONSUMPTION EXPENDITURE (GFCE)

The ratio of real government consumption expenditure to real GDP (RGFCE/RGDP) is a measure of how much of a country's GDP is spent on government consumption goods and services. It is a key indicator of government size and the role of government in the economy. This ratio is 0.14 for the years 2000-2024. It declined from 0.16 in 2000-2013 period to 0.12 in 2014-2018. There is a recent upturn of the ratio in recent years.

Table 8: Average Ratio of Real GFCE to Real GDP

Period	Ratio	Decay of Ratio
2000-2013	0.16	(6.67)
2014-2018	0.12	0.11
2019-2023	0.08	(9.02)
Overall	0.14	-5.12

Source: Computed based on data from MoPD

The GFCE/GDP ratio is not constant and has declined over time. Forecasts of real government expenditure was made considering a declining growth rate of the ratio of expenditure to GDP.

4.1.4. GDP DEFLATOR

A baseline projection of GDP deflator is forecasted based on the assumption that there will be no further policy change or economic reform in the country. The GDP deflator is expected to follow the trend of the last 21 years to forecast values of deflator for the next five years. Therefore, GDP deflator will at an average rate of 13% per year over the

next five years. A more reasonable forecast of GDP deflator is provided in Scenario II below by considering the planned policy/reform changes of the government.

Table 9: Estimation of Trend Coefficient of GDP Deflator

Number of Obs	21	LRGDP	-2.2	+	0.13	*Trend
F Stat	807				R2	0.98
Prob > F	0.00				N	21
R-squared	0.98				DF	19
Adj R-squared	0.98					
Root MSE	0.12					

	Coef.	Std. Error	t-stat	Pvalue	ll	up	df
Trend	0.13	0.00	28.41	0.00	0.12	0.14	19
_cons	(2.16)	0.06	(38.91)	0.00	(2.28)	(2.05)	19

4.1.5. GROSS NATIONAL SAVING

To arrive at a projection for gross national saving, we deduct both projected private and government consumption from disposable national income. This method allowed us to account for the distinct consumption patterns of both private households and the government, ensuring a more comprehensive representation of the factors influencing gross national saving. By subtracting projected consumption expenditures from disposable national income, we effectively captured the residual portion of national income that is potentially available for saving. This approach aligns with the fundamental economic identity that gross national saving is the residual component of disposable national income, after accounting for consumption expenditures.

4.1.6. FORMAL FINANCIAL SAVING

Subsequent to formulating a projection for gross national saving, we disaggregated this into financial and non-financial saving. Utilizing data on the proportion of actual saving held in the banking sector relative to actual total gross national saving, we estimated the share of financial saving from gross national saving. The share of financial saving from total gross national saving can be a valuable indicator for the monetization of an economy, shedding light on the transition from traditional, non-monetized practices to a more integrated financial system. A rising share of financial saving suggests increased participation in formal financial institutions, indicating greater reliance on banks and other financial instruments for storing and utilizing surplus funds. Subsequently, we projected financial saving by applying this share to the projected gross national saving.

4.1.7. INFORMAL FINANCIAL SAVING

Estimating informal financial saving is a complex task due to the inherent nature of informal saving, which is often not recorded or tracked in traditional financial systems. This makes it difficult to gather accurate and reliable data on the extent of informal

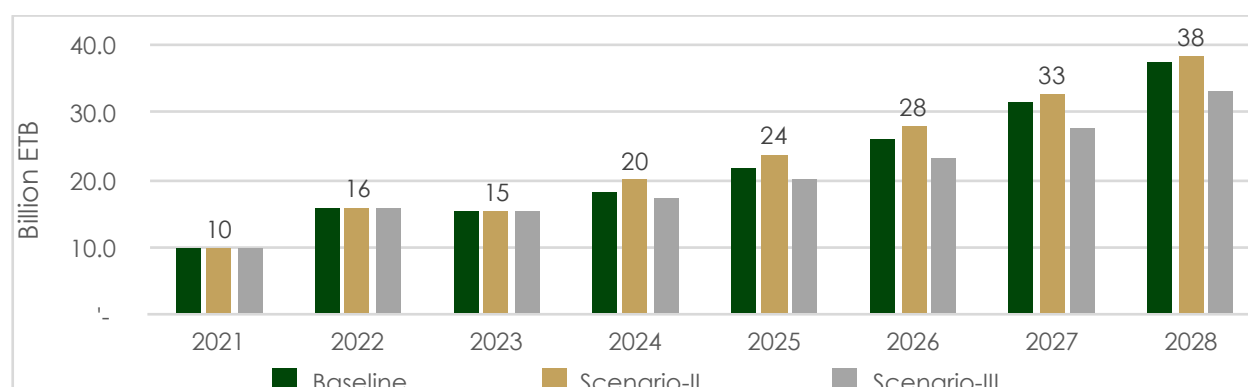
saving practices. Additionally, informal saving can take various forms, such as holding cash at home, participating in rotating savings and credit associations (ROSCAs), or investing in informal assets like livestock or jewelry. This diversity of informal saving methods further complicates the estimation process.

Moreover, the country lacks the infrastructure and resources necessary to effectively collect and analyze data on informal saving. There are few household surveys asking respondents on the type and size of assets including informal savings [e.g. (CSS, 2019)]. In addition to representativeness issues surrounding the sample, estimates were way too small (0.7% of total formal financial saving). This can lead to underestimates or at times overestimates the actual level of informal saving. Additionally, cultural factors and social norms can influence informal saving practices, making it difficult to apply standardized estimation methods across different contexts.

Despite these challenges, estimating informal saving is crucial for understanding the overall financial landscape of the country. Informal saving can play a significant role in household finance and microfinance, and it can influence economic growth and development. Therefore, developing more accurate and reliable methods for estimating informal saving remains an important area of research and policymaking. Doing estimation of informal saving using a robust methodology will however be beyond the scope of this project.

Our approach will be a simpler one: we used currency in circulation to estimate informal saving in Ethiopia. Based on the assumption that the government will implement reforms that promote financial deepening, increase access to finance, and encourage individuals to shift their savings from informal channels to formal financial institutions, informal saving was taken 35% of total changes (flow) in currency in circulation. This assumption is reasonable given the government's commitment to developing the financial sector and reducing reliance on informal saving. However, it is important to note that the actual informal saving rate may be higher or lower than 35% depending on the effectiveness of government reforms and the preferences of individuals and businesses. Using this crude estimation based on currency in circulation informal financial saving will reach Birr 38.3 billion by 2028.

Figure 12: Gross Informal Financial Saving

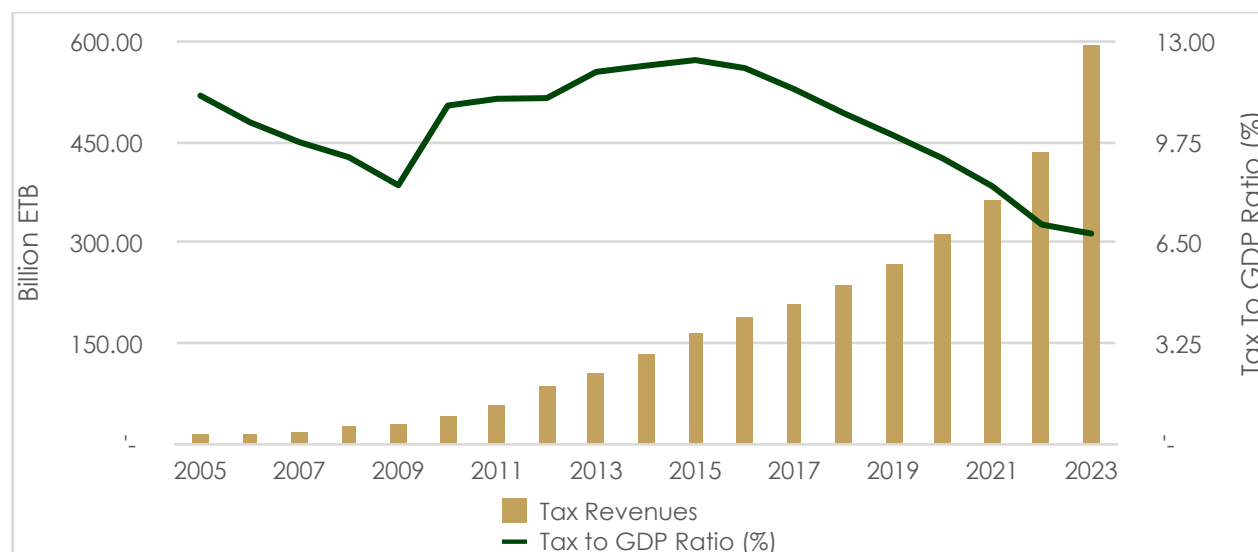


Note: Actual data for 2021-2023 are presented for comparison

4.1.8. TAX REVENUE

Despite the reforms during HGER period and growth in tax revenue in nominal terms, the tax to GDP ratio declined starting in 2015. Tax to GDP ratio was 12.4 % in 2014/15. This has been declining over the years. This ratio further declined from 10% in 2019 to 6.8% by 2023 (Figure 13). This is significantly lower than the sub-Saharan African average of about 16 % of GDP.

Figure 13: Total tax revenue as % of GDP



Source: Drawn based on data from MoF

Effective tax rate (i.e. the ratio of actual tax collection revenue to tax base) and marginal tax rate (i.e. the ratio of the change in taxes to the change in the tax base) are usually employed to forecast tax revenues. The latter, which encompasses elasticity and tax buoyancy, is a better approach as the former lacks stability across time.

