Assessing the Impact of Fiscal federalism on Equitable development in Ethiopia: The Case of Water-Sector Development

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Abstract

After gaining control of state power in 1991, one of the reform agendas of the Ethiopian People's Revolutionary Democratic Front (EPRDF) was the introduction of fiscal federalism in order to bring equitable development and durable peace to Ethiopia. After two-and-a-half decades, though, there are widely held concerns about equitable development across regions. By understanding potable water as one of the pro-poor sectors, this article aims to investigate the impact of fiscal federalism on equitable development in Ethiopia. To achieve this aim, the study applies a mixed-research approach combining qualitative and quantitative econometrics. Primary as well as secondary sources of data have been utilised. Primary data were collected through in-depth interviews with key informants; secondary data were collected from literature, government reports, legal documents, and minutes. Additionally, coefficients of correlation and Gini coefficients were used to measure relationships and disparity, respectively. The findings indicate that there is a statistically significant relationship between fiscal arrangement and equitable development in Ethiopia. This is proved through the statistical analysis made of the potable water sector. Despite a growing trend in all aspects of socio-economic developments over the last ten years in Ethiopia (2008/9 to 2018/19), progress in water-sector development is not equitable among the regional states, with regions showing significant variation in their emphasis on their achievements and their development outcomes. This study contends that Ethiopia's fiscal decentralisation policy has brought adequate equitable development among the regional states in the Ethiopian federation. There is, therefore, a need for concerted action to reduce the inter-regional water-access gap without compromising efficiency to fulfil each individual's right of equal access to government-provided services, as stipulated in the Federal Constitution of Ethiopia.

Key Words: *Development, Equity, Fiscal federalism, Water, Ethiopia*

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1. Introduction

Fiscal federalism, which mirrors the amount of fiscal autonomy and responsibility accorded to subnational governments, has been an important subject in the policy equation of many developing and developed countries. It refers essentially to the allocation of government resources and spending authority to the various tiers of government (Oates, 1972; Tanzi, 1995). The allocation of funds within a federal, or decentralised, system of government is crucial for both the political stability and economic development of a country. In general, fiscal decentralisation is one major component of the broad policy agenda of decentralisation. The latter represents the clamour for greater autonomy and independence by communities, and is informed by the desire to get more involved in government due to dissatisfaction with the inability of the central government to deliver quality services (Chete, 1998). In this equation, fiscal federalism serves, on the one hand, as a constraint on the behaviour of the revenue-maximising central government and, on the other, as a booster to underdeveloped subnational governments to make decisions that favour their interests.

There is yet another reason that fiscal federalism is gaining prominence in development discourse. Since the 1990s, there has been a resurgence of interest in the macroeconomic performance of developing countries. A prominent element in the policy advice given to developing countries since 1990 to enhance growth and development potentials is the core need to restructure the public sector to make it more responsive to the efficient and equitable provision of public services so as to enhance growth and development potentials (Aigbokhan, 1999). A trend to have emerged from this public sector restructuring is the devolution of spending and revenue-raising responsibilities to lower levels of government not only in federal systems but also in many unitary countries. This is a reflection of the movement towards participatory democracy and recognition of the need to provide public goods and services that meet the preferences of people in each locality (Raoul, 2002; Addis Alem, 2003; Watts, 2008; Shah, 2009).

Recent interest in fiscal federalism has fuelled the debate about public sector reforms in general and the role of subnational governments in economic development in particular. In many federal

countries, power is necessarily divided to some extent between the central and other levels of government. The extent of division of power has important implications for the functioning of the public sector and efficient provision of services. Division of policy-making powers influences not only the delivery of services but also their financing, which in turn determines the equitable development of countries. The central policy issue in this perspective is fiscal decentralisation, which requires that sub-central units of the government be empowered to make decisions about the provision of public services and its financing at the lower level (Yilmaz, 1999).

The subject matter of equitable development has dominated the discourse of development policy for many decades. Yet though the proposed policies and strategies for achieving shared growth continue to vary, recently there has been mounting recognition of the importance of addressing inequality and poverty, particularly so in the light of studies that reveal an alarming increase in inequality globally, both between and within countries (UNDP, 2017). Equitable development has become central in the current discourse of development policy, worldwide as well as across developing nations (Tekeste, 2018).

Ethiopia embarked upon the path of decentralisation after nearly two decades of a long and devastating civil war under the Derg military dictatorial regime, which ruled Ethiopia for nearly two decades (1974–1991). The regime was overthrown by a coalition of ethnic or nationality-based liberation forces in May 1991. The new government initiated a major policy on decentralisation to reverse the centuries-old tradition of a highly centralised and unitary state. The main aim of the policy has been to promote equitable development and bring about political stability by enabling all citizens of the country to benefit fairly and equitably from national resources and development achievements. The policy goal also has a broad agenda of empowering nations, nationalities and peoples to determine their destiny and develop their language, history and culture as equal citizens of the country. One of the policy instruments to achieve these objectives has been the introduction of fiscal federalism, as envisaged in Article 95 of the Constitution of the Federal Democratic Republic of Ethiopia (FDRE), which declares that "the federal government and the states shall share revenue taking the federal arrangement into account".

Ethiopia's fiscal policy promotes the design and implementation of a medium-term expenditure and fiscal framework (MEFF) that links policy, planning and budgeting in order to provide for an efficient and effective resource-allocation system. The policy guidance includes the design and implementation of an annual budget based on the MEFF and aimed at attaining rapid, sustainable and inclusive growth, as stipulated in medium-term development strategies such as the SDPRP, PASDEP, GTP 1 and GTP2 (Tekeste, 2018).

As such, fiscal policy has the critical role of streamlining the allocation and distribution of public resources to achieve the development and stabilisation objectives of the country. The federal government uses the general government budget as an instrument of fiscal policy to achieve the objectives of economic growth and macroeconomic stability. In this regard, the annual budget is the principal instrument for resource allocation both at federal and regional levels.

The main objective of this research is, therefore, to investigate the extent to which fiscal federalism has impacted on equitable development in the Ethiopian federation by making specific reference to water-sector development. In particular, the article examines how federal capital and recurrent budget allocations have affected equitable water-sector development among the regional states. The specific objectives are to examine the role of fiscal federalism in promoting equitable or balanced development in the Ethiopian federation by scrutinising outputs and outcomes in the water sector, and to evaluate the underlying causes and implications of low regional fiscal capacity and, as such, fiscal imbalances observed within the federation; and to critically examine the quality of the transfer system in meeting its objectives of narrowing down the fiscal imbalances and equalising the fiscal capacities of the regional states to maintain stability.

Much of the empirical literature on Ethiopia has been concerned with explaining the pattern of fiscal federalism in the country's ethnic-based federal system from a purely political perspective (Solomon, 2006; Assefa, 2006). Such an approach has, within the context of the political economy, provided a largely impressionistic view of the possible consequences of such relationships. Apart from a few exceptions (Addis Alem, 2003) which investi-

gate the relationship between democracy and economic development, most studies have focused on the political dimension of decentralisation. Missing from the literature on Ethiopia is an empirical analysis of the impact of fiscal federalism on equitable development.

