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Ethiopia

Education Sector Public Expenditure and Institutional Review (PEIR)

Analysis of Equity, Efficiency, Effectiveness, Adequacy, and Sustainability of Public Spending and Institutional Arrangements in the Education Sector

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Acronyms and Abbreviations

ECD	Early Child Development
EGMA	Early Grade Math Assessments
EGRA	Early Grade Reading Assessments
EMIS	Education Management Information System
ESAP	Ethiopian Social Accountability Program
ESDP	Education Sector Development Program
GDP	Gross Domestic Product
GEQIP	General Education Quality Improvement Program
GER	Gross Enrollment Ratio
GPE	Global Partnership for Education
HERQA	Higher Education Relevance and Quality Agency
HESC	Higher Education Strategy Center
HoF	House of Federation
IDP	Internally Displaced People
M&E	Monitoring and Evaluation
MELQO	Measuring Early Learning and Quality Outcomes
MoE	Ministry of Education
MoF	Ministry of Finance
MoSHE	Ministry of Higher Education and Science
NEAEA	National Educational Assessment and Examination Agency
NGO	Non-Governmental Organizations
NLA	National Learning Assessment
PBS	Protection of Basic Service
PCR	Primary school completion rates
PEIR	Public Expenditure and Institutional Review
PTA	Parent Teacher Association
REBs	Regional Education Bureaus
SAC	Social Accountability Committees
SIPs	School Improvement Plans
SNNP	Southern Nations, Nationalities, and Peoples
SSA	Sub-Saharan Africa
TSR	Textbook Student Ratio
TTI	Teachers Training Institute
TVET	Technical and Vocational Education and Training
UN	United Nations
UNESCO	The United Nations Educational, Scientific and Cultural Organization
WASH	Water, Sanitation, and Hygiene
WEOs	Woreda Education Offices
WHO	World Health Organization

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Executive Summary

1. **Access to and availability of education increased significantly in Ethiopia in the last ten years, the COVID-19 pandemic, combined with recent political unrest, increased unfinished learning, reduced participation, and amplified inequalities.** Thus, strengthening the education sector to improve learning quality and equity is even more important for the country's future growth and prosperity.

2. **The pandemic put an immense pressure on Ethiopia's economy.** Real gross domestic product (GDP) growth slowed down from an average of 9 percent to slightly above 6 percent in FY 2019/20, and further declined to 2.3 percent in FY2020/21. At the same time, Ethiopia's revenue mobilization has been on the decline since 2016, and revenues now stand at about 11 percent of GDP, running far behind the country's targeted budgeted expenditures of 17 percent of GDP. With ongoing shortfalls, the government has been curtaining public spending, and as a result, fiscal deficit has been kept between 2.5 and 3 percent of GDP.

3. **With this fiscal background, the greatest long-run pressure on Ethiopia's education sector is its large and rapidly growing school age population.** In the short run, the main funding challenge for the country is to find a way to investment in improving quality and reducing inefficiencies in a relatively narrow fiscal space.

Sector structure and characteristics

4. **Since 2018, the education sector has been a central part of Ethiopia's reform agenda.** The education sector has gone through multiple reforms, with significant changes to the structure of education and how decisions are made at the federal level. In 2021, the country replaced the existing education structure with a new grade-band system, and eliminated exit exams, to create more opportunities for students to advance. The 2021 reforms also moved responsibilities for higher education to the Ministry of Education, reversing a 2018 policy, and moved Technical and Vocational Education and Training (TVET) a newly formed Ministry of Labor and Skills. The implementation of these reforms has been slow in the backdrop of a pandemic and political unrest.

5. **The governance responsibilities for general education are split between the federal government and regional and sub-regional governments for decisions including funding, hiring of teachers, and the curriculum.** While regional and woreda governments have significant control over spending and hiring, they still rely on the federal government for key policy decisions and much of the funding they receive. Universities have some degree of autonomy, but they entirely rely on the federal government for their budgets and many key decisions are taken at the ministry level.

6. **The public financing responsibilities of the education sector are similarly shared between the federal government and regional governments.** For general education, school budgets are paid for by general purpose block grants which the federal government transfers to each region based on a formula that takes into consideration various factors such as population, metrics of need, and metrics of revenue capacity. The regional government then decides how much of the region's budget is allocated to education, how much is retained at the regional level and how much is transferred as block grants to each woreda. The woreda administrative councils are responsible for allocating school budgets using both the block grants and their own resources.

7. **Ethiopia allocates significant public resources to education within its budget.** Public education funding as a share of total public spending—22 percent—has been growing, and is above the SSA average of 17 percent, and slightly above GPE's recommended good practice benchmark for developing countries of 20 percent. Approximately 4 percent of the country's GDP is allocated to the education sector, which is about at par with the Sub-Saharan Africa average.

8. **There is little coordination between the federal government and regional governments in funding strategies and goals.** While the federal financial contributions reflect regions' needs and ability to raise funds, there is no requirement to match federal block grants or even allocate them to education in was that MoE suggests. When regions determine education budgets, they must follow recommendations from the MoE for the calculation of block grants and mix their own resources from federal resources (including resources received from equalizing grants that follow the principles of fiscal federalism). But there is no reporting requirement from regional governments to the federal government, and regions sometimes prioritize other types of spending over education.

Public sector spending on education

9. **The public spending in the education sector heavily favors higher education.** Approximately 23 percent of public funding is dedicated to primary education (grades 1 through 6), even though this level accounts for 63 percent of all students. In contrast, tertiary education receives 40 percent of all public funding but serves only 3 percent of all students.

10. **Personnel spending is the key cost driver for primary, secondary, and TVET education where wages and salaries account for 78 percent of all budgeted funds across regions and 84 percent of all budgeted funds.** But because of the large share of funding allocated at the tertiary level (and funded at the federal level), where the main cost driver is the capital funding for the expansion of existing universities and the construction of new ones, the share of capital expenditures in the total publicly funded budget is relatively high, at 35 percent.

11. **Given the allocation of public spending across different levels, unit costs increase significantly as students progress to upper grades, growing from Birr 1,803 at the primary level Birr 66,381 at the tertiary level.** Unit costs also vary greatly across regions. While regions with high primary level unit costs tend to have high secondary level unit costs as well, and national averages as strongly influenced by two regions—Amhara and Oromia—which collectively account for nearly 60 percent of primary school enrollment and 64 percent of secondary school enrollment. An analysis of unit costs and enrollment across higher education institutions show some scale economies, with larger universities educating their students at lower costs. This finding is also related to a key cost driver at higher education—capital funding set aside for the physical expansion—which tends to be a more frequent budget feature of new and relatively small universities.

12. **Ethiopia's unit costs, measured as a share of GDP per capita are lower than the SSA average at the primary and secondar levels.** When measured in constant PPP dollars, per people spending at the primary level is among lowest across all SSA countries for which data are available. Per pupil spending at the tertiary is more than twice the SSA average.

13. **Budget execution rates in Ethiopia are high at both the federal and the regional levels**. At the regional level, budget execution is strongest for personnel spending at all levels of education, and across all regions. Analysis of university budgets show that universities are strongest in executing their

personnel budgets but can be weak in spending their capital funds: a quarter of the universities can execute 65 percent or less of their capital budgets. These low execution rates partly reflect the differences in the nature of the capital projects universities undertake. While renovation projects take shorter, construction projects may take multiple years. There is great variation across universities' budget execution rates, suggesting that there are differences in universities' capability to efficiently execute and implement projects and, sometimes, routine operations.

The performance of the education sector

14. **In the 2019-20 school year, 25.4 million students were enrolled at the pre-primary to upper-secondary level schools in Ethiopia**, with an estimated seven percent enrolled in non-public schools including private schools and religious schools (madrasas). That year, an estimated 805,000 students were attending higher education institutions with about nine percent of these students attending private schools.

15. **Nearly a third of school-age children and youth remains out of school with one in five never attending school.** While a larger share of children is out of school in rural areas, between 2016 and 2019, the share of children out of school have increased in urban areas, mainly driven by urban males who experienced higher dropout rates.

16. **Between 2013 and 2019, enrollment growth was largely driven by increased access in middle school grades, especially in rural areas.** Access to primary education (measured by Gross Enrollment Ratio) declined across all geographies, income groups, and for both genders. Enrollment numbers declined in the earliest grades, and the growing population of children at the primary school age has put additional pressures on the gross enrollment ratios. Access to pre-primary and tertiary education were largely limited to children and youth in urban locations. TVET education remained miniscule, with only one percent of youth attending technical and vocational schools.

17. **Ethiopian students from advantaged backgrounds are much more likely to start and complete their schooling than students from disadvantaged backgrounds.** For example, a male student from a higher income urban household with educated parents or caregivers is twice more likely to start primary school, eight times more likely to finish the primary cycle, 13 times more likely to finish middle school, and 64 times more likely to attend upper secondary school than a female student from a low-income rural household with parents or caregivers who never attended school.

18. **Schooling for over 90 percent of rural and low-income students ends by the end of grade 8**, and this did not change much between 2013 and 2019. One group that experienced tremendous gains in access and persistence is the female students in urban areas from advantaged backgrounds. This group was twice as likely to complete a four-year university or college in 2019 compared to 2013.

19. **For many students in Ethiopia, first grade presents a significant barrier, with 20 percent of students dropping out before completing this year.** This suggests that many students (and their families) begin this year unprepared— academically or financially. Dropout and repetition rates are also high at grade 8 (end of the primary cycle until 2021, end of middle school under the current system) with over 15 percent of the students leaving school at this grade, and another 7 percent repeating. In addition, many students delay their education, and on average, students enter primary cycle two years later than the official starting age. Given the high repetition rates, by the time they begin their tertiary education, students, on average, are nearly four years older than the official age.

20. Despite high levels of repetition and dropout rates, improved level of access has resulted in higher completion rates at the primary school level in 2019 compared to 2013 (up from 61 percent to 70 percent), with gains largely coming from improved completion among male students, especially in rural areas. With this gain, Ethiopia is now outperforming many low-income countries in SSA.

21. Public schools in Ethiopia are resource constrained, with limited availability of textbooks and too few teachers that result in crowded classrooms. Three quarters of teachers do not have a post-secondary degree, and high teacher attrition makes it difficult to improve learning. Accordingly, the learning environment is challenging across Ethiopia's schools. The 2019 National Learning Assessments showed that the country still struggles in improving learning outcomes: mean scores in English at Grade 4 was only 31 percent, and in Math 40 percent; and at Grade 8, while English scores were greater (about 35 percent), they had declined in Math to 32 percent. Educational inputs and students' background seem to be correlated with learning outcomes. This suggests targeted intervention in improving educational inputs and students' household environment help improve learning outcomes.

22. Many working adults in Ethiopia are illiterate, and many never attended school. Illiteracy rate stands at 46 percent and could be as high as 60 percent in rural areas. While the average years of schooling increased for the working age population between 2013 and 2019, at slightly above four years, this number remains below SSA averages. Moreover, it has been declining among urban workers in recent years. Along the same lines, 42 percent of the working age population have never attended school. This level of exclusion in much higher than what is observed as the SSA average (26 percent) and the low-income SSA average (36 percent).

23. Ethiopian labor market attaches a high value to education. Each additional year of education can increase workers' wages by 10.6 percent and household income by 4.4 percent. Additionally, workers with higher levels of education are more likely to work outside of the agriculture sector, hold a formal job with steady wages, and are more likely to find a job in the public sector.

Equity of education spending

24. In Ethiopia, public spending on education disproportionally benefits higher income households. Students from lower income quintiles consistently receive a lower share of public funding compared to their share in enrollment. Both uneven access and regional funding disparities contribute to this outcome.

25. Funding disparities begin at the primary level and widen as students progress through higher grade bands. At the same time, a higher share of students from higher-income households attends private schools and this has an equalizing impact on the distribution of benefits from public expenditures. This holds true for both different grade bands, and across regions where private education participation is higher.

26. While the distribution of benefits from public education funding is skewed towards higher income households, public education spending has a leveling effect from primary through the secondary cycles relative to the underlying economic inequities. At the primary and secondary levels, funding is evenly distributed across students regardless of their economic status: Students from the lowest income quintile (adjusted for the number of children) receive about 20 percent of public spending, which is more than their households' share total consumption (under 10 percent at the primary level and slightly above 10 percent at the secondary level). For higher education, however,

funding distribution is even more inequitable than consumption distribution: households in the top consumption quintile account for almost half the consumption in Ethiopia, yet they receive 65 percent of the benefits from public spending at the post-secondary level.

27. **Household out-of-pocket expenditures account for about 15.3 percent of all resources that support education in Ethiopia, with significant variations across grade bands and between public and private schools.** Across all public schools, households bear about 9 percent of the costs, but this share is higher at lower grade bands—14 percent of all household expenditure on education at the primary levels (grade 1 through 6). Of all household out-of-pocket expenditures, 45 percent of the total education spending is for private schools, but this share is especially high in pre-primary schools (92 percent).

28. **Education expenditures account for about 6 percent of total household spending and 23 percent of per capita spending by households.** While the share of education expenditures both in households' total consumption and per capita expenditures increased from 2013 to 2019, this increase has been primarily driven by increased education spending among middle-income households. In fact, education expenditures in the household budgets of the poorest families declined between 2013 and 2019, worsening the gap between the poor and the rich.

29. **The cost of attending private schools compared to public schools is much higher at earlier grade bands compared to later grade bands.** For the first six years of the primary cycle, households spend Birr 4,522 per each child enrolled in a private school. This amount is more than twenty times the out-of-pocket expenses families incur for a student enrolled in public schools. At the secondary level household spending per student at a private school (6,566 Birr) is seven times the out-of-pocket expenses for a similar student in a public school. At TVET, that ratio goes up to five-to-one; and for tertiary education, full public costs are nearly fifteen times the private school costs.

30. **Households in the poorest quintile spend much less out of their pocket for their students at all levels of education, but costs increase far more rapidly for them as their students progress into higher grade bands.** For the poorest households, out-of-pocket expenses increase by a factor of 2.5 between primary and secondary schools; while for the richest households, the comparable increase is only 44 percent.

31. **While the cost of education has become a bigger push-factor over time, it is not the main explanation for why children and youth are out of school.** The share of households who mentioned costs as a main reason increased mainly because of the increases in perceived costs for older students. For students who are at upper-secondary age group, parents mentioned costs twice as often in 2019 (20 percent) compared to 2013 (10 percent). But parents more frequently mention quality (which captures a large bucket of reasons), and for primary-school aged children, that their child is "too young to attend" as the main reasons why children stay out of school.

System inefficiencies, bottlenecks, and sustainability of public spending

32. **Ethiopia dedicates a relatively large share of its public resources to education, but per pupil spending, especially at earlier grade bands, is relatively low, limiting quality improvements**. Thus, the main funding challenge for the country is to find a way to investment in improving quality and access in a relatively narrow fiscal space.

33. **This means, in the long run, the resources necessary to increase access to public education will have to be found within existing resources by elimination of inefficiencies, reallocating of existing budgets to higher-value investments.** But in the short run, such system efficiency improvements will require additional funding to improve learning quality (for example through a highly qualified teacher workforce, and other school-level interventions that could reduce repetition and drop-out rates).

34. **For primary through secondary education, it is unlikely that the households—especially lower-income households and households in rural areas—will be able to increase their education expenditures**. Thus, funding necessary to increase their access and participation would have be found elsewhere, including improving how existing resources are allocated and used.

35. **Analysis of efficiency metrics show that there is much room for improvement**. Current dropout and repetition rates show that for every 100 children that start Grade 1, only 9 will complete upper secondary education within the prescribed 12 years and without any delays; 46 will be repeating at least a year, and 41 students would drop out—most by the end of the primary cycle.

36. **High repetition and dropout rates result in the loss of 3 percent of public education spending and about 4 percent of household spending on education**. This is the equivalent of about a loss of 0.11 percent of GDP for the public sector, and 0.04 percent total household consumption for families with school age children. When one includes the indirect costs off lost wages for students who drop out, the annual cost of the inefficiencies in moving students through grades bands goes up to 2.2 percent of GDP.

37. **Schools across woredas vary greatly in terms of how they use their resources.** Compared to the schools in best-performing woredas that deliver the greatest access and learning for a given level of resources, the average schools used its resources 25 percent less efficiently. There is even great variation in efficiency within zones, suggesting that better outcomes are related to factors other than inputs, and schools—especially those that share a zone or a region—can learn from each other and emulate the management and operational practices of similarly-resourced schools with less inefficiencies.

38. **Eliminating efficiencies in the system is a difficult task as it would require investments in education quality and improved management and operating practices at schools.** But if achieved, this could allow Ethiopia to reach its access goals with existing resources in the system. For example, achieving universal or near-universal education by 2030 would imply a 64 percent growth in enrolment. This growth would largely be driven by growth in the population of school-age children and youth, as well as the system's ability to move students to higher grades.

39. **With universal access to basic and secondary education, new entrants to higher education would also nearly double by 2030, and total higher education enrollment could increase from 805,000 to 1.4 million.** If current patterns of public and private enrollment hold through this ten-year period, by 2030 private school enrollment would increase to 5 million (86 percent growth), and public school enrollment would increase to 39 million (66 percent growth).

40. **With this level of enrollment, even if the student-teacher ratios remained at current levels, the number of teachers serving preprimary through secondary levels would have to increase by about 500,000 (75 percent) over the next ten years.** Adding new teachers to bring student teacher ratios to recommended levels would require expanding the teacher pool by 115,000 today to nearly 735,000 teachers and increase it to over 1.2 million by 2030. About 85 percent of the growth in teachers

would be in the public sector, bringing the number of teachers serving in public schools from 561,000 to 973,000 under current staff ratios or to 1.2 million under recommended staffing ratios.

41. **To reach universal coverage by 2030, the total spending in education from all resources would have to increase by about 89 percent, even if one kept unit costs constant (in USD).** Growth in spending would outpace growth in the underlying enrollment (68 percent) because a larger share of student would be attending upper grades by 2030, where the per pupil costs are higher both for households and the public.

42. **Investing in quality would require a higher level of resource commitment from the public sector.** Allowing for a 4 percent growth in unit costs, for example, would require Ethiopia to set aside nearly 5.2 percent of its GDP for public education by 2030 compared to the current allocation of about 4.6 percent.

43. **Much of the resources needed for enrollment growth can be found in existing sources, even by making temporary changes to funding allocation at the federal level**. For example, pausing capital investments at higher education for ten years could generate resources that is the equivalent of about half of percent of GDP. Similarly shifting half the operating costs of higher education to households by increasing tuition share to 50 percent from its current 15 percent can generate resources equivalent of 0.4 percent of GDP.

Policy options and recommendations

44. **Ethiopia's education sector now faces multiple challenges including returning all students back to the classroom, catching up with unfinished learning, improving learning outcomes, and expand access to accommodate the fast-growing population of school-age children and youth.** To achieve these outcomes, reforms will have to be accompanied with both increased resource mobilization as well as improved efficiency and equity in the allocation and use of resources.

45. **In the long run, the greatest pressure will come from its large and growing school-age population.** In the short run, the main funding challenge for the country is to find a way to investment in improving quality and reducing inefficiencies in a relatively narrow fiscal space.

46. **It is plausible for Ethiopia to reach universal education by 2030 without permanent increases in spending.** This would require the country to better coordinate funding goals across different levels of government and use existing funding in a different way. Resources necessary to increase access to and improve the quality of public education will have to be found within existing resources by elimination of inefficiencies, reallocating of existing budgets to higher-value investments, and shifting a larger share of burdens to higher income families especially at the higher education level.

47. **Changes in Ethiopia's funding strategies will be key to achieving the desired access and quality improvement goals.** Increased revenue mobilization can be the most direct way of getting more funding to the sector. For example, increasing revenue mobilization to 17 percent of GDP from its current level of 11 percent, while keeping the share of education spending in the budget constant, would increase public education funding by 54 percent.