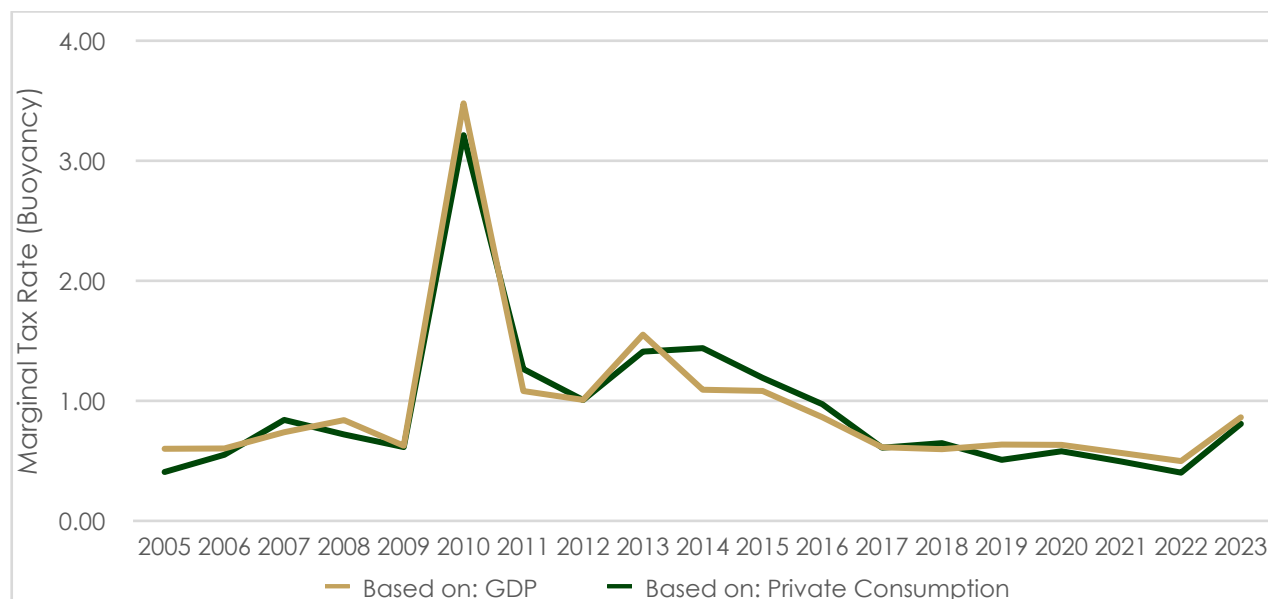
The tax buoyancy approach can be used to project tax revenue by estimating the tax buoyancy, forecast the growth rate of the tax base, and multiply the tax buoyancy by the forecast growth rate of the tax base to get the projected growth rate of tax revenue. The approach is a simple and straightforward to project tax revenue. However, it assumes that the tax buoyancy will remain constant over time. This may not be true if there are significant changes in the tax system or the economy. Despite this limitation, the tax buoyancy approach is a widely used tool for projecting tax revenue. It is particularly useful for forecasting tax revenue in developing countries, where data on tax revenue and the tax base may be limited (IMF, 2019).

Buoyancy is given by:-

$$\mathcal{B} = \frac{\% \Delta TR}{\% \Delta TB},$$

Where TR is tax revenue and TB is the tax base.

Figure 14: Marginal Tax Rate (Buoyancy)



As shown in Figure 14, marginal tax rate has been stable over the last 13 years, as compared to effective tax rate which declined over the recent periods (Figure 15).

Figure 15: Effective Tax Rate

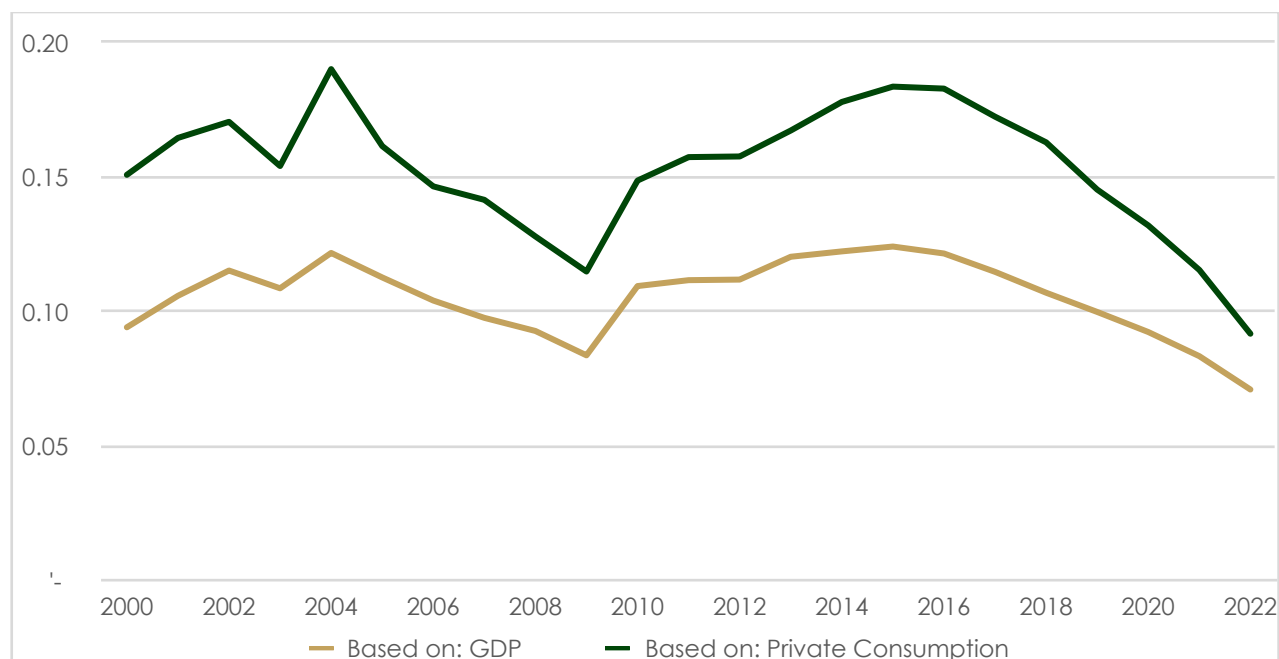


Table 10 also presents average marginal tax rate (buoyancy) based on GDP and private consumption for different periods.

Table 10: Average Marginal Tax Rate (Buoyancy)

	2001-2011	2012-2022	2001-2023
GDP at Current Market Prices	1.30	0.82	1.05
Private Final Consumption Expenditure	1.59	0.82	1.20

A forecast error analysis was made both on effective tax rate and marginal tax rate for both private consumption and GDP. The result shows that marginal tax rate (based on buoyancy) using GDP as a proxy tax base has a lower forecast error.

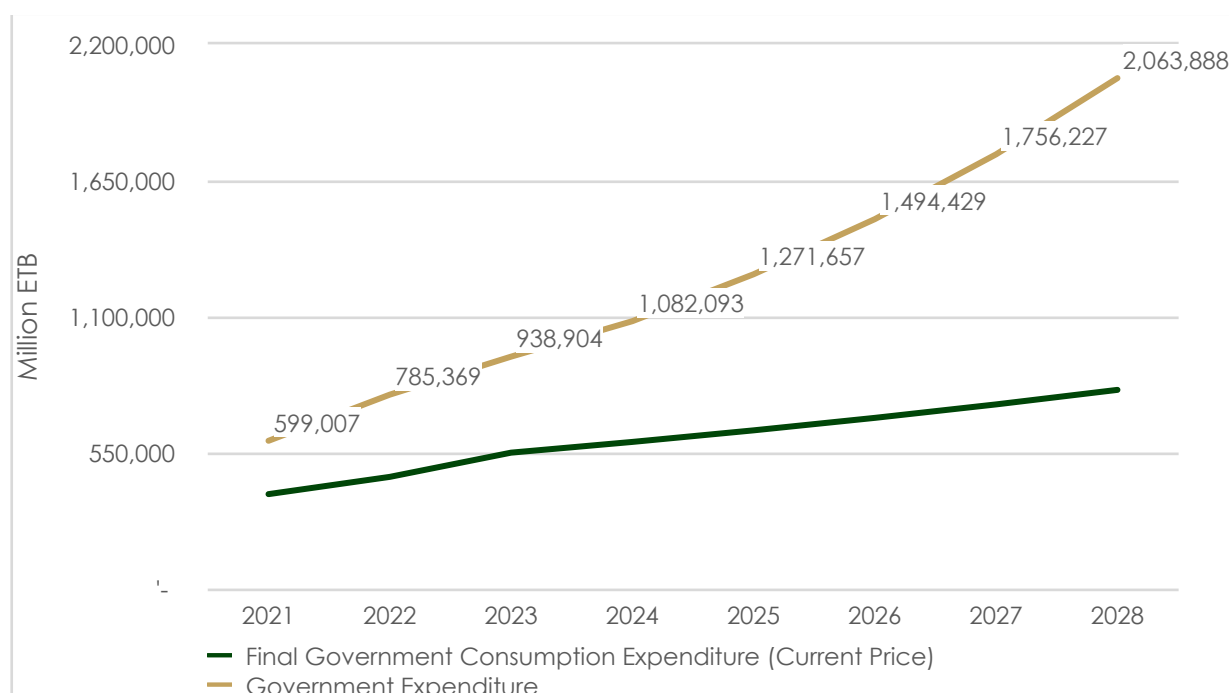
Table 11: Effective Tax Rate (ETR) and Marginal Tax Rate (MTR)

Forecast Error	RMSE	RMSPE
ETR: GDP	383,066.7	82.6
ETR: Private Consumption	531,674.0	114.6
MTR: GDP	101,389.5	21.9
MTR: Private Consumption	183,311.5	39.5

4.1.9. GOVERNMENT EXPENDITURE

Forecasting government expenditure in the fiscal sector was made based on the growth rate of final consumption expenditure of national accounts. The rationale for this approach is that government expenditure is often correlated with final consumption expenditure. This means that when final consumption expenditure increases, government expenditure tends to increase as well. There are a number of reasons why this correlation may exist. The government is a major consumer of goods and services. For example, the government spends money on education, healthcare, infrastructure, and defense. When final consumption expenditure increases, the government is often required to increase its spending on these goods.

Figure 16: Final Government Consumption Expenditure



4.1.10. GOVERNMENT FINANCING

Ethiopia's budget deficit is bridged through two primary financing avenues: external and domestic sources. External financing relies on foreign loans, supporting both capital expenditures and general budgetary needs. Domestically, the government primarily taps into the banking system, with a significant portion sourced through direct advances from the central bank. Non-banking sources also contribute to domestic financing, but to a lesser extent. This dual-pronged approach highlights the government's reliance on both international and domestic resources to manage its fiscal gap.

DOMESTIC FINANCING

Direct Advance

When the government cannot sell enough Treasury bills to cover the budget financing shortfall due to low demand as the domestic loan market is underdeveloped, the National Bank of Ethiopia's Direct Advance facility is used to cover temporary liquidity concerns or financial shortages that occur. In 2019, the government of Ethiopia has set a direction to phase out direct advances from NBE. The government converted the outstanding debt from direct advances into a 25-years government bond with a 10-year grace period to signal the government's commitment. As a result, the outstanding debt from direct advances dropped from ETB 187 billion (7 % of GDP) in June 2019 to ETB 31 billion (i.e. close to 1 % of GDP) by June 2020. While this decline shows commitments of the GOE, direct advances from NBE reverted in the following two years

—it increased to ETB 83.5 Billion (1.9 % of GDP) in June 2021 and to ETB 160 billion (2.6 % of GDP) in June 2022 (Table 12).

