FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
HOUSE OF FEDERATION

The Federal General-Purpose Grant Distribution Formula 2017/18 - 2019/20

Addis Ababa, Ethiopia

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Contents

Message from the Speaker of the House of Federation

The Constitution of the Federal Democratic Republic of Ethiopia in article 62(4) stipulates that the grant from the federal government to regional states is distributed according to the grant distribution formula endorsed by the House of Federation (HoF). Regional states currently cover the largest proportion of the expenditures with the grant they receive from the federal government. Consequently, it is not overstatement to conclude that the grant from the federal government is the main revenue source for regional states. As a result, the distribution of this grant among regional states is a task that requires the highest possible efforts and serious attentions. To make the distribution of the grant just and effective it is crucial to draw lessons from other federal countries, strengthen the capacity of the staff that provide the House with professional support, and improve the awareness and understanding of the members of the HoF. Though efforts have been made in this regard, the House believes that a lot remains to be improved and there are many tasks that require more efforts.

This grant formula, which is endorsed by the House to serve for the three years period of 2010-2012 E.C., required the cooperation and efforts of many for its preparation. One key difference of this grant formula is that though its preparation, like the formulas prepared in the past, required the support of consultants, for the first time the body that played the consulting role is an institution, not individuals. The consulting team from Economics Department of Addis Ababa University together with the professionals from the HoF made robust effort in identifying the limitations of the previous formula and recommending and including the improvements deemed necessary into the new formula.

There had been continuous engagement and discussions with stakeholders at different stages of the preparation of this grant formula. Furthermore, as much as the circumstances in the country with respect to availability and quality of data allowed, efforts were made to ensure that the grant formula is based on reliable and acceptable data. For few expenditure items for which data were not available at federal institutions, the standing committee for budget grants and revenue sharing was requested to make decisions and provide directions. Thus, the questions related to such items were addressed and they were included in to the grant formula based on the directions put in place by the standing committee. Even though all members of the standing committee and all regional states agreed on the framework of the grant formula and the preparation process, according to the new formula the share of few regional states declined in absolute terms compared to what they were receiving as per the old formula. Since it was believed that some of these regional states cannot bear the burden of these change, based on political negotiations, adjustments were made by deducting from those regions whose shares increased in relative terms as per the new formula. These types of initiatives and cooperation among regional states to support each other and share each other's burdens need to be encouraged.

As per the lessons drawn from the preparation process of the current grant formula and also based on the recommendations of the consultants, enough time should be given for the

preparation of the next grant formula. Accordingly, facilitation works will be done to start the preparation of the grant formula that will be used starting in 2013 E.C. as early as possible. It is believed that such a process will lead to further improvements of the current grant formula.

Finally, on behalf of the House and myself, I would like to take this opportunity to extend my thanks to those who supported the efforts of the House by availing data and providing inputs during discussions on the grant formula framework. Furthermore, I would like to extend my thanks to the consultants and the professionals of the House for their diligence to complete the preparation of the grant formula in relatively short period of time. My thanks also go to different institutions which, in one way or another, supported the preparation of the grant formula. The participation and support of stakeholders and other collaborating institutions are crucial for all our works. Thus, I would like to indicate the readiness of the House to work with all stakeholders and other collaborating institutions and call upon all concerned bodies to continue their support taking into account the national importance of the works of the House.

Yalew Abate

Speaker of the House of Federation

CHAPTER ONE: INTRODUCTION

1.1. Background and Rationale

The pre-1991/92 Ethiopia was ruled by governments that can be classified as unitary type of governments. But after the Ethiopian Peoples Revolutionary Democratic Front (EPRDF) came to power in 1991/92, the system of administration has been changed into a federal system. Under a federal system, the decision-making powers are shared across multi-leveled governments.Improving the resource mobilization and allocation efficiencies of the public sector,addressing diversity issues (like self-governance, ethnicity, culture, history), creating an enabling business environment for the private sector, and fast and sustainable national economic growthare some of the justifications for the adoption of decentralized system of administration.

In Ethiopia, the federal system started during the transition period (1991-1995) and this system was ratified when the country adopted the constitution in 1995. According to the Constitution, the Ethiopian federation constitutes the federal government, nine regional states and one administrative city.[1]There are no legal boundaries among regions. The responsibilities and functions assigned to the federal andregional governments are also stated in the 1995 constitution.

The Constitution stipulates the powers and functions of the Federal Government and that of the States in Article 51 and 52, respectively. One of the outcomes of these assignments of functions to the Federal and State governments is Fiscal federalism where the constitution assigned different responsibilities and functions to the federal and regional governments. The responsibilities and functions regarding the financial expenditures are stated in Article 94 of the constitution. For instance, Article 94 (1) states that "the federal government and the states shall respectively bear all financial expenditures necessary to carry out all responsibilities and functions assigned to them by the law." Article 94 (2) adds that "The federal government may grant to states emergency, rehabilitation, and development assistance and loans, due care being taken such that the assistance and loan do not hinder the proportionate development of other states." The responsibilities and functions of tax collection for the federal government and regional governments are, respectively, specified in Articles 96 and 97 while concurrent tax collections are statedin article 98.

As is the case in most federal governments, there is significant vertical fiscal gap in Ethiopia due to the imbalance between the expenditure needs (that arise from functions assigned) and revenue generating capacity of regional states. This fiscal gap has been covered relatively by the general-purpose grant provided by the federal government to the states. Since there are large heterogeneities

[1] The nine regional states are Tigray, Afar, Amhara, Oromia, Somali, Benishangul-Gumuz, SNNP, Harari and Gambella while the Administrative City is the capital Addis Ababa.

across the regions in terms of population size, levels of development, poverty, tax collections, and expenditures, the absoluteand relative size of the subsidy transferred to regions vary considerably to reflect the heterogeneities. The grant distributions from the federal government to the regional governments are based on five provisions which are stated in the following articles of the constitution. These are:

i) Article 41(3): Every Ethiopian national has the right to equal access to publicly funded social services,

ii) Article 89(2): Government has the duty to ensure that all Ethiopians get equal opportunity to improve their economic conditions and to promote equitable distribution of wealth among them,

iii) Article 89(4): Nations and Nationalities and Peoples least advantaged in economic and social development shall receive special assistance,

iv) Article 94(1): The Federal Government and the States shall respectively bear all the financial expenditure necessary to carry out all responsibilities and functions assigned to them by law. Unless otherwise agreed upon, the financial expenditures required for carrying out of any delegated function by the state shall be borne by the delegating party; and

v) Article 94(2): The Federal Government may grant the States emergency, rehabilitation, and development assistance and loans, due care being taken that such assistance and loans do not hinder the proportionate development of States. The Federal Government shall have the power to audit and inspect the proper utilization of subsidies it grants to the States.

Intergovernmental fiscal transfersfinance about 60 percent of sub-national expenditures in developing countries and transition economies and about a third of such expenditures in OECD countries (29 percent in the Nordic countries, 46 percent in non-Nordic Europe). Beyond the expenditures they finance, these transfers create incentives and accountability mechanisms that affect the fiscal management, efficiency, and equity of public service provision and government accountability to citizens. And, countries use different institutional set up andsystem to manage and allocate intergovernmental fiscal transfer depending on their specific set of conditions.

In the case of Ethiopia, the responsibility of deciding the proportion of the grant allocation to the regions is constitutionally vested on the House of Federation (HoF). In this regard, Article 62 (7) states that “the HoF shall determine the division of revenues derived from joint Federal and State tax sources and the subsidies that the Federal Government may provide to the States.” The HoF has been exercising the powers of deciding the proportion of subsidies allocated to each region and the other responsibilities and functions since 1994/95.HoF has been adopting a subsidy allocation formula in order to capture the relative fiscal gaps of the States as accurately as possible. Moreover, HoF revises the subsidy allocation formula periodically so as to adjust the federal subsidy allocation to the changes

in the socio-economic conditions in each State and also improve weaknesses of the formulae from time to time. A number of grant formulae were developed and used since the country adopted fiscal federalism. The current federal grant distribution formula has been used since 2012; that is for the last 5 years. HoF has intended to use a revised formula starting from 2017.The revision is necessary to adjust the proportion of the subsidy allocated to each region to the changes in population size, levels of development, revenue collection capacities, employment, and poverty among others across the regions. In this regard, HoF distributed a Terms of Reference (TOR) which describes the main principles of the revised formula along with the types of data and methodologies for revising the subsidy distribution formula, and the expected results of the study.

The TOR emphasizes four principles. The first principle stipulates that the revised formula should be simple. In other words, the formula should replace the fuzzy and difficult methods of calculating the regional governments' revenue raising capacities and expenditure needs with simple and clear computation methods and approaches. Secondly, the ToR requires that the revision should use all the indicators which were employed for calculating the formula under current use. Thirdly, correcting unreliable and questionable values of permanent expenditures used in the formula currently in use with better quality data and valid methods in the revised formula. Finally, the TOR specifies the need for replacing unrealistic estimates of expenditure and revenue with improved estimation approaches.

1.2. Objective and Scope of the study

1.2.1. Objectives of the Study

The main objective of this study is revising the current Federal subsidy allocation formula to ensure more equitable and efficient resource allocations. The specific objectives of the study are:

i. Identifying and developing efficient and easy techniques of assessing and estimating the regional expenditure needs and revenue generating capacity,

ii. Collect data of expenditure and revenue of the past three years by regional States so as to update the data previously used in developing the current transfer allocation formula,

iii. Update the existing regional level estimates of the spatial price index,

iv. Update the regular and potential expenditure needs and revenue raising capacity estimates based on regions' expenditure responsibilities and revenue raising authority given by the constitution,

v. Replacing computations made with earlier assumptions and method on revenue capacities with improved methods in the current allocation formula.

1.2.2. Scope of the Study

While the development of the new Federal General-Purpose Grant Allocation Formula is made within the framework of the existing one, the scope of work will include additional efforts specified in the objectives above.

1.3. Organization

This document is organized in seven chapters. Following this introductory chapter, chapter two deals with the developments of the different types of intergovernmental fiscal transfers and the different approaches used to estimate the transfers. Chapter three presents the methodology employed to estimate the fiscal capacity of regional states and the estimated potential revenue of the regional states. In a similar fashion, chapter four discusses the details of the representative expenditure approach used and the steps followed to estimate the expenditure needs of the regional states and the estimated expenditure needs for each region for each of the main expenditure categories selected. Chapter five combines the total estimated expenditure needs of regions corrected for spatial price differences with the total estimated potential revenue of regions and generates total and relative fiscal gaps of regional states. Chapter six, based on the lessons learned in the process of developing this Federal General-Purpose Grant Formula, presents concluding remarks and recommendations that are believed to be crucial for the development of future grant formulas. Chapter seven presents the final formula that is endorsed by the House of Federation of FDRE.

CHAPTER TWO: THE LITERATUREANDCONCEPTUAL FRAMEWORK

2.1. Approaches to fiscal gap estimation: An overview

The literature provides different approaches to estimate fiscal gap. Funds can be transferred from the federal government to sub-national governments through political negotiations, or on an ad hoc basis, or using a formula-based equalization transfer system. Each approach has its own advantages and disadvantages in terms of data requirements and in ensuring that the fundamental principles and provisions of the Constitution are strictly adhered to.

In the political negotiation approach, the federal government bargains and negotiates with regional governments in allocating funds. This approach is less transparent and gives discretionary power to the federal government in determining the expenditure needs of each region.

In the ad-hoc approach, the federal government determines the amount of fund to be transferred to each region using simple measures of expenditure needs. However, this approach lacks scientific measurements of fiscal capacities and fiscal needs of each sub-national government. This can easily lead to an unjustified distribution of funds and encourage the regions' bargaining activities. It may also undermine local autonomy, flexibility, fiscal efficiency, and fiscal equity objectives. In general, ad-hoc grants are unlikely to result in behavioral responses that are consistent with the federal government's objectives and such grants may create budgetary difficulties for the federal government.

The formula-based equalization transfer system, if properly designed, is preferred over the political negotiation and ad-hoc approaches mainly because it meets prevailing international norms and practices in intergovernmental fiscal transfers or federal allocation of funds. It also increases the likelihood of satisfying constitutional and legal principles such as: vertical and horizontal equity, efficiency, revenue adequacy, predictability, transparency, accountability, and autonomy. A budget - subsidy-allocation formula will satisfy vertical equity if it ensures that the revenue of a region is consistent with its expenditure responsibilities and needs, while, horizontal equity is achieved when two regions with the same expenditure needs but different tax bases are able to provide a comparable level of service at comparable tax rates.

A budget allocation formula is said to be efficient, if it is neutral with respect to sub-national government choices of resource allocation to different sectors or different types of activity. It should also help regions to have adequate revenues to discharge designated responsibilities and provide sufficient revenue for socio-economic development and provision of public services.

According to the literature on fiscal decentralization (Barati and Szalai, 2000; Boadway, 2004; Rosen 2005; Shah 2005a and Shah 2005b), there are four broad types of formula-based equalization transfer

systems: Revenue Raising Capacity Equalization (RRCE) Formula; Expenditure Need Equalization (ENE) Formula; Equal Per Capita Equalization (EPCE) Formula; and Expenditure Need and Revenue Raising Capacity Equalization (ENRRCE) Formula.

(a) Revenue Raising Capacity Equalization (RRCE) Formula:

This formula is based only on the estimates of the ability of each region to raise revenue from its own sources. This capacity is estimated either using macroeconomic indicators or using the representative tax system. Among macroeconomic indicators, state GDP, state factor income, state personal income and personal disposable income are used to measure a region's ability to raise revenue. The state GDP represents the total value of goods and services produced within a state. However, it is not a perfect indicator of the ability of a regional government to raise taxes because significant portion of the income may accrue to non-resident owners of factors of production. State factor income, on the other hand, includes capital and labour income earned in the state. Nevertheless, it makes no distinction between income earned and income retained by residents of that region. State personal income is the sum of all income received by residents of a given state (region) while, personal disposable income is personal income minus direct and indirect taxes plus transfers. Although both personal income and personal disposable income are reasonable measures of a region's ability to raise revenue, they are only partial measures of the ability to impose tax burdens. Thus, they are not satisfactory measures of the overall revenue raising capacity (RRC) of a sub-national government.

Another challenge of using this approach is availability of accurate and timely data at regional level. Such data is available only with significant lag and the accuracy of such data may be questionable. Canada, Brazil and India use such macroeconomic indicators in their inter-governmental fiscal transfers. (See Aubut and Vaillancourt, 2001 for detailed critics on Canada's use of such macroeconomic indicators in estimating the RRC).

Representative Tax System (RTS) approach measures the RRC of a region by the revenue that could be raised if the regional government employs all of the standard sources of revenue. This requires data on tax bases and tax revenues of each region. Such data are usually published regularly by various levels of government and hence RTS can be readily implemented in countries that have decentralized taxing responsibility. For instance, in USA, education is financed using the RTS method (Broadway & Shah, no date, P.21). Australia, Canada and Germany also use the RTS to equalize per capita fiscal capacity, while Switzerland uses macro tax bases (Boadway, 2002a). However, the representative tax system (RTS) is not feasible in countries where there is no significant tax decentralization or poor local tax administration.

(b) Expenditure Need Equalization (ENE) Formula

This method uses some indicators of 'needs' of each region despite its RRC. However, determining expenditure needs is more difficult to define and derive than estimating the RRC. The difficulties include defining an equalization standard; understanding differences in demographics, service areas, population, local needs and policies; and understanding strategic behavior of recipient regions. Despite these difficulties, the literature suggests, three major approaches of estimating expenditure need of each region.

i. **Ad-hoc determination of expenditure needs:** uses simple measures of expenditure needs such as population size, population density, population growth rate (PGR), location factors, urbanization factors etc. For instance, Germany and Canada use population size and population density; China uses the number of public employees; and India uses measures of backwardness of a region.

ii. **Representative expenditure system (RES)using direct imputation method:** is a method which tries to create a parallel system to the representative tax system (RTS) on the expenditure side. It is done by dividing regional expenditure into various functions and identifying relative need or cost factors and assigning relative weights using direct imputation methods or regression analysis. Then, it allocates total expenditures of all sectors on each function across sectors on the basis of their relative costs and needs for each function. For instance, Australia uses this approach to allocate funds.

iii. **Theory-based representative expenditure system (RES):** uses a conceptual framework that incorporates an appropriately defined concept of fiscal need and properly specified expenditure functions estimated using objective quantitative analysis. For instance, Canada uses this method to determine expenditure needs of its regional states. This approach has the advantage of objectivity and it enables the federal government to derive measures based on actual observed behaviour rather than ad-hoc value judgments. It uses econometric analysis to determine the relative weights assigned to various need factors and their impact on allocation of funds. Hence, it requires specifying the determinants of each expenditure category, including relevant public service need variables.

Finally, the choice of a given approach depends on the government's objectives as well as other historical and political factors.

(c) Equal Per Capita Equalization (EPCE) Formula:

This rule transfers funds on an equal per capita basis. In its simplest form, the EPC equalization transfer formula can be specified as:

$$TR_i = P_i\,(TT/P)$$

WhereTR_i is the transfer amount to region i; TT is the size of pool for transfers; and P is total population eligible for the transfer program. This approach cannot fully equalize but at least can reduce regional disparity in fiscal capacity.

(d) Expenditure Need and Revenue Raising Capacity Equalization (RRCE) Formula:

This approach considers both revenue raising capacity and expenditure needs of different regions. Countries which follow this method include: Australia, Germany, Japan, Korea, and the United Kingdom. Compared to the above three approaches, this one requires a lot of data, mainly on expenditure needs. However, it offers the potential for full equalization and it is the most accurate one in measuring horizontal fiscal gap.

The approachemployed in the Ethiopian intergovernmental fiscal transfers is the representative revenue and expenditure system. In this approach, first the revenue raising capacity is estimated using representative revenue system and the expenditure needs are estimated using representative expenditure system and then fiscal gaps are calculated. Since the total financial resource available for grant – the pool – is always smaller than the total fiscal gap of the regional states, the grant is distributed based on relative fiscal gap of regional states.

2.2Conceptual framework

The conceptual framework of the study is the theoretical basis that guides the revision of the Federal General-Purpose Grant distribution formula in the context of Fiscal federalism. The conceptual framework highlights the basic principles that necessitate grant distribution and the basis for the grant allocation formula. In understanding Fiscal federalism and the ensuing need for Federal Grant Distribution, the overall goal of society, where the society is a single political entity administered by various levels of government, has to be highlighted.

The overall goal of society is to maximize social welfare. The first theorem of welfare economics states that competitive equilibrium is Pareto efficient; the implication of which is that competitive equilibrium maximizes social welfare. However, markets fail to be competitive, though at differing degrees, and missing markets prevail in all societies. Competitive equilibrium cannot be realized under market failures and the state of missing markets. Market failures and missing markets, resulting from public goods, externalities, market power, scale economies, transaction costs, and information asymmetry, necessitate government intervention to improve social welfare by reducing the inefficiencies.

One mechanism of government intervention is through exertion of fiscal efforts applied at national and sub-national levels of government. Such actions are meant to correct market failures and fill gaps created by missing markets in the interest of society. The extent of fiscal interventions of government at national and sub-national levels are hence determined by the extent to which government objectives of addressing missing markets and market failures are met by the various levels of government.

The nature of market failures in the form of public goods, spillovers etc. also confer different levels of responsibilities to the various levels of government. For example, public goods and externalities such as national defense, health and higher education externalities require national level intervention to a larger extent than they require sub-national level interventions. That means the associated expenditure needs for the provision of national defense, education, health etc. addressed at national and sub national levels are different. On the other hand, the parts of public goods and spillovers that fall in the priority lists of sub-national governments differ from region to region. Government objectives and priorities necessitate expenditures that have to be financed by revenues, which may or may not match with the expenditure needs of the particular level of government. The analysis of the revenue capacities and the expenditure needs of national level and sub-national level of governments, linked by arrangements of fiscal federalism, lead to issues of intergovernmental fiscal transfers whether they are conditional, unconditional, general-purpose, or special. Thus, the basis for fiscal efforts and the ensuing intergovernmental transfers is summarized by the following schematic representation.