48. **The current fiscal rules, that are designed to increase cross-regional equity, might be contributing to inequities in education spending.** At present, there is no coordination between federal and regional governments on education goals or funding strategies. While the principles of fiscal

federalism provide for local autonomy, a regional commitment to improving education outcomes through the implementation of regional funding formulas can increase resource availability at the regional level and increase equity. One potential means of creating a coordinated financing strategy would be to benchmark education spending for regions and woredas. At a minimum, maintenance of effort requirements on the use of block grants at the regional and woreda levels can ensure that schools budgets do not decrease from year to year.

49. Increasing non-public revenue at the tertiary level can create significant resources for basic and secondary education. Since returns to higher education is largely capitalized in wages, the share of tuition paid for students can be increased from its current 15 percent to a higher level. For example, if students paid half of the operating costs for higher education, this would have freed resources that are the equivalent of about 0.4 percent of GDP. Alternatively, increasing household's share in the recurring expenditures at the tertiary level from 10 percent (current) to 21 percent (which is what households pay at the primary level) would free 3 percent of the total recurring expenditures across all levels of education. If cost sharing looked more like what it is at the preprimary level, where households pay 59 percent of all costs, the education sector would have Birr 14.6B (14 percent of the recurring expenditures) that could be invested in increasing access and quality.

50. Education spending in Ethiopia is capital-heavy and heavily favors higher education that enrolls a small number of students. While access and availability of higher education is an important goal, too many children and youth are out of school or never attain the necessary levels of education to attend higher education. Ethiopia's spending in primary and secondary education, as a share of total education spending is behind SSA levels. Bringing these shares to regional levels can help support earlier grade bands, especially to increase access to and quality of public education at these levels. Specifically, short term changes to the functional allocation of public education funding can create temporary resources that can be invested in quality improvements. For example, halting capital investments in higher education for a limited period can free up to half a percent of GDP each year.

51. Schools, woredas and regions can learn from each other in better budget administration. The DEA analysis presented in the report shows that there is great variation in the efficiency of input use across schools and zones—even across those that are close to each other. Creating opportunities for schools, woredas, zones, and regions to learn from each other in how to improve resource use can help support broader adaptation of better school management and resource use practices.

52. An adequacy study that examines spending needs at the secondar and tertiary levels can help control costs. There is great variation on per pupil spending across regions at the secondary level and across universities which suggests that a model school budget can help mobilize more resources in some regions and reduce inefficiencies in others. At the tertiary level, per pupils spending can be as low as Birr 6,726 and as high as Birr 1.3 million. While capital investments can explain some of these differences, the nearly 200-fold increase between the lowest- and highest-spending university suggests that higher education institutions can similarly benefit from budgeting guidelines that could help the country keep unit costs under control.

53. New interventions might be necessary to create targeted supports for lower-income households to increase participation. As shown, out-of-pocket costs serve as a real barrier for households, especially those from lower income quintiles. And these costs increase at a faster rate for the poorest households as their students progress into higher grades. These burdens can explain, partly, why learning outcomes

vary so greatly across different income groups. Providing targeted supports to families from the lowest income quintiles conditional on school enrollment can significantly increase participation in education.

54. Investments in pre-primary education and school readiness can increase overall participation at a relatively low cost. At present, the first year of primary school is a make-or-break year, with the highest drop-out rate across all grade levels (20 percent). This suggests that many students who being Grade 1 are not ready for school. Investing in school readiness, especially in rural parts of the country can improve outcomes for students who are furthest away from opportunity.

55. To increase equity within existing resources, Ethiopia could consider incorporating pro-poor weights into school grants. At present students from higher income households attend higher-resourced schools, and as a result tend to reap higher benefits from public spending on education relative to their shares in enrollment. This suggests targeted intervention in improving educational inputs and students' household environment help improve learning outcomes. This can be achieved by incorporating into school grants, which are now tied to enrollment only, pro-poor weights, which can shift resources to regions where access to and quality of education needs the greatest improvements.

56. To improve human capital outcomes across a broader cross-section of working age Ethiopians, the country could consider investing in adult education and programs for out-of-school youth at the federal level: Over half the adults in rural areas are illiterate, and 12.5 million school-aged children and youth (6.7 percent of all school-age children and youth) are out of school. The analysis suggests that regions lack the capacity to serve these groups through alternative programs. Shifting responsibility to adult and alternative education to the federal level, at least temporarily, can help create a national strategy and programming for these groups.

57. Ethiopia must also make investment today to prepare for future growth. Achieving universal public education by 2030 would require the teacher pool to increase six to nine times the current levels. Ethiopia should consider invest in teacher career reforms, including implementing attractive salary structures and creating more pathways for teachers to grow in their professions to make teaching a more attractive profession. TVET organizations can play a role, since Significant expansions in the number of teachers would require significant expansions in the state capacity to train teachers. Ethiopia could consider expanding TVET education for teacher credentialing to ensure that there is enough capacity to train teachers and grow the number of teachers.

Table of Contents

List of Figures and Tables

Figures

List of Tables

Section 1. Introduction

1. Access to and availability of education increased significantly in Ethiopia in the last ten years but the COVID-19 pandemic, combined with recent political unrest, increased unfinished learning and amplified inequalities.[1] Thus, strengthening the education sector to improve learning quality and equity is even more important for the country's future growth and prosperity.

2. The pandemic put an immense pressure on Ethiopia's economy. Real gross domestic product (GDP) growth slowed down from an average of 9 percent to slightly above 6 percent in FY 2019/20, and further declined to 2.3 percent in FY2020/21. While growth in industry and services came to a near-halt, agriculture, where over 70 percent of the population are employed, was not significantly affected by the pandemic and its contribution to growth slightly improved in FY2020/21 compared to the previous year. Exports and foreign direct investment have rebounded in 2020/21 and jobs have been recovering, but due to the unique challenges of the pandemic, urban employment levels have not yet fully recovered. With some households and firms continuing to report income losses, poverty is estimated to have increased.[2]

3. Ethiopia's revenue mobilization has been on the decline since 2016, and revenues now stand at about 11 percent of GDP, running far behind the country's targeted budgeted expenditures of 17 percent of GDP. With ongoing shortfalls, the government has been curtaining public spending, and as a result, fiscal deficit has been kept between 2.5 and 3 percent of GDP.

4. With this fiscal background, the greatest long-run pressure on Ethiopia's education sector is its large and rapidly growing school age population. The sector is further impacted by recent reforms that have significantly altered the structure of schools and shifted authority. While reforms are important for the future of the sector, their implementation has been haphazard, largely due to the uncertainties associated with the political instability in the country.

1.1. Background and recent developments

5. Ethiopia is the second most populous country in Sub-Saharan Africa (SSA), with an estimated population of 114 million in 2020 that spans over a geographical area of 1.1 million square km in surface area. Ethiopia's population is expected grow at an annualized rate of 2.5 percent to reach 144 million by 2030.[3] Ethiopia is a federation with eleven ethnic regional states, and two chartered cities.[4] The capital city of Addis Ababa is the largest city in the country, with an estimated population of 5 million and growing at around 4.3 percent each year.[5]

6. The Coronavirus (COVID-19) pandemic and political unrest that started as a localized conflict in November of 2020 and now have expanded to the rest of Ethiopia, pose significant risks to the development and unity of the country. Since the first reported case in Ethiopia in March 2020, there have been more than

[1] See, for example, Azeze et al., 2020; Kim et al., 2020; and Wieser et al., 2020.

[2] The World Bank (2021), available at https://www.worldbank.org/en/country/ethiopia/overview#1

[3] UN Population estimates.

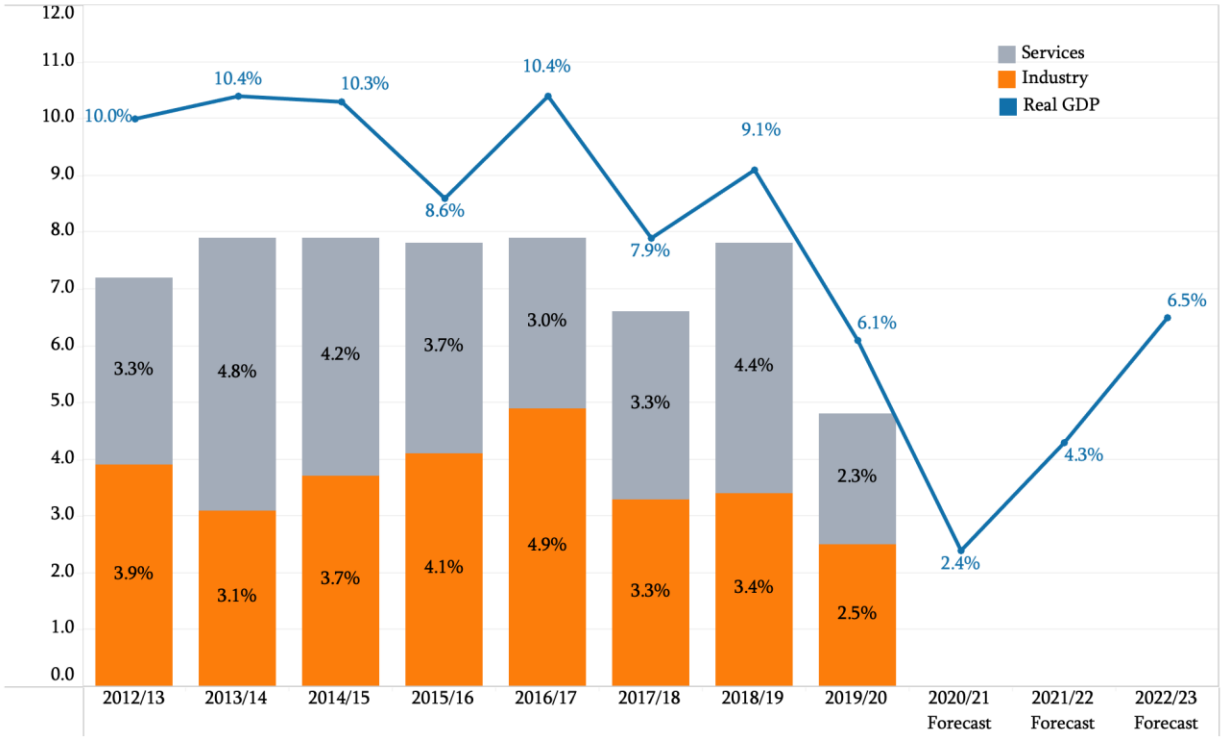
[4] The eleven ethnic states are Afar, Amhara, Benishangul, Gambelia, Harari, Oromia, Somalie, Sidama (since 2019), Southern Nations, Nationalities and Peoples (SNNP), South West, and Tigray. The two chartered cities are Addis Ababa, and Dire Dawa.

[5] United Nations - World Population Prospects.

470,000 cases and 7,500 COVID-19 fatalities,[6] the second largest in absolute terms of SSA countries (but the case of about 3.2 per 1000 residents and the death rate of 58 per a million residents are on the lower side of what has been observed in SSA).[7] As of April 2022, only 21 percent of the population had been vaccinated and only 18 percent were fully vaccinated.

7. The conflict, which began in the Tigray region[8] and extended to the north Ethiopia (Amhara, and Afar), is having lasting impacts on the well-being of the people in these regions. Communication with Tigray remains limited, but in October of 2021, the UN has reported that 5.2 million people in the region need humanitarian assistance and over 63,000 refugees have fled from Tigray to neighboring Sudan.[9] Access to COVID-19 vaccination has been interrupted in Tigray, northeastern Amhara, north Afar, western and south western Oromia and some woredas on Benishangul Gumuz due to the ongoing conflict. There are also reports of destruction of public infrastructure such as schools, health and water, sanitation, and hygiene facilities. Some schools are forced to serve as Internally Displaced People (IDP) camps to host displaced communities fleeing continued violence. Over 3.5 million students are affected by the conflict and associated school's closures.

Figure 1 – Real GDP growth and sectors' contribution to GDP growth



Source:MoF, NPDC, and the World Bank

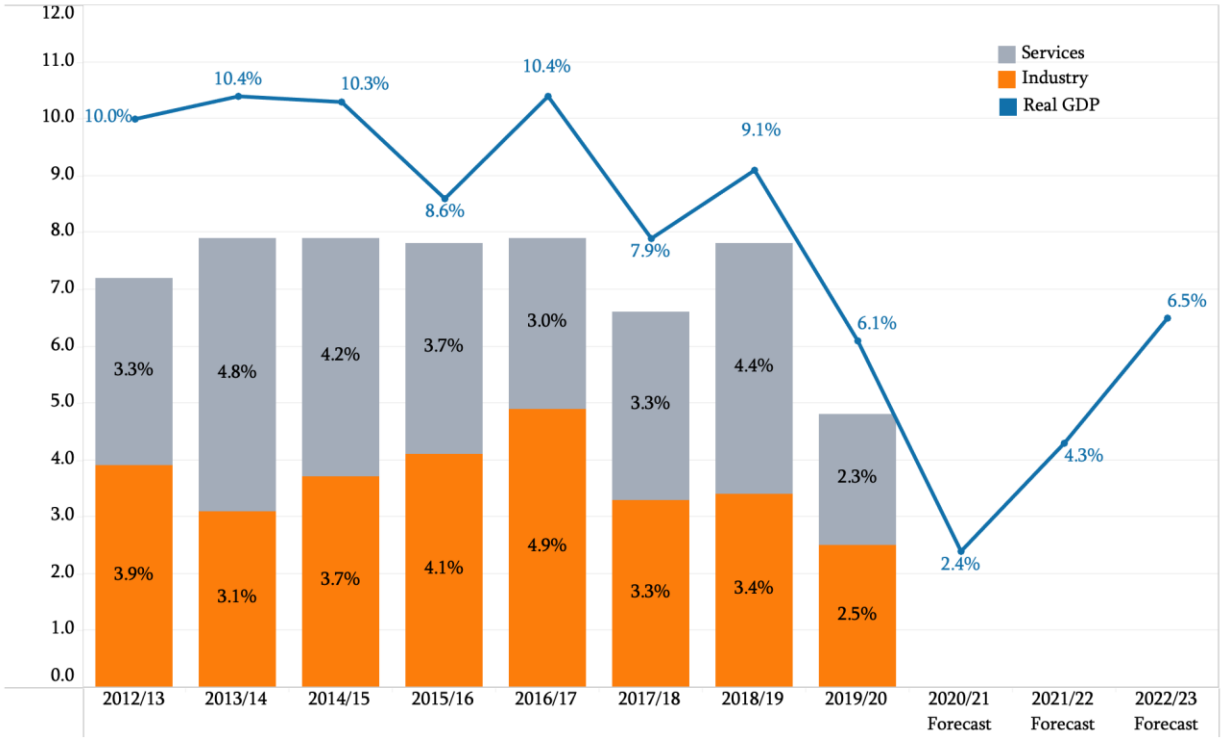
[6] Ministry of Health (2022). Weekly COVID-19 Bulletin, January 16, 2022 available at https://ephi.gov.et/wp-content/uploads/2021/02/EPHI_PHEOC_COVID-19_Weekly_Bulletin_90_English_01202022.pdf.

[7] These data are from WHO, retrieved via Johns Hopkins University Center for Systems Science and Engineering on November 23, 2021.

[8] The Ethiopian government declared a state of emergency for Tigray region on November 4, 2020.

[9] OCHA, May 21, 2021. Ethiopia – Tigray Humanitarian Update (Situation Report) available at https://reports.unocha.org/en/country/ethiopia/

8. Prior to the COVID-19 pandemic, Ethiopia had made significant gains towards poverty reduction. Between 2012 and 2019, Ethiopia's annual GDP growth, at an average of 9.2 percent, consistently outperformed the SSA and the low-income countries averages. Accordingly, real GDP per capita reached an all-time high of $858 in 2019, exhibiting more than threefold increase from the 2006/07 level of $262, and the share of the population in poverty fell from 29.6 percent in 2010/11 to 23.5 percent in 2015/16. Real GDP growth slowed down to 6.1 percent in 2019/20, and is further projected to decline in 2020/21 (Figure 1 – Real GDP growth and sectors' contribution to GDP growth

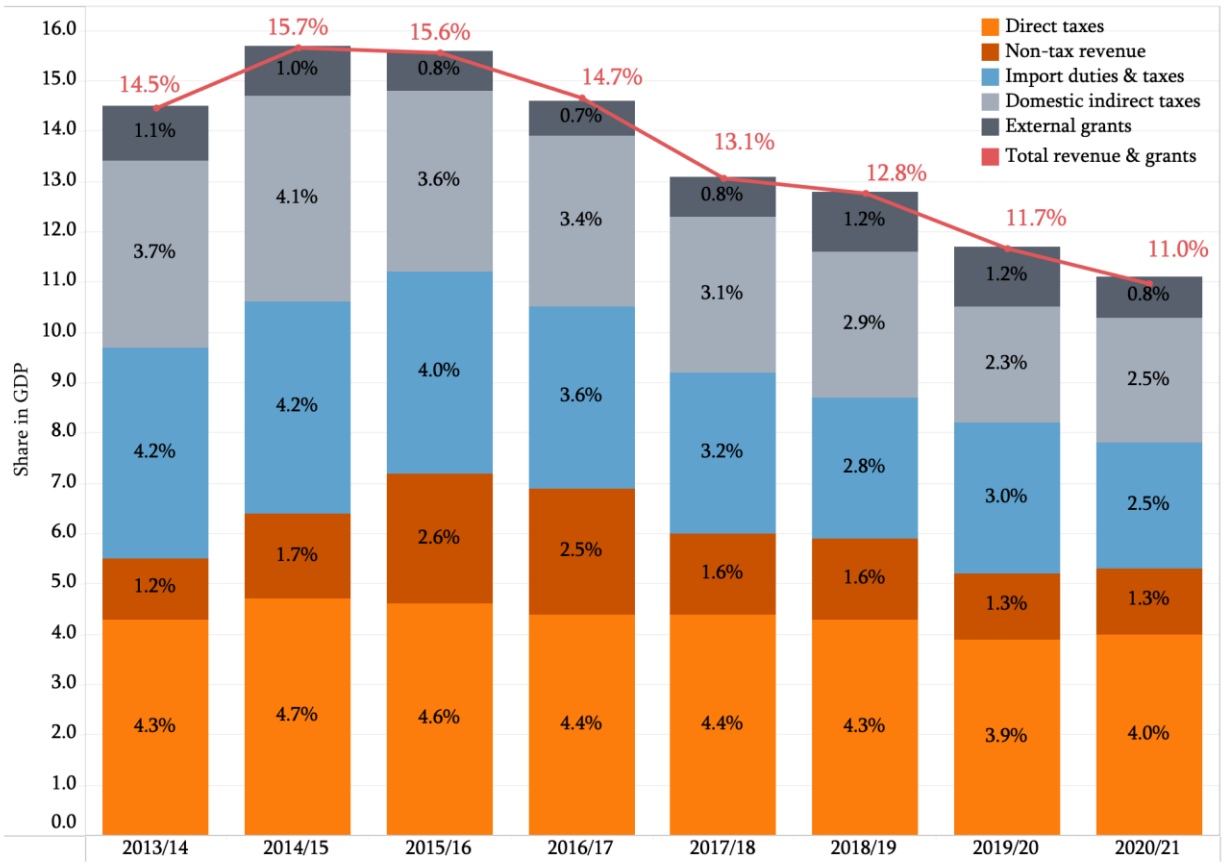


Source:MoF, NPDC, and the World Bank

9.).