It should be noted that forecasting direct advance is more difficult than other macroeconomic variables as the decisions on the size of financing from the central bank is more political than economic one. This means Ethiopia's dependence on direct advances from the central bank to finance its budget deficit raises concerns about the influence of political considerations on economic decisions. Recently, NBE planned to reduce direct advances to the government by sharply reducing direct advance to the government this fiscal year and limit such lending to just one-third of the prior-year levels (NBE, 2023). Our projection of direct advance is based on this plan.

Table 12: Public Sector Domestic Debt Outstanding by Instrument Million ETB

Instrument	30-06-19	30-06-20	30-06-21	30-06-22
Direct Advances	187,265	31,000	83,500	159,500
Treasury Bills	138,034	23,724	120,960	317,670
Treasury Notes		149,333	147,658	147,658
SOE Debt	411,652	486,560	575,364	657,231
Government Bonds	36,589	228,337	248,458	248,020
Total Domestic Debt	773,540	918,954	1,175,939	1,530,078

Source: MOF, Public Sector Debt Statistical Bulletin. No. 42

There should be a discussion on the main document, about the current T-Bills market and how it is undersubscribed and its implication. Its a good baseline!

Treasury Bills

Treasury Bills are short-term government security used to raise funds from the general public. It is used primarily for government deficit financing but occasionally used by NBE for the conduct of monetary policy. Prior to the reform, the MOF issued T-bills on a weekly basis, on demand to the two public pension funds as they were mandated to invest exclusively in T-bills. However, a new market-determined Treasury bill was introduced in December 2019 and the auction became held on biweekly basis. Treasury Bills are available in four maturities: 28 days, 91 days, 182 days, and 364 days. The most frequent purchasers of the bills are pension funds, government banks insurance companies, and other non-financial public institutions. However, as the weighted average yield of market-determined Treasury Bills improved over time since the reform, commercial banks' participation in the Treasury Bills auction increased. The

stock of existing Treasury bills that had not yet matured but were issued before December 2019, was converted into three-year Treasury notes. After the conversion of existing T-Bills, the stock of Treasury Bills becomes around ETB 23,724 million as of June 30, 2020, but continuously increasing and reached ETB 317,670 million at the end of June 2022 constituting 20.8 % of total domestic debt for the fiscal year 2021/22.

T-bills are usually undersubscribed (i.e. the total amount of bids received falls short of the amount of T-bills the government aims to sell.) While this phenomenon can have varied causes depending on the specific context, this might be because of existing NBE's directives, lack of competing investment opportunities, liquidity concerns etc.

Government Bonds

Government bonds are long-term debt instruments with maturities of ten years or more that are issued for particular purposes such as converting short-term central government instruments into long-term instruments or acquiring bad debt from SOEs during privatization as opposed to investing or covering a budget deficit. SOEs typically borrow long-term loans from CBE and DBE to fund projects and issue corporate bonds to CBE. The government has recently issued bonds to assist government-owned banks such as CBE and DBE in raising capital. The majority of government bonds do not pay interest. Thus, the majority of the holders of long-term government bonds are the Commercial Bank of Ethiopia (CBE), the Development Bank of Ethiopia (DBE) and the National Bank of Ethiopia (NBE). At the end of June 2021/22, there were about ETB 248,020,49 million in outstanding government bonds (Table 12).

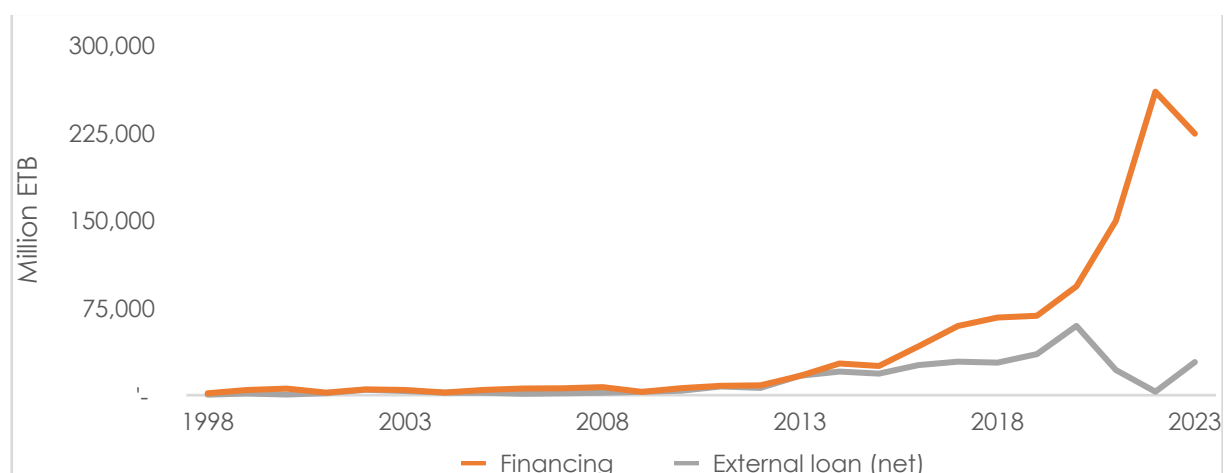
Treasury Notes

Treasury notes are a new medium-term instrument. The Treasury Note was introduced to ease the transition from Treasury Bills to market determined Treasury Bills by converting the stock of existing Treasury Bills into three-year Treasury Notes. As of December 2019, the existing Treasury Bills, ETB 112,046 million were converted into a three-year Treasury Note as part of the transition to the new market-determined Treasury Bills. The majority of these note holders are POSSA and PESSA. The stock of treasury notes is approximately ETB 147,658 million, in June 2022 (Table 12).

EXTERNAL LOAN

Ethiopia's budget deficits has been shaped by significant reliance on external loans. This dependence fueled infrastructure development and economic growth, but also raised concerns about sustainability. However, recent years have witnessed a notable shift (Figure 15). The government has implemented conscious efforts to reduce its dependence on external loans, diversifying its financing sources and prioritizing domestic resource mobilization.

Figure 17: Financing and External Loan (Net)



Source: Ministry of Finance

This proactive approach aims to lessen the burden of future debt repayments and promote greater economic independence. This shift stems not only from a desire for self-reliance but also from a recognition of the changing lending landscape. Borrowers, once eager to lend to Ethiopia's ambitious development plans, have become more hesitant in the face of the country's internal issues, including ongoing conflicts and war. These internal challenges not only hamper economic activity but also raise concerns about the country's capacity to repay loans, making the country a less attractive borrower. This hesitancy from lenders, coupled with the government's own efforts, has contributed to the decline in external borrowing as shown in Figure 17 above.

While the past two decades offer valuable data, simply extrapolating that trend might miss these crucial shifts in recent years and miss the impact of this upcoming financial obligations. Forecasting Ethiopia's net external loans, therefore, requires a nuanced approach, considering both historical trends, the government's evolving relationship with external borrowing, and recent developments regarding external creditors including Eurobond holders.

Ethiopia's current debt outstanding of Eurobond holders is USD 1 billion (Table 11). This is a single issue that matures in December 2024. However, it is important to note that there are recent developments surrounding this Eurobond. In its Press Release on 15th Dec 2023, in an effort to ensure fair treatment of all creditors, Ministry of Finance presented its strategy to Eurobond holders during a global investor call. Following debt service suspension agreements with official creditors, the government seeks similar arrangements with bondholders, including a one-time contribution to address the debt issue while negotiations under the Common Framework proceed. This approach aims to maintain fairness and facilitate ongoing discussions with other external lenders (Ministry of Finance, 2023).

Table 13: Public Sector External Debt Outstanding by Lender, Category, Creditor Type and Creditor (Million USD)

	2018/19		2019/20		2020/21 ^R		2021/22 ^R		31/03/2023 ^P	
	USD	%	USD	%	USD	%	USD	%	USD	%
GRAND TOTAL	27,075.6	100.0	28,889.9	100.0	29,521.8	100.0	27,956.2	100.0	28,173.8	100.0
OFFICIAL CREDITORS	20,196.1	74.6	22,390.4	77.5	23,492.8	79.6	22,688.9	81.2	22,899.2	81.3
MULTILATERALS	11,669.7	43.1	13,783.6	47.7	14,983.1	50.8	14,707.6	52.6	15,210.9	54.0
BILATERALS	8,526.5	31.5	8,606.8	29.8	8,509.7	28.8	7,981.3	28.5	7,688.3	27.3
<i>Paris Club</i>	717.0	2.6	812.7	2.8	937.8	3.2	839.2	3.0	835.3	3.0
<i>Non-Paris Club</i>	7,809.5	28.8	7,794.1	27.0	7,571.9	25.6	7,142.1	25.5	6,853.0	24.3
PRIVATE CREDITORS	6,879.5	25.4	6,499.6	22.5	6,029.0	20.4	5,267.4	18.8	5,274.6	18.7
<i>Commercial Banks</i>	3,919.5	14.5	3,790.9	13.1	3,600.6	12.2	3,092.1	11.1	3,191.2	11.3
<i>Suppliers</i>	1,960.0	7.2	1,708.7	5.9	1,428.4	4.8	1,175.2	4.2	1,083.5	3.8
<i>Bond and Notes Holders (EUROBOND)</i>	1,000.0	3.7	1,000.0	3.5	1,000.0	3.4	1,000.0	3.6	1,000.0	3.5

^P : Provisional; ^R :Revised
Source: Ministry of Finance

Beyond the existing pressure from its Eurobond, Ethiopia also faces additional financial strain from commitments to multilateral (outstanding of USD 15.2 billion as of June 2023) to bilateral -Paris and Non-Paris Club-(USD 7.7 billion) and other private creditors (USD 4.2 billion). These combined loan repayments strain the country's capacity to manage its external debt, potentially hindering essential investments and economic growth.

Our projection of net external loans acknowledges the historical context, the ongoing policy shifts, and the future loan repayments. We utilized growth in deficit to GDP ratio observed during the same period. This calibrated approach balances historical data with evolving realities and a specific financial commitment, providing a more comprehensive and realistic forecast for external debt trajectory.