Drawing on the narrative of the ruling regime, Tekeste (2018) has made a rare effort to examine the fiscal resource allocation in federal Ethiopia from a spatial and social equity perspective. However, he observes that

> "the national development strategies, as well as the fiscal and resource allocation systems in federal Ethiopia, have been transparent and fair. The policy outcomes of the fiscal and resource allocation system have also been instrumental in countering inequality and promoting spatially and socially inclusive development" (2018, p. 208).

Teskeste concludes that "Ethiopia's fiscal and resource allocation system has been equitable" (p. 205), but his conclusions are not backed up by tangible evidence. At the same time, there are widely held views that development in Ethiopia is not equitable, which suggests that there are regional disparities. This empirical study is an attempt to fill such a gap. In seeking to do so, it aims to test the hypothesis that Ethiopia's fiscal federalism has less likely brought about equitable development. Mainly, this is an attempt to critically review the achievements and challenges of Ethiopia's policy of fiscal federalism by examining certain economic parameters in the light of one of the key economic sectors, in this case water. The assumption taken for granted is that inter-regional equity promotes stability. Therefore, this research tries to answer the question of to what extent the fiscal arrangement of the Ethiopian federation promotes equitable development in the water sector.

This article is arranged in five sections. The first presents a general introduction; section two deals with theoretical, conceptual and empirical frameworks and arguments surrounding fiscal federalism and equitable development. Section three focuses on water-sector development in Ethiopia, particularly on federal capital and recurrent expenditure on the water sector and

regional equity in potable water-sector development. The theoretical implications of the findings are presented in section four. The final section summarises the research and draws a number of conclusions.

2. Conceptual, theoretical and empirical frameworks

2.1 Defining key concepts

Key concepts in this article need to be defined briefly.

First, decentralisation can be seen as a shift of authority towards local governments and away from central governments (Rodden, 2004). There are different forms of decentralisation. First, transfer of power may take the form of deconcentration. This refers to a form of transfer of responsibility from the centre to sub-units that for all intents and purposes are branches of the centre which, owing to geographic or population size, must be available in different geographical locations. Deconcentration relates very much to the administrative side of decentralisation and does not necessarily entail the transfer of political power to a sub-unit, as the centre retains its mandate over the matter, be it what it may; nor do the sub-units have elected bodies or a mandate over the substance of policies.

Secondly, there is delegation, namely the transfer of decision-making authority for specific functions. Thirdly, there is devolution, which is political decentralisation by the centre. One should note that federalism is a constitutional devolution or division of power. There is much use and misuse of the concepts of decentralisation and local government in the literature. Traditionally, decentralised systems within unitary states are compared with federations. In general, decentralisation refers to the transfer of power from the centre to sub-state units, with the latter enjoying some degree of political, fiscal and administrative autonomy. However, the transfer of power may or may not have constitutional backing.

In decentralised unitary systems, the transfer of power from the centre to local governments is not necessarily entrenched in a constitution. Local governments are often creations of the centre by a statute and are thus subordinate to it. The arrangement presupposes the existence of central authority, which may for one

reason or another transfer a portion of its authority to local governments. However, such transfer is subject to unilateral withdrawal, amendment or revocation by the centre. The centre's decision to abolish the local units merely requires the passage of legislation.

In a federation, on the other hand, the division of power is constitutionally guaranteed and the states are not creations of the federal government. Both the federal government and the states derive their authority from the federal constitution, and as a result neither level can change the terms of the compact as enshrined in the constitution. There is, thus, an important difference between the two types of transfer of powers. Decentralised unitary systems do not have the legal safeguards necessary to curb undue political interference on their autonomy from the centre. When the transfer of power takes the form of a federation entrenched in a constitution, the federal government cannot interfere with the list of powers transferred to the states. Moreover, there is often a legal guarantee in the constitution that protects the mandate of the states when encroachments materialise.

Fiscal federalism refers to the allocation of government resources and spending authority to the various tiers of government (Oates, 1972; Tanzi, 1995).

Fiscal imbalances: (1) Vertical imbalance is a mismatch between expenditure and revenue assignments. Regional states' dependence on federal grants-in-aids compromises their autonomy. Horizontal imbalance is uneven distribution of resources across regions. Fiscal imbalances can be corrected through transfers (revenue-sharing and federal grants) in the form of either conditional or unconditional grants; (2) borrowing powers. This study is limited to transfers. Fiscal equalisation uses transfers as an instrument.

Equitable development is a positive development strategy which ensures that everyone participates in and benefits from the country's socio-economic transformation – especially low-income citizens. Another significant issue of this study is about choosing variables (dependent and independent). The dependent variable is the variable that this study aims to measure, namely inter-regional equity; the independent variables are expenditure assignments, revenue powers and intergovernmental transfers. This

study relies heavily on expenditure budgets assignments to measure levels of inequality across regions by understanding potable water as one of the pro-poor sectors.

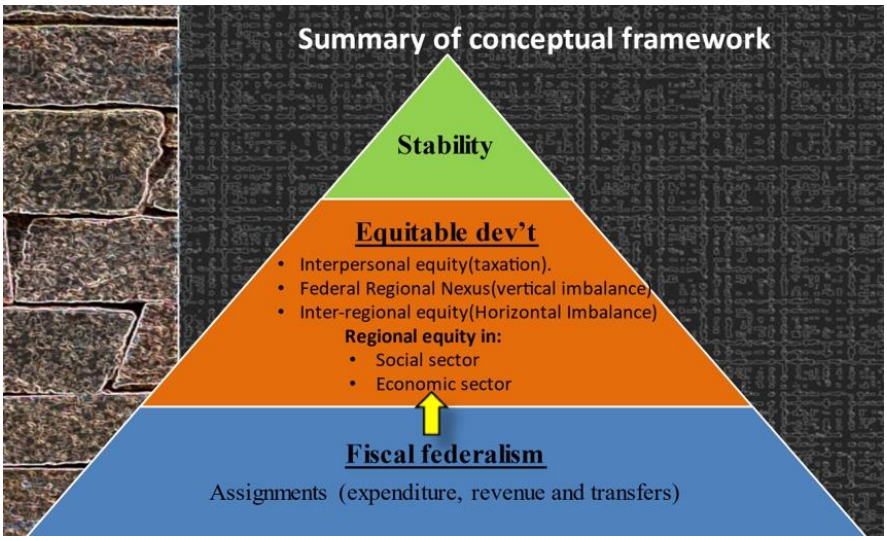
2.2 Theoretical framework

Theoretically, fiscal federalism is supposed to promote equitable development in federations. To this end, first and second generations of the Keynesian theory of fiscal federalism were adopted to explain the Ethiopian context of fiscal federalism. Consequently, data were collected from different sources, including government reports on the water sector, related literature, and respondents (from nine regional states, two federal city administrations, and relevant federal government institutions), in order to investigate whether the constitutional promises of equity and fairness have been achieved through the fiscal arrangement.

The Keynesian theory of fiscal federalism argues for the active role of the government in economic affairs to correct various forms of market failure, thereby ensuring an equitable distribution of income and seeking to maintain stability in the macroeconomy (Musgrave, 1998). "First-generation theory" states that different levels of government provide efficient levels of outputs of public goods – hence the case for fiscal decentralisation. "Second-generation theory" argues that the effects of fiscal federalism, as seen from the perspective of political processes and information asymmetry, must be considered when assigning fiscal powers.