10. The COVID-19 pandemic exerted substantial pressures on service sector and industrial production. The service sector, which experienced an unprecedented demand shock, contributed 2.3 percent to GDP growth—at a rate nearly half of the previous year. The industrial sector's contribution also declined from 3.4 percent in 2018/19 to 2.5 percent in 2019/20. Agriculture was not affected by the pandemic and was the driver of much of the aggregate recovery of the economy

Figure 2 – Trends of revenue and grants as share of GDP by sources (%)



Source: MoF

11. **Ethiopia's revenues relative to its GDP has been on the decline since 2016.** The Ethiopian government raises revenue mainly through direct taxes including income taxes imposed on wage and salary earnings, business income, rental income, domestic indirect taxes including a Value Added Tax, a Turnover Tax (imposed on services, and goods otherwise exempt from VAT); and customs and import duties.[10] Even prior to the pandemic, revenue was declining as a result of declining imports, [11] shift of economic activity to sectors prone to weak compliance (for example, construction) and reduced collection capacity due to increased political unrest.[12] As a result revenue collection, as a share of GDP, was 7 percentage points behind the budget target of 17 percent of GDP (Figure 2).

12. **Until the 2017/18 Fiscal Year, p**ublic spending as a of share of GDP (at all levels of government) ha**d** been consistently increasing (Figure 3). During this period, the growth in public spending has outpaced the growth in revenue mobilization, higher spending widening the fiscal deficit from 2.5 percent of GDP in 2013/14 to 3.3 percent of GDP in 2016/17. At its peak, public expenditure was at 17.9 percent. In face of continuous revenue shortfalls, the government has been curtailing expenditures, which have now declined

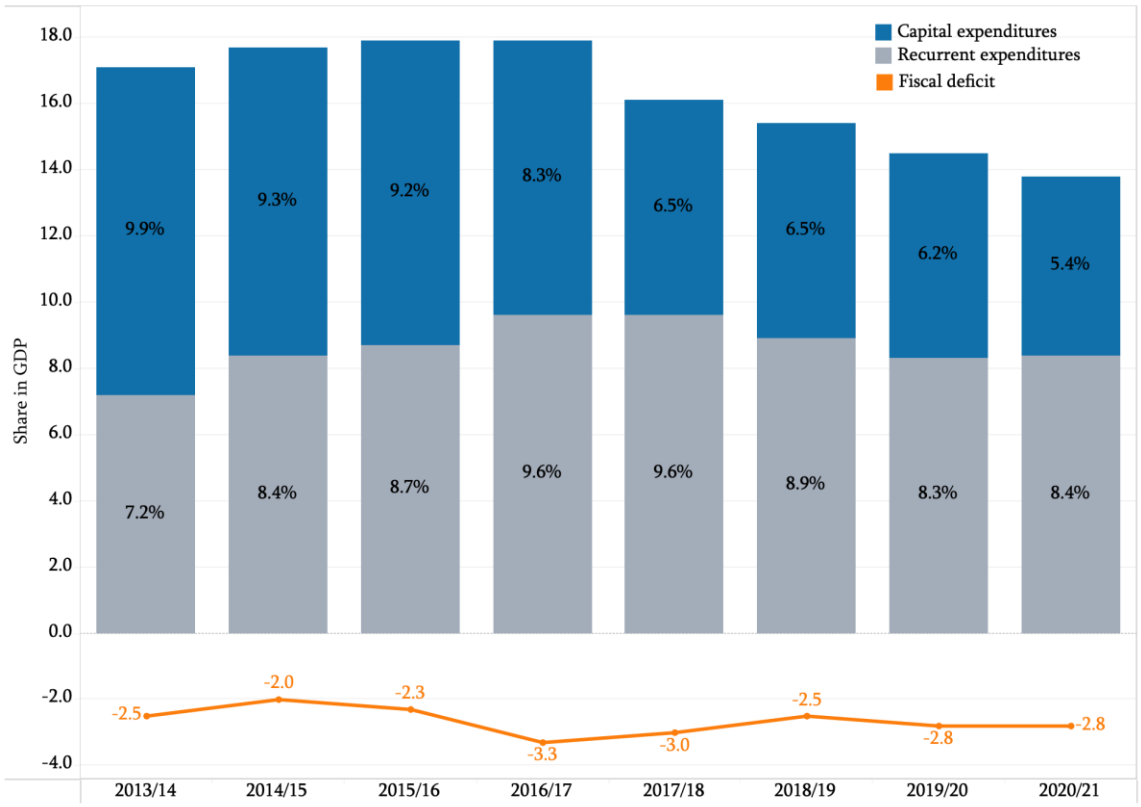
[10] KPMG, "Ethiopia, a Fiscal Guide, 2019" available at https://assets.kpmg/content/dam/kpmg/za/pdf/pdf2020/ethiopia-fiscal-guide-2019.pdf

[11] To reverse this decline in import taxes, the government removed the depreciation allowance on imported vehicles and reduced the number of items exempted from tariffs from 2,000 to 506.

[12] IMF (2020). The Federal Democratic Republic of Ethiopia: 2019 Article IV Consultation and Requests for Three-Year Arrangement under the Extended Credit Facility and an Arrangement under the Extended Fund Facility-Press Release and Staff Report.

to 13.4 percent of GDP. As a result, fiscal deficit has narrowed and in the 2020/21 fiscal year, stood at 2.8 percent of GDP.

Figure 3 – Trends of public spending and fiscal deficit as share of GDP (%)



Source: MoF

1.2. The education sector

13. The key challenge for Ethiopia's education sector is the need to improve learning outcomes for a large and growing population of school-aged children and youth. Ethiopia's population is young and includes a rapidly growing school-age cohort (Appendix figure 1). In 2020, there were an estimated 40 million school-age children (ages 4–18), and this cohort is expected to grow to 50 million by 2030, creating an immense pressure for additional resources to increase access. Further, the underperformance of the education sector is one of the key impediments to the country's human capital development (Appendix figure 2). While the government's resource commitment to education have been strong and enrollment has been growing, learning outcomes lag behind outcomes in similar countries. For example, Learning-Adjusted School Years[13] is nearly a full year behind the SSA average (Appendix figure 3).

14. Since 2018, the education sector has been a central part of Ethiopia's reform agenda. A new Education Sector Roadmap adopted in 2018 made major changes to how the sector had operated since

[13] This metric adjusts average years of schooling for learning outcomes as measured by standardized tests. For details, see Filmer, Deon; Rogers, Halsey; Angrist, Noam; Sabarwal, Shwetlena. 2018. Learning-Adjusted Years of Schooling: Defining A New Macro Measure of Education. Policy Research Working Paper No. 8591. World Bank, Washington, DC.

2001.[14] The plan proposed a return to the pre-2001 education structure and recommended revising the curriculum to align current skills taught at schools to those needed and in demand, adding new foreign languages to the multilingual requirement of additional foreign languages, making preschool compulsory, and expanding digital skills. The 2018 reforms also split the Ministry of Education (MoE), which was previously responsible for all levels of education into two: MoE remained responsible for general education (preprimary through secondary levels) and teachers' training programs and institutions. A new ministry—the Ministry of Higher Education and Science (MoSHE)—was established in October 2018 and became responsible for Technical and Vocational Education and Training (TVET), higher education, and the development of sciences. Additionally, the 2018 Roadmap recommended ratification of an Education Act to provide Ethiopia with a comprehensive legal framework for education. To date, a draft Act is still pending before the Ethiopian Parliament.

15. The old education system followed a 3-4-4-2-2 general education structure, and 3 to 5 years of tertiary education. In this model, preprimary education serves children aged 4-6.[15] Primary education officially begins at age 7 and consists of eight years of schooling conducted in 2 cycles: primary first cycle (grades 1–4) and primary second cycle (grades 5–8). At the end of grade 8, students must pass the Primary School Leaving Examination to continue into secondary school.[16] Secondary school education is also divided into 2 cycles: General secondary lasts two years (grades 9–10). At the end of the general secondary cycle, students take the Ethiopian General School Leaving Certificate Examination (EGSLCE) that certifies completion of secondary general education. Students who pass this exam with satisfactory grades can continue to the upper second cycle (Grades 11 and 12), which prepares students for university education. Those who do not qualify for the upper secondary cycle can be enrolled in TVET institutions if they meet set minimum grade thresholds in the EGSLCE exams (which vary by year and region).

16. The implementation of the new Education Roadmap started in September 2021 and is gradually replacing the existing structure with a 2-6-2-4 system with less filtering and more opportunities for students to advance. Under this system, students go through at least two years of compulsory preprimary schooling, followed by six years of primary, two years of junior secondary, and four years of secondary education. Students are expected to take a regional exam at the end of grade 6 and sit for a national exam in grade 8. The grade 10 national examination is being cancelled, and students will only sit for the national higher education entrance examination, which will be administrated in grade 12 (Figure 4).

17. Along with changes to the general education structure, TVET and higher education policy and strategy was also updated. Responsibilities for higher education have moved back to the MoE with a state minister overseeing higher education programs and policies. 'TVET was moved under a new Ministry of Labor and Skills, which has been split from the former Ministry of Labor and Social Affairs to focus on labor policy.[17] The new TVET and higher education strategy recommends revising the national TVET

[14] The guiding document for the sector between 1994 and 2018 was the Education and Training Policy of 1994.

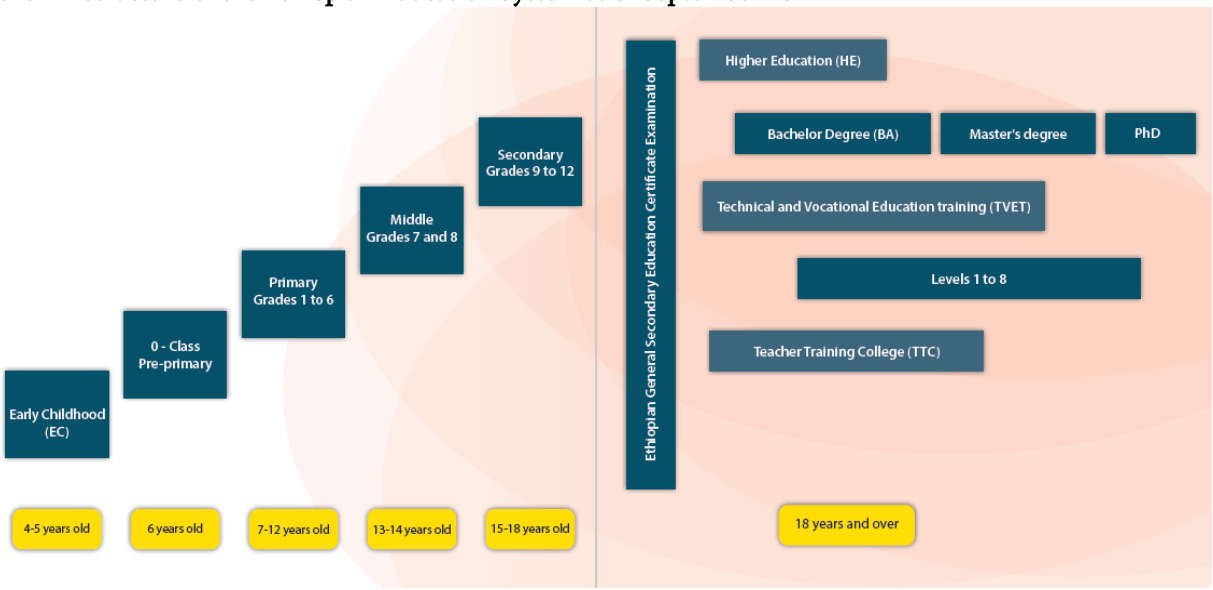
[15] Pre-primary education can be delivered through early care centers, informal and unstructured child-to-child programs where older children teach younger ones, or a formal O-Class (one year) typically located within primary school buildings and serve 6-year-oldsFormal kindergarten programs are community-based and typically fees are paid for by the parents. The informal child-to-child programs are funded by UNICEF and the government. The O-class is formal and publicly provided, like other primary grades. There is also an accelerated school readiness program for children aged 6-7, which lasts about two months. For details, see Rossiter, J.; Hagos, B.; Rose, P.; Teferra, T.; and Woldehanna, T. Early Learning in Ethiopia: Equitable access and Learning. System Diagnostic Report for World Bank Early Learning Program. http://dx.doi.org/10.4135/9781526402004.n14.

[16] Students who fail the exams need to repeat grade eight before they can retake the test.

[17] Under this system, social issues are now under the purview of the new Ministry of Women and Social Affairs.

qualifications framework to create earlier access to TVET with pathways to tertiary diplomas. The recommended framework is intended to increase TVET levels from five to eight, with the first five levels are overseen by TVET authorities and levels 6-8 are part of the higher education system.

Figure 4 – Structure of the Ethiopian Education System as of September 2021



Source: MoE

18. **The dual crises of the pandemic and the continuing conflict have taken a toll on learning**. At the onset of the pandemic in March 2020, Ethiopia closed all primary and secondary schools for more than seven months. During this period, over 26 million students remained out of classrooms and an estimated 700,000 teachers and school management employees were out of work. Access to remote learning was limited, and especially difficult for those who live in remote and rural areas. In-person classes resumed for most of the children in October 2020 but many families opted out: a household survey conducted by the World Bank found that only 67 percent of children and youth aged 3 to 22 were registered to attend classes for the 2020/21 school year. For households that did not register their children for school, the main reasons were the delayed registration process, the need to participate in income-generating activities, and children dropping out because they had missed too much schooling to catch up.[18]

19. **For regions impacted by the conflict zone and surrounding areas, schools largely remain closed, with over 7,000 schools reportedly destroyed or damaged.** As a result, over 3.5 million students in conflict-impacted areas, who already experienced significant learning loss due to the pandemic, remain out of the classroom. [19]

[18] For details see Alemayehu Azeze Ambel, Lina Marcela Cardona Sosa, Wondu Yemanebirahn Kassa, Asmelash Haile Tsegay, and Christina Wieser (2021), How COVID-19 is affecting households in Ethiopia: Results from the High-Frequency Phone Surveys of Households from April 2020 through January 2021. Available at: https://documents1.worldbank.org/curated/en/735251621390657289/pdf/Monitoring-COVID-19-Impacts-on-Households-in-Ethiopia-How-COVID-19-is-Affecting-households-Results-from-the-High-Frequency-Phone-Surveys-of-Households-from-April-2020-through-January-2021.pdf

[19] Bedasso, Bimiam (2021), Saving the Future for Ethiopia's Schoolchildren, Project Syndicate, available at https://www.project-syndicate.org/commentary/saving-the-future-for-ethiopian-schoolchildren-by-biniam-bedasso-2021-09.

20. Ethiopia's education sector now faces multiple challenges including returning all students back to the classroom, catching up with unfinished learning, improving learning outcomes, and expand access to accommodate the fast-growing population of school-age children and youth. To achieve these outcomes, reforms will have to be accompanied with resource mobilization as well as improved efficiency and equity in the allocation and use of resources.

21. This PEIR provides a review of the governance, organization, funding, and performance of Ethiopia's education sector. It tracks changing trends in these areas between 2012/13 and 2019/20 fiscal years.[20] In what follows, Section 2 reviews the governance of the sector with a basic review of the funding structure. Section 3 analyzes public expenditure trends including budget allocation, unit costs and budget execution. Section 4 provides an analysis of sector performance. Section 5 explores the equity and benefits incidence of education spending across different socioeconomic groups. Section 6 reviews system inefficiencies and provides projections for resource needs to achieve universal education. Section 7 concludes with recommendations.

[20] The analysis presented here does not include post-COVID-19 data, as the structure and delivery of education changed dramatically beginning 2020 and data availability has been hampered.

Section 2. Governance of the Education Sector

2.1. Summary findings

22. The governance responsibilities for general education are split between the federal government and regional and sub-regional governments for decisions including funding, hiring of teachers, and the curriculum. At the federal level, the Ministry of Education (MoE) is responsible all levels of education, except for TVET, which is now under the newly formed Ministry of Labor and Skills. While regional and woreda governments have significant control over spending and hiring, they still rely on the federal government for key policy decisions and much of the funding they receive. While universities have some degree of autonomy, they entirely rely on the federal government for their budgets and many key decisions are taken at the ministry level.

23. The public financing responsibilities of the education sector are similarly shared between the federal government and regional governments. For general education, school budgets are paid for by general purpose block grants which the federal government transfers to each region based on a formula that takes into consideration various factors such as population, metrics of need, and metrics of revenue capacity. The regional government then decides how much of the region's budget is allocated to education, how much is retained at the regional level and how much is transferred as block grants to each woreda. The woreda administrative councils are responsible for allocating school budgets using both the block grants and their own resources.

24. Ethiopia allocates significant public resources to education within its budget. Public education funding as a share of total public spending—22 percent—has been growing, and is above the SSA average of 17 percent, and slightly above GPE's recommended good practice benchmark for developing countries of 20 percent. Approximately 4 percent of the country's GDP is allocated to the education sector, which is about at par with the Sub-Saharan Africa average.

25. The education sector is covered under the Ethiopian Social Accountability Program (ESAP), which seeks to increase citizen involvement in key decisions to increase accountability and improve services. Recent research shows that in parts of the country where ESAP was implemented, citizens are more likely to participate in PTAs, join local school committees, and attend community meetings, have a higher degree of satisfaction with delivery of services where the need of new investments are small (such as textbooks), and show more critical understanding of needs such as infrastructure investments in education and teacher availability.

26. Ethiopia has institutionalized several quality assurance, monitoring, and evaluation practices in public education. These include data collection through the Education Management Information System (EMIS), school inspections, national learning assessments, early grade reading and math assessments, and other quality assessments.

2.2. Legal framework

27. In Ethiopia, education is a constitutionally protected right.[21] Article 36(1)(d) of the Constitution protects a child's right to education by prohibiting any imposition of burden of work on the child that might put the child's education at risk. Similarly, Article 36(1)(e) recognizes the child's right to be free from corporal punishment or cruel and inhuman treatment in schools. In line with these Constitutional provisions, the Government of Ethiopia has been promulgating education policies and laws that regulate the provision of basic and higher education in the country, with the stated goals of expanding access to and improve quality of education services in the country.

28. The 1994 Education and Training Policy served as the main policy roadmap for the sector in Ethiopia for more than two decades. A series of five-year Education Sector Development Programs (ESDPs) have been guiding the sector since 1997 (the last one, EDSP VI, was launched in August 2021),[22] covering all aspects of education and training programs of Ethiopia—from pre-primary education to tertiary education, with a sustained public investment program funded by national and international resources (Table 1).

Table 1 – Key policy milestones and their significance

Milestone	Significance
1994 Policy	Redefined primary education as grades 1– 8 and eliminated standardized testing prior to grade 8. It placed new emphasis on the expansion of technical and vocational education and training and the use of mother tongue languages for primary instruction
2018 Roadmap	Restructured education system, separating general education from TVET and higher education.
2021 Reforms	General and higher education brought together under one ministry, Ministry of Education, while that of TVET moved to Ministry of Labor and Skills. The Ministry of Science and Higher Education is dissolved.

Source: Authors' elaborations

29. While an overarching education Act is not yet enacted, the country has a Higher Education proclamation that was ratified in 2003 and revised in 2009 and 2019; and a TVET proclamation that was ratified in in 2016. [23] And the country adopted a new Education Sector Roadmap in 2018 with major changes to how the sector had operated since 1994. A comprehensive education Act has recently been drafted and is awaiting approval by the House of People's Representatives to become a law.[24]

[21] Article 41 (3) of the Ethiopian National Constitution states that every Ethiopian national has the right to equal access to publicly funded social services and Article 41 (4) states that the State has the obligation to allocate ever increasing resources to provide to the public health, education, and other social services. Additionally, the country has ratified international treaties that protect the right to education, and these are also enshrined in the country's constitution.

[22] This program was officially launched in August 2021 even though its implementation had started in September of 2020.