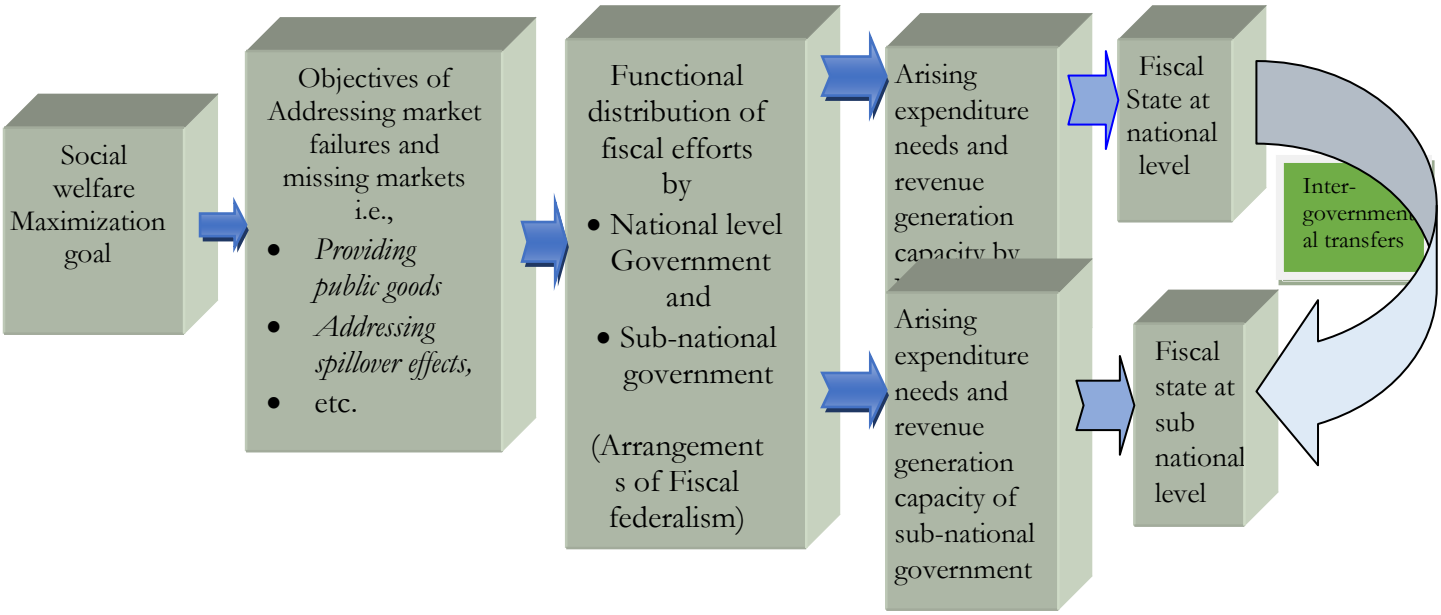

Fig 1: Inter-governmental fiscal transfer framework

The development of the grant allocation formula requires estimation of relative fiscal gap, which involves estimation of the difference between the **revenue potentials** and **expenditure needs** of regions.The gap between revenue generation capacity and expenditure needs of sub-national governments lie at the center of the analysis. The gap between expenditure needs and revenue generation capacity necessitates inter-government transfer. The expenditure needs of sub-national governments have to be assessed and compared with their revenue generation capacity within their jurisdiction in order to estimate the fiscal gap of each sub-national government.While the basis for intergovernmental transfer is the gaps between the expenditure needs and revenue capacities of sub national governments, at the root of the revision of the formula for intergovernmental transfers is the changes in the underlying government objectives necessitated by the provision of public goods and others. Changes in the availability of new data sources also necessitate revision in functional distribution among sub national governments.

Though existing grant allocation formula tried to conform to sound principles in fiscal decentralization and attempted to take into account best international practices, it still needs revision and updating by the dictates of (a) ever changing realities of the country such as: changing population size, changes in economic and social development needs, requirements and targets of Growth and Transformation Plan II (GTP II), changes in revenue raising effort of regions, changes in tax laws etc… , (b) availability of recent datasets; and (c)the need to adopt better framework to make the formula more simple and transparent. The literature also suggests that the grant distribution formula should be frequently revised and adjusted: to improve fair distribution of resources, and to encourage effort of regional governments to mobilize local resources (see Martinez-Vazquez et al, 2010). Accordingly, a revision has been done on both revenue raising capacity and expenditure needs of regions.

CHAPTER THREE: POTENTIAL REVENUE RAINSING CAPACITY OF REGIONAL STATES

3.1. Introduction

As discussed in the previous chapters, in the construction of any intergovernmental fiscal transfer formula, one of the pillars is the estimation of revenue generating capacity of the sub-national governments. Different countries use different approaches to estimate the revenue generating capacity of sub-national governments. The intergovernmental fiscal transfer of Ethiopia uses the Representative Tax System (RTS) to estimate the revenue generation capacity of the regional states. In this chapter we discuss the improvements made relative to the existing grant formula, the basic principles of the RTS, the main tax revenue sources of regional states, and the estimated potential revenue of regional states using the RTS.

3.2. What has been improved

New developments in tax rates are considered and previous rates are amended, particularly regarding pay roll tax. Improvements are made on the previous computation by using weighted average rather than simple average tax rates. New method is followed in the calculation of: Business Income Tax (Profit Tax) and Value Added Tax (VAT) with a major departure from the methods used in the previous formula.

3.3. Representative tax system (RTS)

As per the TOR, we use the Representative Tax System (RTS) to estimate the potential revenue of regions. This system is a common tool applied in many countries, conceptually simple, and gives more insight in to the contribution of specific taxes to the relative accumulated tax effort of each region. However, it is very demanding in terms of data requirement. Four key steps in applying the RTS are:

- Step 1: Identifying major revenue sources/defining major tax bases of regions
- Step 2: Collect data on the selected tax bases from different sources including MoFED, CSA, regional government offices, BOFEDs etc.
- Step 3: Determine the standard (representative) tax rates depending on the nature of the source of tax or
- compute the weighted averages of the tax rates on the basis of the variations in tax rates in progressive or other ways.
- Step 4: calculate the RRC of each region using the following formula.

$C_i = \sum_j B_{ij} * t_j$ Where B_{ij} is the i^{th} region's tax base and t_j is the weighted average tax rate on the j^{th} tax base.

Here, there is improvement over the existing computation by using *weighted average rather than simple average tax rates*.

3.4. The revenue sources

There are about nineteen revenue sources (tax and non-tax) in the accounts. The contributions of the sources to the total revenue are significantly uneven. For the representative tax system, we obviously need to choose among tax revenue sources. The variations of the sources, in their use as a clear tax base, are also very high (some provide clear bases while others are difficult to identify the tax bases).Since all tax revenue sources are not equally important, ranking of actual revenue sources and a process of identification of tax bases of those that contribute most for subsequent selection is pursued.

Table1: Ranking of actual tax revenues and selected tax bases

	Revenue Source	Total	% Share	Remark	Cumulative
1	Payroll Tax	6,942,146,962	36.550%	Known tax base	36.5%
2	VAT	3,268,429,435	17.208%	Known tax base	53.8%
3	Business Income Tax	2,423,311,271	12.759%	Known tax base	66.5%
4	Sales of public goods &services	1,454,528,000	7.658%	Non tax	
5	Turnover Tax	1,026,169,008	5.403%	Known tax base	71.9%
6	Miscellaneous Revenue	994,799,000	5.238%	Non tax	
7	Admin fees and charges	522,009,000	2.748%	Non tax	
8	Stamp sales & duty Stamp	459,165,431	2.417%	Non tax	
9	Other income	445,064,140	2.343%	Non tax	
10	Chat income	395,562,827	2.083%	Unknown tax base	
11	Agricultural Income Tax	326,741,699	1.720%	Known tax base	73.6%
12	Rural Land Use Fee	297,333,630	1.565%	Known tax base	**75.2%**
13	Rental Income Tax	154,699,051	0.814%	less than 1% contribution	
14	Royalties	121,808,494	0.641%	Non tax	
15	Excise Tax	62,400,140	0.329%	less than 1% contribution	
16	Capital gain tax	57,979,408	0.305%	Unknown tax base	
17	Interest income tax	32,407,292	0.171%	less than 1% contribution	
18	Other governmentinvestment income	8,796,460	0.046%	Non tax	
19	Urban land lease	324,300	0.002%	Non tax	
	Total	**18,993,675,549**			

Following Article 97 of the constitution, the selected tax revenue sources among the above listed are:

- Agricultural income tax
- Land use fee
- Payroll tax

- Business income tax
- Turnover tax (TOT)
- Value Added tax (VAT)

Identification of the appropriate tax base and the representative tax rate of each of these tax revenue sources is dealt with separately as follows.

3.5. Identification of the Tax Base and Computation of the Weighted Average Tax Rate

3.5.1. Agricultural income tax

The tax base for agricultural income tax is land holding. Agricultural income tax rate varies with the land size and may differ also across regions. Since income tax from agriculture is allocated to Regional States in accordance with the provisions of the new constitution of 1995, each Regional State uses different tax rate depending on the holding size category. Representative tax system requires a weighted agricultural income tax rate (T_{wi}) applicable to all regions for each land holding category. This standard tax rate is obtained by multiplying the proportion of landholders in a particular land holding size (L_i) by the respective regional agricultural income tax rate **(T_i)** applicable for that particular land holding category. Accordingly, the proportion of landholders (weight) in a particular landholding size (i) in region (j) can be calculated as: Let N_{ij} be the number of land holders of a particular size (i)in a particular region (j)

$$n_i = N_{ij} \Big/ \sum_{j=1}^{10} N_{ij} \quad \text{---------- (1)}$$

Now once the proportion of landholders in a particular landholding size (n_i) of each region is known and the respective regional agricultural income tax rate **(T_i)** for that particular land holding size known; we can compute the weighted agricultural income tax rate (T_{wi}) as follows:

$$T_{wi} = \sum (T_i * n_i) \quad \text{---------- (2)}$$

. Therefore, once we get T_{wi}(the weighted agricultural income tax rate applicable to each land holding category (i) of all regions) and N_{ij}(regional total number of agricultural landholders in each land holding category) we are in a position to estimate the potential agricultural income tax A_{tj} for each region as follows:

Total Potential Agricultural Income Tax Revenue per Region $A_{tj} = \sum_{i=1}^{L} (N_{ij} * T_{wi})$----------(3)

Where *L* is the maximum number of categories of land size

Table 2: Number of holders(N_{ij}) by land holding category (in hectare), Three years average (2005-2007E.C)

Region	Land holding category(L_i) and Number of holders in each land holding category (N_{ij})							
	Under 0.1	0.10-0.5	0.51-1.0	1.01-2.0	2.01-5.0	5.01-10.0	Over 10.0	Total
Tigray	111,228	256,940	265,932	255,685	112,951	5,962	-	1,008,698
Afar	55,486	12,848	12,572	10,870	3,615	-	-	95,391
Amhara	423,972	829,471	1,039,801	1,380,232	742,391	30,126	464	4,446,457
Oromia	347,793	1,131,123	1,331,117	1,639,296	1,205,550	169,236	16,602	5,840,717
Somali	47,065	40,839	33,049	26,803	12,192	603	-	160,551
Ben-Gumz	29,797	69,097	47,735	54,306	35,900	5,517	-	242,352
SNNPR	388,111	1,868,068	944,006	530,013	154,868	7,015	-	3,892,081
Gambella	9,373	25,582	5,875	3,182	1,739	-	-	45,751
Harari	1,214	10,312	9,742	4,853	716	-	-	26,837
Dire-Dawa	4,428	9,871	9,166	4,413	303	-	-	28,181

Source: CSA, Various issues of land utilization

Table 3: Weighted agricultural income tax rate (T_{wi}) for each land holding category (L_i)

Land holding size category (L_i) (in hectare)	Weighted tax rates (T_{wi}) in Birr
Under 0.1	18.25275053
0.10-0.5	18.04370553
0.51-1.0	29.54285626
1.01-2.0	48.45440015
2.01-5.0	92.76154522
5.01-10.0	152.9792699
Over 10.0	158.4015557

NB: The weighted tax rates (T_{wi}) for each land holding category (L_i) is calculated by taking the summation after we multiply proportion(n_i) of landholders in a particular landholding size (L_i) of each region by respective regional agricultural income tax rate (T_i) for that particular land holding size (see Appendix III).

Table 4: Potential Revenue from Agricultural Income Tax (birr)

Region	Potential Agricultural Income Tax Revenue from each land holding category = $T_{wi} * N_j$							
	Under 0.1	0.10-0.5	0.51-1.0	1.01-2.0	2.01-5.0	5.01-10.0	Over 10.0	**Total Potential Agri. Income Tax Revenue (A_{tj}) = $\Sigma T_{wi} . N_j$**
Tigray	2,030,217	4,636,156	7,856,401	12,389,063	10,477,478	912,062	-	38,301,377
Afar	1,012,772	231,826	371,413	526,699	335,333	-	-	2,478,043
Amhara	7,738,655	14,966,736	30,718,701	66,878,330	68,865,305	4,608,653	73,551	193,849,933
Oromia	6,348,185	20,409,644	39,324,988	79,431,104	111,828,681	25,889,651	2,629,783	285,862,036
Somali	859,066	736,893	976,372	1,298,707	1,130,980	92,297	-	5,094,315
Ben-Gumz	543,877	1,246,766	1,410,238	2,631,349	3,330,170	844,038	-	10,006,438
SNNPR	7,084,087	33,706,875	27,888,643	25,681,478	14,365,795	1,078,606	-	109,805,484
Gambella	171,077	461,600	173,564	154,198	161,312	-	-	1,121,752
Harari	22,165	186,067	287,816	235,149	66,386	-	-	797,584
Dire-Dawa	80,817	178,103	270,780	213,829	28,138	-	-	771,667

3.5.2. Agricultural land use fee

The tax base for land use tax is land holding in the same way as agricultural income tax. Hence, the treatment of land use tax is the same as that of agricultural income tax. Land holding tax rate varies with the land size and may differ also across regions. Since land use fee is allocated to Regional States in accordance with the provisions of the new constitution of 1995, each Regional State uses different tax rate depending on the holding size category. Representative tax system requires a weighted land use fee rates (T_{wi}) applicable to all regions for each land holding category. This standard tax rate is obtained by multiplying the proportion of landholders (n_i)in a particular landholding size (L_i) by respective regional land use fee rate (T_i) applicable for that particular land holding category. Accordingly, the proportion of landholders (weight) in a particular landholding size (i) in region (j) can be calculated as follows:

LetN_{ij} be the region j's total number of agricultural landholders in each land size category

$$n_i = N_{ij} \Big/ \sum_{j=1}^{10} N_{ij} \quad \text{---------- (4)}$$

Now, once the proportion of landholders in a particular landholding size (L_i) of each region is known and respective regional land use fee rate (T_i) for that particular land size known, we compute the weighted land use fee rate (T_{wi}) as follows:

$$T_{wi} = \sum T_i * n_i \quad \text{---------- (5)}$$

Therefore, once we get T_{wi}(the weighted land use fee rate applicable to each land holding category (i) of all regions) and N_{ij}(regional total number of agricultural landholders in each land holding category); we are in a position to estimate the potential agricultural land usefee(A_{tj}) for each region as follows:

Total Potential Agricultural Land Use feeRevenue for Region $_j A_{tj} = \sum_{i=1}^{L} (N_{ij} * T_{wi})$**-------(6)**

Table 5: Number of holders(N_{ij}) by land holding category L_i(in hectare), three years average (2005-2007 E.C)

Region	Land holding category(L) and Number of holders in each land holding category (N_{ij})							
	Under 0.1	0.10-0.5	0.51-1.0	1.01-2.0	2.01-5.0	5.01-10.0	Over 10.0	Total
Tigray	111,228	256,940	265,932	255,685	112,951	5,962	-	1,008,698
Afar	55,486	12,848	12,572	10,870	3,615	-	-	95,391
Amhara	423,972	829,471	1,039,801	1,380,232	742,391	30,126	464	4,446,457
Oromia	347,793	1,131,123	1,331,117	1,639,296	1,205,550	169,236	16,602	5,840,717
Somali	47,065	40,839	33,049	26,803	12,192	603	-	160,551
Ben-Gumz	29,797	69,097	47,735	54,306	35,900	5,517	-	242,352
SNNPR	388,111	1,868,068	944,006	530,013	154,868	7,015	-	3,892,081
Gambella	9,373	25,582	5,875	3,182	1,739	-	-	45,751
Harari	1,214	10,312	9,742	4,853	716	-	-	26,837
Dire-Dawa	4,428	9,871	9,166	4,413	303	-	-	28,181

Source: CSA various issues of land utilization

Table 6: Weighted land use fee rate (T_{wi}) for each land holding category (L_i)

Land holding size category (L_i) (in hectare)	Weighted tax rates (T_{wi}) in Birr
Under 0.1	11.31
0.10-0.5	11.97
0.51-1.0	17.52
1.01-2.0	26.81
2.01-5.0	53.65
5.01-10.0	109.21
Over 10.0	117.69

Table 7:Potential Agricultural Land use Tax Revenue from each land holding category = $T_{wi} * N_{ij}$

Region	Under 0.1	0.10-0.5	0.51-1.0	1.01-2.0	2.01-5.0	5.01-10.0	Over 10.0	Total Potential Agri. Land use Tax Revenue
Tigray	1,258,368.14	3,075,985.05	4,660,074	6,855,002.39	6,060,137.95	651,141.35	-	22,560,709.01
Afar	627,735.95	153,811.02	220,306	291,428.42	193,955.46	-	-	1,487,236.72
Amhara	4,796,569.73	9,930,093.06	18,220,993	37,004,501.40	39,831,459.6	3,290,218.75	54,646.16	113,128,481.58
Oromia	3,934,729.12	13,541,339.99	23,325,867	43,950,087.00	64,681,329.8	18,483,189.18	1,953,845.5	169,870,387.89
Somali	532,465.72	488,911.87	579,141	718,588.67	654,154.81	65,893.20	-	3,039,155.37
Ben-Gumz	337,105.72	827,201.15	836,492	1,455953.52	1,926,159.26	602,576.96	-	5,985,488.32
SNNPR	4,390,855.71	22,363,753.44	16,542,327	14,209,838.93	8,309,127.09	770,040.35	-	66,585,942.06
Gambella	106,036.84	306,261.28	102,951	85,319.45	93,302.50	-	-	693,870.82
Harari	13,738.25	123,451.07	170,720	130,110.59	38,397.64	-	-	476,417.65
Dire-Dawa	50,092.02	118,167.60	160,615	118,314.04	16,274.73	-	-	463,463.26

3.5.3. Payroll tax

One of the tax sources assigned to regional States in the Constitution is payroll tax from employees of the States, NGOs, and private organizations. In order to estimate the potential regional revenue obtained from overall payroll tax we used the actual payroll tax revenue collected from government and NGOs employees in each year (RGN_t) and the actual number of private employees (E_{Pit}) under specified salary categories(i) for the three years and the corresponding tax (trp_i) per worker.The overall payroll tax revenue per region is calculated as follows:

The Average Total Payroll Tax Revenue = [$RGN_t + \sum(E_{Pit} * trp_i)]/3$ ……..(7)

where i represents the salary rangeand *t* represents time period (three years)

Private employees are those employed in large and medium scale manufacturing industries, small scale manufacturing industries, and distributive trade and other services.Estimation of potential payroll tax from employees of government and NGO, and from employees of private organizations in large and medium scale manufacturing industries, small scale manufacturing industries, and distributive trade and other services is carried out in slightly different ways.

For employees of government and NGOs, the potential payroll tax is approximated by the actual payroll tax revenue regions have collected at the applicable tax rate. This is because all employees that have to pay income tax actually pay the taxes according to income tax law; and there is no way to escape the tax payment. This revenue is computed as an average tax of three years period.

Table 8: Total potential PayrollTax in Government and NGO employment

Region	Total potential Payroll Tax in Government and NGO employment	
Tigray	712,310,745.3	10.3%
Afar	142,497,125.4	2.1%
Amhara	1,370,006,502.5	19.7%
Oromia	2,460,865,891.1	35.4%
Somalia	198,100,367.6	2.9%
Benishangul	141,255,623.0	2.0%
S.N.N.P.R	1,686,168,989.6	24.3%
Gambela	77,205,182.8	1.1%
Harari	62,766,385.3	0.9%
Dire Dawa	90,970,149.5	1.3%
	6,942,146,962.10	100%

In order to estimate the potential payroll tax of each region from private organizations, the numbers of employees in different private organizations with in the region are used as potential tax base. This is because the collection of taxes from private organizations entails tax effort. The corresponding tax rate is computed on the basis of three years average regional wage derived from the CSA data on wages and salaries. Applying the tax rate on the number of private organizations' employees gives the potential tax that could be collected from private employees.