4.2. SCENARIO II

Scenario II outlines a likely scenario for Ethiopia's economic growth and capital market development. The scenario assumes that the government will implement most of the HGER 2.0 policies, establish macroeconomic stability, create a conducive investment and trade environment, and increase productivity across key sectors. If these reforms are successful, we expect the economy to grow at a faster rate in the coming years driven by strong investment and export growth than the baseline scenario. Furthermore, if the government can implement the necessary reforms, the country could experience a period of sustained economic growth and could change growth trajectory towards its long run trend. The major policy changes and reforms that we consider in the next five years is part of the new reform agenda, Home-Grown Economic Reform—HGER 2.0 (Ministry of Finance, 2023)

4.2.1. HGER 2.0 AND REAL GDP GROWTH

The government launched HGER 2.0 in 2023 to achieve macroeconomic stability, creating a conducive investment and trade environment, improve productivity in key sectors, and build a capable and efficient civil service (Ministry of Finance, 2023). The sectors targeted for transformation include agriculture, manufacturing, mining, tourism, and the digital economy. If most of these reforms are implemented, they deem to have an impact on economic growth, hence on the supply of financial resources for the capital market.

If we assume economic growth to come back to its long run trend, one way to forecast GDP is to use trend analysis for longer periods. This involves regressing logarithms of GDP on trend (i.e. time in years). The regression model will produce a fitted line that can be used to forecast future values of GDP.

$$\text{Ln}(GDP_t) = \alpha + \beta t + \varepsilon_t$$

The slope coefficient β represents the average change in GDP per ³year. To forecast GDP using this model, we would simply plug in the forecasted value of time (T) into the equation and calculate the value of GDP.

$$Y_{t+1} = Y_t * (1 + \frac{\beta (= 9.1)}{100})$$

Estimation result show that trend growth was 9.1% for the period 2020-2022 (see Table 14).

³ If the slope coefficient is positive, then the trend is positive, meaning that GDP is growing over time. If the slope coefficient is negative, then the trend is negative, meaning that GDP is shrinking over time.

Table 14: Coefficients of Trend Growth Rate of the Ethiopian Real GDP

Number of Obs	21	LRGDP	12.7	+	0.091 *Trend		
F Stat	2,736				R2	0.99	
Prob > F	0.00				N	21.0	
R-squared	0.99				DF	19.0	
Adj R-squared	0.99						
Root MSE	0.05						

	Coef.	Std. Error	t-stat	Pvalue	ll	up	df
Trend	0.09	0.00	52.31	0.00	0.09	0.09	19
_cons	12.69	0.02	579.03	0.00	12.65	12.74	19

Source: Computed based on data from MoPD

Trend analysis is a simple and easy-to-use method for forecasting GDP. The authors believe that the economy will be growing by 9.1% (its long run trend) if the government is committed to implementing the reform programs, social peace prevails, and if the country encounters no external shocks.

4.2.2. MONETARY POLICY TIGHTENING

INFLATION

The National Bank of Ethiopia undertook an empirical assessment of inflation's underlying determinants and found that the combined impact of supply side factors, cost-push factors, and expansionary fiscal/monetary policy help explain the surge in recent inflation, and proposed the need for coordinated effort towards a lasting solution (NBE, 2023). A set of measures were taken that aim at reducing inflation in the country. NBE aimed to reducing inflation to below 20% by June 2024 and below 10% by June 2025. In order to achieve this target, credit growth was limited to 14 % of previous levels of disbursement; direct advances is limited to 1/3 of previous levels; interest rate at NBE's emergency lending facility increased from 16% to 18%. In its recently published strategic plan, NBE revised these inflation targets. The plan has five strategic objectives: 1) price and external stability, 2) financial stability, 3) financial inclusion, deepening, and digitization, 4) excellence in NBE's operations, and 5) building a strong governance systems and practices (NBE, 2023). The revised inflation targets for 2024-2026 are presented in Table 15, along with IMF's projections.

Table 15: Forecast of Inflation for the 2023-2027*

	2023	2024	2025	2026	2027	2028
Annual Inflation	29.3	20.0	10.0	8.0	8.0	8.0
IMF Forecast	29.3	20.7	16.5	12.6	12.6	12.6

Note: Projection of annual inflation by NBE is extended for two more years (2027 & 2028)

IMF also has a relatively higher forecast for the next five years (2023-2028) compared to NBE's targeting in the next three years (IMF, 2023). Governments forecast of annual inflation is considered to forecast GDP deflator in the second scenario.

4.2.3. FIXED INCOME INSTRUMENTS: CENTRAL GOVERNMENT

Once we have projections in both baseline and Scenario II of some of the relevant macroeconomic variables, and the resources available to be invested, deducting projected direct advance and external loan from the projected total financing needs of the central government, we will have the size of resources available for fixed income instruments.

4.2.4. OTHER MARKETS

4.2.4.1. PRIVATE SECTOR AND SOEs

To forecast the size of the bond market in state-owned enterprises (SOEs) and the private sector, we utilize lending data disaggregated by term, specifically long-term versus short-term loans. Projected long-term loans are considered a close proxy for the size of the bond market, as bonds are typically issued to finance long-term borrowings. This approach is based on the rationale that long-term loans from banks reflect the demand for long-term financing, which is often met through bond issuance. Therefore, by analyzing long-term loan data, we can gain insights into the potential size and growth prospects of the bond market in both the SOE and private sectors. However, since we do not have term structure of lending in the banking sector (i.e. the different interest rates that banks charge for loans with different maturities). To estimate the proportion of total long-term loans we look at lending by banks. More than 85% of CBE's lending goes to SOEs and can be considered long term. Secondly, we assume that between 5-10 % of lending by the private banks is long-term. This can be considered as a conservative assumption as the average of long-term lending by banks reaches as high as 17% according to industry experts interviewed for this purpose.

To project future growth of bond market we use a method of accounting for inflation impacts on the decision to long term investment in bonds. An estimation was made of the relationship between time deposit savings and inflation: an increase in inflation discourages savers put their money in banks. The estimated coefficient (3.2%) derived from the relationship between inflation and time savings is applied to forecast the future size of the equity market in the banking sector.

4.2.4.2. EQUITY MARKET: SOEs

The projection of the size of equity market for SOEs is based on the market capitalization approach⁴. The projection utilized several key assumptions. The first assumption was that the share of free float shares would be increasing from 25%-40% for SOEs over the next five years. Free float shares are shares that are not held by the company itself or by its major shareholders, and they are therefore available for trading on the public market. The projection also relied on data on the projected total number of listings from 2-5 SOEs. It was also assumed that the average price per share increases by annual growth rate of projected inflation.

The average number of paid-up shares are shares for which the full value has been paid by the shareholder, and they represent a company's equity capital. This was calculated by dividing paid-up capital of each SOEs divided by the par value of shares. The total number of shares issued was calculated by multiplying the total number of listings by the average number of paid-up shares taking into account the proportion of free float shares. The market price per share (which is the price at which a single share of a company's stock is traded on the market) was projected based on an increase by annual growth rates of inflation. Projection of market capitalization was made by multiplying the total number of shares issued by the projected average price per share.

4.2.4.3. EQUITY MARKET: PRIVATE SECTOR

Estimating the size of the equity market in the financial and non-financial sectors involves a multi-step process that utilizes data on total paid-up capital, retained earnings, time deposit and inflation.

Financial Sector: We use changes in total paid up capital of banks, insurance companies and microfinance institutions to determine the amount of capital that can be expanded through share issuance⁵.

Non-financial sector: We took the top 10% taxpayers from large and medium manufacturing surveys of the Central Statistics Service. Paid up capital of these companies was aggregated for estimating changes in their paid up capital⁶.

For both financial and non-financial sector, an estimated coefficient derived from the relationship between inflation and time deposits savings is applied to forecast the future size of the equity market in the banking sector.

⁴ This approach for estimating equity for state-owned enterprises (SOEs) was conducted in close collaboration with a team at the Ethiopian Stock Exchange (ESX), by adjusting some of the parameters for consistency with the overall approach of the study at hand.

⁵ It is to be noted that insurance companies are not allowed to fully invest their funds in long-term investments. This can be a caveat and future reforms might loosen this to give insurance companies flexibility in their investment portfolio.

⁶ Estimation of equity market includes only large and medium manufacturing companies; and doesn't include companies in the service sector due to lack of data in this sector.

4.3. SCENARIO III

Simulating potential economic shocks in forecasting models is crucial for robust policy planning and risk mitigation. However, introducing such shocks demands careful consideration of their nature, duration, and intensity of the shocks. The historical 2003 drought serves as a valuable case study, illustrating how a severe shock (-2.2% growth) can be followed by a period of strong rebound as the economy recovers. This highlights the importance of incorporating not just the immediate impact of shocks but also potential long-term recovery dynamics. In Scenario III, with a lower economic growth shock of 1% growth rate was introduced in 2024 which can serve as a demonstration of a recovery slower than the one following the 2003 drought. Recognizing that this is an open exercise for further exploration, the aim remains to provide a framework for the ECMA/ESX team to test the resilience of their projections under diverse economic scenarios taking into account the situation at hand.