[23] Proclamation No. 954/2016: Technical and Vocational Education and Training Proclamation.

[24] Draft Education Development Roadmap (2018-2030) by Ministry of Education.

2.3. Key decisionmakers

30. Ethiopia is a federation with decision-making powers devolved across multiple levels of government. The federal government is responsible for setting basic education policy, and regional governments are responsible for service delivery. The federal government also sets minimum qualification requirements for teachers, administers national examinations, reports on the national performance in education and training. The federal government has significant control over public higher education institutions, including setting admission standards, enrollment quotas, and curricula.

31. Mandates over general education are decentralized between MoE, regional Education Bureaus (REBs) and Woreda Education Offices (WEOs) (Table 2). In addition to setting policy, MoE prepares and executes sector development programs, sets education standards (and ensures that they are met), develops secondary education and teachers training curriculums, and designs and implement quality enhancement projects. Regional Education Bureaus (REBs) are responsible for overall implementation of general education in the regions and as well as developing the curriculum for primary education. Woreda Education Offices manage of primary education (including hiring teachers, setting budgets, and providing administrative support to schools) Schools report to woredas.[25]

Table 2 – Division of responsibilities between federal, regional, and woreda-level governments for primary and secondary education

Entity	Major Responsibilities
Federal Ministry of Education (MoE)	• Setting education policy • Prepare and implement sector development policy • Setting quality standards[1] • Prepare secondary school curriculum • Design and implement quality enhancement projects • Provide technical and professional support to regions • Administer Grade 12 national exams[2]
Regional Education Bureau (REB)	• Prepare primary school curriculum • Establish and administer Colleges of Teachers Education (CTE) • Train primary teachers • Supervise compliance to standards • Allocate human resources among woredas • Coordinate education actors (positions created by woredas) working in the region • Provide technical and professional support to woredas and schools • Responsible for capital projects including construction of schools • Administer Grade 6 and Grade 8 exams.
Zone	• Textbook distribution • Functions of Woredas when capacity at Woreda is limited • Follow-up implementation of capital projects at school level

[25] MoE Directive for Education Management, Organization, Public Participation and Finance: August 2002

Entity	Major Responsibilities
Woreda	· Preparing Woreda level short, medium- and long-term plans · Administer schools through provision of budget, supervision, and provision of other administrative support · Recruitment and appointment of primary teachers · Ensure compliance to national standards and supervision of quality · Strengthen community participation
School	· Conduct the teaching and learning · Support teachers peer learning and continuous professional development · Provide educational leadership and guidance to teachers and students · Conduct action research and implement findings · Enhance internal income[3]

Source: Author's elaborations. **Table notes**:[1] A document with a set of quality standards is prepared for each level of education which is then used by inspection directorate for developing inspection framework, checklist, and inspection results (status of the school vs the set standards). [2] These are administered by the National Education Assessment and Examination Agency. [3]These include contributions from the community such as volunteered time or resources, fees from facility rentals, fees from night classes, and revenue from sales such as items grown on school compound.

32. Three autonomous agencies within MoE are focused on improving and measuring learning outcomes: *The National Educational Assessment and Examination Agency (NEAEA)* conducts national examinations and sample-based assessments used to monitor the performance of the general education sub-sector. *The Higher Education Relevance and Quality Agency (HERQA*) accredits higher education institutions (including private higher education institutions) in Ethiopia, to ensure that their program offerings are of quality, relevant and meet standards; conducts quality audits of higher education institutions, and provides documentation (such as diplomas and degrees) authentication services.[26] Following the recent restructuring of the TVET sector, HERQA will also be responsible for quality assurance and certification for TVET institutions. *The Higher Education Strategy Center* (HESC) is responsible for formulating Ethiopia's higher education strategy, conducting research/studies on higher education policies, practices, and training.[27]

33. Since 2007, the number of higher education institutions and students enrolled in these institutions increased significantly, but there is a lack of focus and strategy to ensure quality in the education system. The Higher Education Proclamation 351/2003 gives considerable autonomy to universities.[28] In practice, the sector ministry makes many of the key decisions: Universities have the authority to recruit lecturers,[29]

[26] Proclamation No. 1097/2018: Definition of Powers and Duties of the Executive Organs.

[27] HESC was established with the objective of "formulating vision and strategy in order to make higher education compatible with the country's manpower needs as well as with appropriate polices and with due consideration to global situations and advise the Government on such matters."

[28] Bishaw, A., & Melesse, S. (2017). Historical analysis of the challenges and opportunities of higher education in Ethiopia. Higher Education for the Future, 4(1), 31–43. https ://doi.org/10.1177/23476 31116 681212

[29] Van Deuren, R., Kahsu, T., Mohammed, S., & Woldie, W. (2016). Ethiopian new public universities: Achievements, challenges, and illustrative case studies. Quality Assurance in Education, 24(2), 158–172. https ://doi.org/10.1108/QAE-12-2014-0054.

but the selection and admission of regular students, salary scale and benefit packages and assignment of presidents and vice-presidents and board members, are made by the sector ministry.[30]

34. Since 2004, three levels of organizations with distinct responsibilities to support the TVET sector.[31] The Federal TVET Agency (FTA) at the Ministry of Education develops systems-level policies, conducts labor market demand analysis; develops occupational standards, assessment and certification systems, and works with the private sector to implement them. It is also responsible for creating a teacher pipeline for TVET institutions. [32] With the latest restructuring of federal education institutions, FTA will be split with quality assurance functions staying with MoE (under HERQA) and supervision functions moving to the new Ministry of Labor and Skills. At the regional level, the Centers of Competence are charged with effectively coordinating the occupational competence assessments, accredit occupational competence assessment centers; and certify assessors. The Occupational Competence Assessment Centers, which are based in communities, conduct assessments.

2.4. Funding structure and sources

35. Since 1991, public financing in Ethiopia has followed the principles of fiscal federalism, with the federal government furnishing equalizing grants to subnational governments to support the provision of basic social services. The House of Federation (HoF)—the upper house of the Ethiopian Parliament—is responsible for allocating to regions general-purpose grants through a formula that uses a representative revenue and expenditure approach to determine the amount of funding sent to each region.[33] The block grant calculations consider eight expenditure categories including primary and secondary education and TVET,[34] which collectively make up 95 percent of total expenditures of the regions. The funding formula takes into consideration the regional differences in both the metrics of need and the cost of providing services. While calculations in each expenditure category are done separately, regions receive a single block grant that combines funding from all eight different estimates. Regional governments then allocate resources—including funding from federal general-purpose grants—to woredas and cities according to their own priorities, and without interference from the federal government.

36. There is substantial vertical fiscal gap across Ethiopia's ten regional states, and two administrative cities, measured by disparities in the revenue generating capacities and the expenditure needs of regions. The general-purpose grants provided by the federal government to regions is not sufficient to close these

[30] Binyam Zewde Alemayehu, Getahun Kelemework Woldemariam (2020), Academic staff flight from Ethiopian public universities: Causes and possible solutions, Higher Educ Q. 2020;00:1–19., DOI: 10.1111/hequ.12241.

[31] TVET Proclamation No. 391/2004.

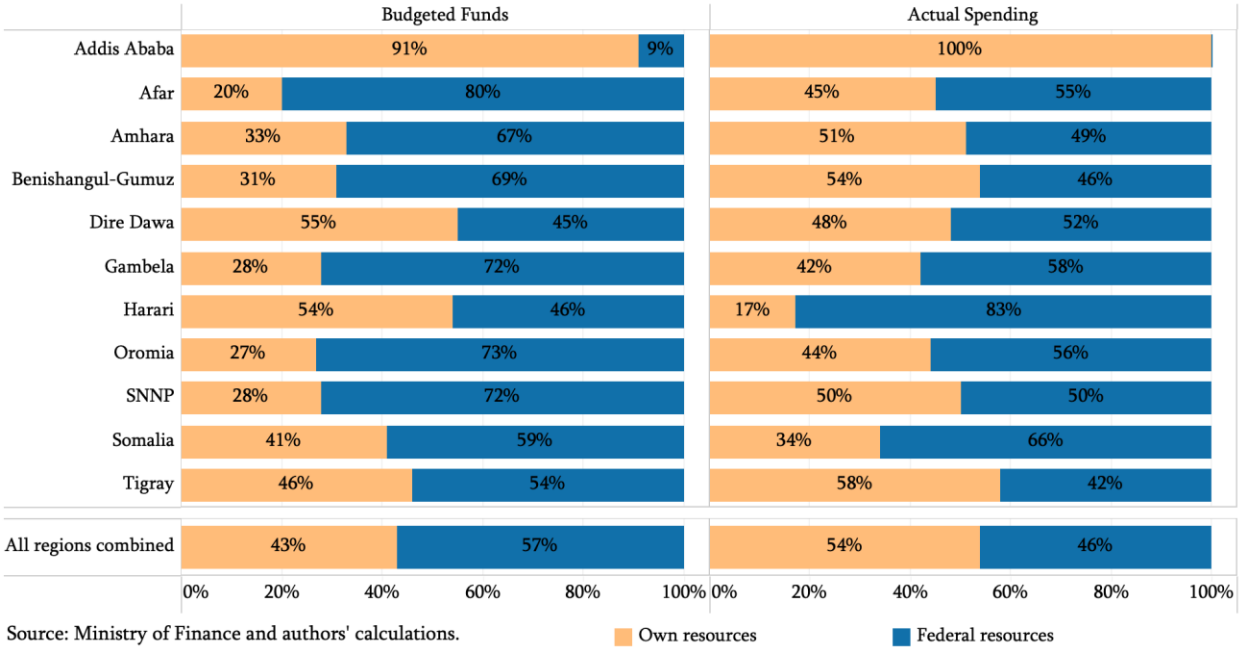
[32] Since 2011, the FTA also houses the Federal Technical and Vocational Education and Training Institute, which was responsible for training TVET teachers and leaders, which was established in 2011 by The Council of Ministers Proclamation 245/2011.

[33] Five principles guide how the federal government distributes general-purpose grants to the regions: the right to equal access to publicly funded social services; equal opportunity to improve economic conditions and to promote equitable distribution; special assistance to nations and nationalities and peoples least advantaged in economic and social development; shared fiscal responsibility between federal and regional governments to carry out all responsibilities and functions assigned to them by law; and the federal government's role in supporting regions for emergency, rehabilitation, and development assistance and loans. The general-purpose grant is allocated based on a formula designed by the technical arm of HoF and approved by the HoF. The most recent formula was adopted in 2017.

[34] The remaining categories are: 1) general services and government administration; (executive and legislative functions, justice and security, and general service); 2) public health; 3) agriculture and rural development; 4) drinking water development, 5) rural road construction and maintenance; 6) urban development, and 7) micro and small-scale enterprise (MSE) development.

gaps entirely; therefore, each region receives funding proportional to its fiscal gap which is measured against the national averages. Since there is sizable heterogeneity across regions' expenditure needs and revenue raising capacities, the absolute and relative size of the subsidy transferred to regions vary considerably to reflect their heterogeneities (Figure 5).

Figure 5 – Share of federal resources in regions' budgets, 2018/19



Source: Ministry of Finance and authors' calculations.

37. Education is one of the key sectors that the HoF considers in estimating the expenditure needs of regions. The HoF uses the size of school-age population and the number of languages used as the medium of instruction as major determinants of the amount of recurrent education expenditure region. [35] For capital expenditure need estimations, the HoF uses student class ratio, the size of school-age population who are outside of schools, and population density. Regions with large number of school-age population outside school gets more funding as these regions require more resources to build classrooms and enroll those who are not in school. Densely populated regions receive relatively less funding as these regions are believed to enjoy economies of scale advantage in the supply of education compared to regions with scattered distribution of population.

38. Once a region receives its block grant, it has full discretion on how to use these resources. There are no reporting requirements from the regional/woreda education bureaus to the HoF. Rather, regional governments are responsible for reporting, oversight, and audit of education funding. Regional Bureaus of Finance ensure that spending meets the approved allocation requirements by the region; Regional Councils provide oversight, and regional Auditors General, which are accountable to the Regional Council provide audit functions.

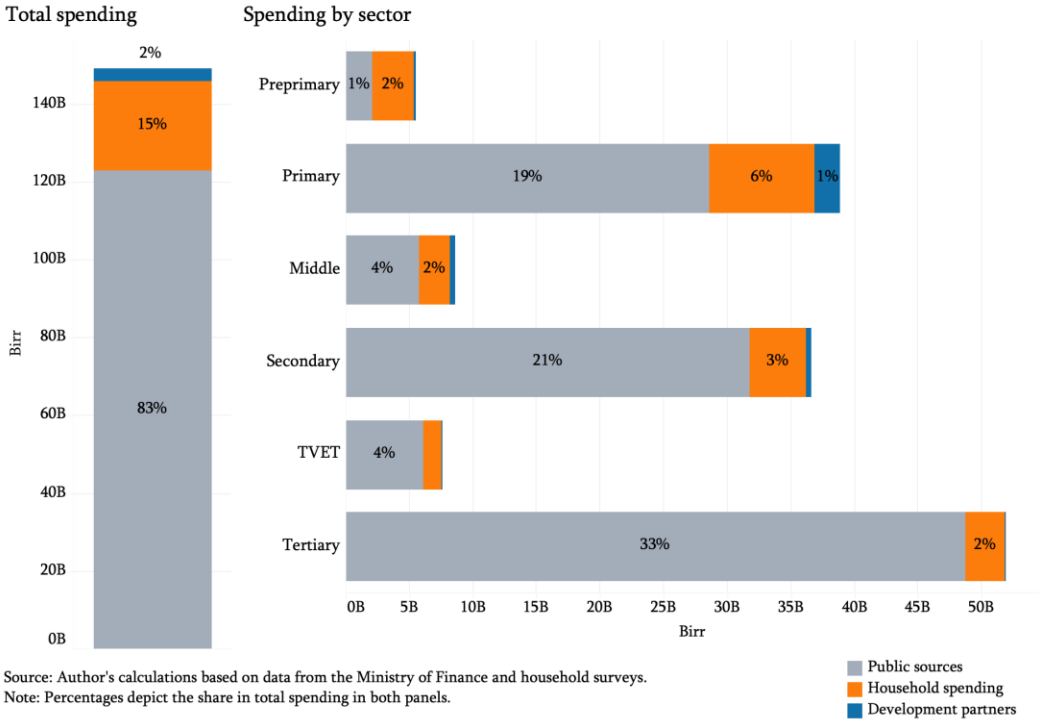
39. While woredas pay for teacher and administrative salaries working at schools within their confines, they can use block grants is to provide schools with a small, but regular and predictable revenue which they

[35] This formula is determined by MOE and is memorialized in "the Organization of Educational Management, Community Participation and Finance Directive," also known as the Blue Book.

can use to cover their operating costs based on their priorities.[36] However, operating funds received through block grants have been exceedingly small for some schools. Since 2008, schools have been receiving direct grants (mainly from donor sources) as a part of the General Education Quality Improvement Project (GEQIP) that fills the gap between what they are supposed to receive under the MoE set formula and what they actually receive from woredas.[37] These school grants are calculated using school enrollment only. [38]

40. The federal government is responsible most of the capital investments including the construction of schools. All public universities receive their budgets directly from the federal government. Higher education institutions are funded by the federal government through block grants that are based on student enrollment, staff population, discipline aggregation, the context of institutions, and its previous year budget. Students pay a share of the tuition and are typically responsible for the full cost for room and board.[39]

Figure 6 – Total education spending, by source of funds 2018/19



Source: Author's calculations based on data from the Ministry of Finance and household surveys.
Note: Percentages depict the share in total spending in both panels.

[36] Hussien Kedir Kelil, Desalegn Chalchisa Jebena, and Derebssa Dufera (2014). The Use and Usefulness of School Grants: Lessons from Ethiopia. UNESCO and International Institute for Education Planning. Available at https://silo.tips/download/the-use-and-usefulness-of-school-grants,

[37] GEQIP is a comprehensive package with five other major components in addition to school grants (School Improvement Program): the Teachers Development Program, the Civic and Ethical Education Program, the Curriculum Improvement and Implementation Program, the Information and Communication Technology Expansion Program, and the Leadership and Management Improvement Program.)

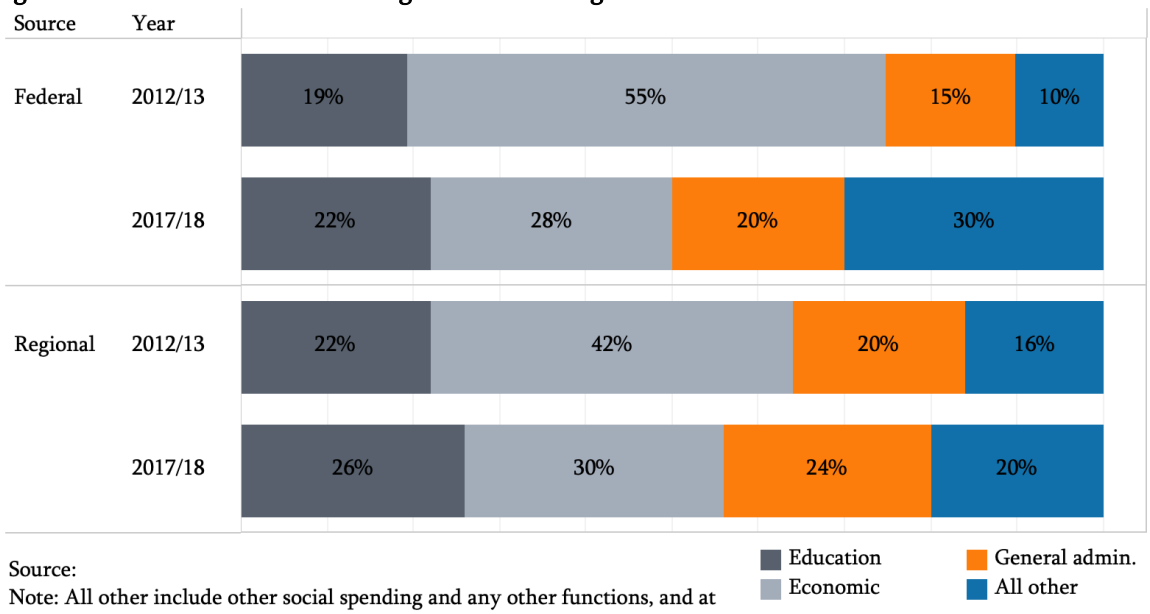
[38] Regions also receive earmarked grants called "Pro-poor grants" for capital expenditures tied to agreed results in selected pro-poor sectors (water, sanitation, education, health, transportation, and agriculture).

[39] Students are required to pay a minimum of 15 percent of tuition fees. The government provides a loan which must be repaid, starting one year after completing the degree. Certain programs are chosen for exemption whereby students can re-pay in kind. In the case of secondary school teacher training, students can serve as teachers for a specific number of years.

41. The education sector in Ethiopia is financed largely by the government.[40] In 2018/2019 (2011EC), for example, federal and regional governments contributed about 83 percent of the total education spending of 149 billion Birr (including spending on private schools); households contributed 15 percent (of this amount about 65 percent was out-of-pocket expenditures for public schools, and the remainder was education spending for students attending private schools), and development partners financed approximately 2 percent. The government's share in education spending is greatest at the post-secondary level, both in levels (49 billion Birr) and in share (94 percent of all funding at this level) and household contributions are greatest at the primary level (8 billion Birr, or 22 percent of all funding). Development partners contribute the most towards primary education as well (5 percent of all funding) (Figure 6).

42. Public education funding has been increasing as a share of total public spending. Between fiscal years 2012/13 and 2017/18, the share of education budget in the total budget has increased by about 3 percentage points at both federal and regional levels. This is the result of an average of 16 percent growth in annual public education funding—ahead of growth in overall government spending (but less than the nominal GDP growth during this period of approximately 20 percent) (Figure 7).