In this study, mixed theories are used to explain the impact of fiscal federalism on equitable development in Ethiopia. What are these fiscally functional assignments? Generally, the federal government is assigned with macroeconomic stabilisation and redistribution functions, whereas lower levels of governments are given allocation functions. In this power balance, taxing power – that is, in Musgrave's wording, "Who should tax where and what" (1983) – is a critical matter. This is so because, if one level of government has greater taxing power than another, it would lead to the problem of fiscal imbalances. Figure 1 summaries the conceptual framework used in this study.

Figure 1: Summary of conceptual framework

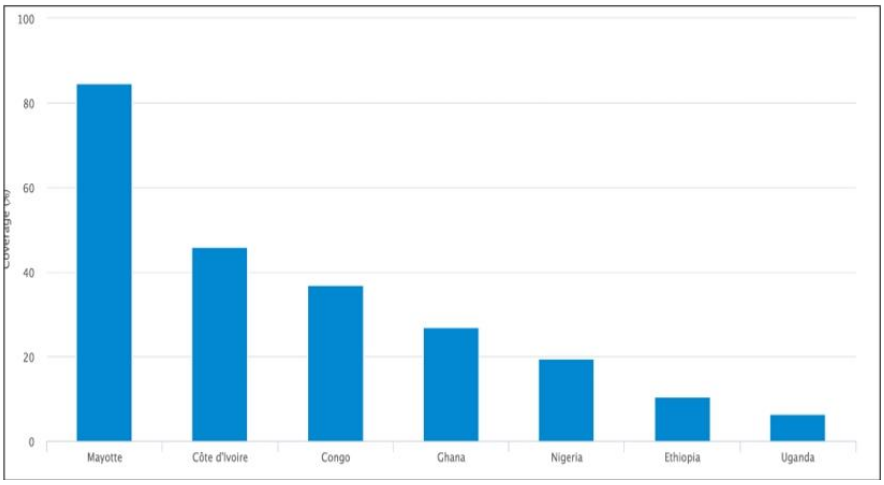


Source: Author's sketch

3. Water-sector development in Ethiopia

According to an independent study (unpublished) on Ethiopian fiscal equity (FISCUS, 2019), Ethiopia has one of the lowest coverage of safely managed drinking water facilities globally. The study also finds that its coverage of safely managed water supply remains less than 11 per cent, compared to 19.4 per cent in Nigeria, 27 per cent in Ghana, and close to 46 per cent in Cote D "Ivoire, as indicated in Figure 2. As such, water and sanitation are one of the main focus areas of government expenditure, along with roads, education, health, and agriculture and food security. Collectively, nearly two-thirds of the federal budget is allocated to pro-poor sectors, including water (MoF, 2018).

Figure 2: Percentage of safely managed water-supply coverage for selected countries



Source: WHO/UNICEF JMP (2017)

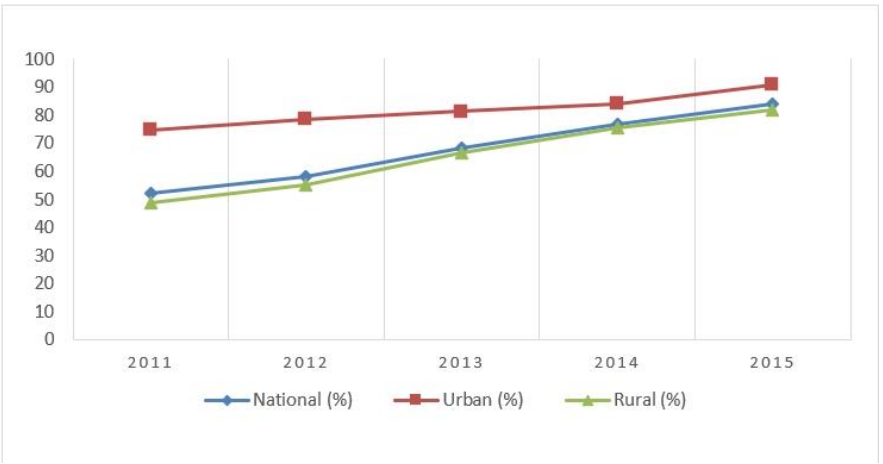
In 2013, Ethiopia began to implement the One WASH National Program (OWNP), leading to enhanced water supply coverage, especially in rural and deprived areas. According to interviews with officials and professionals from the Ministry of Water, Irrigation and Electricity, water-supply access at the national level has increased in both the rural and urban areas as part of the Universal Access Program (UAP).

According to the data from the MoWIE, during the first GTP period, potable water-supply coverage increased nationally from 48.6 per cent to 82 per cent between 2011 and 2015. In urban areas, the rate of access increased from 74.6 per cent in 2011 to 91 per cent in 2015. Similarly, in rural areas, access to water supply increased from 55.5 per cent to 82 per cent in 2015 over the same period, as clearly indicated in Figure 3 below.

The respondents also explained that the minimum-requirement standard used for assessing access to potable water increased from GTP-I to GTP-II. The standard of access to potable water during the first GTP was 15 litres per capita per day, within a 1.5 km radius in rural areas, and 20 litres per capita per day, within a 0.5 km radius in urban areas. During the second GTP (2015–2020), the potable water-supply coverage standard was modified to 25 litres per capita per day, within a 1 km radius in rural areas. For urban areas, the standard varies based on demand catego-

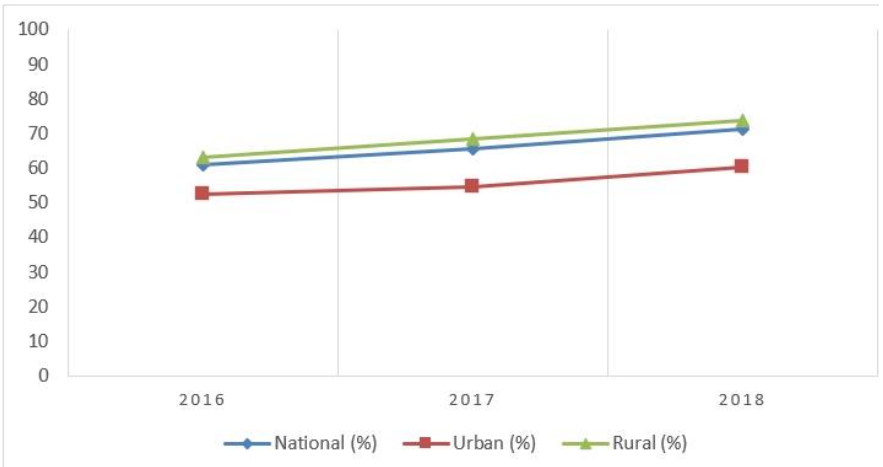
ries – 100 litres, 80 litres, 60 litres, 50 litres and 40 litres per capita per day, within 250 m from the biggest to the smallest cities. From the data and the information from respondents, it was evident that potable water-supply coverage has improved significantly in recent years in all regions.