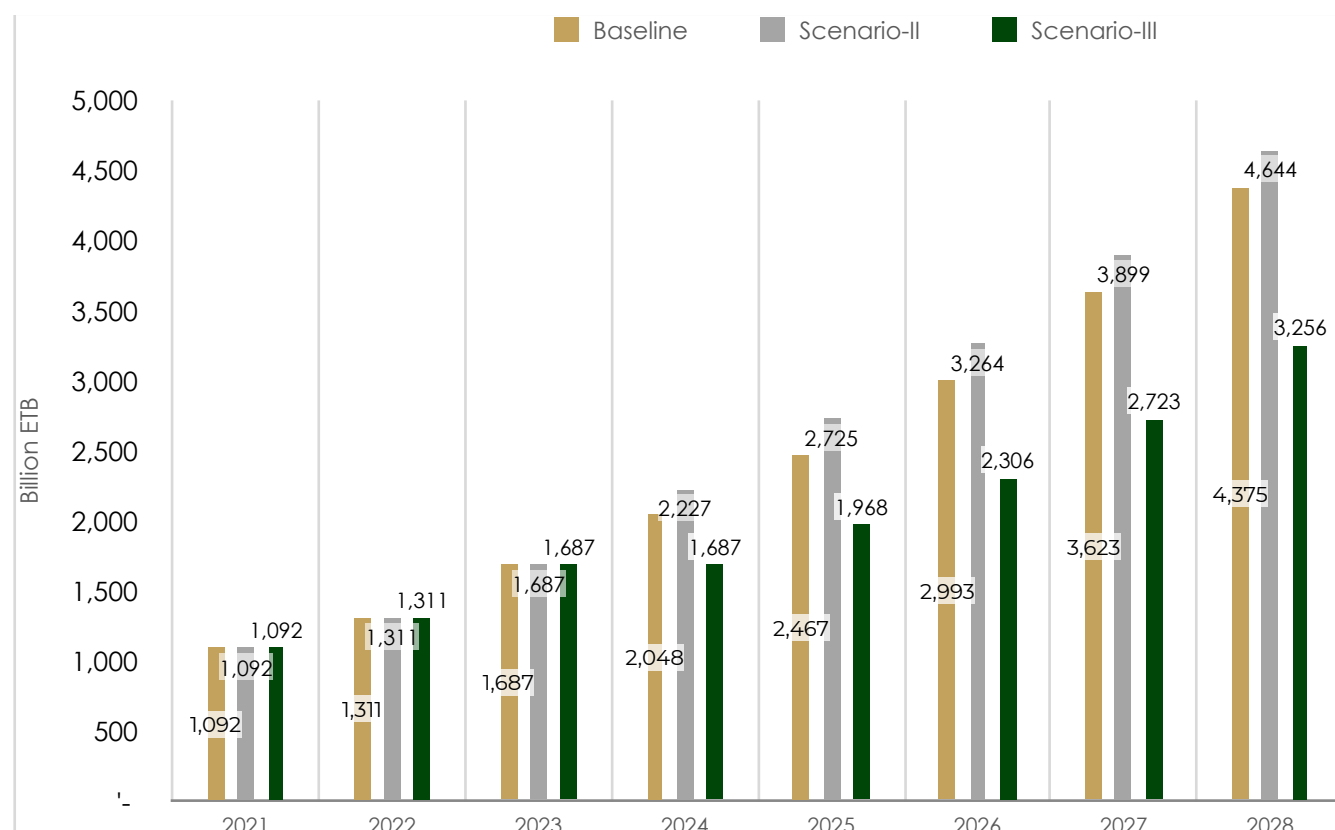
ANALYSIS AND DISCUSSION

Using the general approaches in Section 3 and the estimated results from the last section, this section will discuss and analyze the results of our projections for major variables including gross national saving, financial saving, and market size for debt and equity market in the public and private sectors for the period 2024-2028.

5.1. GROSS NATIONAL SAVING

Gross national saving (GNS) is projected to grow significantly over the next five years under all three scenarios with differing trajectories: baseline, Scenario II (with planned reforms and policies), and Scenario III. Under the baseline scenario, GNS is projected to grow from ETB 2.1 trillion in 2024 to ETB 4.7 trillion in 2028, representing an average annual growth rate of 21%. Under Scenario II (that assumes planned reforms will be implemented), GNS is projected to grow even faster than Scenario I (which assumes current shocks will sustain), reaching ETB 4.6 trillion in 2028, representing an average growth rate of 23% (Figure 18). This is due to the anticipated implementation of planned reforms and policies that are expected to boost economic growth and promote financial saving. Strong economic growth is one of the factors driving changes in GNS. If implemented, there are important packages in HGER 2.0 that lead to a strong economic growth, which have the potential to increase in household incomes and disposable income, allowing households to save more money. With the implementation of the reforms, positive changes in the financial sector will lead to promoting financial deepening such as increasing access to financial services and reducing the cost of borrowing. This makes it easier for households and businesses to save.

Figure 18: Gross National Saving⁷



Under Scenario III, GNS is projected to grow at a slower pace, reaching ETB 3.3 trillion in 2028 from ETB 1.7 trillion in 2024, representing an annual average growth rate of only 14%, mainly due to the impact of deteriorating economic condition due to shocks.

The higher gross national saving under Scenario II has a number of positive implications for the economy. First, it will allow the government to reduce its reliance on foreign borrowing, making the economy less vulnerable to external shocks. Second, higher gross national saving will allow the government to invest more in infrastructure and other public services. This will lead to higher economic growth and improved living standards, which then induces more savings. More importantly, the increase in the overall gross national savings allows more financial savings and increases the resources that flow to the capital market, potentially reducing the cost of capital, and diversifying the investor base.

5.2. FINANCIAL SAVING: TOTAL RESOURCE AVAILABLE FOR INVESTMENT

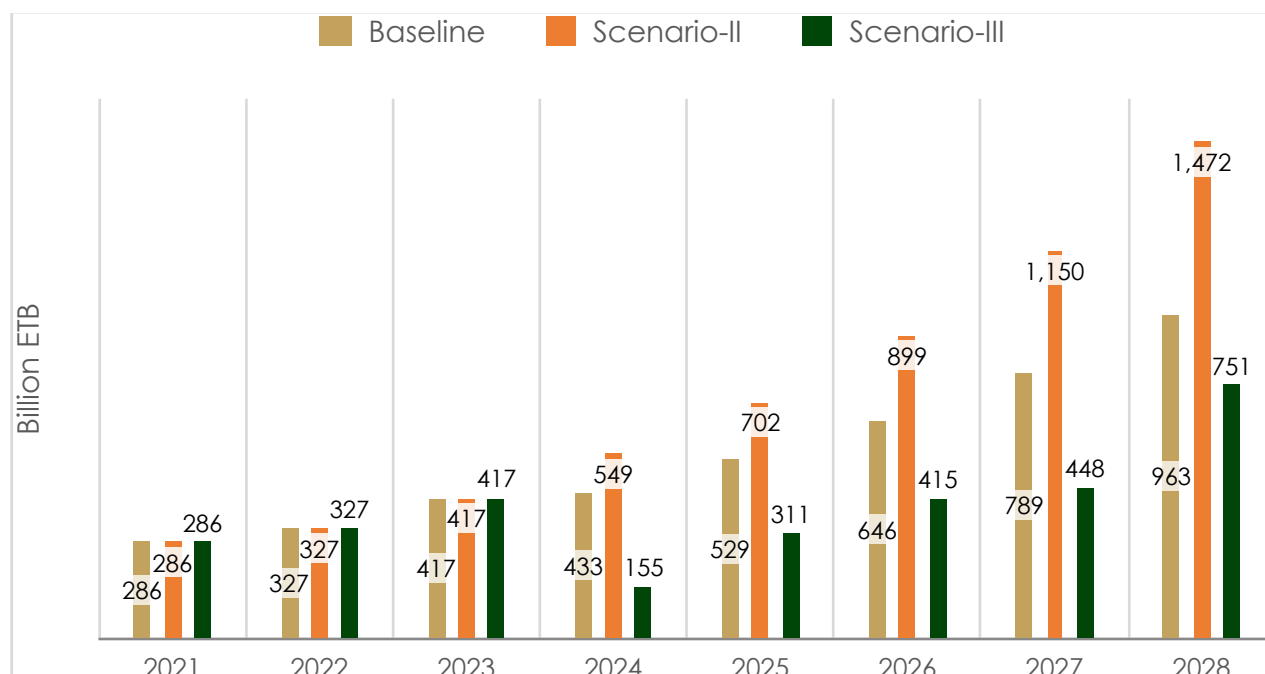
Similar to GNS, the projected growth of financial saving will be increasing in Ethiopia over the next five years, under all three different scenarios, although with different rate of growth rates. Figure 19 shows that the trend in gross national financial saving (GNFS).

⁷ Actual data for 2021-2023 is included along with the forecasts for comparison and to have a quick reference to what happened just before 2024 (the starting point for forecasts)

Under the baseline scenario, financial saving is projected to grow from ETB 433 billion in 2024 to ETB 963 billion in 2028, representing an average annual growth rate of 18%. Under Scenario II, which assumes the implementation of planned reforms and policies, financial saving is projected to grow at a faster pace, reaching ETB 1.5 trillion in 2028, representing an Average annual growth rate of 29%.

Figure 19: Gross National Financial Saving

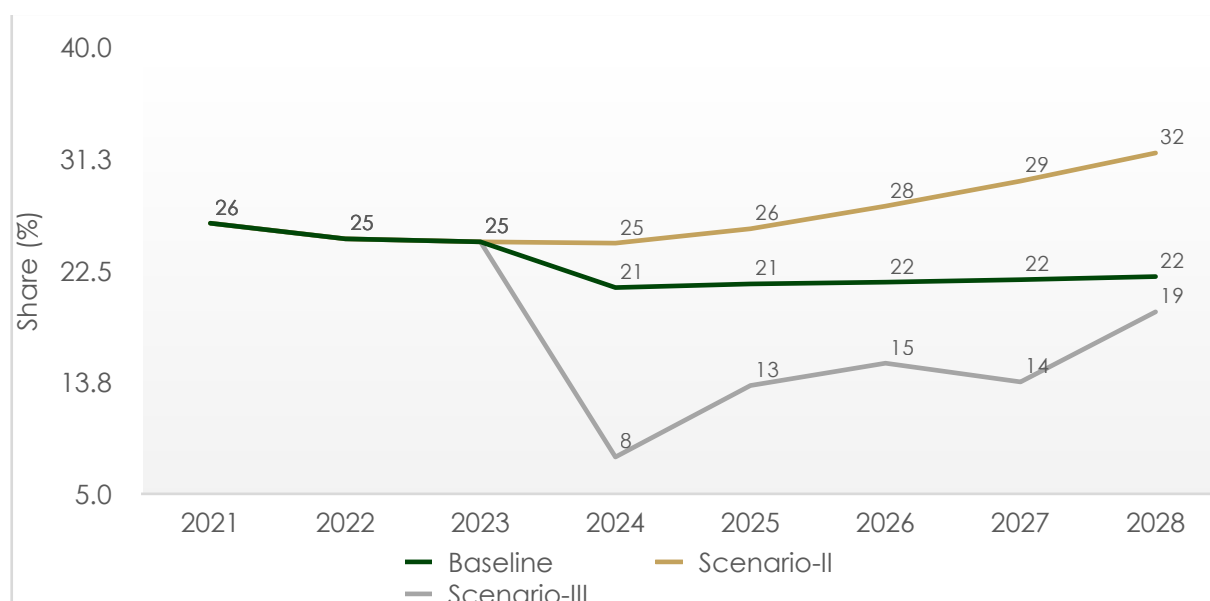
Addis Ababa



GNFS signifies the total available resources for investment. The contributors of this resource include— but not limited to— households, pension funds, commercial banks etc. The increase in GNFS has a number of potential roles for the development of the capital market. First, it provides a pool of resources that can be invested in the capital market. This helps to increase the liquidity of the capital market and makes it easier for businesses to raise capital. Second, the increase in GNFS also helps to reduce the cost of capital. This is because the increased supply of savings leads to lower interest rates. Lower interest rates make it cheaper for businesses to borrow money, which encourages them to invest more. Third, the increase in GNFS also helps to diversify the investor base in the capital market.