Figure 7 – Share of education funding in the total budget

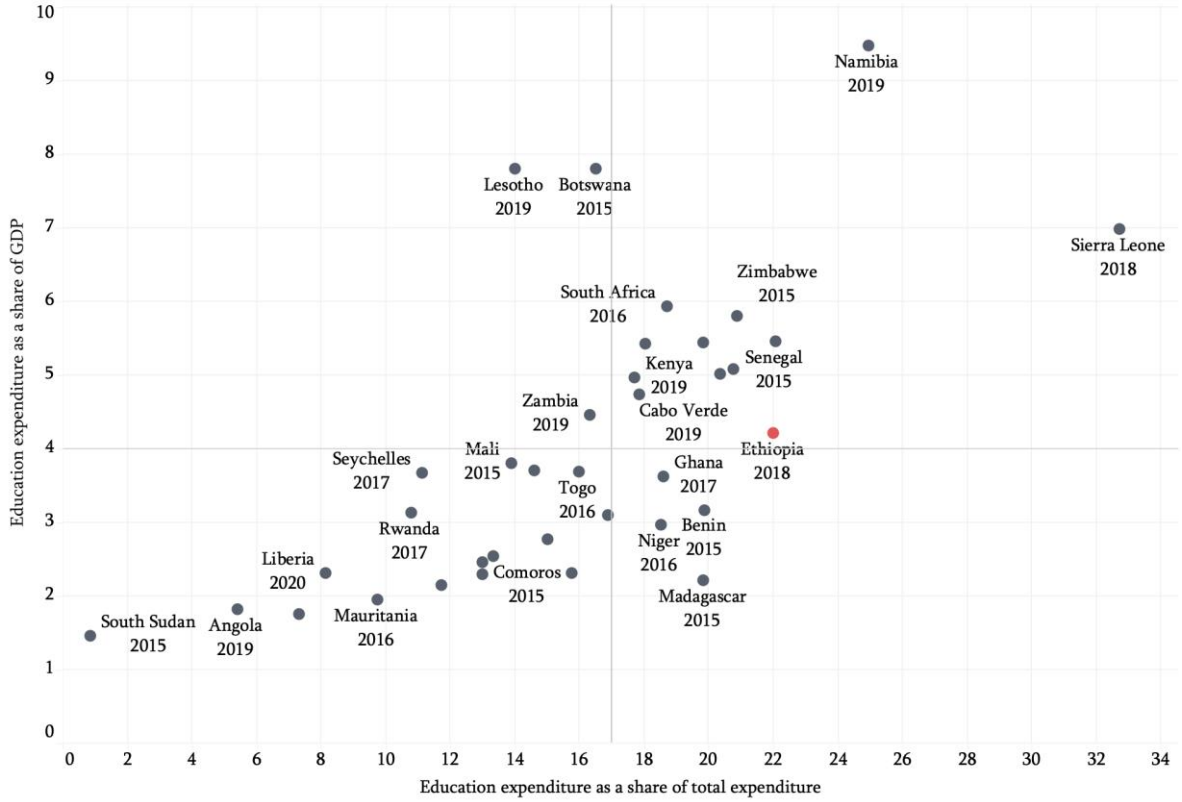


Source:
Note: All other include other social spending and any other functions, and at the regional level, also it includes municipal functions.

43. Compared to SSA average, Ethiopia allocates a larger share of its public resources to education but because the budget's share in GDP has been declining, this does not translate into a larger share of GDP spending on education. Ethiopia's spending on education as a share of GDP (4 percent) is around SSA average and meets the benchmark target set by international organizations such as Global Partnership for Education.[41] Ethiopia's public education expenditures as a share of total expenditures is 22 percent. This is above the SSA average of 17 percent, and slightly exceeds GPE's recommended good practice benchmark for developing countries of 15 to 20 percent (Figure 8).

[40] Public expenditure on education captures spending from both the federal and regional governments, where this spending is channeled through Ministry of Finance, Ministry of Education, and Ministry of Science and Higher Education.
[41] GPE (2016). Policy Brief: GPE's Engagement on Domestic Financing for Education. Available at https://files.eric.ed.gov/fulltext/ED574394.pdf.

Figure 8 – Education expenditure as a share of GDP and total expenditure for selected SSA countries



Source: Unesco Institute for Statistics

44. As will be shown later, these resources have not yet translated into high quality education and more reforms are necessary to improve quality and ensure that the education sector responds to the skill and human capital needs of the country. But given these levels of funding commitment from the government, it is unlikely that a larger share of public expenditures could be dedicated to education, and any funding necessary to invest in the sector would have to be found in existing public resources, and through efficiency improvements.

2.5. Human resources management

45. In Ethiopia, teachers and school leaders who work in pre-primary through secondary public schools are civil servants with a defined career structure and career ladder.[42] Multiple agencies across multiple levels of government are involved in the management of school leaders and teachers. For example, the MoE is responsible for approving teacher career policies and developing guidelines, and the Ministry of Civil Service is responsible for approving these policies and overseeing compliance. Regional education bureaus develop implementation guidelines at the regional level, and administer the implementation of career structures, and regional civil service bureaus oversee compliance at the regional, zone, and woreda levels. Woreda (for pre-primary and primary) and schools (for secondary) hire teachers and select them for

[42] Teachers, principals, and supervisors position assignment directive (Directive No. 499/2013) issued in December 2019 by the Civil Service Commission defined career structure for teachers and leaders.

promotion, and district education offices approve school requests and pay teachers. Finally, the Ethiopian Teacher Association represents teacher interests in all these discussions.[43] At present, there are seven levels for teachers and two levels for principals and supervisors each as steps on their career ladders (Table 3).

Table 3 – Career structure for teachers and principals

Teacher	Principal	Supervisor
Starting Teacher	Deputy Principal	Supervisor
Junior Teacher	Principal	Senior Supervisor
Teacher		
Senior Teacher		
Associate Lead Teacher		
Lead Teacher		
Senior Lead Teacher		

Source: MoE Teachers Education and Leaders Development Directorate

46. A blueprint for the development of teachers and school leaders (principals and supervisors) was drafted by 2018, but its implementation was preempted by the most recent reforms. The reforms have been focused on the need to prepare a comprehensives policy for recruitment, selection, in-service training, accreditation, continuous professional development, training opportunities, licensing, and transfer of teachers. In the medium-term plan (i.e., the education development roadmap of 2018) a 12+2 certificate/diploma was recommended for teachers teaching pre-primary, first degree for teachers teaching primary and middle school and master's degree for teaching secondary (

47. Table 4). After assessing that the field of teaching is currently being considered as a fallback plan instead of a career of choice, the plan also recommended careful selection of candidates into teaching programs.[44]

Table 4 – Career structure for teachers and principals

Teaching Level	Required Teacher's Qualification
Pre-primary	12+2 Diploma
Primary first cycle (G1-4)	First Degree
Primary second cycle (G5-8)	First Degree*
General secondary (G9-10)	Master's Degree
College preparatory (G11-12)	Master's Degree

Source: MoE Teachers Education and Leaders Development Directorate

48. Universities have autonomy over personnel administration and can hire their own staffs based on the universities internal policies and procedures. TVET colleges, unlike universities, receive budget from the respective regions but they can hire their staff independently.

[43] Yinman, Wossenu (2019). Teacher career reforms in Ethiopia, UNESCO, and International Institute for Educational Planning, available at https://unesdoc.unesco.org/ark:/48223/pf0000370854/PDF/370854eng.pdf.multi.

[44] Draft blueprint for teachers', principals', and supervisors' development, MoE 2018.

2.6. Social accountability and mobilization

49. The Ethiopian Social Accountability Program (ESAP) is an extension of a pilot project called Protection of Basic Service (PBS) that began in January 2008. The program, now in its third phase, seeks to improve the quality of and access to public basic services through facilitating dialogue between service users and providers in order to enhance government responsiveness. The program is focused on increasing access through tools like community score cards and citizen report cards, increasing community involvement through participatory budgeting and planning, and providing means for citizens to hold the government accountable through public expenditure tracking and gender responsive budgeting practices.[45]

50. Education is one of the sectors covered under the ESAP at regional and woreda levels across the country. There is some evidence that ESAP has generally improved citizen participation in public education. First, field missions have found that in woredas where ESAP has been implemented, families appear to be more involved in all aspects of their schools such as construction of separate latrines, increasing textbook availability for students and recruitment of additional teachers, etc. Second, national surveys of citizen participation and sentiments across ESAP and non-ESAP woredas[46] found that ESAP had a positive impact on service delivery in education and citizen participation in decision-making, but these improvements were limited to areas where service delivery requires low levels of new investment. [47] In ESAP woredas, citizen reported more frequent formal participation in PTAs, local school committees, and community meeting; a higher degree of satisfaction with delivery of services where the need of new investments are small (such as textbooks); and a more critical understanding of needs such as infrastructure investments in education and teacher availability.

2.7. Quality assurance, monitoring, and evaluation

51. Ethiopia has institutionalized several Quality Assurance and Monitoring and Evaluation (M&E) mechanisms at all levels of the sector. More specifically under the general education there are Education Management Information System (EMIS), General Education School Inspection, National Learning Assessment (NLA), Early Grade Reading and Math Assessments (EGRA and EGMA) and Measuring Early Learning and Quality Outcomes (MELQO). EMIS is annually administered census of schools gathered through administrative channels. EMIS data is used to monitor key indicators of the sector including enrollment, dropout, repetition, promotion, survival rates, and inform policy decision. Annual school grant allocations are also calculated based on enrollment data gathered through EMIS.

52. The school inspection, NLA, EGRA, EGMA and MELQO collectively constitute the education quality assurance components. Pre-primary, primary, and secondary schools are inspected at least once every three years based on their respective inspection framework that assess performance of schools against

[45] ESAP also provides very specific means for citizens to voice their needs and concerns and work collaboratively to enhance the access, quality, and equity of the public services. A Management Agency partners with civil society organizations to work with communities and community-based organizations, local public officials, and citizens to form Social Accountability Committees (SACs), which led to generalized discussions on key policy problems facing their communities. Issue-specific working groups under the SAC draft and then approve a Joint Action Plan, which set priorities in a specific policy area.

[46] The implementation of ESAP has not been uniform, allowing researchers to compare citizen sentiments, involvement, and satisfaction in ESAP and non-ESAP woredas.

[47] Campbell, Laura; Mulugeta, Fitsum Zewdu; Tsegay, Asmelash Haile; Wampler, Brian. 2020. Building the Foundation for Accountability in Ethiopia. Social Protection and Jobs Discussion Paper; No. 2011. World Bank, Washington, DC. https://openknowledge.worldbank.org/handle/10986/35081 License: CC BY 3.0 IGO."

the minimum standards set for them. Inspection helps schools identify their gaps and work towards addressing them by preparing and implementing school improvement plans together with PTA and the community. School Improvement Plans (SIPs) are mainly funded by school grants that are jointly managed by the school and PTA through the planning, financing, implementing, and reviewing process. The NLA assesses students learning outcomes against the minimum learning competency on sample years and sample schools at Grades 4, 8, 10 and 12. This is complemented by EGRA and EGMA Students in grades 2 and 3 are assessed on their reading and math competencies. MELQO is a recent addition to these set of tools for assessing performance of the preprimary sub-sector with adaptation, translation and piloting completed for 8 languages that are expected to cover 80 percent of the learners.[48]

[48] There are 52 mother tongue instruction languages

Section 3. Public Sector Spending

3.1. Summary findings

53. The public spending in the education sector heavily favors higher education. Approximately 23 percent of public funding is dedicated to primary education (grades 1 through 6), even though this level accounts for 63 percent of all students. In contrast, tertiary education receives 40 percent of all public funding but serves only 3 percent of all students.

54. As a result, unit costs increase significantly as students progress to upper grades, growing from Birr 1,803 at the primary level Birr 66,381 at the tertiary level. Unit costs also vary greatly across regions. While regions with high primary level unit costs tend to have high secondary level unit costs as well, and national averages as strongly influenced by two regions—Amhara and Oromia—which collectively account for nearly 60 percent of primary school enrollment and 64 percent of secondary school enrollment. An analysis of unit costs and enrollment across higher education institutions show some scale economies, with larger universities educating their students at lower costs. This finding is also related to a key cost driver at higher education—capital funding set aside for the physical expansion—which tends to be a more frequent budget feature of new and relatively small universities.

55. Ethiopia's unit costs, measured as a share of GDP per capita are lower than the SSA average at the primary and secondar levels. When measured in constant PPP dollars, per people spending at the primary level is among lowest across all SSA countries for which data are available. Per pupil spending at the tertiary is more than twice the SSA average.

56. Personnel spending is the key cost driver for primary, secondary, and TVET education where wages and salaries account for 78 percent of all budgeted funds across regions and 84 percent of all budgeted funds. But because of the large share of funding allocated at the tertiary level (and funded at the federal level), where the main cost driver is the capital funding for the expansion of existing universities and the construction of new ones, the share of capital expenditures in the total publicly funded budget is relatively high.

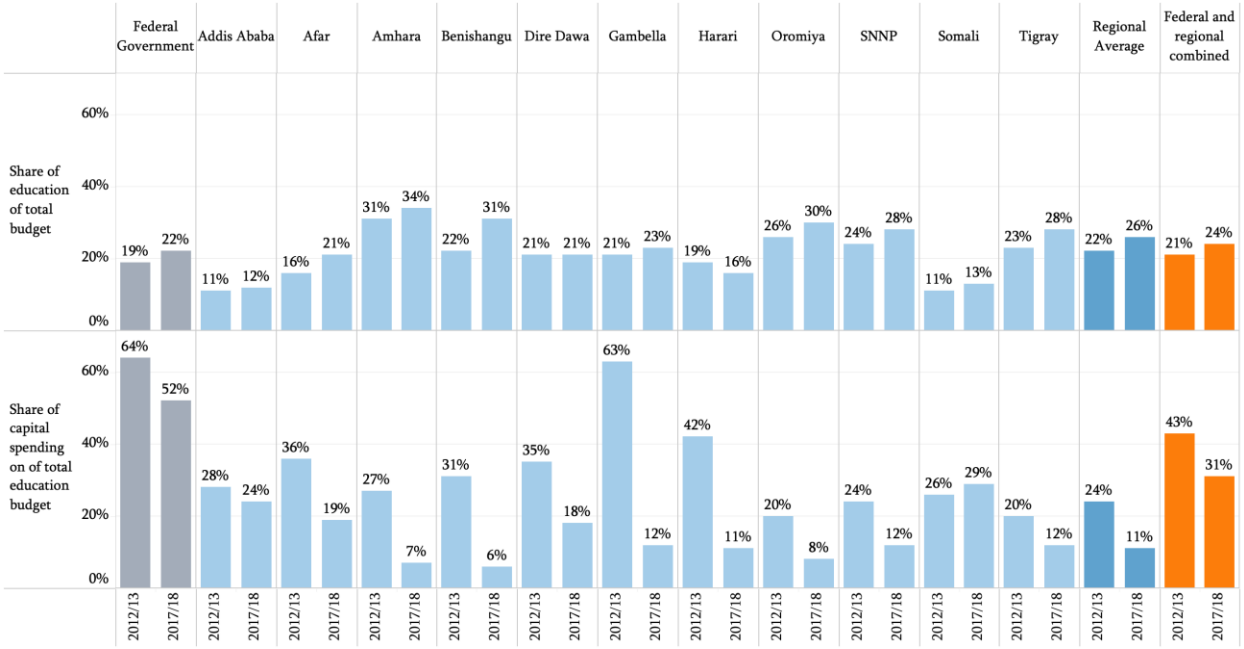
57. Budget execution rates in Ethiopia are high at both the federal and the regional levels. At the regional level, budget execution is strongest for personnel spending at all levels of education, and across all regions. Analysis of university budgets show that universities are strongest in executing their personnel budgets but can be weak in spending their capital funds: a quarter of the universities can execute 65 percent or less of their capital budgets. These low execution rates partly reflect the differences in the nature of the capital projects universities undertake. While renovation projects take shorter, construction projects may take multiple years. There is great variation across universities' budget execution rates, suggesting that there are differences in universities' capability to efficiently execute and implement projects and, sometimes, routine operations.

3.2. Uses of funds by spending category and level of education

58. While public education spending supports both capital and recurring expenditures, its use has been increasingly in recurring expenditures in recent years. In the last fiscal year for which data are available, 73 percent of total public funding for education supported recurring expenditures up from 57 percent in fiscal year 2012/13 (2005 EC), and 69 percent in fiscal year 2017/18 (2010 EC) (Figure 9, last panel). As will be

discussed later, this is a welcome development, as a lion's share of capital spending funded by the federal government goes to support building of new universities, which serve only a small share of students.

Figure 9 – Change in the share of education in public budgets and the share of education budget dedicated to capital expenditures

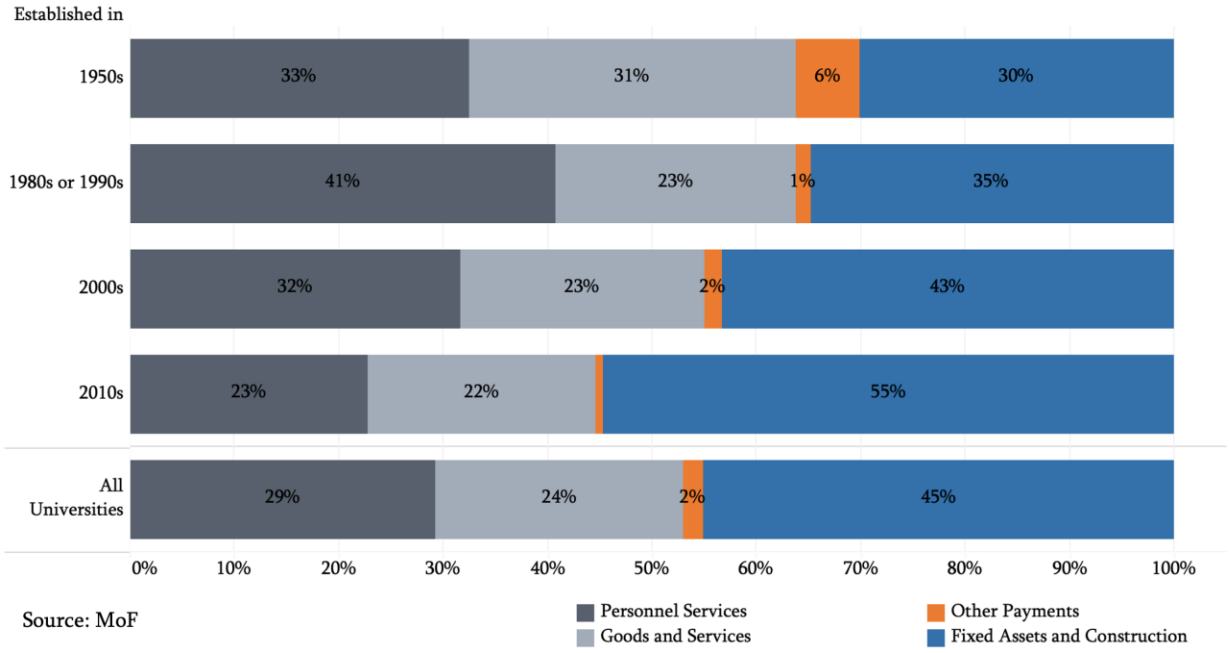


Source: MoF
Note: The chart does not include Sidama which was not established until 2020.

59. Regions vary greatly both in terms of the share of public resources dedicated to education and how these resources are split between capital and recurring expenditures. Regions dedicate anywhere between ten percent to a third of their budgets to education, and this share depends on how resource rich a region is as well as the urban/rural structure and the number of children. While capital expenditure's share has been declining across all regional budgets, it can still be in double digits in regions that are investing in school expansion, and as low as just a few percentage points in resource-constrained regions.