Figure 3: National trends in water-supply access (%): 2011–2015 with GTP-1 Standards



Source: Ministry of Water, Irrigation and Electricity. Note: GTP-I standards for potable water coverage: rural 15 l/c/d within 1.5 km radius, urban 20 l/c/d, within a 0.5 km radius.

Figure 4: National trend in water-supply access (%): 2016–2018 with GTP-2 Standards



Source: Ministry of Water, Irrigation and Electricity.

Note: GTP-2 standards for potable water coverage: Rural; 25 l/c/d within 1 km radius. Urban: based on demand categories of 100, 80, 60, 50 and 40 l/c/d from the highest to the lowest level depending on city population size.

3.1 Federal capital and recurrent spending on the water sector

According to data from the Ministry of Finance set out in the following tables and figures, 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 a larger population implies a larger expenditure to avail water. Federal, regional, municipality, and woreda administrations and development partners are involved in the provision of water and sanitation services in Ethiopia. Tables 1 and 2, and Figures 5 and 6, depict the trends of the budget allocation for the water sector for the last ten years.

As can be seen from Table 1, the recurrent and capital budget allocation of the regions has shown a progressive trend from year to year, with a large variation in equity between regions. This is examined further in the equity analysis by way of using the Gini coefficient.

Table 1: Regional recurrent actual expenditure on water supply, 2008–2017 (in million Birr)

Region/year	2001 2008\09	2002 2009\10	2003 2010\11	2004 2011\12	2005 2012\13	2006 2013\14	2007 2014\15	2007 2015\16	2009 2016\17	2010 2017\18
Tigray	20.2	23.2	30.2	45.9	69.9	34.1	93.3	99.7	114.6	73.6
Afar	12.3	15.3	20.3	24.1	27.1	37.9	48.0	55.6	67.1	NA
Amhara	31.6	31.0	45.6	68.0	81.5	98.7	133.0	148.4	173.0	227.6
Oromia	56.5	60.0	95.5	242.3	195.1	266.5	313.2	561.8	NA	NA
Somali	2.4	6.6	6.0	8.0	7.4	6.8	8.3	66.6	81.5	99.8
B. Gumuz	4.4	6.9	10.1	13.2	17.0	20.9	22.6	26.1	38.1	NA
SNNP	2.7	43.7	53.6	66.6			127.0	174.3	242.4	301.5
Gambella	4.4	5.7	7.3	10.5	12.9	12.9	20.5	26.8	34.2	NA
Harari	NA	NA	0.48	0.7	0.6	1.0	1.3	1.2	12.7	NA
Dire Dawa	2.7	3.4	2.2	3.7	4.3	7.8	8.2	10.0	12.0	NA
Addis Ababa		NA	202.0	280.7	NA	531.9	579.1	404.5	709.1	845.3
Total regional states	137.1	195.8	473.3	763.8	415.8	1018.5	1354.6	1575.0	1484.8	NA
Federal government	22.7	16.4	28.6	37.6	45.2	63.9	69.2	375.7	64.4	74.3
Countrywide	159.8	212.1	501.9	801.3	461.1	1082.4	1423.8	1950.7	1549.2	NA

Source: Ministry of Finance data from 2008 to 2017. Note: NA refers to unavailable data.

Table 2: Regional capital expenditure on water supply, 2008–2018

Region/year	2001 2008\09	2002 2009\10	2003 2010\11	2004 2011\12	2005 2012\13	2006 2013\14	2007 2014\15	2007 2015\16	2009 2016\17	2010 2017\18	2011 2018/2019
Tigray	23.1	107.7	126.9	130.7	654.4	732.8	842.6	862.0	751.1	484.2	530.07
Afar	29.7	54.0	60.1	86.7	104.6	94.8	137.9	139.9	215.2	NA	154.23
Amhara	61.8	162.0	238.6	464.9	565.9	1913.2	1503.3	1190.4	1398.8	1455.1	1995.57
Oromia	160.6	483.3	413.7	474.8	868.6	1208.2	1449.6	1351.0	NA	NA	1993.51
Somali	53.3	293.1	162.8	162.0	172.1	270.7	411.6	651.1	922.5	1581.7	1335.10
B. Gumuz	1.8	3.5	23.8	68.1	92.2	23.0	61.2	49.8	69.8		88.88
SNNP	26.8	126.4	86.0	385.9	397.5	622.2	718.9	435.3	488.9	529.9	906.92
Gambella	0.4	4.2	11.9	42.7	33.5	50.5	18.0	37.8	69.3	NA	1.44
Harari	3.2	11.8	18.4	14.2	19.3	82.0	53.8	104.6	142.3	NA	11.33
Dire Dawa	3.1	8.2	5.7	54.2	31.1	11.8	13.0	12.9	30.3	NA	29.40
Addis Ababa	335.7	289.8	401.2	561.3	1005.6	2207.4	1587.1	2125.6	3873.9	2005.6	2942.99
Regional states	310.6	1417.6	1147.9	2445.6	3944.8	7216.7	6797.1	6960.4	7789.6	6056.4	9988.01
Federal government	216.3	289.2	721.5	1869.2	2559.4	2116.4	1647.4	1942.8	2267.5	1947.1	NA
Countrywide	526.9	1706.8	1869.4	4314.8	6504.2	9333.1	8444.5	8903.2	10057.1	8003.5	NA

Source: Ministry of Finance data from 2008 to 2018. Note: NA refers to unavailable data.

Figure 5: Regional concurrent actual expenditure on Actualwater supply, 2008–2017 (in million Birr)

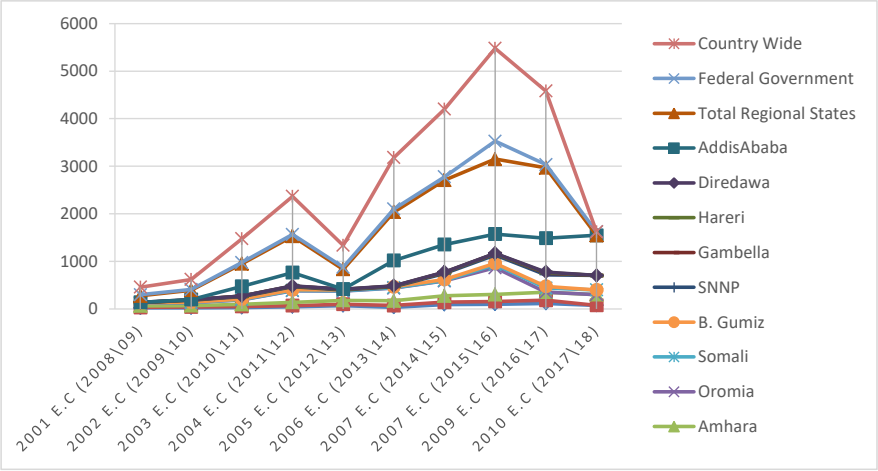
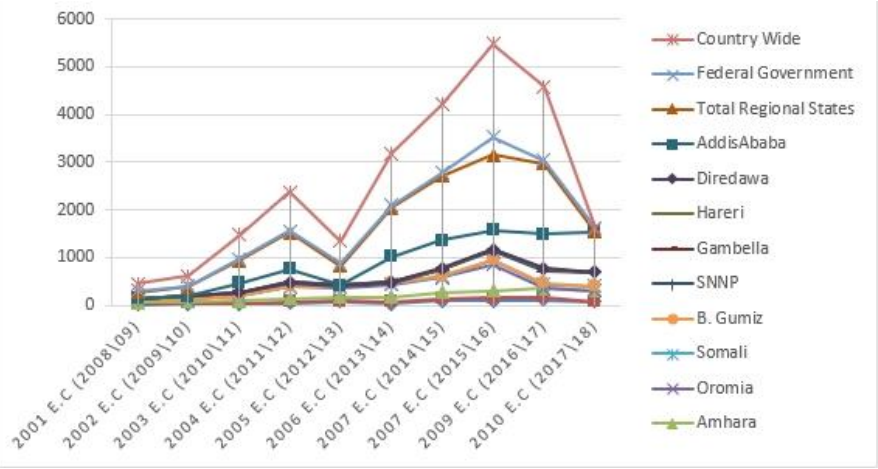