For all employees of business organizations (i.e., LMSMI, SSMI, Distributive trade and other services operating in each region), for which data are available from CSA, we compute the potential tax revenue by: generating a single tax rate, which is a weighted average tax rate to be applied for all regions, and using the total salaries and wages per region. The weighted average tax rate is a representative tax rate that reflects the contributions of the various tax rates applicable to various income brackets in the salary scales and that takes into consideration the proportions of taxpayers falling in the progressive tax brackets pertaining to the salary scales in all regions together

Table 9a: An example from LMSMI in 2012

	Salary range								
1.Upper side of the salary bracket	200	400	600	800	1200	1600	2000	3145	
2.Total number of employees in all regions(within the bracket)	577	6802	20070	21581	21711	11497	6957	17856	107051
3.Percentage of workers (within salary bracket in all employees)(column in 3 above divided by 107051)	1%	6%	19%	20%	20%	11%	6%	17%	
4.Applicable tax rate (for the salary bracket)	0%	0%	10%	10%	10%	10%	15%	15%	
5.Taxable part of salary (corresponding to the tax rate)			15	215	615	1015	350	2560	
6.Tax Revenue (from the salary bracket)		0	1.5	21.5	61.5	101.5	159	330.75	
7.Tax collected as a percentage of theupper side of salary bracket	0.0%	0.0%	0.3%	2.7%	5.1%	6.3%	8.0%	10.5%	
8.Weighted tax rate	0.0%	0.0%	0.0%	0.5%	1.0%	0.7%	0.5%	1.8%	4.6%

Table 9b: An example of Payroll taxes per regional States from LMSMI in 2012

Region	Total wages and salaries in 2012	Other taxable pay roll expenses in 2012	Total Taxable pay roll expenses in 2012	Pay roll tax from LMSMI in 2012
	1	2	3 =1+2	4 =4.6%*3
Tigray	472,341,416	32,082,032	504,423,448	23,203,479
Afar	6,714,943	2,043,658	8,758,601	402,896
Amhara	164,620,263	28,303,264	192,923,527	8,874,482
Oromia	1,221,727,741	109,116,666	1,330,844,407	59,887,998
Somalia	3,887,444	38,200	3,925,644	180,580
Benshangul	170,955	6,400	177,355	8,158
S.N.N.P.R	92,925,808	2,383,284	95,309,092	4,384,218
Gambela	339,700	-	339,700	15,626
Harari	2,444,457	33,489	2,477,946	113,986
Dire Dawa	69,635,653	7,150,162	76,785,815	3,532,147

The same is done for LMSMI wages and salaries in 2013 and 2014 and the average wages and salaries of the three years is computed.

Table 10: Average business payroll tax LMSMI

Region	Business payroll tax LMSMI 2012	Business payroll tax LMSMI2013	Business Payroll tax LMSMI 2014	Average business payroll tax LMSI
Tigray	23,203,478.61	5,884,825.33	31,721,607.65	**20,269,970.53**
Afar	402,895.65	1,038,627.70	396,726.09	**612,749.81**
Amhara	8,874,482.24	14,127,390.25	21,452,651.10	**14,818,174.53**
Oromia	59,887,998.32	105,649,558.42	138,452,041.19	**101,329,865.98**
Somalie	180,579.62	47,198.15	578,119.11	**268,632.30**
Benshang	8,158.33	69,328.23	129,594.15	**69,026.90**
SNNPR	4,384,218.23	5,611,225.94	9,117,869.91	**6,371,104.69**
Gambela	15,626.20	4,064.70	-	**6,563.63**
Harar	113,985.52	3,521,823.62	4,120,759.66	**2,585,522.93**
Dire Dawa	3,532,147.49	9,953,236.92	10,986,632.14	**8,157,338.85**

Table 8 presents the total potential payroll tax from government and NGO employment that regions are supposed to collect. Following the procedure indicated in Table 9a and 9b, the average payroll tax that regions could have collected from Large and Medium Scale Manufacturing and Electricity Industries (LMSMI) is reported in Table 10. While the average payroll tax that regions could have collected fromsmall scale manufacturing industries (SSMI) and distributive trade and other services for each region are estimated using the same procedure used for LMSMI that is illustrated in Table 9a and 9b above. The total potential payroll tax revenue of each region together with the percentage share of each region's revenue from the total is presented in the Table 11. Overall, the major source of payroll tax of the regions is the payroll tax from government employees.

Table 11: Total Payroll Tax (Tax from wages and salaries) by business type

Region	Payroll tax from LMSI	Payroll tax from SSMI	Payroll tax from SERVICE	Total potential payroll tax in Government&NGO employment	Total Potential payroll tax revenue	Percentage in total
Tigray	20,269,971	0	-	712,310,745.3	732,580,716	10.3%
Afar	612,750	0	66,254	142,497,125.4	143,176,129	2.0%
Amhara	14,818,175	0	85,259	1,370,006,502.5	1,384,909,936	19.5%
Oromia	101,329,866	0	108,626	2,460,865,891.1	2,562,304,383	36.1%
Somalia	268,632	78,230	-	198,100,367.6	198,447,230	2.8%
Benshangul	69,027	0	-	141,255,623.0	141,324,650	2.0%
S.N.N.P.R	6,371,105	0	451,638	1,686,168,989.6	1,692,991,732	23.9%
Gambela	6,564	0	-	77,205,182.8	77,211,746	1.1%
Harari	2,585,523	0	-	62,766,385.3	65,351,908	0.9%
Dire Dawa	8,157,339	123895.2	698,742	90,970,149.5	99,950,125	1.4%
Total	154,488,952	202125.2	1410519	6,942,146,962.1	7,098,248,555	
	2.18**%**	0.003**%**	0.02**%**	**97.80%**	**100%**	**100%**

Source CSA employment and unemployment survey (*Raw data on average regional wage is derived from CSA and the corresponding tax rate is applied on the basis of income tax law.*)

3.5.4. Turnover tax (TOT)

Turnover Tax applies to goods and services sold locally by tax payers who are not registered for Value Added Tax (VAT). The tax base for Turnover Tax is sales revenue of establishments in industrial and service sectors operating in the regions with annual sales below 500,000 Birr. Virtually all TOT paid by firms is by those engaged in the distributivetrade sector and small scale manufacturing sectors within the regions and are collected by the regional revenue authorities. CSA dataset on small scale manufacturing , distributive trade and other service surveys will be used to calculate TOT.

Accordingly, in order to estimate the potential revenue from TOT, we multiplied regional sales revenue (RS_{it}) of non-VAT collecting businesses (manufacturers, wholesalers, retailer and Vehicle repair) for three years by the respective TOT rate (tot) as shown in the following formula. Then, the three-year average potential Turnover Tax is calculated and presented in the table that follows. The applicable TOT rule is uniform across regions and applicable sales tax rate is 2% for manufacturing; 2% for distributive trade services and 10% for other services (Ethiopian Legal Brief, 2011).

Therefore, the potential turnover tax revenue is calculated as follows:

Total Potential Revenue from Turnover Tax $_{it}$ $= \sum RS_{it} * tot$**……(8)**

Table 12: Three years average TOT by business type(unit of measure?)

Region	Average TOT LMSMI	Average TOT SSMI	Average TOT Service	Average TOT
Tigray	215,718	6,038,000	5,106,101	**11,359,818**
Afar	7,347	219,127	3,476,286	**3,702,760**
Amhara	588,365	10,330,000	20,991,000	**31,909,365**
Oromia	454,584	17,290,000	33,927,169	**51,671,753**
Somalie	21,252	246,000	6,651,674	**6,918,926**
Benshangul	7,003	134,113	1,596,258	**1,737,374**
S.N.N.P. R	555,858	3,984,000	7,887,785	**12,427,643**
Gambela	2,320	69,190	1,883,084	**1,954,594**
Harar	40,202	172,928	2,424,193	**2,637,323**
Dire Dawa	74,200	606,000	3,307,819	**3,988,019**

3.5.5. Business income tax (profit tax)

The tax base for Business Income Taxis profit earnings of businesses. According to Proclamation No. 286/2002, business income derived by individual businesses is subject to tax at progressive rates ranging from 10 to 35 percent (Ethiopian Legal Brief, 2011). The tax base for Business Income Tax being Profit of establishments in Industrial and Service sectors operating in the regions, it does not include those having legal status of PLC and Share Company. Under the prevailing arrangement, PLCs and Share Companies pay profit taxes to the Federal Government. The applicable tax rate is the income tax rate under the federal income tax rule, which is uniform across regions. Business income tax is computed for the relevant establishments operating as LMSMI, SSMI, and Distributive trade and other SERVICESfor which data are available from CSA.

However, profits of businesses are not readily visible to calculate and therefore their potential values have to be estimated from other sources. One such source is the relationship between value added, wages and salaries, and profits.

Total Profit = Total value of production – Total Cost of Production

Or \

Total Profit = Value Added – Wages and Salaries

Value added of business establishments is the sum of wages /salaries and profits. In other words, value added is the difference between Gross Value of Production (GVP) and intermediate inputs. Intermediate inputs are material, energy, and service inputs excluding labor employed by the establishment. The

surplus over the value of intermediate inputs is the Value Added thatconstitutes wages and salaries and profits, which are factor incomes. If value added and wages and salaries are known, profit can be known as a difference of the two.

Value added and wages and salaries of establishments in industrial and service business providers located in each region will be used to calculate the business income tax. In order to estimate regional potential revenue obtained from profit tax, we will take in to account the following variables:

i. Value added at factor cost (VA_{ijt}) in industrial business (i) region (j) and year (t) and the corresponding wages and salaries (SW_{ijt}). The index (i) of the business type refers to business income category implying the applicable standard tax rate.
ii. Value added in services (VA_{sjt}) in service (s) region (j) and year (t) and the corresponding wages and salaries (SW_{ijt}).The index (s) of the business type refers to business income category implying the applicable standard tax rate.
iii. The standard Profit tax rate (ti) is applicable to industrial businesses of tax category (i)
iv. The standard Profit tax rate (ts) is applicable to service businesses of tax category (s).

It is important to note that although they are operating in a particular region, they may not pay profit tax to the region by virtue of being federal taxpayers. These groups of taxpayers have to be excluded with the use of identifiers such as their legal status.

The potential profit (P_{ijt}) that is taxable in category (i) in year (t) and in region j is:

$P_{ijt}= (VA_{ijt}-SW_{ijt})$ ………………………………………………………………………(9)

The potential profit (P_{st}) in services that is taxable in category (s) in year (t) and in region j is:

$P_{sjt}=(VA_{sjt}-SW_{sjt})$ ……………………………………………………………………..(10)

Since P_{ijt} andP_{sjt} (business profits in year t from the respective business categories) fluctuate from year to year, to get a figure representative of the near past, the average of the latest three years is taken.

$P_{ij}= (\Sigma P_{ijt})/3$ and$Psj = (\Sigma P_{sjt})/3$……………………………………………………(11)

We compute the potential Business Income Tax Revenue by using the total computed profits per region in each of the sectors and generating a single tax rate, which is a weighted average tax rate to be applied for all regions. The weighted average tax rate varies with total profit. The greater the total profit is the greater will be the average weighted tax rate approaching to the highest tax rate i.e.35%. Total profits are computed per region from total value of production and total costs of production of relevant establishments. Designating t_i for the weighted tax rate applicable to all income categories, the total potential industry profit tax (TIj) from all profit categories in region (j) is:

$TIj = \Sigma(P_{ij}. ti)$ ……………………………………………………………………………(12)

The potential tax revenue (TSj) for region (j) in service is:

$TSj = \Sigma(P_{sj} .ts)$…………………………………………………………………………(13)

The total potential profit tax revenue(PTRj) in region(j) is :

$PTRj = TIj + TSj$ ……………………………………………………………………(14)

We compute the average profit per establishment from the total profit and the total number of establishments of all regions together. The average profit per establishment guides us to fix which AVERAGE WEIGHTED PROFIT TAX to use for all regions in a particular year. The weighted average tax rate is a representative tax rate that reflects the contributions of the various income tax rates applicable to various profit income brackets and that takes into consideration the proportions of profit falling in the progressive tax brackets pertaining to the income scales in all regions together.

Table 13: Weighted income Taxcomputation given the average annual profit income per establishment

Average annual profit income per establishment								**2,000,000**
Monthly income(= 2000000/12)								166,667
Monthly Income scales	585	1,650	3,145	5,195	7,758	10,833	166,667	
Maximum applicable tax rate	-	0.10	0.15	0.20	0.25	0.30	0.35	
Taxable income under each tax rate		1,065	1,495	2,050	2,563	3,075	155,834	
Monthly Tax from monthly profit	-	106.5	224.3	410.0	640.8	922.5	54,541.8	56,845.8
Weighted income Tax=Total monthly Tax /Monthly Income								0.3411

The sources of data for these computations are the large and medium scale manufacturing survey (LMSMIS), small scale manufacturing survey (SMMIS), and distributive services survey of CSA. As in the example shown above, using the average weighted profit tax rate as a representative tax rate, which is estimated to be 34.1%, we compute the profit tax.Accordingly, the average profit tax for LMSMI is computed as follows:

Table 14: Average Region al profit tax from LMSMI

Region	Profit tax 2012	Profit Tax2013	Profit Tax 2014	Average profit tax
Tigray	68,390,917	105,006,294	95,718,426	89,705,212
Afar	27,703	3,602,481	759,629	1,463,271
Amhara	50,294,844	96,242,639	106,299,979	84,279,154
Oromia	263,451,099	631,577,000	1,116,247,128	670,425,076
Somale	13,802,952	31,760,455	34,924,733	26,829,380
Benishangul	141,581	2,043,858	5,896,936	2,694,125
S.N.N.P.R	251,208,973	109,486,197	157,202,500	172,632,557
Gambela	-	-	-	-
Harar	3,712,646	1,542,736	2,787,404	2,680,929
Diredawa	2,932,593	827,381	200,830,666	68,196,880

We follow similar procedures in computing the representative tax rate for the various services categorized as TOT and VAT payer service establishments. The computed tax revenue on the basis of the representative tax in the respective service categories are tabulated hereunder (refer the appendix section for the details)

Table 15: Profit Tax from Services

	Total potential profit tax revenue from service establishments		
Regions	that pay TOT	that pay VAT	All
Tigray	16,474,279	220,040,000	236,514,279
Afar	10,109,962	51,300,000	61,409,962
Amhara	56,107,567	668,915,125	725,022,691
Oromia	206,912,274	600,814,465	807,726,739
Somalia	3,250,474	120,951,515	124,201,989
Benshangul	4,791,637	10,557,000	15,348,637
S.N.N.P.R	20,225,464	352,691,081	372,916,544
Gambela	5,184,307	44,507,549	49,691,856
Harari	6,310,259	42,777,000	49,087,259
Dire Dawa	3,174,966	181,710,000	184,884,966

Applying the same procedure for Small Scale Manufacturing Industrial establishments the representative tax rate becomes 20% and the potential profit tax would be as follows.

Table 16: Profit tax SSMI

Region	Two Years Average Profit	Profit tax at representative tax rate of 20%
Tigray	196,320,359	39,264,071.7
Afar	18,081,734	3,616,346.8
Amhara	241,288,188	48,257,637.5
Oromia	163,950,000	32,790,000.0
Somalie	8,662,166	1,732,433.2
Benshangul	10,172,703	2,034,540.5
S.N.N.P.R	33,950,000	6,790,000.0
Gambela	6,588,815	1,317,763.0
Harari	4,539,607	907,921.4
Dire dawa	519,375	103,874.9

The total potential profit tax from Manufacturing and Services from the respective region is computed and summarized as follows:

Table 17: POTENTIAL PROFIT TAX TOTAL

Region	LMSMI	SERVICES	SSMI	Total
Tigray	89,705,212	236,514,279	39,264,072	365,483,563
Afar	1,463,271	61,409,962	3,616,347	66,489,579
Amhara	84,279,154	725,022,691	48,257,638	857,559,483
Oromia	670,425,076	807,726,739	32,790,000	1,510,941,815
Somalie	26,829,380	124,201,989	1,732,433	152,763,802
Benshangul	2,694,125	15,348,637	2,034,541	20,077,302
S.N.N.P.R.	172,632,557	372,916,544	6,790,000	552,339,101
Gambela	-	49,691,856	1,317,763	51,009,619
Harari	2,680,929	49,087,259	907,921	52,676,109
Dire dawa	68,196,880	184,884,966	103,875	253,185,721

3.5.6. Value added tax (VAT)

The tax base for value added tax is the total valued added from VAT payers. VAT payers are those businesses whose total value of taxable transaction is exceeding 500,000.00 birr at the end of any period of 12 calendar months**. I**ndustries and service providers paying VAT directly to the Federal Government are excluded from the estimation. Such VAT payers will be excluded using legal status identifier.

In order to estimate the potential regional revenue collected from VAT, we will use regional value added at factor cost as (VA_{ijt}) for industry (i), region (j) and year (t). For services, as (VA_{sjt}) for service (s), region (j) and year (t). Those industries and services found in the region having annual sales value above 500,000.00 birr are subject to VAT payment. The value added of such businesses is computed from the differences of Gross Value of Production (GVP_{ijt}) in industry (i) region (j) and year (t) and the corresponding Value of Intermediate Products (VIP_{ijt}). Thus, the corresponding industrial value added per establishment is computed as: $VA_{ijt}=GVP_{ijt}-VIP_{ij}$. To overcome the problem of fluctuations in value added, value added to be used is the average of three years, i.e, $VA_{ij}=(\Sigma VA_{ijt})/3$. Similarly, service value added per establishment is computed as: $VA_{sjt} =GVP_{sjt}- VIP_{sjt}$and the average value added of three years is:$VA_{sj}=(\Sigma VA_{sjt})/3$. Total value added ($VA_{Ij}$) in industry and region (j) is the aggregation of value added of industrial establishments (i) as: $VA_{Ij}=\Sigma VA_{ij}$and that for services (VA_{Sj}) for a region j is: $VA_{Sj}=\Sigma VA_{sj}$ Hence, total Potential VAT Revenue for the respective region j is $VAT_j=(VA_{Ij}+VA_{Sj})*0.15$**.** The value added and VAT revenue per region as computed for the Large and Medium Scale Manufacturing Industries (LMSMI) is as follows:

Table 18: **VAT LMSMIand VAT LMSMI**

Region	**Average VAin LMSMI**	**VAT in LMSMI**
Tigray	325,491,060	48,823,659
Afar	4,712,299	706,845
Amhara	293,394,525	44,009,179
Oromia	2,041,096,489	306,164,473
Somali	190,739,742	28,610,961
Benishangul	10,033,928	1,505,089
S.N.N.P.R.	1,438,267,588	215,740,138
Gambela	-	-
Harar	19,995,564	2,999,335
Diredawa	392,856,169	58,928,425

The value added(VA)and the valued added tax(VAT) that is potentially collectablefrom services categorized by their legal status as private (individual), partnership and cooperatives and for Small Scale ManufacturingIndustries are tabulated as follows:

Table 19: VAT revenue from services

Regions	Private (Individual)		Partnership		Cooperative and others		Total Potential VAT Revenue
	Average VA	Average VAT of two years = Average VA*0.15	Average VA	Average VAT of two years = Average VA*0.15	Average VA	Average VAT of two years = Average VA*0.15	
Tigray	1,234,000,000	185,100,000	6,300,000	945,000	1,293,161	193,974	186,238,974
Afar	285,500,000	42,825,000	-	-	-	-	42,825,000
Amhara	3,720,000,000	558,000,000	2,151,425	322,714	2,473,415	371,012	558,693,726
Oromia	3,090,000,000	463,500,000	2,914,757	437,214	13,001,693	1,950,254	465,887,468
Somalia	632,700,000	94,905,000	3,005,950	450,893	22,449,300	3,367,395	98,723,288
Benshangul	58,867,500	8,830,125	-	-	2,968,702	445,305	9,275,430
S.N.N.P.R	1,955,000,000	293,250,000	481,298	72,195	2,968,702	445,305	293,767,500
Gambela	246,500,000	36,975,000	-	-	404,675	60,701	37,035,701
Harari	238,000,000	35,700,000	-	-	-	-	35,700,000
Dire Dawa	1,037,000,000	155,550,000	-	-	-	-	155,550,000

Table 20: VALUE ADDED TAX in SSMI

Region	2014				2010				Two Years Average VA	VAT SSMI
	Gross Value of Production	Cost of Intermediate Inputs	Other Indirect Expenses	Value Added	Gross Value of Production	Cost of Intermediate Inputs	Other Indirect Expenses	Value Added		
Tigray	480,000,000	276,600,000	13,700,000	189,700,000	295,000,000	60,728,620	1,992,929	232,278,451	210,989,226	31,648,384
Afar	8,928,580	9,411,323	153,374	(636,117)	47,700,000	10,353,427	250,505	37,096,068	18,229,976	2,734,496
Amhara	907,000,000	433,500,000	18,700,000	454,800,000	178,000,000	87,981,721	1,941,904	88,076,375	271,438,188	40,715,728
Oromia	1,170,000,000	753,300,000	21,400,000	395,300,000	42,900,000	173,700,000	4,527,114	(135,327,114)	129,986,443	19,497,966
Somalie	13,200,000	7,703,236	522,980	4,973,784	24,600,000	6,220,196	226,006	18,153,798	11,563,791	1,734,569
Benshangul	2,144,400	2,507,191	136,834	(499,625)	29,900,000	7,867,312	309,309	21,723,379	10,611,877	1,591,782
S.NNP	298,000,000	194,900,000	10,600,000	92,500,000	62,900,000	58,882,976	1,825,739	2,191,285	47,345,643	7,101,846
Gambela	4,769,060	2,661,059	723,189	1,384,812	15,000,000	1,785,544	245,318	12,969,138	7,176,975	1,076,546
Harari	7,703,334	5,105,892	113,356	2,484,086	16,200,000	6,473,231	192,721	9,534,048	6,009,067	901,360
Dire dawa	39,000,000	33,960,173	981,898	4,057,929	867,674	11,427,564	298,587	(10,858,477)		-

The Overall Potential VAT revenue per region is tabulated hereunder

Table 21: Potential Vat total

Regional Potential VAT Revenue				
Region	**LMSMI**	**SERVICES**	**SSMI**	**TOTAL**
Tigray	48,823,659	186,238,974	31,648,384	266,711,017
Afar	706,845	42,825,000	2,734,496	46,266,341
Amhara	44,009,179	558,693,726	40,715,728	643,418,633
Oromia	306,164,473	465,887,468	19,497,966	791,549,907
Somalie	28,610,961	98,723,288	1,734,569	129,068,818
Benshangul	1,505,089	9,275,430	1,591,782	12,372,301
S.n.n.p.r.	215,740,138	293,767,500	7,101,846	516,609,485
Gambela	-	37,035,701	1,076,546	38,112,248
Harari	2,999,335	35,700,000	901,360	39,600,695
Dire dawa	58,928,425	155,550,000	-	214,478,425

3.6. Regional revenue raising potential

The regional revenue potential is the sum of the representative revenues collectable from payroll tax, agricultural income and land use tax, profit tax, value added tax and turnover tax in the respective region**.** The sum of all these taxes per region is summarized as follows.