60. Higher education, which accounts for about a 40% of Ethiopia's education spending, plays a large role in shaping the trends in functional allocation of public education funding. An analysis of recurring v. capital funding across Ethiopia's 45 universities shows that most capital funding from the federal government goes to pay for the construction of new universities. The ten mature universities that have been established prior to 2000s spend only about 30 percent of their budgets on building or acquiring capital assets while 17 of the most recently established universities spend 59 percent of their budgets to do the same (Figure 10)

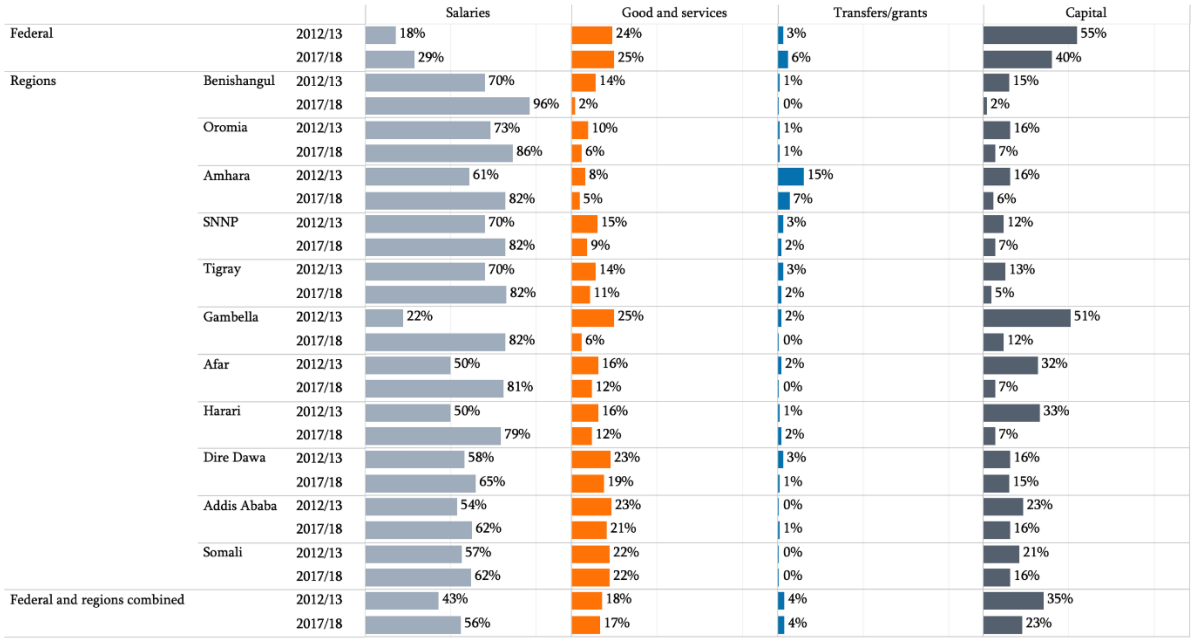
Figure 10 – Budget structure of universities by their year of establishment



Source: MoF

61. Across regions, in 2017/18, personnel budget accounted for the largest share of public education expenditures, exhausting 78 percent of the total education budget (up from 58 percent in 2012/13) and 86 percent of all the recurring budget (up from 76 percent in 2012/13). This leaves little flexibility for other investments that could improve the quality of education, including textbooks and learning materials (Figure 11). There is also great variation of how recurring budgets are spent across the region. In the resource-poor regions of Benishangul, Gambella, and Oromia, salaries exhaust over 80 percent of regional budget (and over 90 percent of recurring budget), whereas in urban locations like Addis Ababa and Dire Dawa, they account for under 65 percent of total education budget (or about three quarters of total recurring budget for education). Compared to the regions, the federal budget is more often used for non-personnel expenditures and transfers and grants. More than half the federal recurring budget is spent on these items. But salary expenditures have been consuming an increasing share of federal budget, too: Personnel spending accounted for 29 percent of federal education budget (48 percent of the recurring budget) in 2017/18 compared to 18 percent of the federal education budget (40 percent of recurring budget) in 2012/13.

Figure 11 – Distribution of education budget by spending category and by level of government 2012/13 and 2017/18

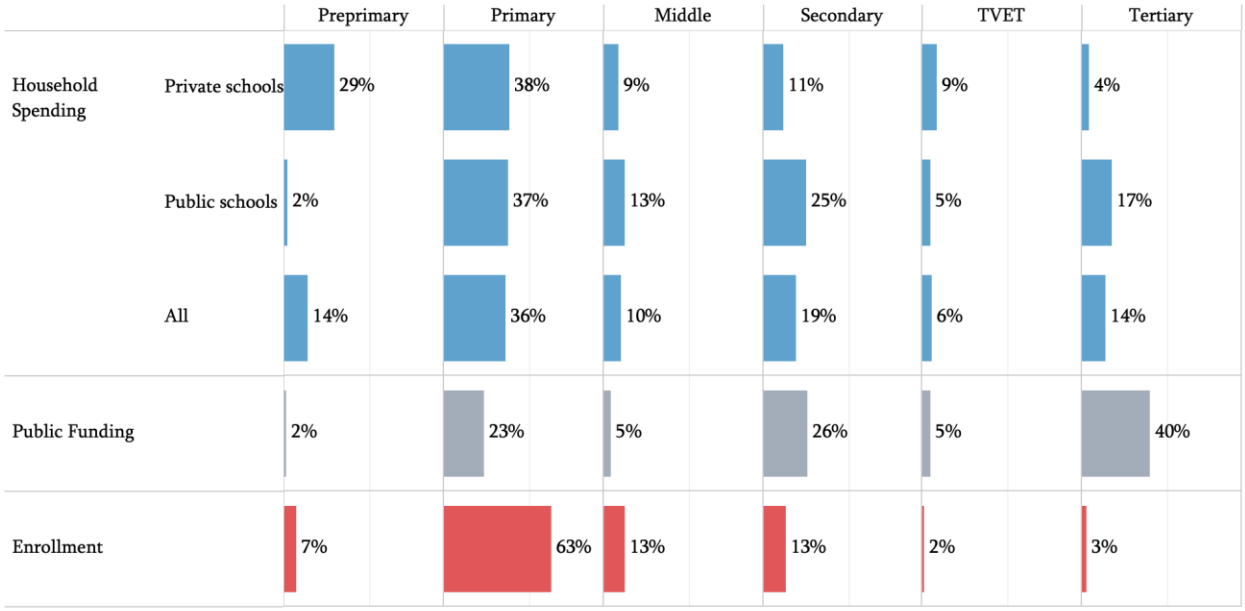


Source: MoF
Note: The chart does not include Sidama which was not established until 2020.

62. In Ethiopia, the greatest share of public funding is allocated to post-secondary education while the greatest share of household expenditures on education is at the primary level. As noted, 40 percent of all public education funding and 14 percent of all household expenditures on education is for post-secondary, whereas post-secondary education accounts for only 3 percent of total enrollment (approximately 805,000 students out of total enrollment of 26 million.) Only 23 percent of public resources support primary education (including pre-primary classes in primary schools) where two thirds of students attend. Households' expenditures are more closely aligned with enrollment distribution, with 35 percent of all household expenditures allocated at the primary level. Household contribution is greatest at the primary level, with household expenditures evenly split at this level between public and private schools. Approximately 14 percent of all household expenditures are at the preprimary level, and over 90 percent of these expenditures are for students attending privately run preprimary schools (Figure 12).

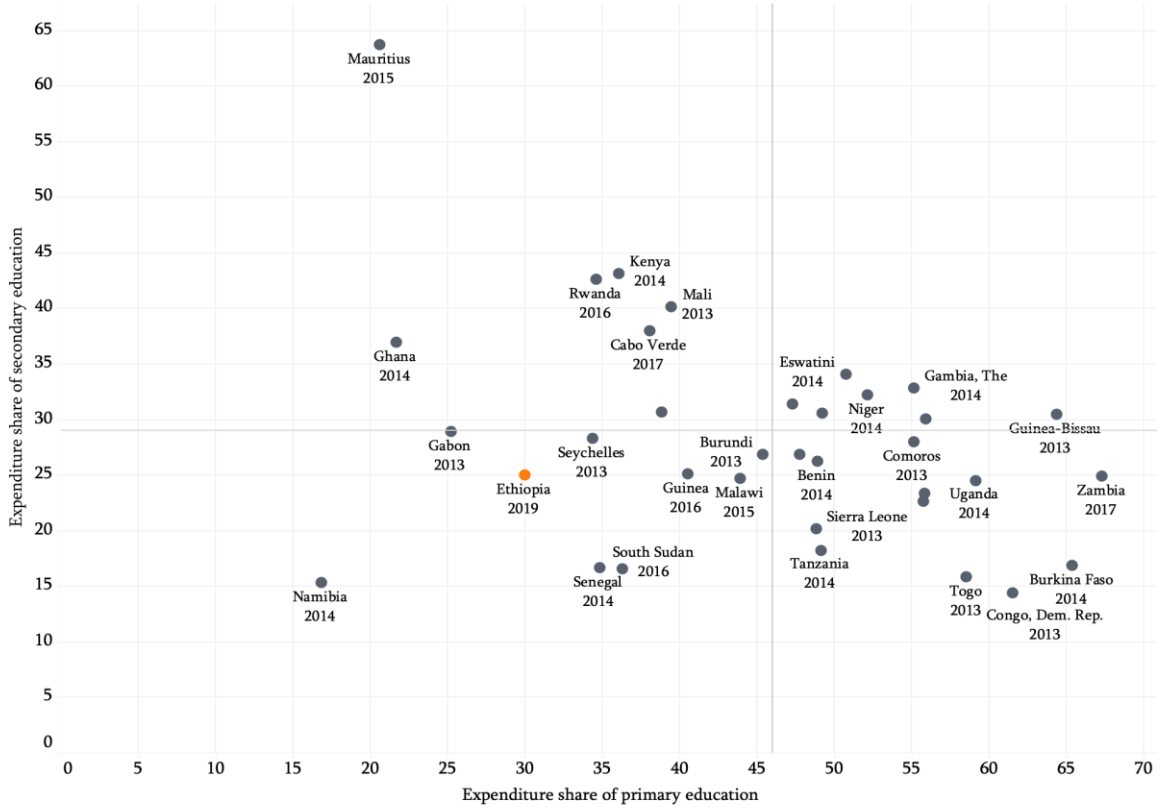
63. When post-secondary education is excluded, the distribution of public funding is more closely aligned with the distribution of enrollment (Appendix figure 19). The highest share of MoE allocation goes to primary education (49 percent). The regions collectively spend even a larger share of their budgets on primary education (58 percent).

Figure 12 – Allocation of funding by grade band and enrollment by grade band



Source: Authors' calculations using data budget from MoF (2018/19) and household spending data from EMIS 2019/20.

Figure 13 – Education budget allocation by levels of education for selected SSA countries (in percent)



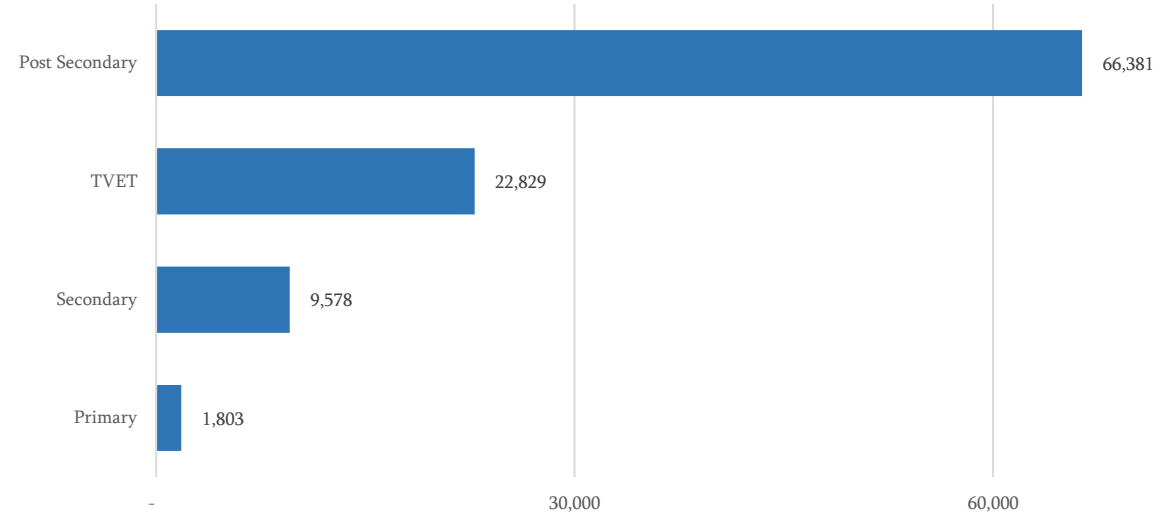
Source: World Bank Education Statistics and Ethiopia MoF

64. The large share of tertiary education spending in education funding means that Ethiopia spends a smaller share of its public education budget on earlier grade bands compared to other SSA countries. (Figure 13). A comparison across 36 SSA countries shows that Ethiopia's spending on primary education as a share of total education expenditure (30 percent) is substantially lower than SSA average (46 percent). Similarly, Ethiopia allocates a relatively lower share of its education to secondary education (25 percent in Ethiopia compared to 30 percent across SSA).

3.2.1. Unit cost analysis

65. There is a significant variation in publicly funded unit costs across different levels of education. Public unit cost (total public expenditure divided by the total number of students at each education level) comparisons show that government spends more in higher education (Birr 66,381) where the per-student cost in public higher education is more than double the per-student cost of all the other education levels combined. The second highest per-student public spending goes to TVET (Birr 22,829) education, followed by secondary (Birr 9,571) and primary (Birr 1,803) education. Almost half of the high unit costs at the tertiary level is driven by the high capital expenditures at the tertiary level (Figure 14).

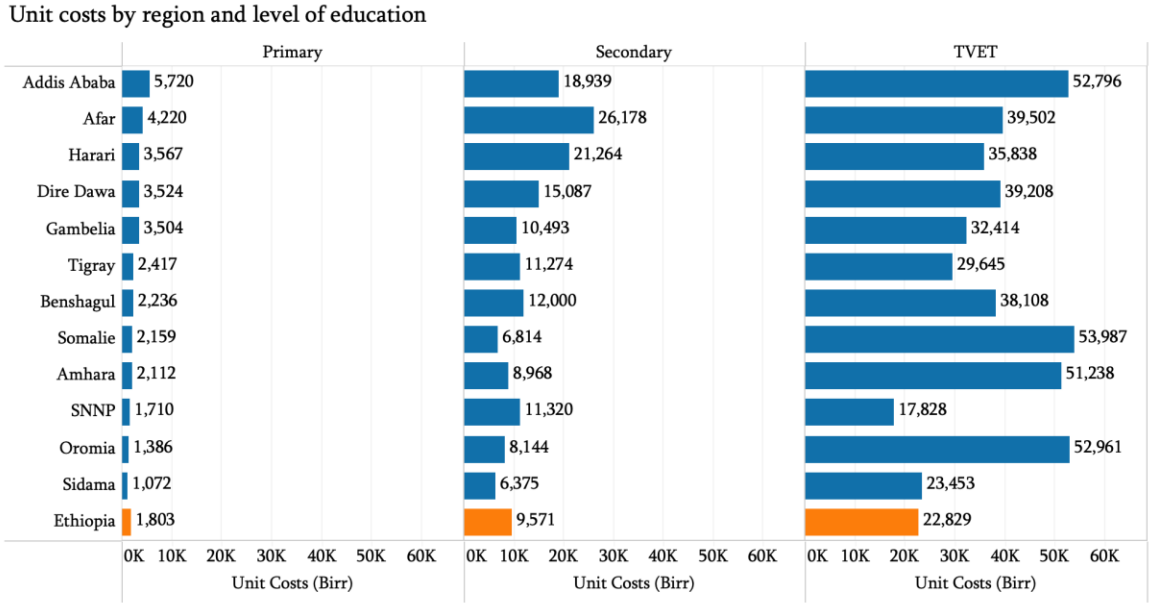
Figure 14 –Government unit cost by level of education in BIRR-2019/20



Source: Authors' calculation from MoF and EMIS

66. Unit costs also vary greatly across regions with unit costs at the teritiary level can be as high as ten to fifty times the unit costs at the primary level. Data from 2017/18 show that there is a strong correlation between the publicly funded unit costs of primary and secondary education, with cost variations across the primary level explaining over 60 percent of the cost variations at the secondary level. In Addis Ababa, for example, the unit cost of primary education is nearly three times the national average, and the unit costs of secondary education is nearly twice the national average (Figure 15).

Figure 15 –Unit costs by region and level of education

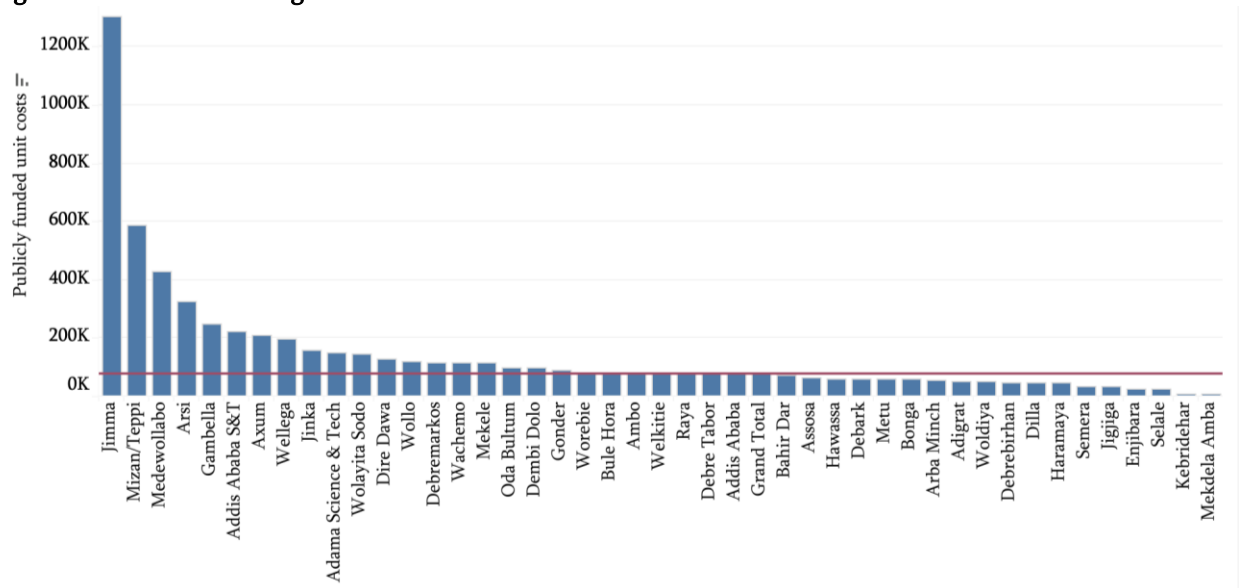


Source: Authors' calculations from MoF and EMIS data for 2017/18
Note: The chart includes public resources only.

67. The national averages for unit costs are largely driven by two regions—Amhara and Oromia—which collectively account for nearly 60 percent of primary school enrollment and 64 percent of secondary school enrollment. TVET education unit costs also vary greatly and are not strongly correlated to unit costs at lower levels. For nearly 60 percent of the students that attend TVET schools in Addis Ababa, Amhara, Oromia or Somali, the unit costs are above Birr 50,000; and for the remainder of the TVET students, publicly funded unit cost is only Birr 15,885. At the primary and secondary levels, the main driver of costs (and therefore unit costs) are salary expenditures, which account for 82 percent of public spending budgeted at the Ministry of Education and 86 percent and 79 percent of spending budgeted at regional levels respectively.