Figure 6: Regional concurrent actual expenditure on water supply, 2008–2017 (in million Birr)

Figure 7: Regional capital expenditure on water supply, 2008–2018 (in million Birr)



Source: Author's own computation using MoFEC data.

Tables 1 and 2, and Figures 5 and 6, show that the recurrent and capital expenditure across the region has increased during the last ten years. This by itself shows how public expenditure among regions is used for service provision.

The budget expended for water-sector development and the number of physical structures built have the ultimate impact of improving access to safe drinking water. This could be represented by the water coverage which the regions achieved in different years. In this regard, the data from the Ministry of Water, Irrigation and Electricity in Figures 2 and 3 and documented in MoFEC show that potable water-supply coverage increased in all regions during GTP-I (with GTP-I standard for water supply) and during GTP-II (with GTP-II standard for water supply). According to the report on the One Wash National Program Phase-1 review by the National Wash Coordination Office (NWCO), beneficiaries of the programme increased from 57,467,526 in 2013 to 76,191,083 in 2015, out of which about 80 per cent of beneficiaries are in rural areas. However, the reliability of services due to frequent breakage and power outage was reported to remain a challenge (NWCO, 2018).

Potable water supply is the duty and responsibility of regions. Clean water includes private and common pipeline water supply as well as developed, maintained, and protected natural springs. Table 3 shows changes in water-supply coverage. In a period of 12 years (2004–2016), there have been significant changes and progress. In 2004, national clean water-supply access was 29.73 per cent. In 2016, the coverage grew to 62.69 per cent. In 2004, only the Amhara region had coverage below the national average. In 2016, Somali (48.01 per cent), Afar (59.15 per cent), Oromia (60.63 per cent), and the SNNP (61.83 per cent) registered below the national average, whereas Tigray (79.39 per cent), Amhara (63.33 per cent), Benishangul-Gumuz (81.51 per cent), Gambella (82.99 per cent), Harari (81.89 per cent), and Dire Dawa (84.34 per cent) had registered above the national average coverage.

Table 3: Regions' potable water supply in per cent

Region	Coverage (%)		2004–2016 Growth in per cent
	1996/2004	2008/2016	
Tigray	54.00	79.39	31.98
Afar	48.57	59.15	17.89
Amhara	28.00	63.33	55.79
Oromia	31.99	60.63	47.24
Somali	38.98	48.01	18.81
Benishangul-Gumuz	51.54	81.51	36.77
SNNPR	34.27	61.83	44.57
Gambella	NA	82.99	100
Harari	73.28	81.89	10.51
Dire Dawa	90.76	84.34	(7.61)
National average	29.73	62.69	52.58

Source: Central Statistical Agency data from 2004 to 2016.

According to the above data and the respondents' reflections, several regions' clean water-supply coverage increased in the last 12 years, with the exception of Dire Dawa City Administration. During this period, Amhara (55.79 per cent), Oromia (47.24 per cent), the SNNPR (44.57 per cent), Benishangul-Gumuz (36.77 per cent), and Tigray (31.98 per cent) recorded good performances. Nevertheless, as demonstrated in other sectors, there is no balanced and fair growth among regions. Indeed, 2016 was better than previous years and the imbalance among regions decreased in this year.

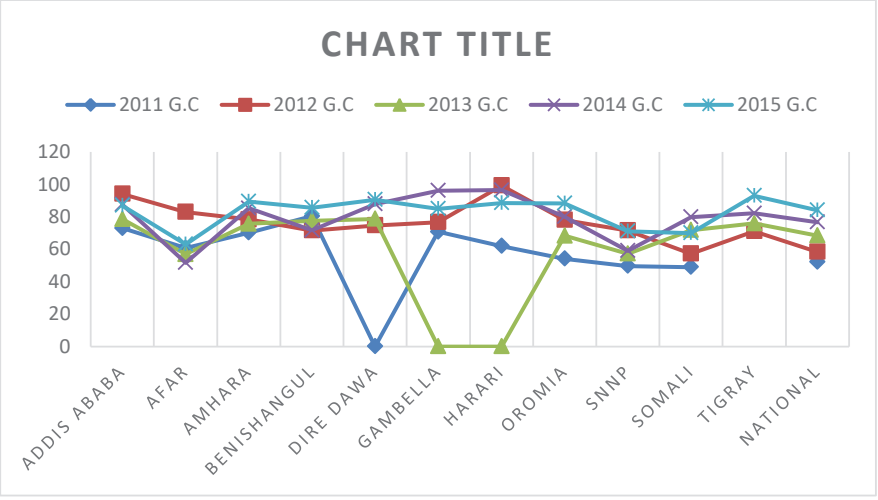
Moreover, as shown in Tables 4 and 5 below, by the end of GTP-I, only three regions had access levels below 80 per cent – Afar (60 per cent), the SNNP (71.1 per cent) and Somali (70 per cent). In recent years with GTP-II, almost all regional access rates are now lower due to the higher standards. The emerging regions have caught up with the big regions in terms of potable water access, and some regions now have higher access levels. Based on the table below and the respondents' perceptions, the Amhara region has improved significantly during GTP-II and now has the highest performance, with 82 per cent access in 2018. Tigray, SNNP, and Afar regions had the lowest coverage in the same year. However, it should be noted that Afar has shown significant improvement during the second GTP.

Table 4: Trends across regions in access to water during GTP-1 (GTP-I Standard)

Region	2011	2012	2013	2014	2015
Addis Ababa	73	94.1	78.6	87.7	87
Afar	60.7	83	56.9	51.7	63
Amhara	70.3	78.4	75.7	85.3	89.5
Benishangul-Gumuz	80.4	71.6	77.6	71.7	85.7
Dire Dawa	NA	74.7	78.7	87.8	90.6
Gambella	70.8	76.7	NA	96.1	85
Harari	62	99.3	NA	96.5	88.5
Oromia	54.1	78.1	68.3	80	88.4
SNNP	49.6	71.6	57.2	59	71.1
Somali	49	57.2	71.8	79.9	70
Tigray		71.1	75.9	82.2	93
National	52.1	58.3	68.5	76.7	84

Source: Ministry of Water, Irrigation and Electricity, based on data supplied by regions. Note: NA refers to unavailable data.