Figure 20 shows, in the baseline scenario, the share of financial saving from total saving will be 22% by 2028 from its level of 21% in 2024. This figure for Scenario II increases from 25% in 2024 to 32% in 2028. This upward trend is driven by two key factors: the ongoing monetization of the economy and the channeling of informal sector saving into formal financial institutions. As the economy becomes more monetized, individuals and businesses are increasingly using formal financial channels to hold their savings. This shift from informal to formal saving is further supported by government reforms aimed at promoting financial inclusion and expanding access to formal financial services. As a result, the share of saving held in formal financial institutions is expected to increase steadily, contributing to the overall growth of the formal financial sector and the overall share of saving in the economy.

Figure 20: Share of Financial Saving from Total GNS



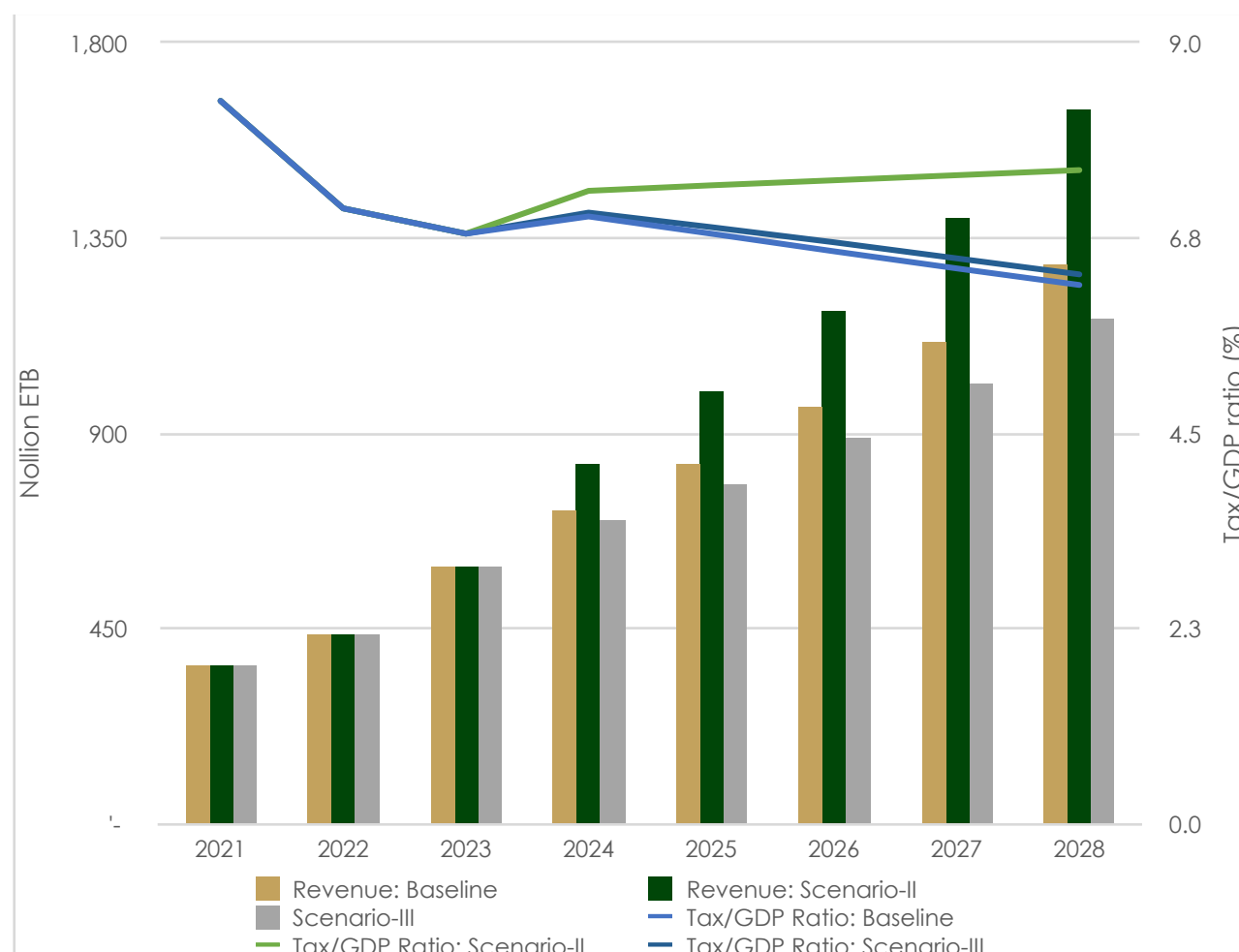
However, the higher level and its increases in the share of financial savings from total gross national savings in the second scenario (Scenario II) is highly dependent on the government's commitment to implement reforms promoting financial deepening, financial inclusion, access and literacy.

5.3. GOVERNMENT DEMAND ON THE DEBT MARKET

5.3.1. BUDGET DEFICIT

Under Scenario II, tax revenue collection and the tax to GDP ratio are projected to increase. Tax revenues increase from ETB 829 billion in 2024 to ETB 1.6 trillion by the end of 2028. Tax to GDP ratio also increases from 7% in 2024 to 8% in 2028. This means that the government is collecting more tax revenue relative to the size of the economy. This has a number of implications for deficit financing: an increase in tax revenue collection can help to reduce the government's budget deficit. This is because the government will have more revenue to cover its spending. A lower budget deficit can lead to a number of positive outcomes, such as reduced interest payments on government debt and lower inflation. Furthermore, an increase in the tax to GDP ratio can make the government's finances more sustainable in the long-run. This is because the government will be able to generate more revenue to cover its spending, which can help to reduce the need to borrow money.

Figure 21: Tax Revenue and Tax-to-GDP Ratio



More importantly, a higher tax to GDP ratio can lead to a lower cost of capital for businesses. This is because the government will be able to finance its spending through tax revenue, rather than through borrowing. Lower interest rates make it cheaper for businesses to borrow money, which can encourage them to invest in the capital market. A higher tax to GDP ratio can also improve investor confidence in the economy as the government is able to generate enough revenue to cover its spending.

5.3.2. DEBT MARKET: CENTRAL GOVERNMENT

As discussed in Section 4, the domestic sources of government financing needs are the various ways in which the government can raise funds from within the country to finance its operations and investments. These sources include tax and non-tax revenues. The government can also borrow money from domestic sources, such as banks, financial institutions, and individuals. This is done by issuing treasury bills, bonds, and other debt instruments.

Figure 22: Market Demand for Fixed Income Instruments

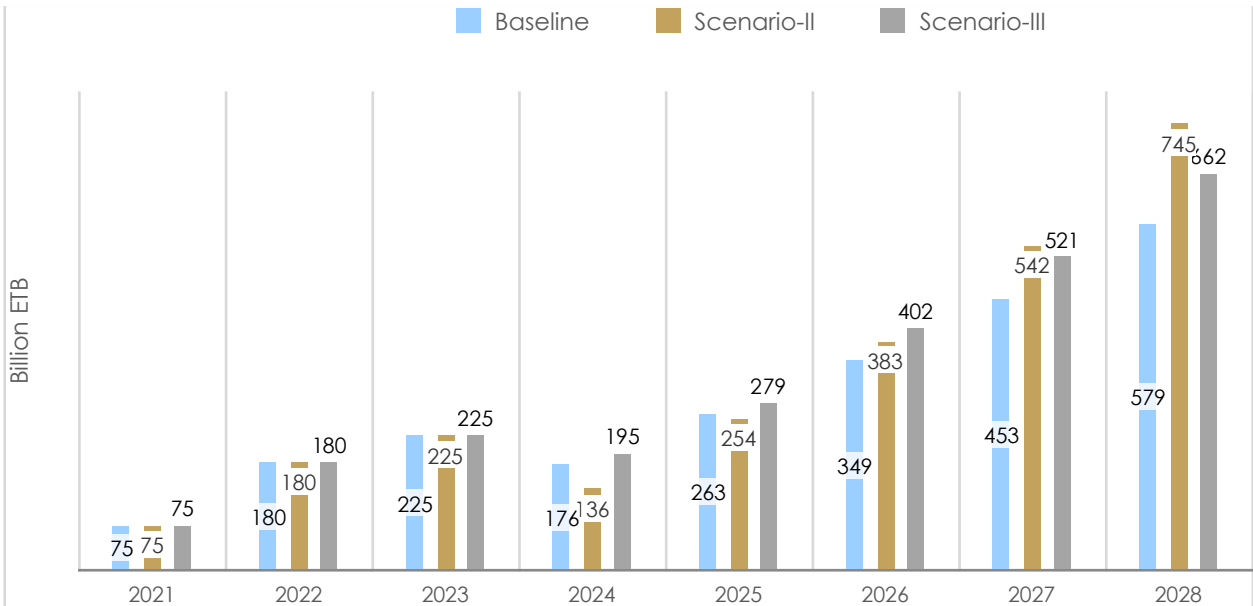
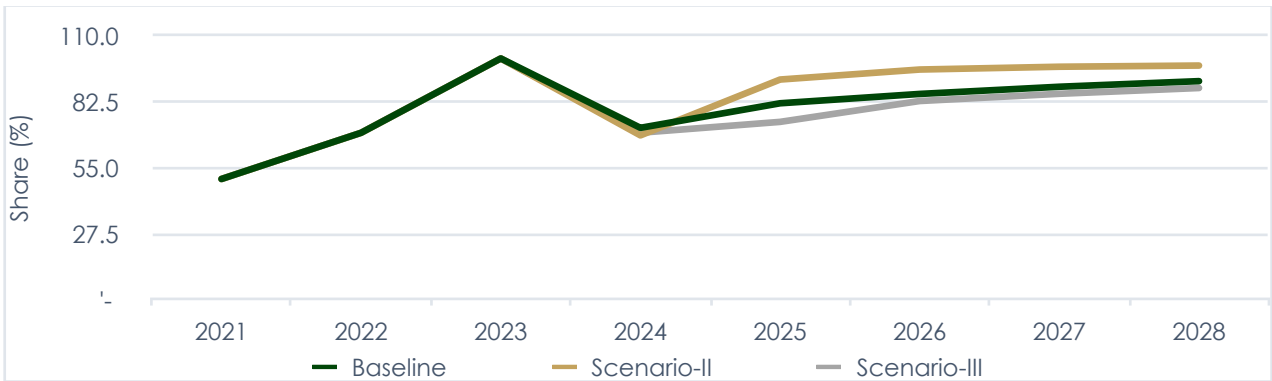


Figure 22 shows projected sales of treasury bond by the Central Government. Under the baseline scenario, the demand for financing in the form of purchase of treasury bonds is projected to increase from ETB 176 billion in 2024 to ETB 579 billion in 2028. Under Scenario II, market size in 2028 will be ETB 645 billion increasing by an annual average growth rate 54% from ETB 210 billion in 2024. This higher increase in the second scenario is due to a number of factors, including, increased government spending, reduced foreign aid, and deepening financial markets inducing more demand for treasury bonds.