68. Unit costs at higher education institutions also vary greatly, and this variation is largely driven by capital investments. The recent expansion of Ethiopia's higher education system is going through a huge expansion of universities in recent years, and fixed asset and construction cost component is enormously high for recently built universities (Figure 16). Across all universities, capital investments account for 45 percent of all university budgets, but among those that have been established since 2010, this share is 55 percent. Additionally, the cost associated with construction of buildings takes up almost a fifth (18 percent) of the expenditure of total budget set aside for tertiary education, which is the second highest spending category to the ministry, next to salaries. Unit costs depend greatly on the types of degrees a university offers, but analysis of unit costs and enrollment show some scale economies, with larger universities educating their students at lower costs.

Figure 16 – Unit costs at higher education institutions

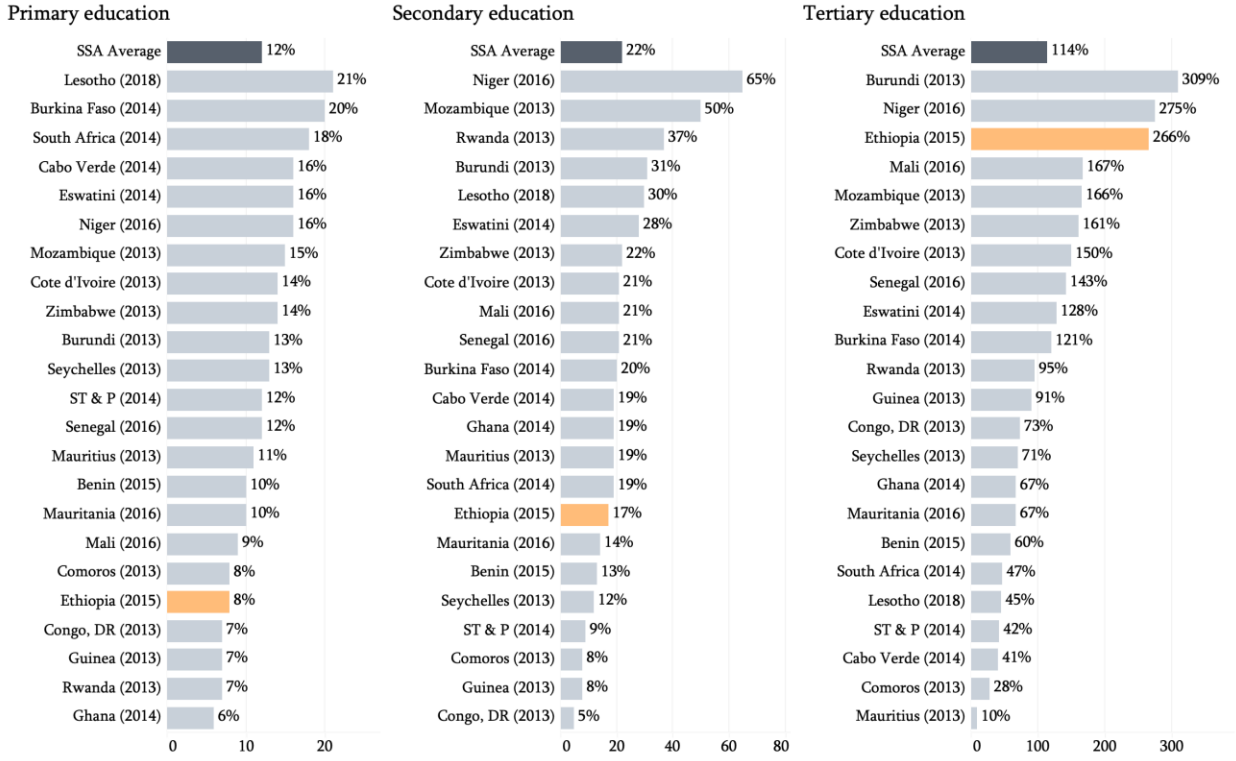


Source: Authors' calculations from BOOST and EMIS data for 2017/18
Note: The chart includes public resources only.

69. Sometimes there are large disparities in the budget data reported for universities by the by the sector ministry and data recorded by the Ministry of Finance. These discrepancies vary by universities, with relatively larger discrepancies are observed in Welayta, Mekelle and AASTU universities (Figure 16). Since data shortage and quality has been one of the most important challenges for federal institutions as well as regional bureaus, the Ethiopian government need to enhance the 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. With universities now under the purview of the Ministry of Education, reporting might improve, but the existing disparities suggest that both the sector ministries and the MoF need to strengthen their internal data management capacities (Appendix figure 20).

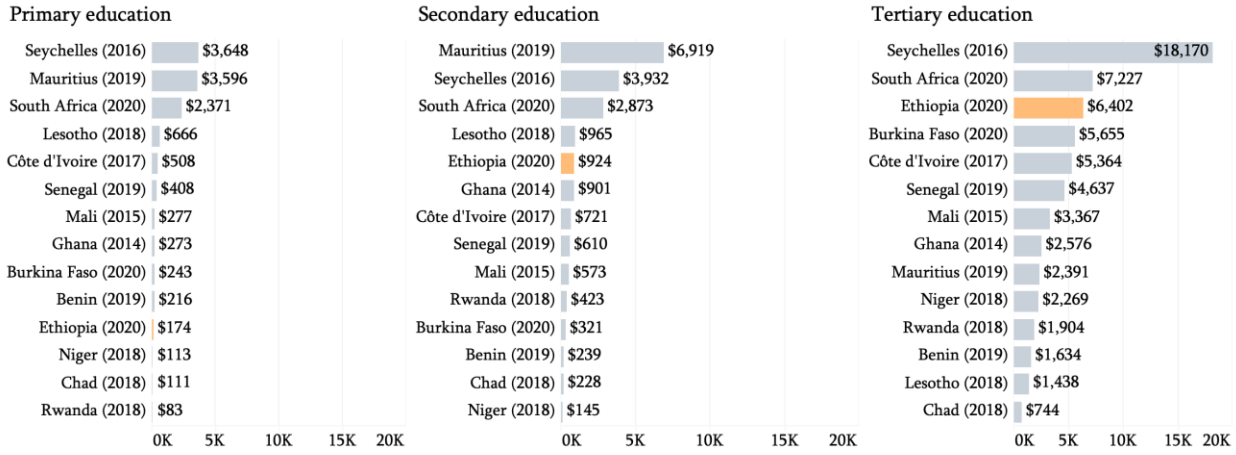
70. In Ethiopia, publicly funded unit costs as a share of GDP per capita are low compared to the SSA average for primary and secondary education, but high, compared to SSA average for tertiary education. International comparisons shows that Ethiopia's per capita public spending as a share of GDP per capita in primary and secondary education are respectively 8 and 17 percent whereas the SSA averages are 12 percent for primary education and 22 percent for secondary education (Figure 17). For tertiary education, on the other hand, it is 266 percent for Ethiopia which is substantially higher than that of SSA average of 114 percent. The sizable per student public spending as a share of the GDP per capita in tertiary education is partly explained by Ethiopia's huge investment in the expansion of higher education in recent years. This huge investment in higher education has actually paid off in terms of increasing enrollment and graduation rates. However, as discussed above, investment in higher education in Ethiopia is proved to be not pro-poor. Thus, ensuring investment in higher education in Ethiopia is designed in such a way that it will help narrowing down the education inequality in the country is crucial.

Figure 17 – Per student public spending by levels of education (% of GDP per capita)



Source: World Development Indicators
Note: Chart scales for different levels are not identical.

Figure 18 – Per student public spending by levels of education (Constant $PPP measured in 2020 dollars)



Source: Author's calculations based on UIS data

71. **These differences become even more obvious when comparing per pupil spending measured in constant dollars adjusted for differences in purchasing power.** This data are not widely available for SSA countries, but what is available shows that when adjusted for purchasing power, the unit costs at the secondary and tertiary level in Ethiopia increase faster compared to other SSA countries (Figure 18).

3.3. Budget execution

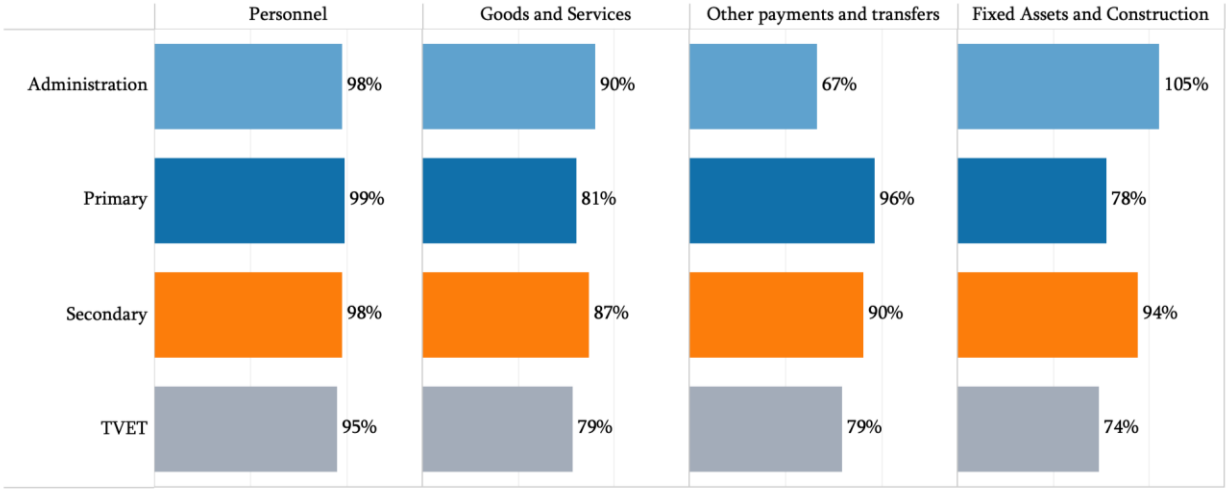
72. Data through the 2017/18 fiscal year show that budget execution rates in Ethiopia are high both at the federal and the regional levels. At the federal level, education budget has been executed at a higher rate than the overall budget, largely driven because of the high spending rates for capital expenditures. The education budget execution rate at regional level has stayed above 95 percent throughout the period between 2012/13 and 2017/18 (Table 5). But there are significant variations across regions' ability to execute their budgets, especially capital budgets. This suggests that the budget execution capacity and process varies from region to region.

Table 5 – Trends in the Budget execution rate at federal and regional levels—overall and education

Execution rate, overall budget							
	Type	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
Federal	Capital	95%	102%	107%	82%	78%	80%
	Recurrent	78%	85%	79%	75%	78%	71%
	Total	88%	94%	95%	79%	78%	77%
Regional	Capital	100%	95%	99%	91%	93%	93%
	Recurrent	94%	94%	94%	93%	94%	93%
	Total	96%	95%	96%	92%	94%	93%
Execution rate, education							
Federal	Capital	90%	92%	112%	97%	91%	91%
	Recurrent	74%	85%	77%	81%	78%	71%
	Total	86%	90%	103%	93%	88%	87%
Regional	Capital	94%	94%	96%	96%	97%	95%
	Recurrent	96%	96%	97%	96%	98%	96%
	Total	96%	95%	97%	96%	98%	95%

Source: MoF **Note:** Includes block grants only.

Figure 19 – Budget execution by level and spending category, regions

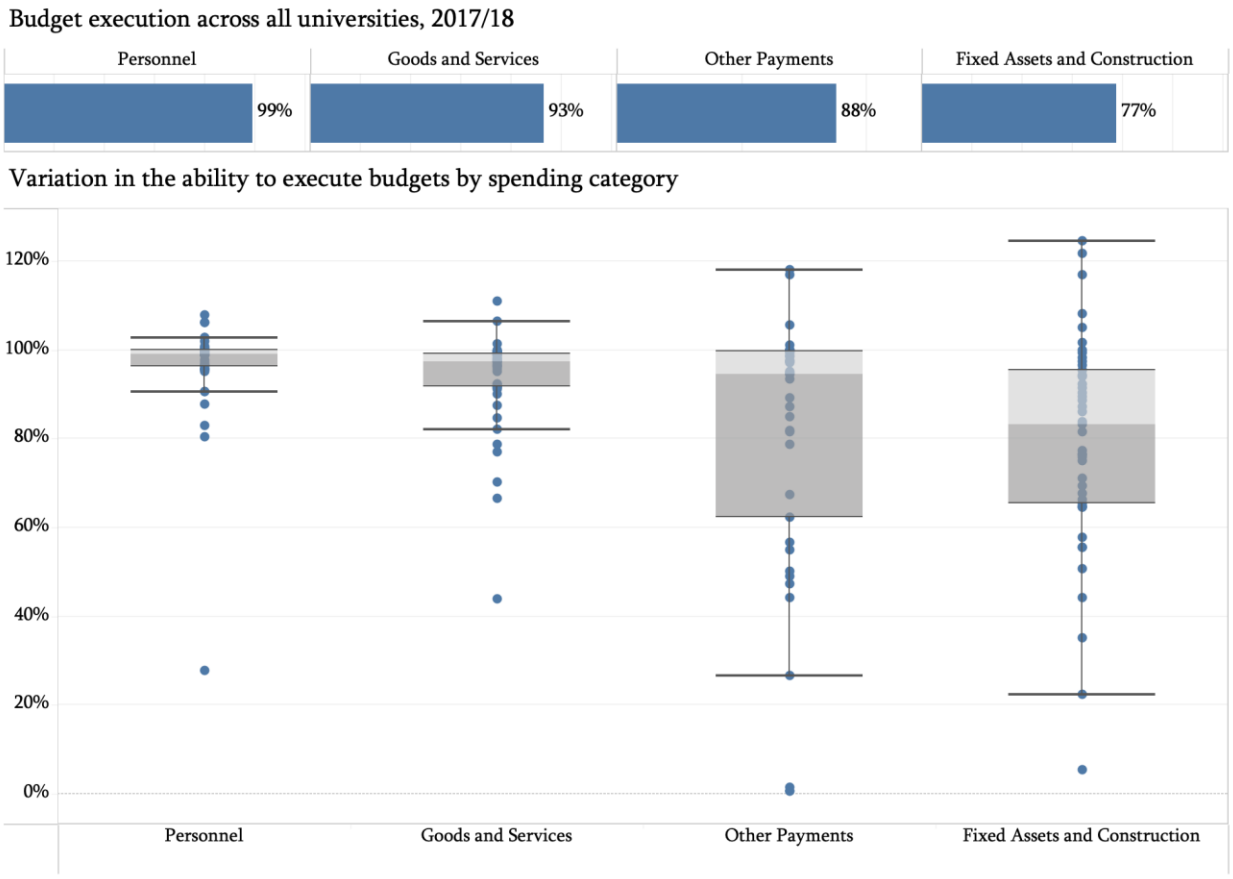


Source: Authors' calculations from BOOST data, EC 2011 (2018/19)

73. At the regional level, budget execution is strongest for personnel spending at all levels of education, and across all regions (Figure 19). The ability to execute the non-personnel budget (goods and services and other payments and transfers) is more restricted and vary greatly across regions and levels of education. Execution rates are lowest for TVET spending, which is also the lowest share of all education spending at the regional level.

74. As more than a third of public funding for education is allocated to post-secondary education, how universities execute their budgets play a big role in overall execution rates. Analysis of university budgets show that universities are strongest in executing their personnel budgets with over a quarter of the universities spending 96 percent or more of their budgeted personnel budgets. In contrast a quarter of the universities can execute 65 percent or less of their budgets set aside for capital expenditures, suggesting that there are differences in universities' capabilities to efficiently execute and implement projects and as well as how they can execute funding for routine operations (Figure 20). Some of the differences in capital execution rates across universities can also be tied to the differences in the types of projects as big construction projects that took multiple years to complete might have lower year to year execution rates.

Figure 20 – Budget performance across universities



Source: Authors' calculations from BOOST data, EC 2011 (2018/19)
Note: The box plot shows the median and the first and third quartiles. The upper and lower whiskers are the largest and smallest values that are within the 1.5 times the interquartile range.

Section 4. Performance of the education sector

4.1. Summary findings

75. In the 2019-20 school year, 25.4 million students were enrolled at the pre-primary to upper-secondary level schools in Ethiopia, with an estimated seven percent enrolled in non-public schools including private schools and religious schools (madrasas). That year, an estimated 805,000 students were attending higher education institutions with about nine percent of these students attending private schools.

76. Between 2013 and 2019, enrollment growth was largely driven by increased access in middle school grades, especially in rural areas. Access to primary education (measured by Gross Enrollment Ratio) declined across all geographies, income groups, and for both genders. Enrollment numbers declined in the earliest grades, and the growing population of children at the primary school age has put additional pressures on the gross enrollment ratios. Access to pre-primary and tertiary education were largely limited to children and youth in urban locations. TVET education remained miniscule, with only one percent of youth attending technical and vocational schools.

77. Nearly a third of school-age children and youth remains out of school with one in five never attending school. While a larger share of children is out of school in rural areas, between 2016 and 2019, the share of children out of school have increased in urban areas, mainly driven by urban males who experienced higher dropout rates.

78. Ethiopian students from advantaged backgrounds are much more likely to start and complete their schooling than students from disadvantaged backgrounds. For example, a male student from a higher income urban household with educated parents or caregivers is twice more likely to start primary school, eight times more likely to finish the primary cycle, 13 times more likely to finish middle school, and 64 times more likely to attend upper secondary school than a female student from a low-income rural household with parents or caregivers who never attended school.

79. Schooling for over 90 percent of rural and low-income students ends by the end of grade 8, and this did not change much between 2013 and 2019. One group that experienced tremendous gains in access and persistence is the female students in urban areas from advantaged backgrounds. This group was twice as likely to complete a four-year university or college in 2019 compared to 2013.

80. For many students in Ethiopia, first grade presents a significant barrier, with 20 percent of students dropping out before completing this year. This suggests that many students (and their families) begin this year unprepared— academically or financially. Dropout and repetition rates are also high at grade 8 (end of the primary cycle until 2021, end of middle school under the current system) with over 15 percent of the students leaving school at this grade, and another 7 percent repeating. In addition, many students delay their education, and on average, students enter primary cycle two years later than the official starting age. Given the high repetition rates, by the time they begin their tertiary education, students, on average, are nearly four years older than the official age.

81. Despite high levels of repetition and dropout rates, improved level of access has resulted in higher completion rates at the primary school level in 2019 compared to 2013 (up from 61 percent to 70 percent), with gains largely coming from improved completion among male students, especially in rural areas. With this gain, Ethiopia is now outperforming many low-income countries in SSA.

82. Public schools in Ethiopia are resource constrained, with limited availability of textbooks and too few teachers that result in crowded classrooms. Three quarters of teachers do not have a post-secondary degree, and high teacher attrition makes it difficult to improve learning. Accordingly, the learning environment is challenging across Ethiopia's schools. The 2019 National Learning Assessments showed that the country still struggles in improving learning outcomes: mean scores in English at Grade 4 was only 31 percent, and in Math 40 percent; and at Grade 8, while English scores were greater (about 35 percent), they had declined in Math to 32 percent. Educational inputs and students' background seem to be correlated with learning outcomes. This suggests targeted intervention in improving educational inputs and students' household environment help improve learning outcomes.