Figure 8: Trends across regions in access to water during GTP-1 (GTP-1 Standard)



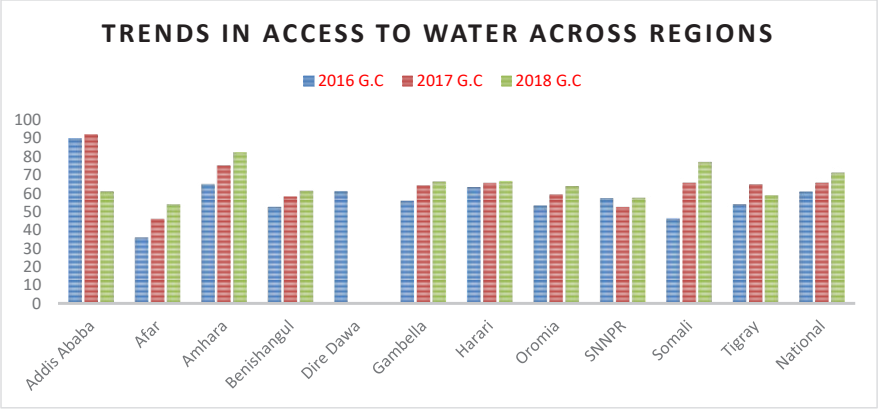
Source: Ministry of Water, Irrigation and Electricity, based on data supplied by the regions from 2011 to 2015.

Table 5: Trends across regions in access to water during GTP-II (GTP-II Standard)

Region	2016	2017	2018
Addis Ababa	90	92	61
Afar	36	46	54.0
Amhara	65.02	75.07	82.2
Benishangul	52.6	58.2	61.2
Dire Dawa	61.1	NA	NA
Gambella	55.9	64.2	66.3
Harari	63.3	65.5	66.5
Oromia	53.26	59.28	63.8
SNNPR	57.3	52.5	57.6
Somali	46.4	65.6	77
Tigray	54.16	64.78	58.9
National	61	65.7	71.1

Source: Ministry of Water, Irrigation and Electricity, based on data supplied by regions. Note: NA refers to unavailable data.

Figure 9: Trends across regions in access to water during GTP-II (GTP-II Standard)



Source: Ministry of Water, Irrigation and Electricity, based on data supplied by regions.

Table 5 and Figure 8 show a sharp decline in access to water in Addis Ababa in 2018. This is a result of a change in the way access is measured. Respondents explained that prior to 2018, access in Addis Ababa was estimated by taking the total water supply divided by the population, without deducting water that goes to industries. Given that Addis Ababa has the largest concentration

of industries in the country, this skewed access measures. Hence, by excluding water supply to industries, the measures of access to households declined in 2018, as shown in Table 5. Respondents added that a potential weakness of coverage measures is that some facilities might not be working and maintenance not conducted in time. As such, the figures might exaggerate the actual utilisation.

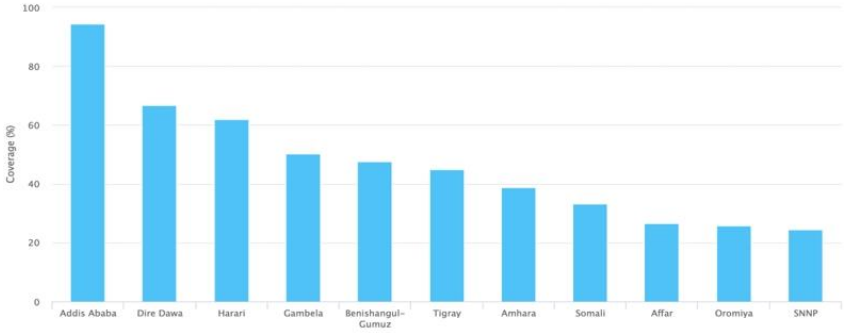
Table 6 and Figure 9 – along with the interviews with officials and professionals from the federal ministry and regional bureaus – show that while potable water supply increased over time in both rural and urban areas, there is a significant gap in service quality between the rural and the urban (WHO/UNICEF JMP, 2017). The data in the same table show that in rural areas the coverage of safely managed water is less than five per cent, while in urban areas it stood at 38 per cent in 2015. As such, while access has improved significantly across the regions and in rural areas, the standard of water supply remains low. Taking service quality into account, more urban regions have a higher coverage of potable water service, as shown in Table 6. Addis Ababa, Harari, Dire Dawa, and Gambella have the highest drinking-water coverage, while regions with the highest proportions of rural population, such as the SNNP, Oromia, and Afar, lag behind.

Table 6: Quality of potable water services in urban and rural areas in Ethiopia

Ethiopia	Drinking water			Sanitation		
	National	Rural	Urban	National*	Rural	Urban*
	2015	2015	2015	2015	2015	2015
Safely managed	11	4	38	-	4	-
Basic service	29	26	39	7	1	18
Limited service	25	26	18	7	1	30
Unimproved	25	30	3	59	62	44
No service	12	14	2	27	32	7

Source: WHO/UNICEF JMP (2017).

Figure 10: Drinking water – service levels across the regions



Source: WHO/UNICEF JMP (2017). Note: Figure includes only basic and safely managed facilities.

3.2. Regional equity in potable water-sector development

Improving water access for all Ethiopians is among the key tasks of the federal and regional governments. It is found that water expenditure is lower than that for education and road expenditure. Capital expenditure is much higher than recurrent expenditure. This is because water development, like road development, requires a large amount of physical construction. If one looks at the average per capita expenditure of the regions over 2009–2019 (Table 7), differences between regions are apparent. The average per capita expenditures of Addis Ababa City Administration are many times higher than those of other regional states.

Table 7: Average per capita expenditure on water sector by region, 2009–2019 (in Birr)

Region	Per capita recurrent expenditure on water	Per capita capital expenditure on water	Per capita total expenditure on water
Addis Ababa	262	840	1031
Afar	23	63	86
Amhara	6	48	54
Benishangul	21	48	69
Dire Dawa	13	44	57
Gambella	42	67	109
Harari	15	197	209
Oromia	10	28	38
SNNP	8	23	30
Somali	7	97	103
Tigray	14	94	107
No. of obs.	107	114	114

Source: Author's computation based on data from MoFEC and CSA from 2009 to 2019.

As can be seen from Table 7, Addis Ababa had the highest per capita capital expenditure (840 Birr), followed by Harari region (197 Birr). The lowest average per capita capital expenditures were in the SNNP and Oromia. Addis Ababa's per capita capital outlay was about 30 times higher than these regions' expenditures. Addis Ababa's average recurrent expenditure (262 Birr) was more than 40 times higher than that of the Amhara region (6 Birr), which appeared to have the least per capita expenditure. Gambella's per capita recurrent expenditure, which was the next largest, was only about one-sixth of Addis Ababa's.

These inequalities in recurrent and capital expenditures have given rise to inequalities in total expenditure by the regional states. To better capture the regional inequalities, Gini coefficients were computed by years and the results presented in Table 8 below.