The share of central government bond market from its financing needs is projected to be 72% in 2024 and 91% in 2028 under baseline scenario. Under Scenario II, this share will be 97% showing a high dependence on the domestic bond market; and assuming a reduced use of direct advance from the central bank and external loan for its financing needs (Figure 23).

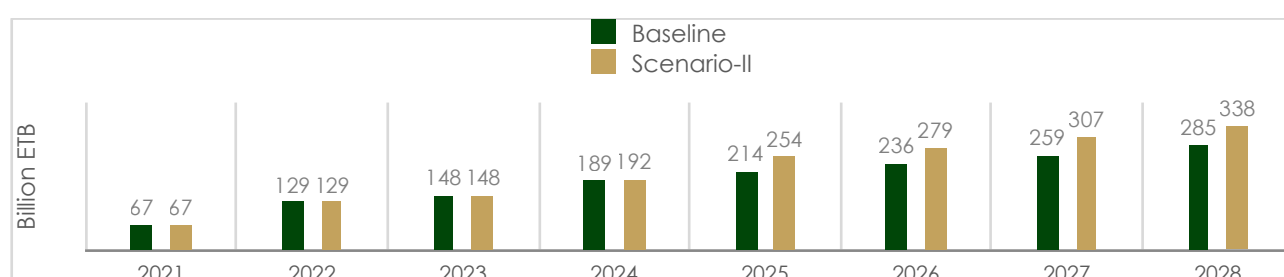
Figure 23: Share of Treasury Bond from Total Financing



5.3.3. DEBT MARKET: PRIVATE SECTOR AND SOES

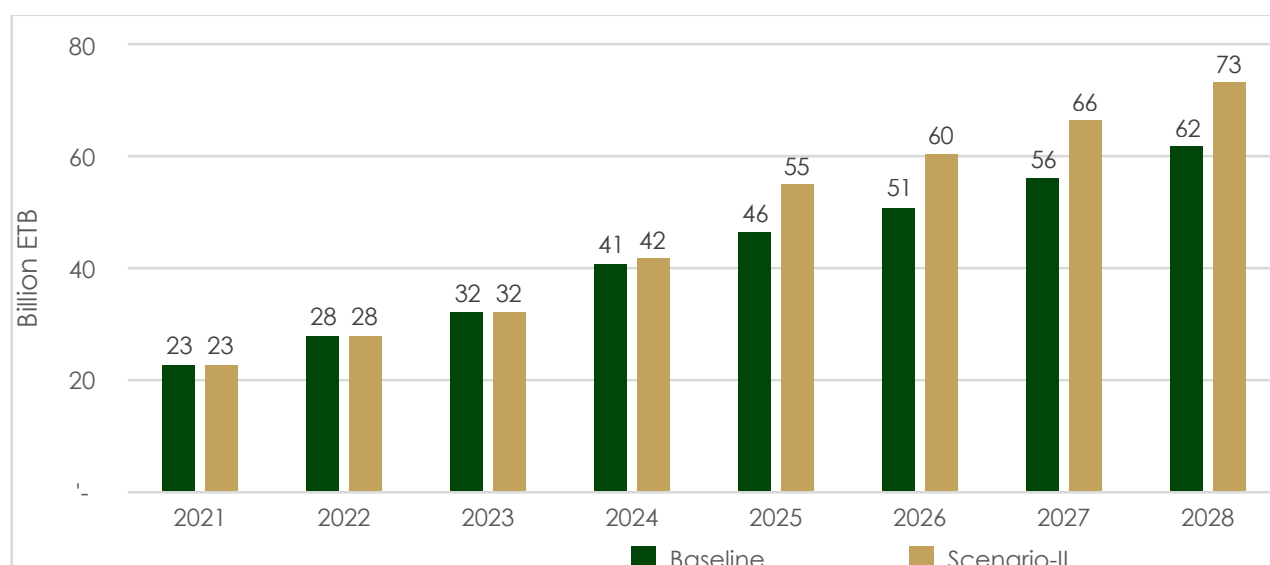
The debt market in Ethiopian state-owned enterprises is projected to grow significantly over the next five years. According to the baseline scenario, the total market size of SOE bonds is expected to increase from ETB 189 billion in 2024 to ETB 285 billion by 2028. Under Scenario II, debt market size for SOEs increases from ETB 192 billion in 2024 to ETB 338 billion in 2028. The significant growth in the SOE debt market assumes that SOEs increase their spending and their bond issuance converting their long-term loans from CBE, reduced foreign government guaranteed foreign borrowing, and deepening financial markets in the economy.

Figure 24: Debt Market Size for SOEs



Although currently non-existent in the country, if the potential for the private sector bond market is expected to experience significant growth over the next five years, with the total value of bonds issued is projected to increase from ETB 41 billion in 2024 to ETB 62 billion by 2028. Under Scenario II, which assumes successful implementation of government reforms, shows the most optimistic growth trajectory, with the bond market reaching ETB 73 billion by 2028 (Figure 25).

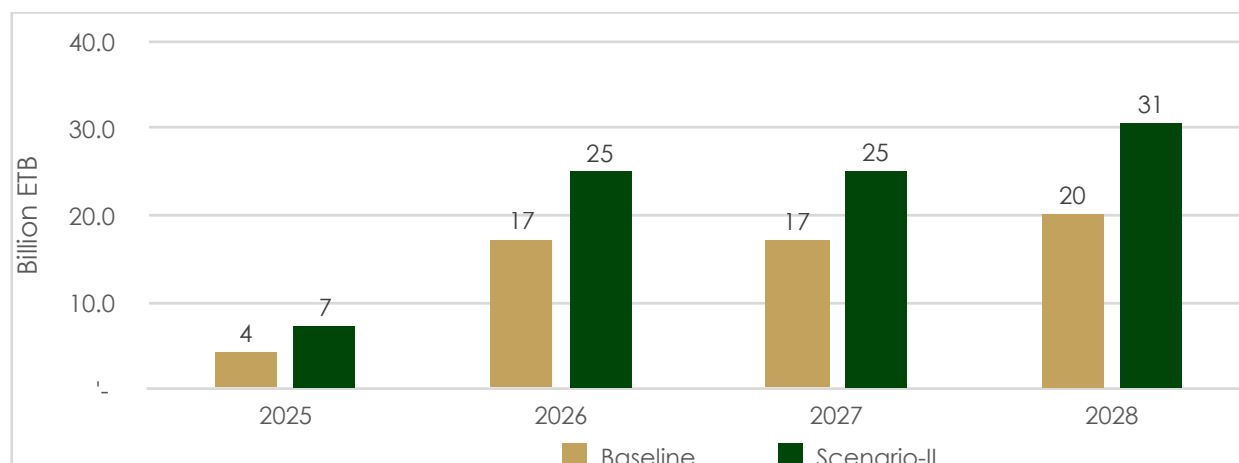
Figure 25: Debt Market Size for the Private Sector (excl. the non-financial service sector)



5.3.4. EQUITY MARKET: PRIVATE SECTOR AND SOES

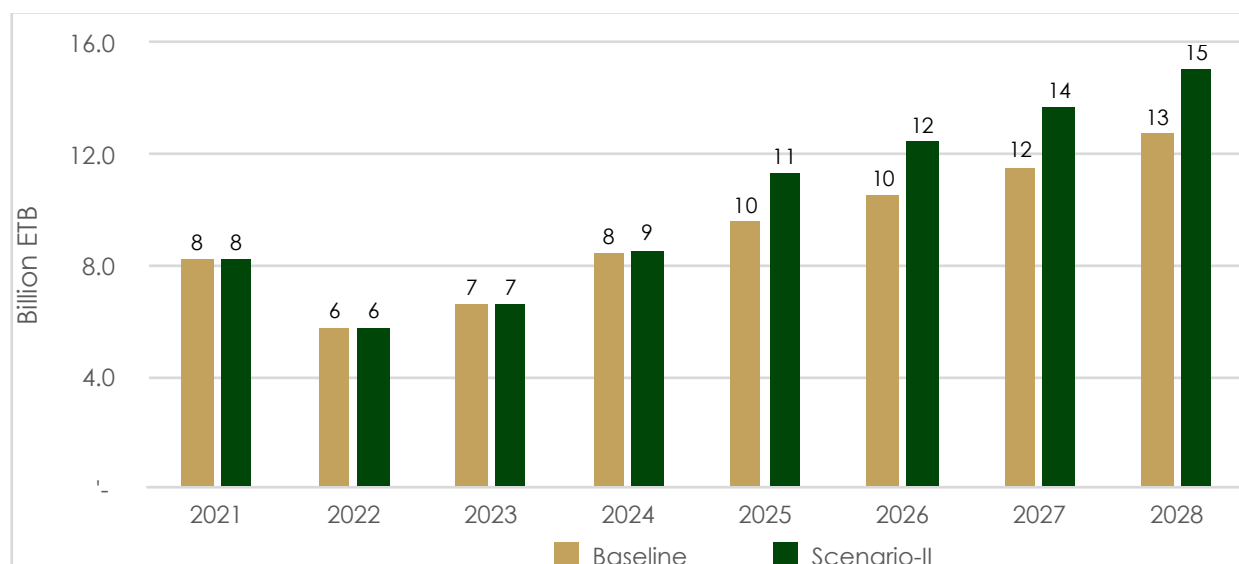
Under the baseline scenario, the size of equity market in the SOE sector was projected to reach ETB 20.1 billion by 2028 from ETB 4.3 billion 2025. With the reforms (Scenario II), this size increases to ETB 31 billion by 2028 (Figure 26).

Figure 26: Equity Market Size for SOEs



Similarly, equity market in the private sector was projected to be ETB 13 billion in 2028 in the baseline and ETB 15 billion under Scenario II. The projections for 2024 are ETB 8.4 billion and ETB 8.6 billion respectively (Figure 27)⁸.