Table 22: Summary of regional revenue potential

Region	Total Potential pay roll tax revenue	Total potential agri. income tax	Total land use fee	Potential Profit Tax	Potential TOT	Potential VAT	Total regional Revenue Potential
Tigray	732,580,716	38,301,377	22,560,709	365,483,563	11,359,818.47	266,711,016.93	**1,436,997,201**
Afar	143,176,129	2,478,043	1,487,237	66,489,579	3,702,759.74	46,266,341.13	**263,600,089**
Amhara	1,384,909,936	193,849,933	113,128,482	857,559,483	31,909,364.99	643,418,632.85	**3,224,775,831**
Oromia	2,562,304,383	285,862,036	169,870,388	1,510,941,815	51,671,753.14	791,549,907.30	**5,372,200,282**
Somalie	198,447,230	5,094,315	3,039,155	152,763,802	6,918,926.45	129,068,817.50	**495,332,246**
Benshangul	141,324,650	10,006,438	5,985,488	20,077,302	1,737,374.22	12,372,301.00	**191,503,554**
S.n.n.p.r.	1,692,991,732	109,805,484	66,585,942	552,339,101	12,427,642.89	516,609,484.63	**2,950,759,387**
Gambela	77,211,746	1,121,752	693,871	51,009,619	1,954,593.96	38,112,247.50	**170,103,829**
Harari	65,351,908	797,584	476,418	52,676,109	2,637,322.98	39,600,694.70	**161,540,036**
Dire dawa	99,950,125	771,667	463,463	253,185,721	3,988,018.78	214,478,425.30	**572,837,421**
Total							**14,839,649,876**

3.7. Total regional revenue potential

The total revenue potential of regions is composed of their computed potential revenue raising capacity and the shared revenues with the Federal government. Summing up the potential revenue generated by regions and the revenues to be shared with the federal Government constitute the total potential regional revenue as tabulated hereunder.

Table 23: Total potential revenue

Region	Potential Revenue generated by the Regions alone	Revenues Shared with Federal Government	Total Potential Revenue	Percentage in total potential revenue
Tigray	1,436,997,201	314,927,121	1,751,924,322	11.0%
Afar	263,600,089	2,116,753	265,716,842	1.7%
Amhara	3,224,775,831	251,301,023	3,476,076,854	21.9%
Oromia	5,372,200,282	398,157,768	5,770,358,051	36.3%
Somale	495,332,246	122,705	495,454,952	3.1%
Benshangul	191,503,554	346,990	191,850,544	1.2%
S.N.N.P.R	2,950,759,387	45,351,703	2,996,111,090	18.8%
Gambela	170,103,829	7,141,986	177,245,815	1.1%
Harari	161,540,036	38,148,182	199,688,218	1.3%
Dire Dawa	572,837,421		572,837,421	3.6%
Total	14,839,649,876	1,057,614,232	15,897,264,107	

Appendices

	Total Potential Value Added Tax Revenue(in Birr) (Only for VAT payer services)															
Region	Private (Individual)					Partnership					Cooperatives and others					
	2,011	2,014	Total VA	Average VA=(Total VA/2)	Average VAT of two years	2,011	2,014	Total VA	Average VA =(Total VA/2)	Average VAT of two years	2,011	2,014	Total VA	Average VA= (Total VA/2)	Average VA*0.15	Total Potential VAT Revenue
Tigray	618,000,000	1,850,000,000	2,468,000,000	1,234,000,000	185,100,000		12,600,000	12,600,000	6,300,000	945,000		2,586,322	2,586,322	1,293,161	193,974	186,238,974
Afar	267,000,000	304,000,000	571,000,000	285,500,000	42,825,000			-	-	-		-	-	-	-	42,825,000
Amhara	3,230,000,000	4,210,000,000	7,440,000,000	3,720,000,000	558,000,000		4,302,850	4,302,850	2,151,425	322,714	4,946,829	-	4,946,829	2,473,415	371,012	558,693,726
Oromia	3,540,000,000	2,640,000,000	6,180,000,000	3,090,000,000	463,500,000		5,829,514	5,829,514	2,914,757	437,214		26,003,386	26,003,386	13,001,693	1,950,254	465,887,468
Somalia	95,400,000	1,170,000,000	1,265,400,000	632,700,000	94,905,000	4,931,300	1,080,600	6,011,900	3,005,950	450,893		44,898,600	44,898,600	22,449,300	3,367,395	98,723,288
Benshangul	67,335,000	50,400,000	117,735,000	58,867,500	8,830,125			-	-	-		5,937,404	5,937,404	2,968,702	445,305	9,275,430
S.N.N.P.R	1,050,000,000	2,860,000,000	3,910,000,000	1,955,000,000	293,250,000		962,596	962,596	481,298	72,195		5,937,404	5,937,404	2,968,702	445,305	293,767,500
Gambela	385,000,000	108,000,000	493,000,000	246,500,000	36,975,000			-	-	-		809,350	809,350	404,675	60,701	37,035,701
Harari	420,000,000	56,000,000	476,000,000	238,000,000	35,700,000			-	-	-			-	-	-	35,700,000
Dire Dawa	754,000,000	1,320,000,000	2,074,000,000	1,037,000,000	155,550,000			-	-	-			-	-	-	155,550,000

Appendix II Profit tax SSMI

Region	2014						2010						Two Years Average Profit	Profit tax at 0.2
	Gross Value of Production	Cost of Intermediate Inputs	Other Indirect Expenses	Value Added	Wages and Salaries	Profit _2014	Gross Value of Production	Cost of Intermediate Inputs	Other Indirect Expenses	Value Added	Wages and Salaries	Profit _2010		
TIGRAY	480,000,000	276,600,000	13,700,000	189,700,000	24,000,000	165,700,000	295,000,000	60,728,620	1,992,929	232,278,451	5,337,734	226,940,717	196,320,359	39,264,071.7
AFAR	8,928,580	9,411,323	153,374	(636,117)	497,464		47,700,000	10,353,427	250,505	37,096,068	932,600	36,163,468	18,081,734	3,616,346.8
AMHARA	907,000,000	433,500,000	18,700,000	454,800,000	48,000,000	406,800,000	178,000,000	87,981,721	1,941,904	88,076,375	12,300,000	75,776,375	241,288,188	48,257,637.5
OROMIA	1,170,000,000	753,300,000	21,400,000	395,300,000	67,400,000	327,900,000	42,900,000	173,700,000	4,527,114	(135,327,114)	23,500,000		163,950,000	32,790,000.0
SOMALIE	13,200,000	7,703,236	522,980	4,973,784	3,417,880	1,555,904	24,600,000	6,220,196	226,006	18,153,798	2,385,370	15,768,428	8,662,166	1,732,433.2
BENSHANGUL	2,144,400	2,507,191	136,834	(499,625)	873,220		29,900,000	7,867,312	309,309	21,723,379	1,377,974	20,345,405	10,172,703	2,034,540.5
S.N.N.P.R.	298,000,000	194,900,000	10,600,000	92,500,000	24,600,000	67,900,000	62,900,000	58,882,976	1,825,739	2,191,285	6,998,264		33,950,000	6,790,000.0
GAMBELA	4,769,060	2,661,059	723,189	1,384,812	78,800	1,306,012	15,000,000	1,785,544	245,318	12,969,138	1,097,520	11,871,618	6,588,815	1,317,763.0
HARARI	7,703,334	5,105,892	113,356	2,484,086	879,160	1,604,926	16,200,000	6,473,231	192,721	9,534,048	2,059,760	7,474,288	4,539,607	907,921.4
DIRE DAWA	39,000,000	33,960,173	981,898	4,057,929	3,019,180	1,038,749	867,674	11,427,564	298,587	(10,858,477)	1,150,980		519,375	103,874.9
													684,072,945	
	Number of establishments in 2014					11307			Number of establishments in 2010			3882	Average 7,595	
						-					Annual profit		90,075	
						-					Monthly profit		7,506.23	
											Representative tax rate		0.2	

Appendix III Agricultural income tax rates

Regions	under 0.10	Weight	Agri-income tax	weighted	0.10-0.5	Weight	Agri-income tax	weighted average tax	0.51-1.0	Weight	Agri-income tax	weighted average tax	1.01-2.0	Weight	Agri-income tax	weighted average tax	2.01-5.0	Weight	Agri-income tax	weighted average tax	5.01-10.0	Weight	Agri-income tax	weighted average tax	over 10	Weight	Agri-income tax	weighted average tax
Tigray	111,228	0.08	-	-	256,940	0.06	10.00	0.60	265,932	0.07	20.00	1.44	255,685	0.07	35.00	2.29	112,951	0.05	81.67	4.06	5,962	0.03	175.00	4.78			205.00	-
Afar	55,486	0.04	20.00	0.78	12,848	0.00	20.00	0.06	12,572	0.00	30.00	0.10	10,870	0.00	47.50	0.13	3,615	0.00	120.00	0.19	-			-				-
Amhara	423,972	0.30	22.50	6.73	829,471	0.19	22.50	4.39	1,039,801	0.28	32.50	9.14	1,380,232	0.35	53.75	18.98	742,391	0.33	101.25	33.11	30,126	0.14	101.25	13.96	464	0.03	101.25	2.75
Oromia	347,793	0.25	30.00	7.36	1,131,123	0.27	30.00	7.98	1,331,117	0.36	40.00	14.39	1,639,296	0.42	55.00	23.06	1,205,550	0.53	95.00	50.45	169,236	0.77	160.00	123.93	16,602	0.97	160.00	155.65
Somali	47,065	0.03		-	40,839	0.01		-	33,049	0.01		-	26,803	0.01		-	12,192	0.01		-	603	0.00		-	-			-
Ben-Gumz	29,797	0.02	17.60	0.37	69,097	0.02	17.60	0.29	47,735	0.01	35.20	0.45	54,306	0.01	59.70	0.83	35,900	0.02	130.08	2.06	5,517	0.03	280.08	7.07	-			-
SNNPR	388,111	0.27	10.25	2.80	1,868,068	0.44	10.25	4.50	944,006	0.26	15.25	3.89	530,013	0.14	22.75	3.08	154,868	0.07	41.50	2.83	7,051	0.03	100.50	3.24	-		160.00	-
Gambella	9,373	0.01	30.00	0.20	25,582	0.01	30.00	0.18	5,875	0.00	30.00	0.05	3,182	0.00	30.00	0.02	1,739	0.00	30.00	0.02	-			-	-			-
Harari	1,214	0.00	20.00	0.02	10,312	0.00	20.00	0.05	9,742	0.00	30.00	0.08	4,853	0.00	47.50	0.06	716	0.00	123.30	0.04	-			-	-			-
Diredawa	4,428	0.00			9,871	0.00			9,166	0.00			4,413	0.00			303	0.00			-							
All Regions	**1,418,467**				**4,254,152**				**3,698,996**				**3,909,653**				**2,270,225**				**218,496**				**17,066**			
weighted average tax rates				**18.25**				**18.04**				**29.54**				**48.45**				**92.76**				**152.98**				**158.40**

Appendix IV Weights land use tax

Regions	**under 0.10**	**Weight**	**land use fee**	**weighted average fee in**	**0.10-0.5**	**Weight**	**land use fee**	**weighted average fee in**	**0.51-1.0**	**Weight**	**land use fee**	**weighted average fee in**	**1.01-2.0**	**Weight**	**land use fee**	**weighted average fee in**	**2.01-5.0**	**Weight**	**land use fee**	**weighted average fee in**	**5.01-10.0**	**Weight**	**land use fee**	**weighted average fee in**	**over 10**	**Weight**	**land use fee**	**weighted average fee in**
Tigray	111,228	0.08	-	-	256,940	0.06	10.00	0.60	265,932	0.07	15.00	1.08	255,685	0.07	25.00	1.63	112,951	0.05	61.67	3.07	5,962	0.03	132.50	3.62			162.50	-
Afar	55,486	0.04	15.00	0.59	12,848	0.00	20.00	0.06	12,572	0.00	25.00	0.08	10,870	0.00	30.00	0.08	3,615	0.00	49.20	0.08	-			-				-
Amhara	423,972	0.30	12.50	3.74	829,471	0.19	12.50	2.44	1,039,801	0.28	17.50	4.92	1,380,232	0.35	25.00	8.83	742,391	0.33	35.00	11.45	30,126	0.14	35.00	4.83	464.3	0.03	35.00	0.95
Oromia	347,793	0.25	15.00	3.68	1,131,123	0.27	15.00	3.99	1,331,117	0.36	20.00	7.20	1,639,296	0.42	30.00	12.58	1,205,550	0.53	65.00	34.52	169,236	0.77	120.00	92.95	16,602.0	0.97	120.00	116.74
Somali	47,065	0.03		-	40,839	0.01		-	33,049	0.01		-	26,803	0.01		-	12,192	0.01		-	603	0.00		-	-			-
Ben-Gumz	29,797	0.02	17.60	0.37	69,097	0.02	17.60	0.29	47,735	0.01	25.45	0.33	54,306	0.01	42.10	0.58	35,900	0.02	107.23	1.70	5,517	0.03	182.20	4.60	-			-
SNNPR	388,111	0.27	10.00	2.74	1,868,068	0.44	10.00	4.39	944,006	0.26	15.00	3.83	530,013	0.14	22.50	3.05	154,868	0.07	41.25	2.81	7,051	0.03	100.00	3.23	-		145.00	-
Gambella	9,373	0.01	30.00	0.20	25,582	0.01	30.00	0.18	5,875	0.00	30.00	0.05	3,182	0.00	30.00	0.02	1,739	0.00	30.00	0.02	-			-	-			-
Harari	1,214	0.00	10.00	0.01	10,312	0.00	10.00	0.02	9,742	0.00	15.00	0.04	4,853	0.00	22.50	0.03	716	0.00	37.50	0.01	-			-	-			-
Diredawa	4,428	0.00			9,871	0.00			9,166	0.00		-	4,413	0.00			303	0.00			-							
All Regions	**1,418,467**				**4,254,152**				**3,698,996**				**3,909,653**				**2,270,225**				**218,496**				**17,066.3**			

CHAPTER FOUR: ESTIMATION of EXPENDITURE NEEDS of REGIONS

4.1.Estimation Approach

Estimation of expenditure needs of sub-national governments is one of the difficult tasks in the process of allocation of grants from central governments to sub-national governments in both developed and developing countries. This is partly due to the fact that expenditure needs to provide certain unit of public services vary significantly across sub-national governments due to various factors – disability factors - such as climate, topology, demographic structure, incidence of poverty, sub-national government policies, efficiency differences, etc. Some of these factors are beyond the control of the sub-national governments and therefore need to be accounted for. However, the data for most of such variables are either not available or not measured accurately not only in developing countries but also in developed countries. The problem is pronounced in developing countries due to poor quality of the data on main variables – actual expenditures of the sub-national governments and the workload factor for each of the functions of the sub-national governments. This makes the estimated expenditure needs of subnational governments a contentious point in the process of developing formula for intergovernmental fiscal transfers.

There are different approaches that are employed to estimate expenditure needs for intergovernmental fiscal transfers. The approaches differ in terms of the objectivity of the measures and whether they are ad hoc or systematic and have some conceptual underpinnings. As discussed in the previous chapters, the House of Federation of the Federal Democratic Republic of Ethiopia opted for the representative expenditure system (RES) to estimate expenditure needs of the regional states for the construction of grant formula for its general-purpose grant. Variants of this approach are used by many countries both developed and developing with Australia being the point of reference for many.

Conceptually, the representative expenditure approach to estimate the expenditure needs of sub-national governments closely parallels that of the representative tax system of estimating the fiscal capacity of sub-national governments. The parallel is, however, not perfect since there is important asymmetry between revenue and expenditure items in the national income accounts (Rafuse, 1990).[2] Furthermore, according to Rafuse (1990), it is important to emphasize that the estimates of representative expenditures are of relative and not absolute interest. The argument is that such estimates indicate "how much it would cost a state to provide the average level of public services that actually prevailed nationwide in the year for which the estimates are calculated. A key assumption here is … "that the representative level of outlays results in roughly the same service level in every

[2]Note that Rafuse (1990) argues that the representative revenue system had been in use for quarter a century before the development of the representative expenditure approach.

state - in other words, that government is of approximately equivalent efficiency in every state" (p.7). It is important to emphasize that efficiency differences of the sub-national governments that can result into significant differences in the quality and quantity of public services provided to citizens across sub-national governments are not taken into account in the use of representative expenditure approach in estimating expenditure needs. This is one of the basic weaknesses of the representative expenditure systems to estimate expenditure needs of sub-national governments.

There are various versions of the representative expenditure system of estimating the expenditure needs of sub-national governments. The versions differ in the level of sophistication (complexity) of the technique applied and the data requirement. For this grant formula, we selected the simplest version of the representative expenditure approach that can be easily understood by policy makers at different levels of the central government and the regional governments and defended theoretically and on the basis of logical reasoning. The method selected is the one developed by Rafuse (1986 and 1990), further expounded in Shah (1994 and 1996) and well-articulated and illustrated with examples in Ma (1997).

According to this approach to estimate the expenditure need, the expenditure need of a region for a given expenditure category *i* is given by

Exp_need_i=Measurement unit*Representative Expenditure*Adjustment Index

That is, expenditure need of a region for expenditure category **i** is given by the unit of measurement or workload used (e.g., number of school age children for education, length of roads in kilometers for road, population, area, and specific age groups and sex for healthcare services, etc.) multiplied by the representative expenditure on category i, which is the national per unit average expenditure for each category**.** The representative expenditure is obtained by dividing national total actual expenditure (i.e. total of all regions for which the grant is to be distributed) to the unit of measurement of all regions, where recent one year or 3-5 years figure is used in both cases. Then, the result is adjusted by an index constructed from factors explaining unit cost differentials across sub-national governments (these must be factors beyond the control of the sub-national governments such as topography, agro-ecological zones, population density, high wage, for example, due to high relative cost of living, slope, etc.).

It is worth emphasizing that both the workload (measurement units) and factors that explain unit cost differences across sub-national governments (disability factors) must be factors beyond the control of the sub-national governments or neutral to the policies of sub-national governments. This is crucial to avoid development of strategic behavior by the grant recipient sub-national governments by manipulating the magnitude of these factors.

Usually the units of measurements are not as such source of controversy. The same applies to the representative/average expenditure since it is a well-developed system with solid theoretical foundation and empirical evidences from various federal nations and more importantly the representative revenue system-representative expenditure system is selected and adopted by House of Federations of the Federal Democratic Republic of Ethiopia. The only problematic and controversial area is the identification of factors explaining unit cost differentials across regions (disability factors) and their measurement or estimation. That is, it is important that these factors are identified first and then their importance be determined to construct an index for each expenditure category and each regional state.

Adjustment_Index_Exp_need_i=$\Sigma w_i X_i$ where $\Sigma w_i=1$.

Where $\mathbf{X}_i$s are the factors that explain the per unit cost differential for expenditure category ***i*** across sub-national governments while $\mathbf{w}_i$ is the weight (importance) attached to factor ***i*** in explaining unit cost differentials across sub-national governments. It is obvious that more than all the issues mentioned in the representative expenditure system the determination of these weights is the most problematic and controversial due to reasons explained earlier.

The literature identifies two approaches to determine these weights. The first approach is regression using time series or panel data which is a preferred approach since it is objective if appropriate data are available and if the estimation functions are properly specified. The second approach is subjective judgment by the experts (designers) which will finally be settled through political process – negotiations among the sub-national governments. For the current federal general-purpose grant formula, we employ the regression approach to determine the weights in order to reduce subjectivity that is crucial to build consensus and trust on the process of the grant distribution.