Table 8: Gini coefficients for recurrent, capital and total water expenditure by year

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Recurrent expenditure	0.39	0.25	0.51	0.49	0.28	0.59	0.52	0.43	0.55	0.53	0.37
Capital expenditure											
for water	0.60	0.41	0.42	0.35	0.40	0.46	0.36	0.54	0.60	0.52	0.43
Total expenditure											
for water	0.53	0.37	0.43	0.34	0.39	0.47	0.38	0.49	0.58	0.51	0.37

Source: Author's computation based on data from MoFEC and CSA from 2009 to 2019.

As can be seen from the table above, the trends in regional inequality show that inequality is rising in recurrent expenditure, both in terms of capital and total expenditure. While the pattern is irregular, there is an increasing trend, except for the last two years of 2018 and 2019, when the trend seems to decline. The trends of inequality in total regional water expenditures also vary for each year, with the highest inequality observed in 2017 (Gini = 0.58), followed by 2009 (Gini = 0.53) and 2018 (Gini = 0.51).

Figure 11: Trends in recurrent expenditure Gini coefficient

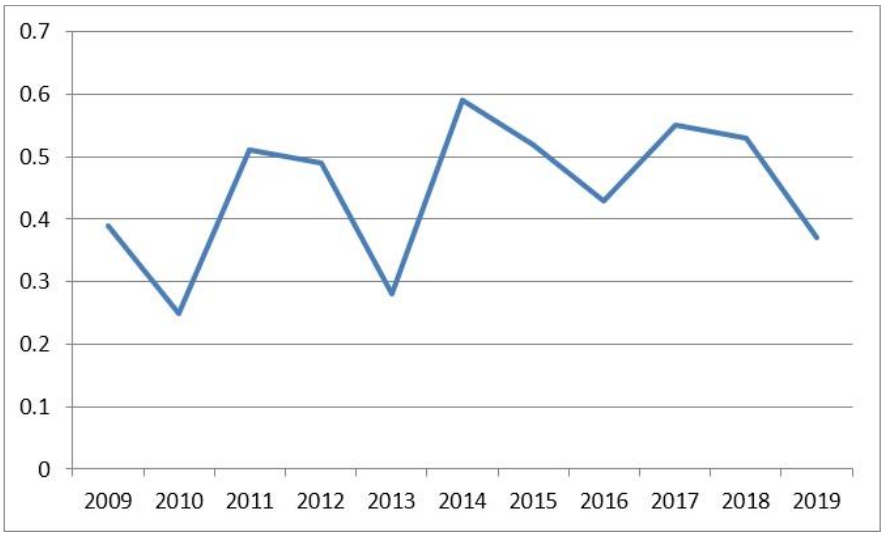


Figure 11: Trends in capital expenditure Gini coefficient

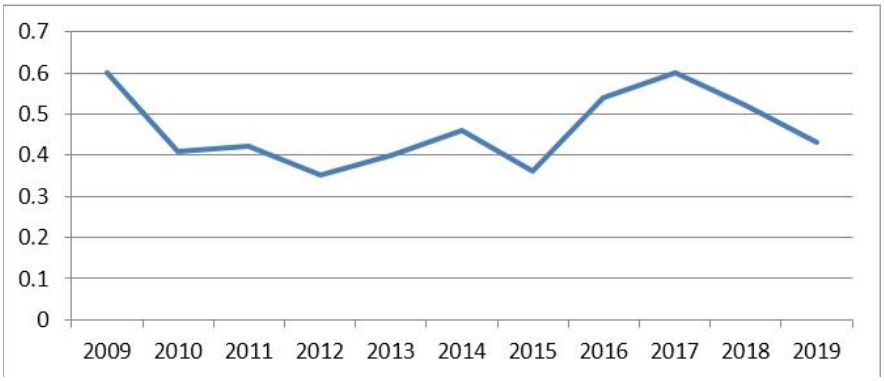
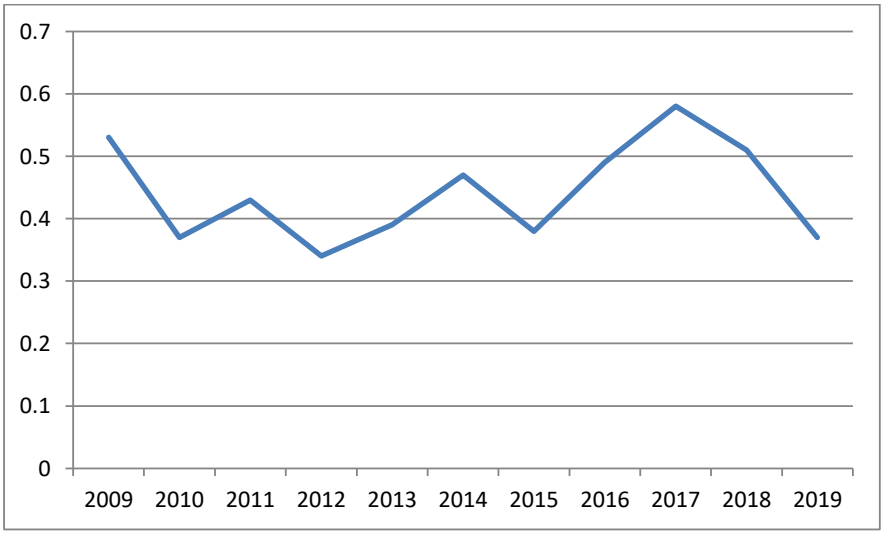


Figure 12: Trends in total expenditure Gini coefficient



The average Gini coefficient over the 2009–2019 period was about 0.44. The recurrent and capital components of total expenditures exhibited similar patterns. Inequality appeared to be the highest in 2014 in the case of recurrent expenditure, as it was in both 2009 and 2017 in the case of capital. The average Gini coefficients for recurrent and capital expenditures over the 2009–2019 period were nearly equal, with respective values of 0.45 and 0.46. The highest inequality observed in 2017 was driven by relatively higher inequalities in terms of both recurrent (Gini = 0.55) and capital expenditures (Gini = 0.60) in the same year. In general, there appeared to be higher inequality among regional states in terms of expenditures aimed at improving access to water service. Addis Ababa city had the highest outlays in terms of both recurrent and capital expenditures.