Figure 27: Equity Market Size for the Private Sector



⁸ Our analysis reveals a significant disparity in the projected size of Ethiopia's capital market, with government and state-owned enterprise (SOE) bond and equity markets outpacing the private sector. This gap reflects two key factors. First, the Ethiopian government and SOEs hold a dominant position in the economy compared to the private sector. Second, our estimations encompass only the financial and manufacturing sectors, excluding other service industries, which could contribute to the private sector's capital market potential.



CONCLUSION AND POLICY IMPLICATION

6.1. CONCLUSION

Ethiopia's rapid economic growth demands substantial investments, but limited domestic savings, reliance on foreign debt, and an underdeveloped capital market pose significant challenges. Recognizing this, the 2021 Capital Market Proclamation established a framework for building a more robust and efficient financial system. By diversifying funding sources beyond government bonds, strengthening regulatory institutions, and addressing macroeconomic imbalances, Ethiopia has the opportunity to unlock its capital market's potential. This project, aiming to estimate the potential market size and available resources, will equip stakeholders with valuable insights to guide informed decisions on resource allocation, investments, and policy development. Ultimately, this paves the way for sustainable growth and job creation, empowering Ethiopia to achieve its full economic potential.

To estimate the potential size of Ethiopia's capital market, the study combines top-down and bottom-up approaches. It starts with a general idea from the top-down, then delves into individual components like the stock market and bond market using bottom-up data. This hybrid approach acknowledges limitations in data availability for developing countries. Additionally, the IMF's Financial Programming and Policies framework will be used as a guideline, taking into account real, external, fiscal, and monetary aspects of the economy. This comprehensive approach ensures consistency and accuracy in macroeconomic projections, ultimately informing stakeholders about investment opportunities and development strategies for Ethiopia's capital market.

Three scenarios are designed for projection of major macroeconomic indicators and size of capital markets. Scenario I (Baseline) assumes no significant policy changes and continuation of current challenges, resulting in slower economic growth and limited

capital market development. Scenario II (Proactive) envisions successful implementation of reforms like the HGER 2.0 plan, leading to improved investment climate, macroeconomic stability, and increased productivity. This creates a more conducive environment for the capital market and faster economic growth. Scenario III (Deteriorating) predicts further economic setbacks due to internal or external shocks like fuel price hikes, natural disasters, or intensified conflicts. This would result in slower growth, higher inflation, and negative impacts on employment and poverty, hindering capital market development.

Our projection and estimation of the Ethiopian capital market suggests that it is poised for significant growth in the coming years provided favorable macroeconomic conditions prevail. All three scenarios project growing national savings in Ethiopia, but at different rates. Under the baseline scenario, savings are expected to reach 4.7 trillion ETB by 2028, while proactive reforms (Scenario II) could push this number to 4.6 trillion with a faster annual growth rate. However, external or internal shocks (Scenario III) would slow down growth, leading to a lower 3.3 trillion ETB in savings. Higher savings in Scenario II offer multiple benefits. They reduce foreign debt dependence, enable more public investment, and ultimately create a larger pool of resources for the capital market, potentially lowering costs and attracting diverse investors.

Ethiopia's financial savings, a crucial resource for its capital market development are projected to grow in all scenarios. Under Scenario II, financial saving will reach 1.5 trillion ETB by 2028. This increased pool of funds would enhance market liquidity, reduce capital costs for businesses, and attract diverse investors. Driving this growth are the ongoing monetization of the economy and the shift from informal savings to formal institutions due to government efforts. However, Scenario II's higher financial saving trajectory relies heavily on effective implementation of reforms promoting financial inclusion and literacy.

Scenario II predicts a stronger Ethiopian capital market due to increased tax revenue and reliance on domestic financing. Higher tax collection reduces budget deficits and lowers costs for businesses, while also boosting investor confidence. In this scenario, government's demand for treasury bonds is projected to grow significantly, reaching 745 billion ETB by 2028, driven by factors like increased spending, reduced foreign aid, and deeper financial markets. This heavy reliance on domestic bonds highlights the growing importance of a well-developed capital market for Ethiopia's future.

Both state-owned enterprises (SOEs) and the private sector are expected to drive significant growth in Ethiopia's debt market over the next five years. The SOE market, projected to reach 338 billion ETB by 2028 in the best-case scenario, will be fueled by increased spending, conversion of loans into bonds, and a deeper financial market. Although currently absent, the private sector bond market is also anticipated to see notable growth, reaching 73 billion ETB by 2028 if reforms are successful. These developments highlight the expanding role of the debt market in financing various sectors of the Ethiopian economy.

Ethiopia's equity market, for both private companies and state-owned enterprises (SOEs), is expected to grow over the next five years. Under a scenario with successful reforms (Scenario II), the SOE market could reach 31 billion ETB by 2028, nearly triple its 2025 size. While private sector growth is projected to be more modest, reaching 15 billion ETB in Scenario II, it still represents a significant increase from the 2024 baseline. These projections suggest that both public and private entities will increasingly utilize the equity market for fundraising, potentially expanding investment opportunities and fostering economic development in Ethiopia.

6.2. KEY TAKEAWAYS AND POLICY IMPLICATIONS

This study on the potential market size of Ethiopia's developing capital market offers valuable insights for policymakers and stakeholders. Here are the key takeaways and their policy implications:

MARKET POTENTIAL AND GROWTH

Ethiopia's capital market holds significant growth potential: The study's projections, particularly under Scenario II (Proactive Reforms), indicate substantial growth in national savings, financial savings, government bond demand, and both SOE and private equity markets.

Policy plays a critical role: The pace and extent of this growth hinge on the successful implementation of reforms aimed at macroeconomic stability, improved investment climate, and financial inclusion.

POLICY IMPLICATIONS

Prioritize HGER 2.0 and Similar Reforms: The strong dependence of market growth on proactive reforms underscores the importance of prioritizing initiatives like the HGER 2.0 plan that address financial sector development, investment climate improvement, and macroeconomic stability.

Promote Financial Inclusion and Literacy: Scenario II's projection for increased financial savings relies heavily on effective financial inclusion and literacy initiatives. Policymakers should focus on strategies that encourage Ethiopians to save formally and participate in the capital market.

Develop a Robust Regulatory Framework: A well-developed regulatory framework that fosters investor confidence and protects market integrity is crucial for attracting diverse investors and ensuring sustainable growth.

Diversify Funding Sources: While the study highlights the potential of domestic financing through the capital market, a balanced approach is necessary. Continued efforts to diversify funding sources beyond government bonds are crucial for mitigating risks.

WORKS CITED

- Angolan Stock Exchange and Derivatives (BODIVA). (2023, Dec 26). <https://www.bodiva.ao/>. Retrieved from <https://www.bodiva.ao/sobre-nos>: <https://www.bodiva.ao/sobre-nos>
- Central Statistics Services. (2022). *Montly Inflation Report*. Addis Ababa: Central Statistics Services.
- CSS. (2019). *Ethiopia Socioeconomic Survey (ESS4) 2018-2019*. Retrieved Nov 21, 2023, from Socioeconomic Survey 2018-2019: <https://microdata.worldbank.org/index.php/catalog/3823>
- Esteves, P. S. (2013). Direct vs bottom-up approach when forecasting GDP: Reconciling literature results with institutional practice. *Economic Modelling*, Volume 33, P# 416-420.
- FEDERAL NEGARIT GAZETTE. (2021). *THE FEDERAL DEMOCRATIC REPUBLIC*. Addis Ababa: Federal Negarit Gazette.
- IMF. (2019). *Financial Programming and Policies-Volume 1*. IMF Institute for Captacity Development.
- IMF. (2023, Dec 13). *The Federal Democrateic Republic of Ethiopia*. Retrieved from <https://www.imf.org>: <https://www.imf.org/en/Countries/ETH>
- M. Gudmundsson, T. H. (2000). MACROECONOMETRIC MODELLING. *Macroeconomic Policy: Iceland in an Era of Global Integration*, 399-414.
- Ministry of Finance. (2020). *A Homegrown Economic Reform Agenda: A Pathway to Prosperity*. Addis Ababa: Ministry of Finance.
- Ministry of Finance. (2023, December 15). Ethiopia Holds Global Investor and Reiterates its Intentions to Treat All its External Creditors Equitably. *Press Release*. Addis Ababa: Ministry of Finance.
- Ministry of Finance. (2023). *Homegrown Economic Reform Agenda: A Blueprint for Transforming Ethiopia-HGER 2.0*. Addis Ababa: Ministry of Finance.
- MoF. (2023). *Ethiopia: Summary of Quarterly General Government Finance, Performance (cumulative)*. Addis Ababa: MoF.
- MoPD. (2018). *Poverty and Edconomic Growth in Ethipia (1995/96-2015-16)*. Addis Ababa: Ministry of Planning and Development.

- MoPD. (2021). *Ten Years Development Plan: A Pathway to Prosperity 2020--2030*. Addis Ababa: Planning and Development Commission.
- MoPD. (2022). *National Accounts Statistics: GDP Estimates and Key Macroeconomic Aggregates*. Addis Ababa: Ministry of Planning and Development.
- National Bank of Ethiopia. (2022). *Annual Report*. Addis Ababa: National Bank of Ethiopia.
- NBE. (2023). *Delivering on Our Stability Goals. NBE's Strategic Plan for 2023-26*. Addis Ababa: National Bank of Ethiopia.
- NBE. (2023, August). Monetary Policy Statement. *Press Release*. Addis Ababa: National Bank of Ethiopia.
- Office of the Prime Minister. (2019). *A Homegrown Economic Reform Agenda: A Pathway to Prosperity*. Addis Ababa.
- Patrick Higgins, T. Z. (2016). *FORECASTING CHINA'S ECONOMIC GROWTH AND INFLATION*. Cambridge: NBER WORKING PAPER SERIES.
- PMO. (2019). *A Home-grown Economic Reform Agenda: A Path Way to Prosperity*. Addis Ababa: Prime Minister Office.
- PMO. (2023). *Home Grown Economic Reform Agenda: A Blueprint for Transforming Ethiopia: HGER 2.0*. Addis Ababa: Not Published.
- PwC. (2020). *Africa Capital Markets Watch 2019*. PricewaterhouseCoopers International Limited.
- Valadkhani, A. (2004). *History of Macroeconometric Modelling: Lessons from Past Experience*. Faculty of Commerce - Papers, Faculty of Commerce, University of Wollongong.
- World Bank. (2023, Dec 25). *data.worldbank.org*. Retrieved from Gross savings (% of GDP); <https://data.worldbank.org/indicator/NY.GNS.ICTR.ZS>