From the aforementioned discussions, we understand that the representative expenditure approach to the estimation of expenditure needs of sub-national governments involves the following steps:

Step 1: Divide the expenditures of sub-national governments into several categories that constitute the largest proportion of the total expenditure if not all (say 80-90 percent) of their total expenditure. We adopted the categories used in the development of the existing FGPG formula which disaggregated the expenditures into nine categories that, on average, capture about 95 percent of the total expenditures of the regions except the expenditure category of environmental protection for which data on main variables (both workload variable and the adjustment factors) could not be found. These are:

i. General Service and administration (Organ of the state, Justice and security, and general service);
ii. Primary and secondary education (including TVET);
iii. Public health;
iv. Agriculture and Rural development
v. Drinking water development
vi. Rural road construction and maintenance
vii. Urban development; and
viii. Micro and small-scale enterprise (MSE) development

As can be seen from Table 25 below, these eight expenditure categories constitute, on average, more than 93 percent of the total expenditures of the regional States. The share ranges from the smallest of about 80 percent for Harari and more than 98 percent for the Somalie regional State.

Step 2: Identify the measurement Unit for each of the expenditure categories – that is, address the question "what is the most important variable that determines the expenditure of regional States in category i?". That is, what are the main drivers of expenditures in each of the major expenditure functions assigned to sub-national governments (for example, for general administration it may be population, for elementary education the number of students, or for roads kilometers of roads to be paved or maintained etc.). Theoretical works on the subject and experiences from many countries show that for most of the expenditure functions (expenditure categories) assigned to the sub-national governments, the population size of the sub-national governments is the most appropriate measurement unit. For education, for example, the size of school age children for the different level of schooling is the proper variable while for healthcare service either the entire population or special age categories such as children and elderly are taken as measurement unit. In some cases, it is tempting to use more than one measurement unit. The challenge with this is the determination of the weights to be attached to the measurement units selected. For the purpose of the current grant formula, the measurement units selected for each expenditure category are discussed in some detail in sub-section 4.2 below.

Step 3: Identify determinants of the costs of providing a given level of service other than the prices of the inputs used by the subnational governments and hence explain unit cost differentials across the sub-national governments (these are also known as the "disability" factors). If there are several such factors, a weighted average of the determinants is constructed as a composite disability index. These factors must be factors beyond the control of the sub-national governments or they must be policy neutral. However, there is no guarantee that the adjustment factors will be of the expected sign. When such a problem exists, we rely on the coefficients of the

remaining adjustment factors with the expected signs. Again, the disability factors suggested for this grant formula and the justifications for their selections are discussed below for each of the expenditure category. During the field work the regional experts stressed to take efficiency in budget use, population participation rates, and quality of the public services. But due to lack of data, efficiency, population participation, and quality of services are not taken into consideration.

Step 4: Find the total subnational expenditures in each expenditure function (expenditure category) by multiplying the representative or average expenditure for the expenditure category by the measurement unit. Then multiply the total sub-national expenditure of each sub-national government by each sub-national government's adjustment index to arrive at how much each sub-national government would have spent in that expenditure category if it had provided the representative or average level of service.

Step 5: Derive the estimated expenditure need of each of the sub-national government by adding the total expenditures on the expenditure categories.

The representative or average expenditure is obtained from the data collected from the regions or from MoFEC. In this grant formula using representative expenditure approach, attempts are made to emphasize not only unit cost explaining factors but also the need factors in the calculation of adjustment index (regions who are far from achieving national standards in a given service incur more in per capita terms or per units of measurement than those who are closer to or achieved the standard and only need operational cost to maintain and run the existing facilities). This is crucial and consistent with the basic principle of the grant formula which is helping regional states provide comparable services to each citizen at comparable tax burden or the principle that all citizens enjoy comparable quality and quantity of publicly provided services irrespective of their area of residence.

It is worth mentioning that there are expenditure items in some regions for which the representative expenditure system is not applicable. The expenditure needs for some of these items such as hardship allowances can be estimated on ad hoc basis because this approach makes more sense and more understandable to users than representative expenditure need approach. There are other expenditure items that are raised by the regional states that need special treatment. These are expenditure needs that are related to security/defense, effect of industrial concentration on the surrounding and downstream population and the expenditure by regional governments to help the population cope with the problems (such as expenses on water treatment) and health expenses, and those related to spillover cost due to provision of services to a large size of population of other regions. These expenditure needs are very important in reality but cannot be dealt with within the framework of representative expenditure system since they are not problems of all regions. As a result, such expenditures are better settled through political process – negotiations among the grant recipients – than through the formal

approach used for the grant formula. Accordingly, the following expenditure needs will be handled by employing ad hoc calculations:

i. The calculation of hardship allowance that better attached to actual number of *Woredas* or administrative units for which sub-national governments pay this allowance, the average allowance they pay, and the number of payees affected. Fortunately, the Woredas are determined by law which makes the task easy;
ii. Expenditure entailed due to extreme weather conditions such as costs of ventilation/air conditioner and refrigerator; and
iii. Expenditure need for special zones and regional level nation and nationalities councils.

Whereas the estimation of the following expenditure items (which were raised by some regional states) is made based on the political direction given by HoF standing committee:

i. Expenditure need due to security/defense related issues
ii. The effect of industrial concentration and associated expenditure on infrastructure as well as costs incurred in the process of addressing pollution from the establishments, and
iii. Spillover costs for being small and providing services to the neighboring regions

The last item is raised particularly by one regional state (Harari) and one City administration (Dire Dawa). The issue is that all the calculations of the expenditure needs are, directly or indirectly, based on the population of the regional state and the city administration though, they argue, the service they provide is for a population by far greater than their population. This is due to their location and their level of development (at least in the provision of basic services such as education and health) relative to the nearby towns and rural areas of the neighboring regional states. Since it is difficult to obtain objective data on the size of the population from the neighboring regional states that use public services from the Harari regional State and Dire Dawa City Administration, it is advisable to use an adjustment factor determined through discussions of the experts at HoF and negotiations at the standing committee level or use the factor determined in the existing grant formula. It is also important to clearly identify to which of the public services that these two governments need compensatory adjustment for the spillover effects.

The standing committee, after deliberation on the issues, gave direction that the estimation of expenditure needs of regional States for cross-border security issues be determined based on the audited actual expenditure submitted by the regional States. The standing committee also indicated that the expenditure needs related to the externalities emanating from industrial concentration is important but difficult to address in the General-Purpose Grant. Hence, decided to take it to another forum. The expenditure needs due to spillover costs, according to the Standing Committee, must be

addressed since it has huge implications for the government of the regional State of Harari and the Dire Dewa City Administrations in their effort to deliver basic services to their populations. Accordingly, it was decided that the regional State of Harari and the Dire Dawa City Administration get an additional 40 percent of their total estimated expenditure needs for healthcare services and education.

4.2. Actual Expenditures of the Regional States and their Compositions

To understand the trend and the sectoral distributions of the expenditures of the regional States, the average expenditures of the regional States for the most recent three years (2005-2007) data are used. Table 24 shows the total actual expenditures of the regional States for the period 2005-2007 EC, the total average expenditures, and the share of the regional states in the sum total of the expenditures of the grant recipient regional States and one City Administration.

Table 24: Total actual expenditures of the regional states for the period 2005-2007 EC

Regions	Total All Sectors	Share of Regions in the total Expenditure
Tigray	7,105,117,623.81	8.54
Afar	2,617,965,323.71	3.15
Amhara	19,348,810,302.72	23.25
Oromia	26,594,064,361.26	31.95
Somale	6,235,495,489.33	7.49
BG	1,640,966,462.04	1.97
S.N.N.P.R	17,052,484,846.20	20.49
Gambella	1,187,838,062.06	1.43
Harari	689,478,816.92	0.83
Diredawa	755,452,196.10	0.91
All Regions	83,227,673,484.15	100

Table 25 presents the actual expenditures of regional States on the eight selected expenditure categories and the share of the sum total of the expenditures on eight selected expenditure categories in the total actual average expenditures of the regional States over the three years 2005-2007 EC.

Table 25: The Share of the Main Expenditure Categories in total average Expenditure of Regional States for 2005-2007 EC

Regions	Selected Expenditure Categories									Total average of three years Expenditures	Percentage share of the 8 expenditure categories
	Administration and general services	Education	Health	Agriculture	Drinking Water	Rural Road	Urban Developmen	SME	Total Expenditure on the 8 categories		
Tigray	1,494,607,777.33	1,673,828,502.22	571,929,441.28	671,300,050.23	920,074,325.34	398,861,566.67	202,775,081.03	89,481,020.80	6,022,857,764.89	7,105,117,623.81	84.77
Afar	820,951,752.63	366,262,912.80	226,899,376.41	790,343,664.94	151,114,277.38	68,865,675.13	88,990,540.16	9,594,395.28	2,523,022,594.73	2,617,965,323.71	96.37
Amhara	5,381,438,230.46	5,517,421,853.81	2,070,222,962.93	1,526,220,818.97	1,624,457,302.37	2,211,668,310.26	95,763,123.65	195,868,592.19	18,623,061,194.65	19,348,810,302.72	96.25
Oromia	5,327,388,335.71	6,879,275,897.87	3,104,157,504.36	2,288,757,585.21	1,816,868,612.23	5,261,839,348.82	469,535,372.25	379,125,328.49	25,526,947,984.94	26,594,064,361.26	95.99
Somale	2,519,225,316.36	780,859,757.29	464,155,299.16	1,499,609,688.66	292,310,935.81	248,461,871.63	269,393,316.95	60,524,248.61	6,134,540,434.47	6,235,495,489.33	98.38
BG	519,071,443.94	346,614,329.04	223,252,350.54	210,222,250.77	70,776,265.76	134,338,124.76	99,569,788.33	545,848.70	1,604,390,401.85	1,640,966,462.04	97.77
SNNP	5,987,677,035.88	3,912,956,129.87	1,719,482,103.12	1,693,932,416.81	691,749,838.95	6,195,333.33	152,102,138.88	174,513,036.00	14,338,608,032.85	17,052,484,846.20	84.09
Gambella	475,972,613.63	226,482,798.15	113,778,773.79	167,961,375.12	49,410,512.19	52,098,802.67	8,494,454.44	12,689,180.74	1,106,888,510.73	1,187,838,062.06	93.19
Harari	145,231,533.36	123,149,471.12	58,597,895.59	23,487,082.14	44,334,950.32	138,392,466.10	-	16,735,918.17	549,929,316.79	689,478,816.92	79.76
Diredawa	217,330,210.99	212,376,720.12	139,468,501.40	53,516,658.86	34,990,661.41	-	-	24,135,710.33	681,818,463.10	755,452,196.10	90.25
All Regions	22,888,894,250.29	20,039,228,372.29	8,691,944,208.59	8,925,351,591.70	5,696,087,681.78	8,520,721,499.37	1,785,457,781.85	963,213,279.30	77,510,898,665.17	83,227,673,484.15	93.13

Table 26:The Percentage Share of Each Expenditure Category in the total of the Eight Main Expenditure Categories

Regions	Administration and general services	Education	Health	Agriculture	Drinking Water	Rural Road	Urban Development	SME	Total
Tigray	24.82	27.8	9.50	11.15	15.276	6.62	3.37	1.49	100.000
Afar	32.54	14.5	8.99	31.33	5.989	2.73	3.53	0.38	100.000
Amhara	28.90	29.6	11.12	8.20	8.723	11.88	0.51	1.05	100.000
Oromia	20.87	26.9	12.16	8.97	7.117	20.61	1.84	1.49	100.000
Somale	41.07	12.7	7.57	24.45	4.765	4.05	4.39	0.99	100.000
BG	32.35	21.6	13.92	13.10	4.411	8.37	6.21	0.03	100.000
SNNP	41.76	27.3	11.99	11.81	4.824	0.04	1.06	1.22	100.000
Gambella	43.00	20.5	10.28	15.17	4.464	4.71	0.77	1.15	100.000
Harari	26.41	22.4	10.66	4.27	8.062	25.17	0.00	3.04	100.000
Diredawa	31.88	31.1	20.46	7.85	5.132	0.00	0.00	3.54	100.000
All Regions	29.53	25.9	11.21	11.51	7.349	10.99	2.30	1.24	100.000

4.3. The measurement units and adjustment factors for the major expenditure categories

4.3.1. General Service and Administration (Organ Of The State, Justice and Security, and General Service)

The total **population size** of regional states is selected as the measurement unit for the general service and administration. This is because the demand for general services such as administrative, justice, and security increases with population size. Moreover, large population size and rapid population growth rates could aggravate conflicts among ethnic, religious, linguistic, and social groups. In addition to population size, there are many other factors that affect the regions' unit cost of general services and administration. The following variables are selected based on theoretical and empirical literature and data availability to adjust the variations in the unit cost of general services and administrations across regions:

i. **Inverse of population density**: given the fact that population is the unit of measurement for the general services and administration, administration and provision of general services is more practical in densely populated areas compared to sparsely populated areas; that is, there is economies of scale in the provision of some services. Thus, the cost of administering and provision of services is likely to be very high in sparsely populated regions than in densely populated regions. Therefore, inverse of population density is used to account for the cost disadvantages that regions with larger proportion of sparsely populated areas face in the general services and administrations.

ii. **Urbanization rate:** Rate of urbanization – defined for the purpose of this grant formula as the rate of increasing urban population - included in the adjustment factor for general services and administration to account for the problems and challenges posed by increasing urban population. Rapid urbanization rate is often associated with high rural to urban migration and a decline in traditional social values and community spirit in developing countries which could consequently lead to higher crime rates that in turn increases the demand for more resources to build institutions such as police and other law enforcement institutions to counteract the undesirable consequences of rapid urbanization rates across regions.

iii. **Size of pastoral population**: since pastoralists move from place to place in different seasons in search of water and grazing land for their animals, it would be costly to administer and to provide general services in pastoralist areas than in sedentary areas. Pastoralists are also more vulnerable to drought and they have limited mitigation mechanisms as they do not store food. Moreover, regional governments (with the help of federal government) have started implementing villagization programs through water developments in predominantly pastoralist areas to reduce the frequency of their movement in search of water and animal food and to transform their life into sedentary agriculture. This implies that regions with large number of pastoral community incur more cost than regions with low number of pastoral community and hence the size of pastoral population is used as one of the adjustment factors for general services and administration expenditure category.

Table 27: Total Estimated Expenditure Needs of Regional States for Basic Administration and General Services

Region	Three-year Average actual expenditure (2005-2007EC)	Average population size (2005 to 2007EC)	Representative expenditure	Total Expenditure Need - before adjustment	Adjustment index	Total Expenditure Needs after adjustment
Tigray	1,494,607,777	4,960,333	270	1,341,341,952	1.00	1,341,341,952
Afar	820,951,753	1,678,333	270	453,844,288	1.29	584,834,412
Amhara	5,381,438,230	20,015,333	270	5,412,419,584	1.00	5,412,419,584
Oromia	5,327,388,336	32,818,667	270	8,874,615,808	1.00	8,874,615,808
Somali	2,519,225,316	5,308,000	270	1,435,355,776	1.75	2,517,493,940
BG	519,071,444	976,000	270	263,923,744	1.05	277,076,808
S.N.N.P.R	5,987,677,036	17,838,333	270	4,823,729,152	1.00	4,823,729,152
Gambela	475,972,614	396,000	270	107,083,808	1.00	107,083,808
Harari	145,231,533	226,000	270	61,113,488	1.00	61,113,488
Dire Dawa	217,330,211	427,000	270	115,466,632	1.00	115,466,632
Total	**22,888,894,250**	**84,644,000**		**22,888,894,232**		**24,115,175,584**

Note: even though the inverse of population density was among the adjustment factors, its coefficient was negative and hence its coefficient was not used in the calculation of the adjustment weight.

Accounting for Regions' Security/Defense Related Expenditures

According to the Federal Constitution, defense and security along the country's international borders are the responsibilities of the Federal Government. However, some regions are forced to bear significant amount of expenditure to ensure the security of their region and thereby the whole nation. The estimation need for this purpose is not straight forward to apply the representative expenditure approach. First, the problem applies only to some of the regional states and it has no specific expenditure line. As a result, the data for this expenditure category cannot be found from Federal offices, which leads to the second problem. Second, as the data for this expenditure come from grant recipients it leads to the development of strategic behavior by the regional states, which violates one of the basic principle underlining representative expenditure system and other grant distribution approaches.

As discussed above, these issues were brought to the attention of the HoF so that directions are given on how to handle this expenditure category. Accordingly, the HoF indicated that the problem was raised in the process of the development of the existing grant formula where decision was made to include regional governments' estimated expenditure on cross-border conflict in the block grant formula based on the audited actual expenditure of the regions.

In the existing grant formula, this expenditure category was captured for all regional governments that have international borders; that is, except Harari Region and Dire Dawa City Administration. In the existing grant formula, it is indicated that conflicts in relation to international border are very serious in Tigray and Somalie followed by Afar, Amhara, BenishangulGumuz and Gambella. It was also argued that some levels of international border related conflicts exist in Oromia and SNNP. Based on these arguments it was decided that in addition to the estimated expenditure needs, Tigray, Amhra and Somali obtain additional 40 percent of average of their three year expenditure on security and justices, Afar, Oromia, SNNP, BenishangulGumuz and Gambella receive 15 percent. It was decided by the HoF that the expenditure need of each region be determined by the expenditure data on this specific item that each region presents. In case regions fail to present reliable data, they get the 15 percent determined in the previous formula. However, it was not easy to get reliable data on cross-border related security issues as regions report the total expenditure on justice and security. As noted below, only the Tigray national regional State submitted detail data on this expenditure item. As a consequence, the estimated expenditure needs for cross-border security in the previous formula is maintained. Accordingly, Tigray, Amhra and Somali obtain 40 percent of their three-year average expenditure on security and justices while Afar, Oromia, SNNP, BG and Gambella 15 percent of their three-year average expenditure on security and justices.

Table 28: Estimated Expenditure Needs for Security/Defense Related Expenditures

Regions	Three Year Average actual Expenditure on Justice and security of regions	Estimated share of border conflict related expenditure	Estimated Expenditure Need related to cross border security
Tigray	580,857,008.09	0.40	232,342,803.24
Afar	267,869,904.37	0.15	40,180,485.66
Amhara	1,308,613,038.62	0.40	523,445,215.45
Oromia	2,010,047,098.36	0.15	301,507,064.75
Somale	567,174,649.29	0.40	226,869,859.72
BG	133,916,130.22	0.15	20,087,419.53
S.N.N.P.R	1,365,301,709.16	0.15	204,795,256.37
Gambella	146,679,051.79	0.15	22,001,857.77
Harari	34,383,871.92	0.00	-
Diredawa	82,249,940.83	0	-
Total	**6,497,092,402.65**		**1,571,229,962.49**

It is worth mentioning that Tigray region reported a detailed data on its annual expenditure for border related conflicts and security issues (which includes training expenses, monthly allowances, weapons and other field instruments, payments to defecting enemy combatants, etc.) that amounts to ETB217,948,990.00. This amount is 38 percent of the region's 3-year average expenditure on justice and security. No such detail data are available for other regions and hence the share used in the existing grant formula was applied for all regions.

Expenditure Need for Hardship Allowance and Extreme Weather Condition

Regional states pay hardship allowances for employees who are working in very remote and extremely hot areas. In many cases, the allowances vary between 30 to 40 percent of their salary. This hardship allowances are supposed to compensate workers for additional expenditure they would incur due to the extreme weather condition and remoteness. Moreover, air condition and ventilation are used in many offices mainly in Gambella, Benshangul-Gumuz, Afar, and Dire Dawa. Therefore, it is reasonable at least to account for the regions' expenditure need for hardship allowance and extreme weather condition.

Hardship allowances are calculated for areas where regional governments pay hardship allowance based on the number of *Woredas* identified in the process of developing the existing grant formula.