Table 9: Effect of per capita expenditures on access to water services

Dep. Var.: Water access (%)	Coef.	(RSE)	Coef.	(RSE)	Coef.	(RSE)
Per capita recurrent expenditure	0.028***	(0.007)				
Per capita capital expenditure			0.007***	(0.001)		
Per capita total expenditure					0.005***	(0.001)
Region						
Afar	-20.80***	(6.365)	-20.18***	(5.355)	-20.14***	(5.380)
Amhara	1.93	(5.349)	1.986	(4.238)	2.118	(4.280)
Benishangul-Gumuz	-7.99	(5.771)	-7.333	(4.800)	-7.304	(4.819)
Dire Dawa	-2.27	(5.167)	-1.591	(4.316)	-1.531	(4.305)
Gambella	-4.25	(5.067)	-3.173	(4.350)	-3.247	(4.365)
Harari	0.456	(5.906)	-0.556	(4.949)	-0.245	(4.998)
Oromia	-8.81*	(4.959)	-8.30**	(3.956)	-8.23**	(3.972)
SNNP	-15.06***	(5.465)	-17.33***	(4.405)	-17.25***	(4.426)
Somali	-12.56*	(6.382)	-12.67**	(5.377)	-12.51**	(5.420)
Tigray	-7.28	(5.398)	-7.33*	(4.314)	-7.174	(4.354)
_cons	70.39***	(5.062)	70.55***	(4.280)	70.44***	(4.301)
Year dummies included						
No. of ob.	81		84		84	
F(19, 61)	14.53		17.13		18.76	
R-squared	0.72		0.73		0.73	

*Note: ***, **, * indicate significance at 1 per cent, 5 per cent and 10 per cent levels, respectively.*

In order to see how variations in water expenditures affect access to water, data on water access by region and expenditures were used to run a regression of separate expenditure components on access as a dependent variable. The results reported in Table 9 depict the estimation outputs. As can be seen from the table, a 0.028 coefficient with strong positive significance corresponding to recurrent expenditure suggests that for a 1,000 Birr increment in per capita recurrent expenditure of a given region, the region's access to water will increase by 28 per cent. Similarly, for an ad-

ditional 1,000 Birr per capita capital expenditure of a region, access to water will improve by about 7 per cent, while a similar increase in total per capita water expenditure is associated with a 5 per cent increment in access.

However, this result should be interpreted with due care and not taken to imply the need for increased recurrent expenditures towards better access to water. The high economic effect of recurrent expenditure may be linked to areas where there is already better water infrastructure, which in turn entails the possibility of increased recurrent expenditures for managing and providing the water service to the public. Increasing the amount of capital expenditure needed to invest in water projects is fundamental in order to increase access to water. Indeed, there are variations across regions in the amount of capital required to extract water available, depending on different geographical and social factors. A quick look at the coefficients of region dummy reveals that, with the exception of the Amhara region, all regional states have lower water access than Addis Ababa (the base category). However, the differences are statistically significant only in the cases of the Afar, Oromia, SNNP and Somali regions. Similar differences prevail when different expenditure components are taken as explanatory variables.

Table 10: Per capita water expenditures by year and region (in Birr)

	Per capita water expenditure			
Region	2009	2012	2015	2019
Tigray	9.6	37.0	185.1	126.6
Afar	28.7	69.7	107.9	125.9
Amhara	5.2	27.7	80.2	106.4
Oromia	7.6	23.1	52.3	88.6
Somali	12.0	33.8	77.0	241.9
Benishangul-Gumuz	7.4	88.6	83.4	126.2
SNNP	1.9	26.7	46.3	63.9
Gambella	14.4	143.8	94.1	81.7
Harari	16.3	69.6	237.5	88.2
Dire Dawa	15.8	144.0	48.2	81.7
Addis Ababa	117.7	276.4	662.0	1070.9

Source: Author's computation based on CSA and MoFEC data.

Table 10 shows per capita expenditures on water in selected years with reference to Ethiopia's GTP-I and GTP-II periods. Just before the beginning of GTP-I (2009), the per capita expenditure on water was below 20 Birr for all regions except Addis Ababa and Afar. The highest expenditure per capita was that of Addis Ababa (117.7 Birr), followed by Afar (28.7 Birr), while the least was that of the SNNP region (1.9 Birr). In the first (2012) and final years of GTP-I, per capita expenditures on water increased manyfold in all the regions. At the end of GTP-I (2015) too, Addis Ababa had the highest expenditure (662 Birr), followed by Harari and Tigray. The increment in water expenditure also continued over the GTP-II period, with the exception of a few regions. In 2019, the Somali region had the next largest per capita water expenditure (241.9 Birr) after Addis Ababa (1,070.9 Birr).

Respondents from the Amhara region complained about the difference in water-sector data from the federal statistics agency and the region. They also said that the census of 2017 reduced the size of the Amhara population, which penalised the region in that it received less budgetary funding from the federal government than expected. The respondents proposed that the region should be compensated by any means necessary so that it could enable its citizens to have the same level of water access as that in other regions.

To conclude, from the discussion above and the respondents' reflections, the researcher observed that water-supply coverage has increased both in urban and rural areas, though some rural areas are lagging behind. Despite the achievements observed in the sector, the analysis shows that water-resource coverage is unevenly distributed in Ethiopia. Concerted action is thus needed to further reduce the inter-regional water-coverage gap so as to fulfil each individual's right of equal access to government-provided services, as stipulated in the Ethiopian Constitution.

4. The theoretical implications of the findings

The empirical findings are novel: there is, indeed, a connection between fiscal federalism and equitable development in Ethiopia over the study period. More specifically, for a 1,000 Birr increment in per capita recurrent expenditure of a given region, the region's access to water will increase by 28 per cent. Similarly, for an additional 1000 Birr per capita capital expenditure of a

region, access to water will improve by about 7 per cent, while a similar increase in total per capita water expenditure is associated with a 5 per cent increment in access.

To synthesise the study at this point, in theory fiscal federalism is supposed to promote equitable development in federations. To this end, first- and second-generations of the Keynesian theory of fiscal federalism were adopted to explain the Ethiopian context of fiscal federalism. As a result, it can be deduced that there are no major differences across primary and secondary data sources (when triangulated) in respect of equitable development, which means that even though there is an increasing trend of development across sectors, every data source shows that the development is not equitable among regions. This points to a divergence between the practice of fiscal federalism in Ethiopia, on the one hand, and the theory of fiscal federalism and the promises of the FDRE Constitution, on the other.

The study therefore concludes that fiscal federalism is good for equitable development in Ethiopia if the country applies the true principles and practices of the fiscal federalism observed in other federal countries.

5. Concluding remarks

This article analysed the impact of fiscal federalism on equitable development in the water sector in Ethiopia. Improving potable water access to all Ethiopians is among the key tasks of the federal and regional governments. In this regard, the capital expenditure of the water sector is much higher than its recurrent expenditure. This is because water development requires a great deal of physical construction. In this regard, if one looks at the average per capita water expenditures of regions over 2009–2019, differences are apparent among the regions. The average per capita expenditures of Addis Ababa City Administration are many times higher than those of other regional states. The lowest average per capita capital expenditures were registered in the SNNP and Oromia regional states. Addis Ababa's per capita capital outlay was about thirty times higher than these regions' expenditures. The average per capita road expenditure (including recurrent, capital and total) of Addis Ababa is far higher than those of its regional counterparts. The Somali region had the least average per capita recurrent road expenditure. Oromia and Amhara also had low

per capita recurrent expenditures. The lowest per capita expenditure was that of the SNNP region. These differences gave rise to differences in total road expenditures among regions.

Despite a growing trend in water-sector development over the last ten years, it is, however, important to realise that progress in each of the levels of water-sector development is not equitable and that regions show significant variation in their achievements and development outcomes. Expenditure in the water sector increased in both its absolute amount and on a per-capita basis; consequently, the output and outcome of the regions' services also increased substantially. However, the analysis shows that equity among regions is still to be addressed and that concerted action is needed to further reduce the inter-regional water-access gap in order to fulfil each individual's right of equal access to government-provided services, as stipulated in the Constitution, yet without compromising efficiency.

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