Table 29: Total Estimated Expenditure Needs for Hardship Allowance

Region	Number of woredas	Average allowance rate applied to all regions	Number of woreda with hardship allowance in 2002EC	Annual Salary expenditure (2005-2007 EC Average)	Per woreda annual Salary expenditure (2005-2007 EC Average)	Annual salary estimate for hardship allowance woredas	Annual hardship allowance estimate for hardship woredas, in Birr
Tigray	47	0.35	12	2,602,827,930.67	55,379,317.67	664,551,812.09	232,593,134.23
Afar	30	0.32	17	715,282,964.00	23,842,765.47	405,327,012.93	129,704,644.14
Amhara	138	0.3	6	8,100,136,932.33	58,696,644.44	352,179,866.62	105,653,959.99
Oromia	278	0.28	31	11,981,337,707.67	43,098,337.08	1,336,048,449.42	374,093,565.84
Somali	54	0.31	47	1,772,875,032.00	32,831,019.11	1,543,057,898.22	478,347,948.45
BG	20	0.24	5	720,899,605.00	36,044,980.25	180,224,901.25	43,253,976.30
S.N.N.P.R	145	0.36	10	6,754,484,189.00	46,582,649.58	465,826,495.79	167,697,538.49
Gambella	13	0.32	13	602,984,360.67	46,383,412.36	602,984,360.67	192,954,995.41
Harari	2	0	0	216,237,850.00	108,118,925.00	-	-
Dire Dawa	6	0.31	6	324,153,658.00	54,025,609.67	324,153,658.00	100,487,633.98
National	733	0.31	141	33,791,220,229.33	46,099,891.17	6,500,084,655.30	1,824,787,396.82

It is worth emphasizing that the estimation of regions' costs for air conditioning, ventilation and refrigeration is difficult as the prices for different brands and different sizes vary significantly. Therefore, the estimate is very rough and it may not account fully for their expenditure needs. For air conditioning and ventilation, the 10 regional bureau offices for air conditioning and 500 offices for ventilation in the four regions namely Gambella, Benshangul-Gumuz, Afar and Dire Dawa were accounted. Moreover 20 Refrigerators per *Woreda* is accounted for *Woredas* where hardship allowance is being paid. The annual expenditure need per refrigerator (including the prorated cost of acquiring a refrigerator plus cost of electricity) is estimated to be Birr 12,000.00 while annual cost of air conditioner including electricity for regional states is estimated to be Birr 1,400,000.00 (based on the estimated value in the existing grant formula), 500 offices ventilation cost is estimated at ETB 347,500.00 which again includes the prorated cost of acquiring plus the electricity cost.

Table 30: Estimated Expenditure Needs for Extreme Weather Condition

Region	Expenditure at region level, Birr				Number of Woredas paying hardship allowance	Woredas' refrigeration cost	Both total region and Woredas' cost, Birr
	Ventilation cost	Air conditioner cost	Refrigeration	Total cost			
Tigray				0	12	2,880,000	2,880,000
Afar	347,500.00	1,400,000.00	500,000.00	2,247,500.00	17.00	4,080,000.00	6,327,500.00
Amhara				-	6.00	1,440,000.00	1,440,000.00
Oromia				-	31.00	7,440,000.00	7,440,000.00
Somali				-	47.00	11,280,000.00	11,280,000.00
BG	347,500.00	1,400,000.00	500,000.00	2,247,500.00	5.00	1,200,000.00	3,447,500.00
SNNPR				-	10.00	2,400,000.00	2,400,000.00
Gambella	347,500.00	1,400,000.00	500,000.00	2,247,500.00	13.00	3,120,000.00	5,367,500.00
Harari				-	-	-	-
Dire Dawa	347,500.00	1,400,000.00	500,000.00	2,247,500.00	-	-	2,247,500.00
Total							**42,830,000.00**

Expenditure Need for special zones and regional level nation and nationalities councils

The regional states also incur cost for the support of nationalities that is aimed at addressing ethnic diversities through supporting special zones and/or ethnic minorities. Moreover, two regions (SNNP and Harari) have council of nationalities at regional level. Therefore, it has been found reasonable to account (1) for supporting nation and nationalities, and (2) for regional level HoFs. To estimate the budget need for supporting nations and nationalities, actual and estimated expenditure need from Gambella, SNNP, Tigray, Amhara and Harai regions are used. The estimated expenditure need per nationality is Birr 3.5 million per year based on the actual three-year data by SNNP. Regions' expenditure need to support nations and nationalities is computed as Birr 3.5 million times the number of nations and nationalities in the region. To estimate the expenditure needs for regional HoF, actual expenditure data of SNNP and Harari regions is used. The estimated budget need for regional HoF is found to be Birr 229,772 per nationality. Then the expenditure need for regional HoF is computed as the number of nations and nationalities that exist in the region times Birr 229,772.

Table 31: Expenditure Need for nation and nationalities councils and nationalities support

Regions	Number of nationalities obtaining support	Three Years Actual Average Expenditure for Council of Nationalities	Per Nationalities average cost	For regional council (229772X # of nationalities), 56 for SNNP is used	Budget for nationalities support (3,517,661 X Number of nationalities)	Total expenditure need, Birr
Tigray	2			0	7,035,322.00	7,035,322.00
Afar	0			0	-	-
Amhara	5			0	17,588,305.00	17,588,305.00
Oromia	0			0	-	-
Somale	0			0	-	-
BG	4			0	14,070,644.00	14,070,644.00
SNNPR	56	11858724.67	211762.9405	12867211.4	196,989,016.00	209,856,227.40
Gambella	3			0	10,552,983.00	10,552,983.00
Harari	1	1468030	734015	229771.6322	3,517,661.00	3,747,432.63
DD	0			0	-	-
Total			**229771.6322**	**13096983.03**	**249,753,931.00**	**262,850,914.03**

Table32: Total Estimated Expenditure Needs of Regional States for Administration and General Services

Region	Estimated Expenditure Needs for Basic Administration and General Services	Estimated Expenditure Need for cross border security	Estimated Expenditure Need for nation and nationalities councils and nationalities support	Estimated Expenditure Needs for hardship allowance	Estimated Expenditure Needs for Extreme Weather Condition	Total expenditure Need for General Services and Administration
Tigray	1,341,341,952.00	232,342,803.24	7,035,322.00	232,593,134.23	2,880,000.00	1,816,193,211.47
Afar	584,834,412.07	40,180,485.66	-	129,704,644.14	6,327,500.00	761,047,041.86
Amhara	5,412,419,584.00	523,445,215.45	17,588,305.00	105,653,959.99	1,440,000.00	6,060,547,064.43
Oromia	8,874,615,808.00	301,507,064.75	-	374,093,565.84	7,440,000.00	9,557,656,438.59
Somali	2,517,493,939.99	226,869,859.72	-	478,347,948.45	11,280,000.00	3,233,991,748.16
B. Gumuz	277,076,808.01	20,087,419.53	14,070,644.00	43,253,976.30	3,447,500.00	357,936,347.85
SNNPR	4,823,729,152.00	204,795,256.37	209,856,227.40	167,697,538.49	2,400,000.00	5,408,478,174.26
Gambella	107,083,808.00	22,001,857.77	10,552,983.00	192,954,995.41	5,367,500.00	337,961,144.18
Harari	61,113,488.00	-	3,747,432.63	-	-	64,860,920.63
Dire Dawa	115,466,632.00	-	-	100,487,633.98	2,247,500.00	218,201,765.98
Total	**24,115,175,584.08**	**1,571,229,962.49**	**262,850,914.03**	**1,824,787,396.82**	**42,830,000.00**	**27,816,873,857.42**

4.3.2. Primary and secondary education (including TVET)

The expenditure need of regional States for education is computed by disaggregating the total expenditure into capital expenditure and recurrent expenditure needs. The capital expenditure need enables to reduce the regional disparity in the access and quality of education and to fulfill each individual's constitutional right for equal access to government provided services. The recurrent expenditure need, on the other hand, is used to maintain those that are already enrolled in the education system. Since consumers of education services are predominantly specific age groups, we use school age population (instead of total population) as the units of measurement in the estimation of the education expenditure needs of regions. Primary school education is from age 7 to 14 (grades 1 to 8) and secondary school education is from ages 15 to 18 (grades 9 to 12). Students leaving at grade 10 can also go to Technical and Vocational Education and Training (TVET).

Capital Expenditure

The unit of measurement for the capital expenditure need is the size of school age population outside school. Like the general services and administration, to take account of unit cost differences across regions, the expenditure needs of education are also adjusted by the following disability factors:

i. **Inverse of population density**: The rationale of using the inverse of population density in the estimation of the capital and recurrent expenditure needs of regions is similar to the explanation offered in the general services and administration. In general, the larger the population the higher the expenditure need for merit goods such as education. Regions with densely populated areas could also have economies of scale advantage in the supply of education compared to regions with scattered distribution of population.

ii. **Student to class ratio**: This adjustment factor enters only in the estimation of the capital expenditure needs of education. Regions with large number of school age population outside school require more resources for constructing class rooms to enroll those who are not in school. At the same time regions with larger student class ratio need to construct more facilities to meet the national standards with respect to this factor which is claimed to have impact on quality of education.

Table 33: Estimated Capital expenditure Need for Primary Education

region Name	Three Year Average Expenditure (2005 to 2007EC)	School age population 7-17 (2005 to 2007EC)	Representative expenditure	Total Expenditure Need before adjustment	Adjustment index		Total Estimated Expenditure need after adjustment
Tigray	77,789,606.67	1,008,110.33	48	47,904,566.31	0.80	1.00	47,904,566.31
Afar	63,577,906.00	307,379.67	48	14,606,426.63	0.87	1.00	14,606,426.63
Amhara	4,922,383.00	3,889,345.67	48	184,818,477.92	0.89	1.00	184,818,477.92
Oromia	270,066,329.33	7,228,621.67	48	343,498,101.84	1.10	1.10	378,191,410.13
Somali	9,459,348.00	953,415.67	48	45,305,521.14	1.53	1.53	69,408,058.39
BG	47,021,516.67	194,172.00	48	9,226,892.28	1.00	1.00	9,226,892.28
SNNPR	273,625,900.33	3,950,350.67	48	187,717,384.89	1.16	1.16	218,315,318.63
Gambela	27,680,854.00	76,833.00	48	3,651,040.39	1.05	1.05	3,848,196.57
Harari	-	40,606.67	48	1,929,595.10	0.84	1.00	1,929,595.10
Dire Dawa	35,448,044.67	82,756.00	48	3,932,496.43	0.76	1.00	3,932,496.43
Total	**809,591,888.67**	**17,731,591.33**		**842,590,502.94**			**932,181,438.39**

Table 34: Estimated Capital expenditure Need for Secondary and TVET

Region	Three years average actual expenditure (2005 to 2007EC)	School age population 15-18 (2005 to 2007EC)	Representative expenditure	Total Expenditure Need before adjustment (=D*E)	Adjustment index	expenditure need after adjustment	Assuming this capital expenditure is spent over 5 years
Tigray	98,249,933	452,760	1,526	690,968,299	1.000	690,968,299	138,193,660
Afar	45,855,297	158,875	1,526	242,462,760	1.040	252,161,270	50,432,254
Amhara	293,388,247	1,774,614	1,526	2,708,284,565	1.000	2,708,284,565	541,656,913
Oromia	958,336,090	3,036,112	1,526	4,633,489,971	1.000	4,633,489,971	926,697,994
Somali	199,473,253	503,786	1,526	768,840,913	1.530	1,176,326,597	235,265,319
Benishangul-Gumuz	21,756,725	85,200	1,526	130,025,426	1.000	130,025,426	26,005,085
SNNPR	304,336,090	1,673,506	1,526	2,553,981,018	1.000	2,553,981,018	510,796,204
Gambela	16,579,166	36,087	1,526	55,073,309	1.410	77,653,366	15,530,673
Harari	396,244	19,181	1,526	29,273,132	1.000	29,273,132	5,854,626
Dire Dawa	396,244	41,448	1,526	63,254,870	1.000	63,254,870	12,650,974
Total	**1,938,767,289**	**7,781,569**		**11,875,654,263**		**12,315,418,514**	**2,463,083,703**

Recurrent Expenditure

The measurement unit for the recurrent expenditure is the total school age population because education expenditure is directly linked to school age population and the measure is beyond the control of the regional governments. Attempts were made to use adjustment factors such as inverse of population density, proportion of female students and so on. But the result obtained after adjusting has large difference from the average of the actual expenditure of regions. Therefore, the recurrent expenditures on both primary and secondary are not adjusted.

Table 35: Recurrent Expenditure for Primary Education

Region	Three years average actual expenditure (2005 to 2007EC)	School age Children (2005 - 2007EC)	Representative expenditure	Total Estimated Expenditure Needs of Regional States
Tigray	129,228,021	1,008,110	535	538,883,665
Afar	140,153,037	307,380	535	164,309,278
Amhara	2,712,951,302	3,889,346	535	2,079,043,114
Oromia	3,596,083,302	7,228,622	535	3,864,047,423
Somali	57,621,021	953,416	535	509,646,724
BG	168,471,079	194,172	535	103,794,313
SNNPR	2,145,748,605	3,950,351	535	2,111,653,233
Gambela	91,237,996	76,833	535	41,070,950
Harari	52,685,510	40,607	535	21,706,225
Dire Dawa	13,007,208	82,756	535	44,237,079
Total	9,107,187,082.00	17,731,591.33		9,478,392,003.53

The implication of number of languages used in education in the regions: Some of the regional states provide education in more than one language which increases their expenditure needs particularly for the development of textbooks[3]. These imply that the expenditure on education is an increasing function of the number of languages used as a medium of instruction in each regional State. The number of languages used in education was used as an adjustment factor; however, the estimated result was highly unrealistic. This could be due to the outlier regional State – SNNP – with a number of languages in which education is claimed to be offered more than 10-fold of the second largest. As a result, an ad hoc method is adopted to take care of the implication of the number of languages particularly on expenditure of regions on textbook development used in the previous grant distribution formula by updating daily payments for experts from ETB 1500 to ETB 2000.

[3]It is also important to note that regional States who offer education in more than one language incur costs for researches on the use of the language as a medium of instruction. However, this cost is not captured in this grant formula due to lack of reliable data.

Using the ministry of education specification, text book development requires four experts:

- Subject area specialist;
- Pedagogical designer (what activities and illustration);
- Illustration specialist; and
- An Editor

Subject area specialist and Pedagogical designer work together and need up to five full months. That is, they require 10-person months at a rate of Birr 2000 per day (10*30*2000=600,000). Illustrative specialists (or artists) require two-person months at a rate ETB 2000 = (1*2*30*2000=120,000), while an Editor requires one person month (30*2000=60,000). In total, one text book preparation requires ETB 780,000. This is assumed to serve for five years and hence per year cost to develop a text book per subject is Birr 156,000.

Table 36: Estimated Expenditure Needs of Regional States for Textbook Development

Region	Number of language used	Number of languages that need text book	Total textbooks	Unit cost	Total budget for text book development
Tigray	4	3	75	156,000.00	11,700,000.00
Afar	3	2	50	156,000.00	7,800,000.00
Amhara	5	4	125	156,000.00	19,500,000.00
Oromia	2	1	25	156,000.00	3,900,000.00
Somali	2	1	25	156,000.00	3,900,000.00
BG	6	5	125	156,000.00	19,500,000.00
SNNPR	57	56	1400	156,000.00	218,400,000.00
Gambella	5	4	100	156,000.00	15,600,000.00
Harari	3	2	50	156,000.00	7,800,000.00
Dire Dawa	3	2	50	156,000.00	7,800,000.00
Total					**315,900,000.00**

Table 37: Recurrent Expenditure for Secondary Education and TVET

region Name	Three-year average Expenditure (2005 to 2007EC)	School age population (age 15-18) (2005 to 2007EC)	Representative expenditure	Total Expenditure need before adjustment
Tigray	1,267,453,822	452,760	721	326,417,942
Afar	68,851,232	158,875	721	114,540,993
Amhara	1,555,289,157	1,774,614	721	1,279,411,335
Oromia	2,025,655,809	3,036,112	721	2,188,890,955
Somali	91,088,094	503,786	721	363,205,474

BG	82,860,320	85,200	721	61,425,102
SNNPR	355,218,382	1,673,506	721	1,206,517,330
Gambela	60,897,752	36,087	721	26,016,991
Harari	32,107,600	19,181	721	13,828,819
Dire Dawa	70,714,666	41,448	721	29,882,014
Total	5,610,136,834	7,781,569		5,610,136,956

Table 38: Total Estimated Expenditure Needs of Regional States for Education

Regions	Recurrent Expenditure Need Primary Education	Capital Expenditure Need Primary education	Expenditure Need for Textbook Development	Recurrent Secondary and TEVT	Capital Secondary and TEVT	Total Education before Adjustment for spillover	Spillover Rate	Estimated Compensatory Adjustment for Spillover Effect	Total Estimated Expenditure Need for Education
Tigray	538,883,664.90	47,904,566.31	11,700,000.00	326,417,941.93	138,193,659.81	1,063,099,832.94	-	-	1,063,099,832.94
Afar	164,309,278.27	14,606,426.63	7,800,000.00	114,540,992.80	50,432,253.98	351,688,951.69	-	-	351,688,951.69
Amhara	2,079,043,114.23	184,818,477.92	19,500,000.00	1,279,411,335.07	541,656,913.07	4,104,429,840.29	-	-	4,104,429,840.29
Oromia	3,864,047,423.26	378,191,410.13	3,900,000.00	2,188,890,955.33	926,697,994.16	7,361,727,782.88	-	-	7,361,727,782.88
Somali	509,646,723.81	69,408,058.39	3,900,000.00	363,205,473.89	235,265,319.39	1,181,425,575.49	-	-	1,181,425,575.49
BG	103,794,312.51	9,226,892.28	19,500,000.00	61,425,101.88	26,005,085.30	219,951,391.96	-	-	219,951,391.96
SNNPR	2,111,653,233.27	218,315,318.63	218,400,000.00	1,206,517,330.36	510,796,203.55	4,265,682,085.81	-	-	4,265,682,085.81
Gambela	41,070,949.53	3,848,196.57	15,600,000.00	26,016,991.22	15,530,673.13	102,066,810.45	-	-	102,066,810.45
Harari	21,706,224.64	1,929,595.10	7,800,000.00	13,828,818.71	5,854,626.30	51,119,264.75	0.30	15,335,779.42	66,455,044.17
Dire Dawa	44,237,079.11	3,932,496.43	7,800,000.00	29,882,014.35	12,650,974.09	98,502,563.99	0.30	29,550,769.20	128,053,333.18
Total	9,478,392,003.53	932,181,438.39	315,900,000.00	5,610,136,955.53	2,463,083,702.79	18,799,694,100.24		44,886,548.62	18,844,580,648.86

4.3.3. Public Health

The estimation of the regions' health expenditure need is implemented disaggregating the total into capital expenditure and recurrent expenditure needs like the approach we followed for education expenditure needs.

Capital Expenditure

The capital expenditure components are estimated based on the principle of reducing the access gap and inequality in health services and to fulfill each individual's right of equal access to government provided services. The unit of measurement in the estimation of the capital expenditure is the size of population without access to health services at reasonable distance (depending on the national standard). The capital expenditure needs for health services are adjusted by the disability factors. The rationale for choosing these disability factors is presented as follows:

i. **Inverse of population density**: this adjustment factor is used to account for the difficulties of providing health services in scattered population.

ii. **Population to health facility ratio:** larger population to health facility ratio implies larger capital expenditure need to improve access to health service coverage.

iii. **Number of health professionals per population:** this adjustment factor is to take health service quality into consideration. In regions where the number of health professionals per thousand of population is low, larger resources are needed to improve the health service quality.

Table 39: Estimated Capital Expenditure Needs of Regional States for Health Services

Region	Region Code	Three years average actual expenditure (2005 to 2007EC)	Three years average population size (2005 to 2007EC)	Representative expenditure	Total Expected Expenditure Need before adjustment	Adjustment index	Adjustment index after allowing all regions to have national average index	Total Estimated Expenditure Need after adjustment
Tigray	1	45,258,200	4,960,333	32	158,439,536	0.276	1.00	158,439,536
Afar	2	59,113,692	1,678,333	32	53,608,164	1.098	1.10	58,861,764
Amhara	3	628,419,072	20,015,333	32	639,315,968	0.969	1.00	639,315,968
Oromia	4	940,610,112	32,818,667	32	1,048,271,168	0.888	1.00	1,048,271,168
Somali	5	155,038,272	5,308,000	32	169,544,464	0.899	1.00	169,544,464
BG	6	75,476,960	976,000	32	31,174,718	2.392	2.39	74,568,554
SNNPR	7	720,890,560	17,838,333	32	569,779,712	1.256	1.26	715,643,318
Gambela	12	23,766,064	396,000	32	12,648,758	1.871	1.87	23,668,875
Harari	13	10,517,042	226,000	32	7,218,736	1.480	1.48	10,682,408
Dire Dawa	15	44,550,256	427,000	32	13,638,939	1.160	1.16	15,821,169
Total		**2,703,640,230**			**2,703,640,163**			**2,914,817,224**

Recurrent Expenditure

Unlike education services, health services are essential regardless of the age of the population. Like the other services, the demand for health services increases with large and growing population. Population size is the deriving factor of expenditure on health. Therefore, the measurement unit for the recurrent expenditure on health is population size. The following factors are selected as adjustment factors to account for unit cost differences across regional States:

i. Inverse of population density: is among the adjustment factors used to account the economies of scale in health service provisions in densely populated areas.

ii. Infant and maternal mortality: reducing infant and maternal mortality rates have been among the foremost MDGs. Ethiopian government has also given emphasis to achieve these goals and achieved rapid reductions both in infant and maternal mortalities. Most of these services are also offered at free or at very cheap prices. Hence, regions with large number of infants and child bearing women could incur substantial cost to finance the health service needs than regions with smaller shares of infants and child bearing mothers. To account these heterogeneities in health expenditure associated with infant and maternal mortality rates, the size of under 5-year-old population and 15-49-year-old women are used in the adjustment factors.

iii. Poverty index: higher poverty incidence implies lack of access to nutritious food and clothing among others. These in turn exacerbates health problems. Thus, regions with higher poverty

incidence could face larger demand for health services and nutrient supplements to protect children from malnutrition.

Table 40: Estimated Recurrent Expenditure Needs of Regional States for Health Services

Region	**Three years average** actual expenditure (2005 to 2007EC)	Three years average population size (2005 to 2007EC)	Representative expenditure	Total Expected Expenditure Need before adjustment	Adjustment index	Adjustment index after all regions are assigned an index of at least 1	Total Estimated Expenditure Need after adjustment
Tigray	526,671,232	4,960,333	71	350,928,416	1.50	1.499	526,171,890
Afar	167,785,680	1,678,333	71	118,736,952	1.41	1.410	167,363,771
Amhara	1,441,803,904	20,015,333	71	1,416,023,680	1.02	1.018	1,441,512,106
Oromia	2,163,547,392	32,818,667	71	2,321,820,160	0.93	1.000	2,321,820,160
Somali	309,117,024	5,308,000	71	375,524,768	0.82	1.000	375,524,768
BG	147,775,392	976,000	71	69,049,016	2.13	2.132	147,245,922
SNNPR	998,591,552	17,838,333	71	1,262,007,552	0.79	1.000	1,262,007,552
Gambela	90,012,712	396,000	71	28,015,788	3.20	3.200	89,656,321
Harari	48,080,852	226,000	71	15,988,809	1.99	1.988	31,785,832
Dire Dawa	94,918,248	427,000	71	30,208,944	3.50	3.501	105,748,614
Total	5,988,303,988			5,988,304,085			6,468,836,936

Table 41: Total Estimated Expenditure Needs of Regional States for Health Services

Regions	Total Estimated Expenditure Need for Recurrent Expenditure	Total Estimated Expenditure Need for Capital	Total Estimated Expenditure Need for Health Services before Adjustment for Spillover Effects	Rate of Spillover Effect	Estimated Compensatory Adjustment for Spillover Effect	Total Estimated Expenditure Need for Health Services
Tigray	526,171,890.03	158,439,536.00	684,611,426.03	-	-	684,611,426.03
Afar	167,363,770.90	58,861,764.07	226,225,534.97	-	-	226,225,534.97
Amhara	1,441,512,106.24	639,315,968.00	2,080,828,074.24	-	-	2,080,828,074.24
Oromia	2,321,820,160.00	1,048,271,168.00	3,370,091,328.00	-	-	3,370,091,328.00
Somali	375,524,768.00	169,544,464.00	545,069,232.00	-	-	545,069,232.00
BG	147,245,921.84	74,568,553.77	221,814,475.60	-	-	221,814,475.60
SNNPR	1,262,007,552.00	715,643,318.27	1,977,650,870.27	-	-	1,977,650,870.27
Gambela	89,656,320.87	23,668,874.57	113,325,195.44	-		113,325,195.44
Harari	31,785,832.24	10,682,408.25	42,468,240.49	0.30	12,740,472.15	55,208,712.63
Dire Dawa	105,748,613.72	15,821,169.24	121,569,782.96	0.30	36,470,934.89	158,040,717.85
Total	6,468,836,935.83	2,914,817,224.17	9,383,654,160.00		49,211,407.04	9,432,865,567.04

4.3.4: Agriculture and Rural development

In GTP II, it is clearly indicated that the agricultural sector would continue to be the main source of economic growth. In turn, within agriculture, the bulk of the growth is expected to originate from smallholder farmers' agriculture. Regional States provide various services to both smallholder farmers and pastoralists to increase production and productivity and thereby meet the goals of national food security and sustainable growth**.** The expenditure on agriculture and rural development is mainly for crop and livestock production.

For the **agriculture and rural development,** the unit of measurement selected is the region's rural population. The main actors in **agriculture and rural development** in the country are smallholder farmers. Training, plot visits, on farm demonstrations, and related costs for **agriculture and rural development** mainly depend up on the rural population. Hence, the number of rural population is the driving force of expenditure needs of regional governments for **agriculture and rural development**.

Though the size of rural population is the driving force of the expenditure needs of regional States for **agriculture and rural development,** there are other factors that explain unit cost differences across regions. The contributors for variations in expenditure need on **agriculture and rural development** mainly include: inverse of density of rural population, size of arable land, tropical livestock unit and

pastoral population. Variation in these factors has an implication on expenditure needs for agriculture and rural development. Hence, in the expenditure need estimation adjustments are made to take into account such variations across regions.

i. **Inverse of density of rural population:** Population dispersion increases the cost of offering trainings, plot visits and demonstration activities of the development agents. Thus, inverse of population density is used to adjust for the impact of population dispersion on the cost of delivering services to crop producing smallholder rural households.

ii. **Size of arable land:** As the size of the arable land of the region increases there is a need for more FTC, DAs and more supervision and follow up costs. The development agents are required to visit the plots of farmers especially the trial plots planted by the model farmers. Thus, larger arable size could increase the cost of development agent visits. Moreover, larger size in arable land might require huge resources to protect production loss during some epidemics such as pests and rainfall during harvest seasons. Regional governments have responsibility to help farmers to overcome such type of disasters.

iii. **Size of pastoral population**- pastoralists move from place to place in search of grazing land and water for their cattle. As a result, supplying animal health services to pastoralist population is extremely high than in settled agriculture areas. Thus, to ensure access to animal health services for the pastoralist population, the regional governments should either built veterinaries in all of the potential destinations of the pastoralists or the regional governments should design veterinary services which moves from place to place by following the pastoralist communities. Consequently, the regions with more pastoralists need more expenditure for livestock development than the other regions and vice versa.

iv. **Tropical Livestock Unit (TLU)**:This a composite measure of the total population of livestock. The livestock population is used as one of the adjustment factors since regional governments incur significant expenditure in vaccination during epidemics, preventing and controlling animal disease outbreaks, and also providing water and fodder especially during drought. The total cost for these services is, therefore, directly proportional with the livestock population.

Table 42: Total Estimated Expenditure Needs of Regional States for Agriculture Development

Region	Three-year average Rural Population	Three Year average actual Expenditure	Representative Expenditure	Total Expenditure Need before adjustment	Average of the estimated Weights of Adjustment factors	Total Estimated Expenditure Need after adjustment
Tigray	3,759,666.67	621,307,675.87	92.56	347,994,746.67	1.40	487,988,419.53
Afar	1,388,666.67	748,166,866.19	92.56	128,534,986.67	4.52	580,706,916.48
Amhara	16,887,000.00	1,181,650,303.81	92.56	1,563,060,720.00	1.00	1,563,060,720.00
Oromia	28,164,000.00	1,712,856,999.74	92.56	2,606,859,840.00	1.00	2,606,859,840.00
Somali	4,545,333.33	467,676,828.19	92.56	420,716,053.33	2.61	1,097,950,628.40
BSG	786,666.67	181,709,509.81	92.56	72,813,866.67	2.11	153,611,887.00
SNNPR	15,132,333.33	1,455,439,274.53	92.56	1,400,648,773.33	1.00	1,400,648,773.33
Gambela	271,666.67	138,961,260.00	92.56	25,145,466.67	4.74	119,244,409.56
Harari	101,333.33	16,314,626.41	92.56	9,379,413.33	2.63	24,700,313.37
Dire Dawa	159,000.00	65,928,276.67	92.56	14,717,040.00	2.29	33,681,533.70
Total	**71,195,666.67**	**6,590,011,621.22**		**6,589,870,906.67**		**8,068,453,441.39**

4.3.5. Provision of Drinking Water

Provision of Drinking Water is an important responsibility for regional States. According to GTP II, at the end of the plan period the urban potable water supply coverage will reach 100 percent while that of the rural areas will reach 98 percent. Access to water supply is defined as when people in urban areas get 30 liters of water within 500 meter and people in rural areas get 15 liters of water within 1.5-kilometer distance. The 2015 assessment report by JMP indicates that Ethiopia has met the target of 57 percent of the population using safe drinking water and attained the target by halving the number of people without access to safe water since 1990.

Safe drinking water is financed through government channels and using government implementation modalities to localized interventions using innovative approaches and direct project financing mechanisms.

The Unit of measurement to estimate the regions' expenditure needs for provision of drinking water is total population. The rationale for this choice is straightforward as larger population implies larger expenditure to avail water. However, as in the case of other expenditure needs, in addition to measurement units, there are disability factors that explain unit cost differentials across regional States in providing drinking water to their respective populations. Some of these disability factors are:

i. Inverse of population density: One drinking water supply facility can serve many people in densely populated areas. But in areas where the population is distributed sparsely, one water facility serves a few people. In other words, if there are two areas with equal population size but with different population densities, then it requires installation (building) of many more water facilities in the less densely area than in the densely area to supply drinking water. Therefore, to account for the differential effects of population density on the unit cost, the inverse of population density is included among the adjustment when the population is dispersed the production and distribution of drinking water and the unit cost increases than when supplying water to densely populated areas/regions

ii. The size of population with no access to safe drinking water- When the size of population with no access to safe drinking water increases the region needs to invest in water infrastructures/facilities to meet the national standard which leads to higher unit cost of water provision.

Table 43: Estimated Expenditure Need of Regions for Drinking Water Development

Region	Three Years Average Actual Expenditure on Drinking Water	Average Total Population (a)	Representative Expenditure (	Total Cost Before Adjustment	Average of the estimated Weights of Adjustment factors	Adjustment to national average Expenditure for those below the national average	Total Estimated Expenditure Need for Drinking Water-after adjustment
Tigray	920,074,325.34	4,960,333.33	67.29	333,803,856.12	2.71	2.71	905,226,452.57
Afar	151,114,277.38	1,678,333.33	67.29	112,942,840.91	1.30	1.30	146,625,371.58
Amhara	1,624,457,302.37	20,015,333.33	67.29	1,346,924,692.20	1.17	1.17	1,575,889,753.00
Oromia	1,816,868,612.23	32,818,666.67	67.29	2,208,520,425.93	0.81	1.00	2,208,520,425.93
Somali	292,310,935.81	5,308,000.00	67.29	357,199,960.01	0.82	1.00	357,199,960.01
BSG	70,776,265.76	976,000.00	67.29	65,679,570.64	1.09	1.09	71,912,702.80
SNNPR	691,749,838.95	17,838,333.33	67.29	1,200,424,256.46	0.53	1.00	1,200,424,256.46
Gambela	49,410,512.19	396,000.00	67.29	26,648,678.25	1.82	1.82	48,511,162.16
Harari	44,334,950.32	226,000.00	67.29	15,208,589.10	1.95	1.95	29,610,445.28
Dire Dawa	34,990,661.41	427,000.00	67.29	28,734,812.16	2.10	2.10	60,364,165.37
Total	5,696,087,681.78	84,644,000.00		5,696,087,681.78			6,604,284,695.15

4.3.6: Rural Road Construction and Maintenance

Road network is one of the key infrastructures which drive the economic growth and social development of a country. Hence, it is envisaged in GTP-II to expand road network and to improve/upgrade the standards of existing roads infrastructure of the country. With regard to rural road development (which is the responsibility of regional states as per article-52 of the constitution), the plan is to link all rural Kebeles to all weather roads and to the main road during the plan period (2015/16 to 2019/20). The major expenditure needs of regional states for rural road development are

costs of constructing new roads (capital expenditures) and costs of maintaining existing roads (recurrent expenditure).

Capital Expenditure Need

In this case, regions' average yearly plan for construction of new rural road (which is determined from five years plan) is used as unit of measurement. The average five years plan is used as proxy for total length of rural road that need to be constructed to achieve minimum national standard since data is not available on the prevailing gap in this regard. Here, it is assumed that a region that lag behind in terms of road accessibility need to construct more KMs of rural road than otherwise so as to ensure equitable road accessibility.

Representative expenditure (i.e. overall average per kms cost of constructing rural road) is determined as the ratio of three years average capital expenditure on rural road construction by all regions and the overall average length of rural road constructed by all regions during the same period.

Disability/Adjustment factors: To account for possible deviation of region specific unit cost from representative unit cost, an adjustment is made using the following factors:

Weather condition (rain-fall): High mean annual rain implies higher costs for the construction of rural roads and also needs more selected materials to withstand the effect of rainfall.

Mean slope: Sloppy topography requires building of more supportive structures, bridges and culverts/drainage/ systems, and also level the land while building new roads, and hence entail more costs.

Soil type: This factor is included in the adjustment index on the ground that road construction cost and the cost needed for maintenance depends on the soil cover: removing existing unsuitable soil and refilling with selected material, and constructing supportive structures as well is necessary with all additional costs thereof.

In addition to the above variables, inclusion of number of bridges and culverts in the adjustment index was also suggested by some regions. However, these factors are not considered in estimating rural road expenditure needs of regions due to absence of data.

Table 44: Estimated Capital Expenditure Need of Regional States Rural Roads

Region	Three Years Ave. Actual Capital Expenditure on Rural Road Construction	Average yearly road constructed	Average Rural Road Gap in KMs(as proxied by average yearly plan)	Representative Expenditure	Total Cost Before Adjustment	Relative Index of Adjustment	Weighted adjustment index after allowing all regions to have at least the national average	Total Estimated Capital Expenditure Need for Rural Road - after adjustment
Tigray	559,232,762.00	456.60	1,032.80	992,797.58	1,025,361,339	0.96	1.00	1,025,361,339.41
Afar	59,463,002.00		405.40	992,797.58	402,480,138	0.73	1.00	402,480,138.46
Amhara	2,133,368,439.00	1,883.00	4,097.60	992,797.58	4,068,087,359	0.92	1.00	4,068,087,359.01
Oromia	5,487,096,244.33	5,431.60	7,001.00	992,797.58	6,950,575,849	0.87	1.00	6,950,575,849.38
Somali	248,802,044.33		1,323.80	992,797.58	1,314,265,435	0.48	1.00	1,314,265,434.85
BSG	146,840,894.67	73.20	225.20	992,797.58	223,578,015	1.30	1.30	290,651,419.18
SNNPR	361,929,154.00	1,437.00	3,744.40	992,797.58	3,717,431,254	0.34	1.00	3,717,431,254.17
Gambela	63,220,572.33	9.00	85.60	992,797.58	84,983,473	2.59	2.60	220,957,029.14
Harari	143,577,811.67	28.80	27.00	992,797.58	26,805,535	1.47	1.50	40,208,301.94
Dire Dawa	91,040,008.67	42.80	57.20	992,797.58	56,788,022	0.34	1.00	56,788,021.51
Total	**9,294,570,933.00**	**9,362.00**	**18,000.00**		**17,870,356,418.93**			**18,086,806,147.06**

Recurrent Expenditure Need

The measurement unit selected for recurrent expenditures is the length of rural road network. This is so since the major recurrent spending by regional states on rural roads is expenditure on the maintenance of existing rural roads. The representative expenditure rate (i.e. the overall average maintenance cost per kms) is determined as the ratio of the sum of three years average expenditure of all regions to the sum of average yearly road constructed by all regions. Here, had data been available, using average length of rural road maintained by all regions over the same period would have been better instead of using average length of road constructed, however, the requisite data is not missing.

Disability/Adjustment Factors: To account for unit cost differential across regions, adjustment is made using factors such as

i. **Traffic rate (proxied by population density)**: The frequency of maintenance of a road partly depends on the rate of utilization. Other things remaining the same, roads that are used with high

frequency or high traffic rate are roads that require frequent maintenance. Since data on traffic flow of all regions are not available, we use population density as a proxy for traffic rate since densely populated areas lead to higher traffic rate compared to others.

ii. **Weather condition (mean annual rain fall):** It is more expensive to construct and maintain roads in areas with high mean rainfall than areas with less mean rainfall.

iii. **Soil type:** This is linked with the need for selected material and the nature of some soil types that lead to frequent damage and therefore frequent maintenance.

iv. **Mean slope:** The frequency of road damage generally increases in sloppy areas due to high runoff water, land slide and other reasons. Hence, mean slope of regions is also included in the adjustment index in estimating regions' expenditure needs for rural road maintenance.

Table 45: Estimated Recurrent Expenditure Need of Regional States for Rural Roads

Region	Three-year average Recurrent Expenditure on Rural Road	Total Length of Rural Road Constructed so far in kms	Representative Expenditure	Total Cost Before Adjustment	Weighted Adjustment Index	Total Estimated Expenditure Need for rural road -after adjustment
Tigray	40,125,372.67	3,793.70	4,467.27	16,947,497.72	1.28	21,646,920.94
Afar	10,560,643.33	1,178.00	4,467.27	5,262,448.88	1.08	5,695,825.15
Amhara	78,299,871.67	14,691.00	4,467.27	65,628,723.67	1.00	65,628,723.67
Oromia	154,948,267.67	37,354.00	4,467.27	166,870,556.41	1.00	166,870,556.41
Somali	4,465,102.33	3,214.00	4,467.27	14,357,818.93	1.00	14,357,818.93
BSG	14,892,163.33	1,985.00	4,467.27	8,867,539.07	1.00	8,867,539.07
SNNPR	24,049,953.67	14,043.00	4,467.27	62,733,930.06	1.18	74,231,445.74
Gambela	5,548,488.00	1,898.00	4,467.27	8,478,886.23	1.00	8,478,886.23
Harari	6,276,800.00	424.23	4,467.27	1,895,151.69	2.23	4,218,326.54
Dire Dawa	14,489,245.33	585.00	4,467.27	2,613,355.34	1.06	2,776,069.10
Total	**353,655,908.00**	**79,165.93**		**353,655,908.00**		**372,772,111.79**

Table 46: Total Estimated Expenditure Needs of Regional States for Rural Road

Regions	Total Estimated Recurrent Expenditure Need	Total Estimated Capital Expenditure Need	Total Estimated Rural Road Expenditure Need
Tigray	21,646,920.94	1,025,361,339.41	1,047,008,260.36
Afar	5,695,825.15	402,480,138.46	408,175,963.61
Amhara	65,628,723.67	4,068,087,359.01	4,133,716,082.69
Oromia	166,870,556.41	6,950,575,849.38	7,117,446,405.79
Somali	14,357,818.93	1,314,265,434.85	1,328,623,253.78
BG	8,867,539.07	290,651,419.18	299,518,958.25
SNNPR	74,231,445.74	3,717,431,254.17	3,791,662,699.91
Gambela	8,478,886.23	220,957,029.14	229,435,915.37
Harari	4,218,326.54	40,208,301.94	44,426,628.48
Dire Dawa	2,776,069.10	56,788,021.51	59,564,090.61
Total	372,772,111.79	18,086,806,147.06	18,459,578,258.85

4.3.7. Urban Development

It is indicated in GTP-II that undertaking ranges of integrated urban development programs are inevitable in realizing the envisaged socio-economic development and in improving the living standard of urban dwellers. The major urban development programs set to be executed during the plan period include strengthening the on-going urban housing development, upgrading urban centers and implementing fair and balanced urban settlements, develop and manage climate resilient urban green infrastructures (like enhancing urban road network, water sewerage and dry waste management systems, etc.), and strengthening urban land information system and good governance among others. To this end, regional governments need a lot of resources so as to realize their share of these programs.

To estimate expenditure needs of regions for urban development activities, the total urban population of regions is selected as the primary deriving force or measurement unit. The size of urban population is selected since all urban development programs and activities are mainly meant to improve the living standards of urban dwellers by providing requisite services and infrastructures in more equitable way. Besides, with higher number of urban population, the demand for various public services and infrastructures becomes larger, causing more spending need. The representative unit cost of urban development is estimated by taking the ratio three years average actual urban development expenditure of all regions to their three years average urban population. Disability/Adjustment Factors: In addition to the primary variable – the size of urban population – that explains the expenditure needs of regions, unit costs for urban development activities are expected to differ across regions depending on other factors. This implies that adjusting the expenditure estimation using

factors like number of urban household without own house, inverse of urban road density (proxy for gap in urban road accessibility)and urbanization rate would have been useful. Yet, due to lack of data on the first two proposed adjustment factors, only urbanization rate is considered in the adjustment index in this case.

i. **Urbanization rate**: The justification here is that regions with high urbanization rate face ever increasing demand for various urban services like urban waste management, security, utilities, police and justice, and other municipal services and infrastructures such as road and housing.

Table 47: Estimated Expenditure Need of Regions for Urban Development

Region	Three Years Average Actual Expenditure of Regions	Unit of Measurement (3 years average urban Population)	Representative Unit Cost	Total Cost Before Adjustment	Weighted adjustment index	Weighted adjustment index after allowing all regions to have at least national average	Total Estimated Expenditure Need of Regions for Urban Development-
Tigray	348,522,665.00	1,201,000.00	263.04	315,907,480.12	0.94	1.00	315,907,480.12
Afar	89,107,339.67	290,000.00	263.04	76,280,740.41	1.38	1.38	105,247,707.70
Amhara	960,323,631.00	3,129,000.00	263.04	823,042,885.35	0.82	1.00	823,042,885.35
Oromia	469,535,372.25	4,655,000.00	263.04	1,224,437,402.14	0.86	1.00	1,224,437,402.14
Somali	348,357,345.33	763,000.00	263.04	200,697,258.40	0.56	1.00	200,697,258.40
BG	145,951,021.33	189,333.33	263.04	49,801,678.80	1.60	1.60	79,819,697.78
SNNPR	724,842,883.03	2,706,333.33	263.04	711,865,898.17	1.26	1.26	896,137,979.36
Gambela	38,918,321.67	124,333.33	263.04	32,704,271.46	1.67	1.67	54,734,326.77
Harari	74,990,667.33	124,666.67	263.04	32,791,950.48	0.42	1.00	32,791,950.48
Dire Dawa	337,474,244.33	268,000.00	263.04	70,493,925.62	0.48	1.00	70,493,925.62
Total	3,538,023,490.95	13,450,666.67	263.04	3,538,023,490.95			3,803,310,613.71

4.3.8. Micro and Small-Scale Enterprise (MSE) Development

Creation of large quantity and quality employment opportunities that enable poverty reduction and efficient utilization of human resources is among the major development goals envisaged in GTP-II. And, the goals of employment generation and poverty reduction are to be realized both in urban and rural areas alike. Development of Micro and Small Enterprises (MSEs) is one of the main strategies being pursued to realize these development goals. And, regional states spend huge resources in promoting MSEs development in their respective jurisdictions.

In estimating regional states' expenditure need for SMEs development, the size of youth unemployment (age 15-34) is used as the measurement unit (i.e. major determinant factor of SMEs development expenditure need). Youth unemployment (age 15-34) is chosen on the ground that regions with large size of unemployed youth need more resources in creating more job opportunities. The unemployed youth is taken to mean both rural and urban youth as long as the CSA data allow.

In estimating regional states' expenditure need for MSEs development, representative/standard unit cost of employment creation is determined as the ratio of recent three years (2005-2007 E.C)average expenditure data of all regions under consideration for MSEs development to the average number of employment created by these regions over the same period.

Disability/Adjustment Factors: To take into account the unit cost differential of creating job across regions, an adjustment is made using the following disability/adjustment factors.

i. **Youth illiteracy rate**: Regions with high youth literacy rate spend fewer resources on training youth and prepare the youth for paid employment or self-employment than those with low youth literacy rate.

ii. **Overall unemployment rate**: Regions with high over all unemployment rates need to create more jobs and spend more resources than regions with low over all unemployment rates.

Though including other adjustment factors like proportion of population without electricity and access to market center would have been useful to account for the ease or difficulty of creating job opportunity, these factors are not considered in estimating Regions' SME expenditure need due to lack of data.

Table 48: Estimated Expenditure Needs for MSE development

Region	Three Years Ave.Acutal Expenditure of Regions on SME Dev't (2005-2007 EC)	Average Size of Unemployed Youth Age 15-34	Representative Expenditure	Total Exp.Need for SME Dev't-before adjustment	Weighted Adjustment Indices after allowing all regions to have at least the minimum national average	Total Expenditure Need for SME Development-after adjustment
Tigray	89,481,020.80	115,423.39	597.87	69,007,737.20	1.00	69,007,737.20
Afar	9,594,395.28	49,976.02	597.87	29,878,972.76	1.36	40,497,009.40
Amhara	195,868,592.19	336,566.96	597.87	201,221,993.70	1.00	201,221,993.70
Oromia	379,125,328.49	469,363.90	597.87	280,616,793.30	1.00	280,616,793.30
Somali	60,524,248.61	122,497.89	597.87	73,237,343.12	1.06	77,962,906.42
BSG	1,395,755.43	12,596.18	597.87	7,530,831.76	1.00	7,530,831.76
SNNPR	174,513,036.00	313,790.61	597.87	187,604,790.08	1.00	187,604,790.08
Gambela	12,689,180.74	8,278.99	597.87	4,949,728.80	1.00	4,949,728.80
Harari	17,387,777.70	8,595.44	597.87	5,138,923.56	1.37	7,028,413.38
Dire Dawa	24,135,710.33	26,895.35	597.87	16,079,821.66	2.25	36,138,045.72
Total	964,715,045.56	1,463,984.74		875,266,935.94		912,558,249.76

Table 49: Total Expenditure Needs of Regional States before adjustment for Spatial Price Differences

Regions	Administration and General Services	Education	Health	Agriculture	Drinking Water	Rural Road	Urban Development	MSE	Total Expenditure Need before Adjustment for Spatial Price variation
Tigray	1,816,193,211.47	1,063,099,832.94	684,611,426.03	487,988,419.53	905,226,452.57	1,047,008,260.36	315,907,480.12	69,007,737.20	6,389,042,820.21
Afar	761,047,041.86	351,688,951.69	226,225,534.97	580,706,916.48	146,625,371.58	408,175,963.61	105,247,707.70	40,497,009.40	2,620,214,497.29
Amhara	6,060,547,064.43	4,104,429,840.29	2,080,828,074.24	1,563,060,720.00	1,575,889,753.00	4,133,716,082.69	823,042,885.35	201,221,993.70	20,542,736,413.70
Oromia	9,557,656,438.59	7,361,727,782.88	3,370,091,328.00	2,606,859,840.00	2,208,520,425.93	7,117,446,405.79	1,224,437,402.14	280,616,793.30	33,727,356,416.63
Somali	3,233,991,748.16	1,181,425,575.49	545,069,232.00	1,097,950,628.40	357,199,960.01	1,328,623,253.78	200,697,258.40	77,962,906.42	8,022,920,562.65
BG	357,936,347.85	219,951,391.96	221,814,475.60	153,611,887.00	71,912,702.80	299,518,958.25	79,819,697.78	7,530,831.76	1,412,096,293.01
SNNPR	5,408,478,174.26	4,265,682,085.81	1,977,650,870.27	1,400,648,773.33	1,200,424,256.46	3,791,662,699.91	896,137,979.36	187,604,790.08	19,128,289,629.49
Gambela	337,961,144.18	102,066,810.45	113,325,195.44	119,244,409.56	48,511,162.16	229,435,915.37	54,734,326.77	4,949,728.80	1,010,228,692.73
Harari	64,860,920.63	66,455,044.17	55,208,712.63	24,700,313.37	29,610,445.28	44,426,628.48	32,791,950.48	7,028,413.38	325,082,428.43
Dire Dawa	218,201,765.98	128,053,333.18	158,040,717.85	33,681,533.70	60,364,165.37	59,564,090.61	70,493,925.62	36,138,045.72	764,537,578.05
Total	**27,816,873,857.42**	**18,844,580,648.86**	**9,432,865,567.04**	**8,068,453,441.39**	**6,604,284,695.15**	**18,459,578,258.85**	**3,803,310,613.71**	**912,558,249.76**	**93,942,505,332.18**

4.3.9. Spatial Price Index

In addition to the disability factors considered for each of the expenditure categories discussed above, the quantity and quality of public services provided by regional States to their respective population significantly depend on the relative prices they face. That is, due to some economic, geographic and social reasons the prices vary across regions. This is referred to as spatial price differences. Thus, spatial price differences need to be taken into account when estimating the expenditure needs of regional states by multiplying each region's expenditure need by respective relative spatial price index. The relative spatial price indices are constructed by taking the ratio of each region's price index to the national average price index. For the construction of this grant formula, the relative spatial price index used is the one applied in developing the existing formula since there is no new index constructed by a body mandated with the estimation of the price indices.

Table50: Regional level relative SPI in 2010/11 (national average = 100)

Region	Food	Non-food	Total
Tigray	1.047	1.021	1.034
Afar	1.069	0.947	1.021
Amhara	0.996	0.9	0.949
Oromia	1.01	0.951	0.981
Somali	1.231	0.962	1.132
BG	0.941	0.976	0.958
SNNPR	0.908	0.904	0.906
Gambella	1.059	1.072	1.065
Harari	1.16	1.308	1.227
Addis Ababa	1.158	1.869	1.554
Dire Dawa	1.132	1.388	1.245

In adjusting regional States' expenditure need for spatial price indices, adjustment of expenditure of those regions with spatial price index below national average of 100 percent is made using the national average index (that is 100 percent or an index of 1), while the expenditure of those regions with spatial price index above national average of 100 percent is adjusted using their respective price index as it is.

Besides, since some prices such as salary scale of civil servants do not vary from region to region, adjustment for spatial price index is applied only to non-salary expenses (which accounts about 59 percent of total regional expenditure needs) after excluding salary expenditure (which make up about 41 percent of total expenditure of regions).

Table 51: Total Expenditure Needs of Regional States after adjustment for Spatial Price Differences

Total Expenditure Need before Adjustment for Spatial Price variation	Spatial Price Index	Total Expenditure Need net of Salary Expenses (59 percent)	Non-salary Expenses Adjusted for Spatial Price Variation	Salary Expenses (41 percent of total Expenses	Total Estimated Expenditure Needs of Regional States
6,389,042,820.21	1.034	3,769,535,263.93	3,897,699,462.90	2,619,507,556.29	6,517,207,019.19
2,620,214,497.29	1.021	1,545,926,553.40	1,578,391,011.02	1,074,287,943.89	2,652,678,954.91
20,542,736,413.70	0.949	12,120,214,484.08	12,120,214,484.08	8,422,521,929.62	20,542,736,413.70
33,727,356,416.63	0.981	19,899,140,285.81	19,899,140,285.81	13,828,216,130.82	33,727,356,416.63
8,022,920,562.65	1.132	4,733,523,131.97	5,358,348,185.39	3,289,397,430.69	8,647,745,616.07
1,412,096,293.01	0.958	833,136,812.87	833,136,812.87	578,959,480.13	1,412,096,293.01
19,128,289,629.49	0.906	11,285,690,881.40	11,285,690,881.40	7,842,598,748.09	19,128,289,629.49
1,010,228,692.73	1.065	596,034,928.71	634,777,199.07	414,193,764.02	1,048,970,963.09
325,082,428.43	1.227	191,798,632.77	235,336,922.41	133,283,795.66	368,620,718.07
764,537,578.05	1.245	451,077,171.05	561,591,077.96	313,460,407.00	875,051,484.96
93,942,505,332.18		**55,426,078,145.99**	**56,404,326,322.91**	**38,516,427,186.19**	**94,920,753,509.11**

CHAPTER FIVE: TOTAL AND RELATIVE FISCAL GAPS OF REGIONAL STATES

After the expenditure needs are adjusted for spatial price differences, the total annual potential revenue of each regional State is deducted from the respective total annual expenditure needs to generate the fiscal gap of each of the grant recipient regional States. The fiscal gap of each of the regional States is divided to the sum total of the fiscal gap of all regions to obtain the relative fiscal gaps of each region. The total and relative fiscal gaps of regions are indicated in Table 52.

Table 52: Total and Relative Fiscal Gaps

Region	Total Estimated Expenditure Needs of Regional States	Total Potential Revenue	Gap	Relative Gap	Population Share 2007 EC
Tigray	6,517,207,019.19	1,751,924,322.03	4,765,282,697.16	**6.03%**	5.83%
Afar	2,652,678,954.91	265,716,841.52	2,386,962,113.39	**3.02%**	1.99%
Amhara	20,542,736,413.70	3,476,076,853.50	17,066,659,560.19	**21.60%**	23.53%
Oromia	33,727,356,416.63	5,770,358,050.61	27,956,998,366.02	**35.38%**	38.87%
Somalia	8,647,745,616.07	495,454,951.54	8,152,290,664.53	**10.32%**	6.29%
BG	1,412,096,293.01	191,850,543.68	1,220,245,749.33	**1.54%**	1.16%
SNNPR	19,128,289,629.49	2,996,111,089.82	16,132,178,539.66	**20.41%**	21.08%
Gambela	1,048,970,963.09	177,245,815.48	871,725,147.61	**1.10%**	0.47%
Harari	368,620,718.07	199,688,218.13	168,932,499.93	**0.21%**	0.27%
Dire Dawa	875,051,484.96	572,837,420.69	302,214,064.27	**0.38%**	0.51%
Total	94,920,753,509.11	15,897,264,107.01	79,023,489,402.10	**100.00%**	100.00%

CHAPTER SIX: CONCLUDING REMARKS AND RECOMMENDATIONS

6.1. Conclusions

As stipulated under various articles of the Constitution of the Federal Democratic Republic of Ethiopia, the federal grant allocation is meant to ensure fiscal equalization, equitable provision of public services and promote revenue generation capacity of regions/city administration among other things. Hence, as much as possible, the revision of the grant allocation formula is made objectively based on a number of core principles such as transparency, adequate stakeholders' participation, fairness, understandability/clarity, revenue predictability, and efficiency in revenue generation and budget utilization, and self-rule and accountability.

Throughout the revision of the grant allocation formula, the research team has worked in close collaboration with a group of Experts from the Secretariat of the House of Federation. Besides, from the outset, comprehensive consultative sessions were held with regional government cabinet members and in-depth discussions conducted with key officials and experts from selected Bureaus/Offices such as Agricultural and Natural Resource Development Bureau, Health Bureau, Education Bureau, Finance Bureau and [Rural] Road Development and other Bureaus of each regional State and the City Administration. These sessions were instrumental in understanding the various concerns of regional States, in getting their suggestions on the way forward and in gathering some information essential for the revision of the grant formula. Furthermore, the members of the Standing Committee at the House of Federation that is mandated with overseeing the revision of the grant formula, representatives from key regional Bureaus, and other stakeholders have deliberated and agreed on the framework proposed to revise the grant allocation formula ahead of the revision process (that is, before the revenue and expenditure estimation process started). Then, draft federal grant allocation formula is prepared as per the agreement and the directions given by HoF Standing Committee were presented to the members of the Committee for feedback. The revised grant formula document is then finalized after incorporating the essential inputs/comments obtained at various stages of the process.

The revision of grant allocation formula is made primarily by using the data obtained from several federal institutions like CSA, Ministerial offices and other pertinent federal agencies. The research team in collaboration with HoF experts/staffs exerted utmost effort to address the various concerns raised by regional States during the revision processes. Despite the efforts made, lack of adequate and quality data on some essential variables of interest has been one of the most important challenges faced while estimating revenue generating capacity and expenditure needs of regional States. For instance, absence of pre-studied tax bases and revenue potential of regions (including joint revenue potential), total absence of data on some expenditure categories like environmental protection and inconsistency of data were among the ranges of data related constraints faced. Moreover, it was impossible to capture some of the concerns raised by regional states like variation in quality of public

services provided and efficiency differentials across regional States in this revision. On other hand, the desire to address many issues using a single federal grant has made the revision process so challenging.

In light of the aforementioned constraints and other challenges faced during the revision of the Federal General Purpose Grant Allocation Formula, the following recommendations are forwarded for future actions.

i) Since data shortage and quality has been one of the single most important challenges, the HoF, CSA, concerned Federal Institutions as well as regional bureaus need to enhance their data collection/recording and management practices. Besides, periodically updating data records and cross-checking with the sources is necessary in improving data quality at all levels. The HoF also needs to strengthen its internal data management capacity.

ii) Availability of some essential national data/information like pre-assessment of revenue/tax/ potential of regions (including joint revenue) and clearly defined tax base and rate, gap in various public services versus national standards is essential in undertaking such revision. Hence, the HoF in collaboration with other concerned offices need to undertake an assessment on such matters so at to generate better information for future revision of grant allocation formula,

iii) Efficient utilization of allocated grant is important in realizing the purposes that the grant is meant to serve. To this end, mechanisms to ensure proper utilization of the allocated budget have to be in place by HoF in a manner that would not jeopardize regional mandate.

iv) As it could be difficult to address too many issues using a single general-purpose grant, it might be advisable to have some additional specific purpose grants for some issues like security, environmental pollution.

v) It also seems important that HoF strengthens the capacity of its experts in both exposing its experts to theoretical foundations of fiscal federalism, different approaches (and their merits and demerits) of intergovernmental fiscal transfers, and the technical aspects of constructing/revising grant formulas. This will enable HoF to conduct assessments on grant formulas in a continuous basis that once in three or five years.

CHAPTER SEVEN: DECISION OF THE HOUSE OF FEDERATION

The new Federal General-Purpose Grant Formula is prepared with improvements on some of the weaknesses of the existing formula and taking into account the level of the socio-economic developments of that the country achieved. The formula is prepared based on objective data and passed through a process that is transparent and participatory of the relevant stakeholders. However, if the newly developed grant formula is implemented as it is, three regional States (Beneshangul Gumuz, Gambela, and Harari) and the Dire Dawa City Administration will receive a grant amount that is less than what they received during 2016/2017 F.Y. As a result, it is agreed that some adjustment to the final grant formula is needed.

After deliberation on the issue, the Standing Committee agreed that some amount be deducted from the regional States that gained, in relative terms, from the new grant formula relative to what they received during the 2016/2017 F.Y. and added to the aforementioned regions. Accordingly, from Oromia, Ethiopia Somali, and SNNP regional States 0.92 percent, 0.34 percent, and 0.3 percent, respectively, or a total of 1.56 percent was deducted. The amount deducted was added to Beneshangul Gumuz, Gambela, and Harari regional States and the Dire Dawa City Administration so that they will receive at least what they received during the previous budget year. The formula adjusted this way was as presented in Table 53 which the Standing Committee suggested to be used for grant allocation only for the coming three years and then revised. This proposed decision was presented to the HoF.

The HoF, after a lengthy discussions and hot debates, approved that the proposed decision presented by the Standing Committee by a majority vote.

Table 53: The New Federal General-Purpose Grant Formula for 2017/18-2019/20

Region	**Percentage share of Regional States**
Tigray	6.03
Afar	3.02
Amhara	21.6
Oromia	34.46
Somali	9.98
BG	1.83
SNNPR	20.11
Gambella	1.33
Harari	0.76
Dire Dewa	0.88
Total	**100**

References

Barati, I., and Szalai, A. (2000) Fiscal Decentralization in Hungary. Centre for Public Affairs Studies, Budapest University of Economic Sciences.

Boadway, R. and Shah, A. (2007) Intergovernmental Fiscal Transfers: Principles and Practice. Public Sector Governance and Accountability Series, the World Bank.

Boadway, Robin (2002a) Revisiting Equalization Again: Representative Tax System vs. Macro Approaches.Working Paper, Institute of Intergovernmental Relations, Queen's University, Kingston, Ontario, Canada.

Boadway, Robin (2004) The Theory and Practice of Equalization.CESifo Economic Studies 50 (1): 211–54.

Ethiopian Legal Brief: A Blog about Ethiopian Law (2011) "Federal Laws [Federal Laws Year Index, Council of Minister Regulations, Codes, Directives, Constitutions, and Revised Constitutions of Regional States]", Federal NegaritGazeta(several issues). Available at: http://chilot.me/federal-laws

Fiscal Equalization Transfers.World Bank Policy Research Working Paper 3785, Washington, DC.

House of Federation (2012)The Federal Budget Grant Distribution Formula 2012/13 - 2016/17. Addis Ababa, Ethiopia

Ma, Jun (1997) Intergovernmental Fiscal Transfers in Nine Countries: Lessons for Developing Countries. Policy Research Working Paper 1822, The World Bank, Washington, D.C.

Martinez-Vazquez,J. and Timofeev,A.(2010)Technical note on the methodology for the allocation of intergovernmental grants in the Republic of Belarus. The World Bank, Washington, DC.

MOFED (2014) "Growth and Transformation Plan Annual Progress Report for F.Y. 2012/13", Addis Ababa, Ethiopia.

Rafuse, Robert W. (1990) Representative Expenditures: Addressing the Neglected Dimension of Fiscal Capacity. Advisory Commission on Intergovernmental Relations, Washington, D.C.

Rosen, Harvey S. 2005. Public Finance. 7th ed. Boston: McGraw-Hill/Irwin.

Shah, Anwar (1994) A Fiscal Needs Approach to Equalization Transfers in a Decentralized Federation. Policy Research Working Paper 1289, The World Bank, Washington, D.C.

Shah, Anwar (1996) A Fiscal Needs Approach to Equalization. Canadian Public Policy – Analyse de Politiques, XXii: 2: 99-115.

Shah, Anwar (2005b) On Getting the Giant to Kneel: Approaches to a Change in the Bureaucratic Culture.In Fiscal Management, ed. Anwar Shah, 211–27. Washington, DC: World Bank.

Shah, Anwar (2005a) A Framework for Evaluating Alternate Institutional Arrangements for.

FDRE Proclamation No.1/1995 'Proclamation of the Constitution of the Federal Democratic Republic of Ethiopia', Federal NegaritGezeta of the Federal Democratic Republic of Ethiopia, 1st year, No.1, 21st August,1995, Addis Ababa, Ethiopia.

FDRE Proclamation No. 416/2004 ‘the Dire-Dawa Administration Charter Proclamation’ Federal NegaritGezeta of the Federal Democratic Republic of Ethiopia, 10thYear No. 60,30th July,2004, Addis Ababa, Ethiopia