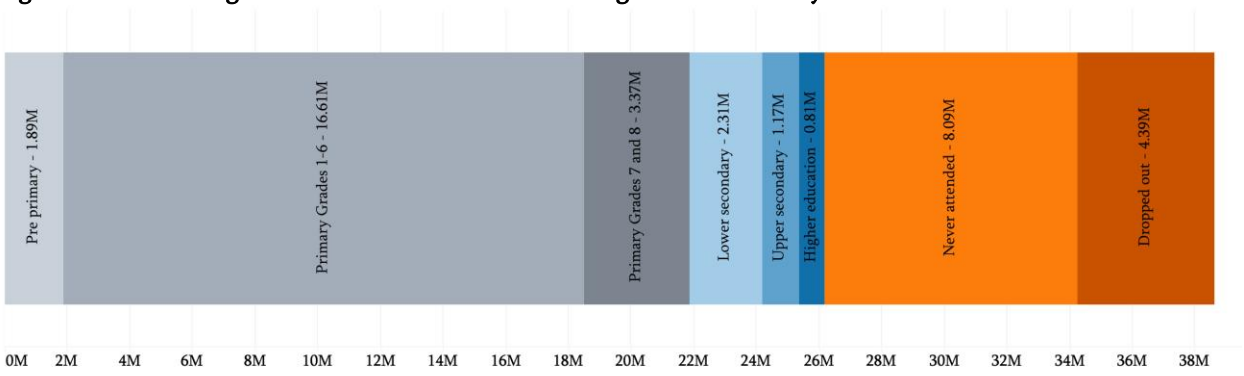
83. Many working adults in Ethiopia are illiterate, and many never attended school. Illiteracy rate stands at 46 percent and could be as high as 60 percent in rural areas. While the average years of schooling increased for the working age population between 2013 and 2019, at slightly above four years, this number remains below SSA averages. Moreover, it has been declining among urban workers in recent years. Along the same lines, 42 percent of the working age population have never attended school. This level of exclusion in much higher than what is observed as the SSA average (26 percent) and the low-income SSA average (36 percent).

84. Ethiopian labor market attaches a high value to education. Each additional year of education can increase workers' wages by 10.6 percent and household income by 4.4 percent. Additionally, workers with higher levels of education are more likely to work outside of the agriculture sector, hold a formal job with steady wages, and are more likely to find a job in the public sector.

4.2. Access and resources

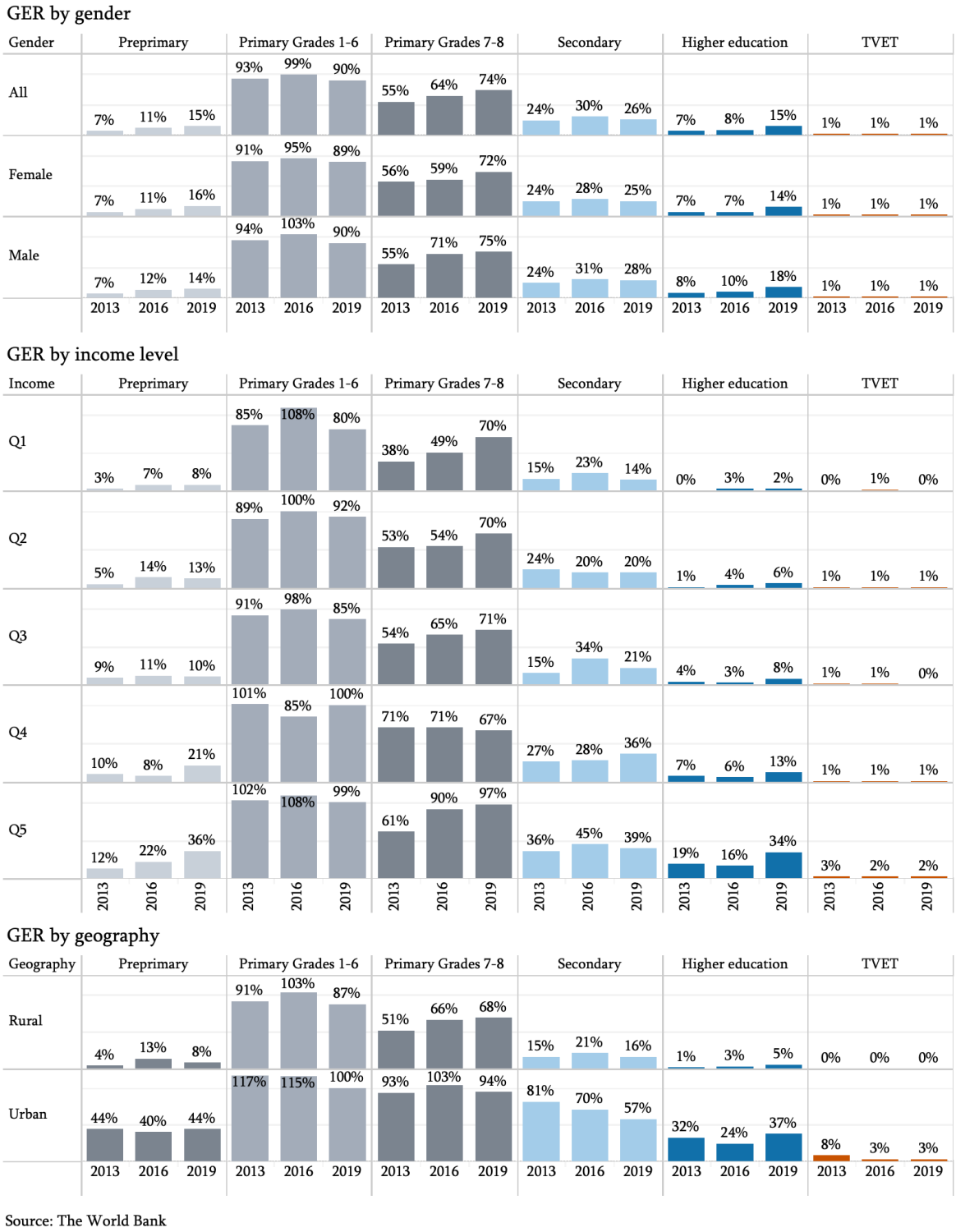
85. In the 2019-20 school year, 26.4 million children and youth were enrolled in school, including 1.9 million at pre-primary, 16.6 million in primary, 3.4 million in middle schools (formerly primary grade bands 7 and 8), 2.3 million in lower-secondary, 1.2 million in upper-secondary, and 805,000 in higher education institutions. An estimated seven percent of the students were in non-public schools including private schools and religious schools (madrasas). That year, an estimated 12.5 million school-aged children and youth were out of school, and of these approximately two-third had never enrolled in or attended school (Figure 21).

Figure 21 – Schooling and enrollment status of school-aged children and youth



Source: Authors' calculations based on EMIS and LSMS 2019
Note: Under the new system, a new middles school grade band (7 and 8) is created, and separated from the primary level.

Figure 22 - Gross enrollment rate by gender and level, 2013 through 2019



Source: The World Bank

86. Between 2013 and 2019, increases in access to education, measured by the Gross Enrollment Ratio (GER), were largely driven by growing enrollment in rural areas (Figure 22). Perhaps the best of example

of this is the 19 percentage points increase in GER at the Grades 7 and 8 of primary level (now middle school level) for students of both genders, reflecting a strong increase in enrollment in rural locations. In urban areas, middle school GER declined between 2016 and 2019, but remained at above 90 percent, and the gap between female and male students continued to close. Middle school GER improved at all income quintiles, but especially for students from the lowest quantile (up from 38 percent to 70 percent) and highest quintile (from 61 percent to 97 percent).

87. **GER at the primary level for grades 1-6 (currently the full primary grade band) declined across all geographies, income levels, and for both genders.** The decline in access to primary schools has been driven by both a growing primary school age population and fewer children attending primary school. For example, total enrollment at the primary level (grades 1 through 6) declined by 2 percent (by approximately 335,000 students) between school years 2017/18 and 2019/20.[49] These losses are largely driven by earlier grades: for example, enrollment in grade 1 declined by 1 percent, in grade 2 by 6 percent, and grade 3 by 7 percent. Recent research shows that urban and rural children drop out of school in earlier grades for different reasons: the top four reasons for dropping out among younger children in urban areas are: illness and disability (more frequent among girls); families' inability to afford feed (more frequent among boys); the need to work outside the house (more frequent among girls); and lack of interest in school (more frequent among girls). In rural areas, the top four reasons are: no interest in school (more frequent among boys); parents' objections to going to school (more frequent among boys); need to provide agricultural support for the family (more frequent among girls); and illness or disability (more frequent among boys.)[50]

88. **Even though enrollment at the secondary level continued to increase during this period, GER remained stagnant because of the steep increases in the secondary-school aged youth.** For example, there were one million more youth enrolled in secondary education in 2019 compared to 2016 (43 percent increase) but GER decreased during this period because of the rapid increase in the number of youth aged 15-18. The declining GER has been driven by lower access to secondary in urban areas.

89. **Between 2013 and 2019, access to pre-primary education and tertiary education was limited to students in urban locations or from higher income families.** GER at the pre-primary level doubled from 7 percent to 15 percent between 2013 and 2019, but rural access, and access among children from the lowest income quintile remained limited, with a GER of 8 percent for both groups. Similarly, GER at the higher education level more than doubled in this period but is stands at 5 percent for rural students. And while a third of students from the highest income quintile had access to higher education, this share was only 8 percent among students from the middle of the income distribution, and only two percent for students from the poorest 20 percent of families. Access to TVET is limited to urban locations only, with only a small (and dwindling) share of students attending TVET schools.

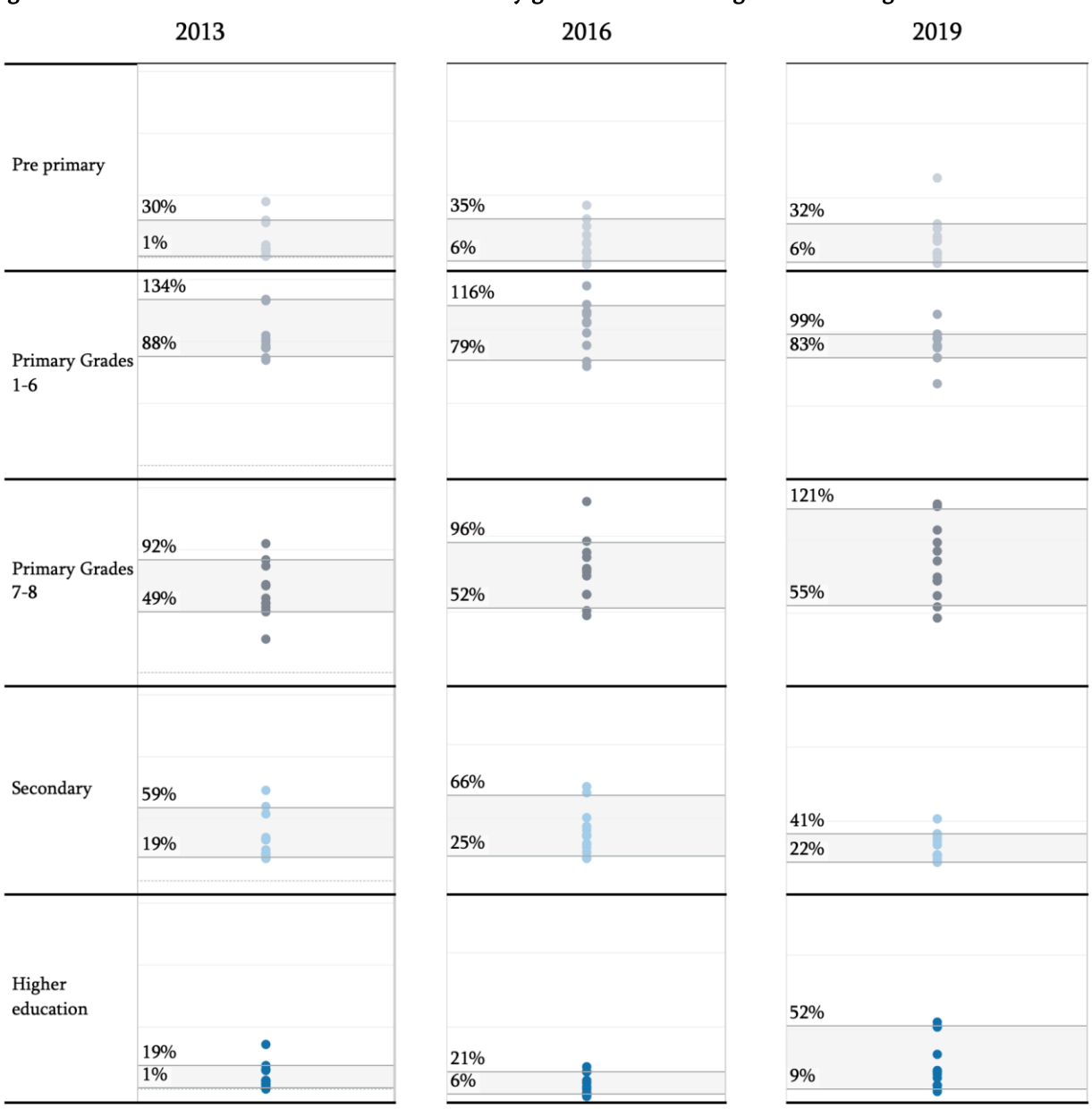
90. **Gaps in GER across regions of Ethiopia closed at the pre-primary, primary (grades 1-6) and secondary levels, because of expanded access at previously lower-access regions at the pre-primary level.** Primary school access declined in every region, yet regional gaps closed because GER declines were steeper at regions that had higher levels of GER, and especially urban regions. Similarly, a smaller gap in access across regions at the secondary level was entirely the result of declining access in urban regions such as

[49] EMIS data.

[50] These results reflect findings from a field survey. For details see Woldehanna, T; Endale, K., Hamory J., and · Baird, S. (2021). Absenteeism, Dropout, and On-Time School Completion of Vulnerable Primary School Students in Ethiopia: Exploring the Role of Adolescent Decision-Making Power in the Household, Exposure to Violence, and Paid and Unpaid Work, The European Journal of Development Research, https://doi.org/10.1057/s41287-021-00454-5.

Addis Ababa, and not the result of any significant gains in rural regions. Regional gaps in access in grades 6 and 7, and higher education widened, driven by faster enrollment growth in high-access regions (Figure 23, also see Appendix figure 4).

Figure 23 – Distribution of Gross Enrollment Rates by grade band across regions and change from 2013 to 2019

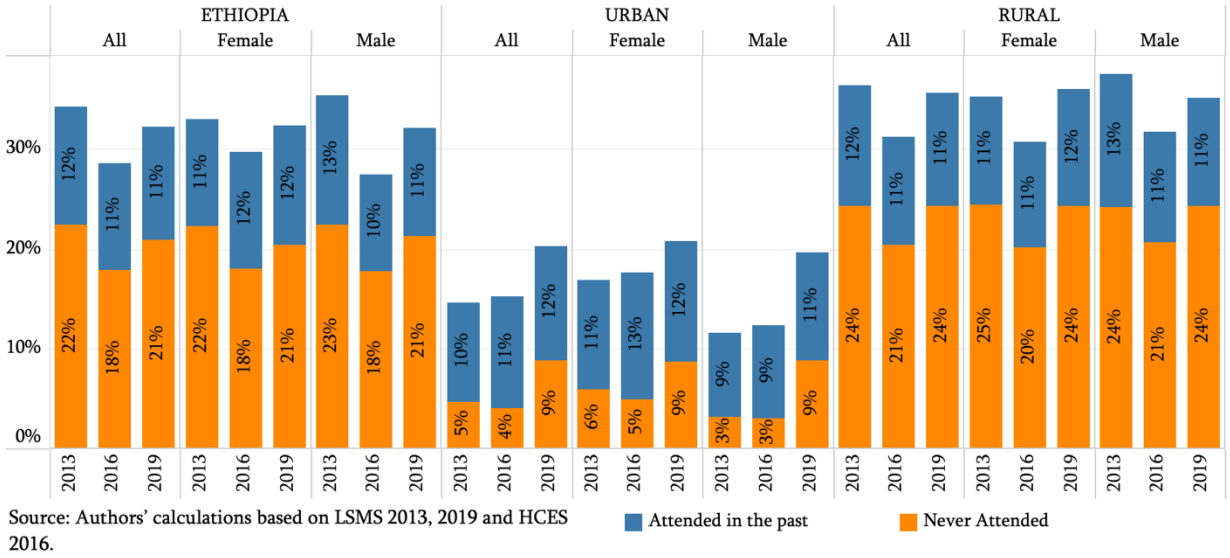


Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016
Note: Each dot represents a region. The gray shaded area shows the values between the 10th and 90th percentile of the distribution, along with the values presented for these percentiles.

91. The large number of out-of-school children remains one of the most pressing issues facing the education sector in Ethiopia. There were an estimated 30.1 million school aged children (7-18 years old) in 2019, of which about a third were out-of-school either because they have never been in school or because they dropped out. Moreover, this high rate of out of school children have remained persistent, showing only

a few percentage points of decline over the years (Figure 24). The large number of out-of-school children and youth is a significant challenge for the Ethiopia's education sector, as this number, no doubt, increased since 2020 as the pandemic and the social unrest has kept more students out of school.

Figure 24 – School status of children and youth



Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016.

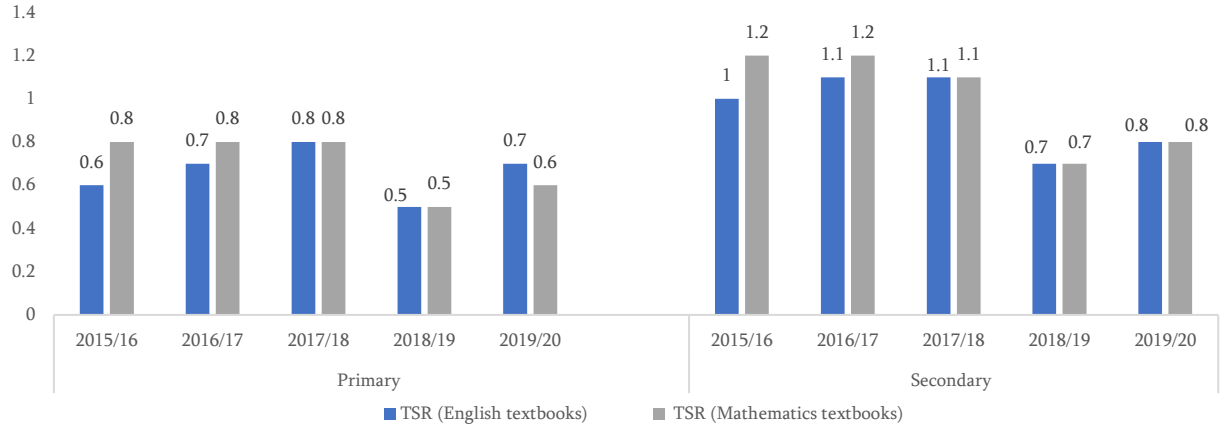
92. While being out-of-school predominantly affects rural areas, the magnitude of the problem is increasing in urban areas. In 2019, rural areas registered at about 36 percent of children out-of-school (down from 37 percent in 2013) compared to 20 percent in urban areas (up from 15 percent). The increase in the share of out-of-school children in urban areas is observed both for male and female students, but it is especially big male students. Across the country, one in five children or youth never enrolled in school; yet in rural areas, that number is one in four. In contrast about 8.8 percent of urban out-of-school children had never been to school. The share of out-of-school children vary greatly across regions and income quintiles, and while all quintiles showed improvements, the largest share of youth and children out of school remains in the lowest income quintile (41.5 percent). A larger share of children at the primary level are out of school in Ethiopia (29 percent) compared to the SSA average of 21 percent and above the low income SSA average of 27 percent (Appendix figure 5)

93. Along with access to schools, access to academic resources such as textbooks and availability of teachers play an important role in education outcomes. Both these metrics have proven to be important bottlenecks in Ethiopia. Access to and availability of textbooks increased greatly in Ethiopia with the implementation of GEQIP1, and public-private partnerships that were put in place in early 2010s.[51] In 2013/14, the country achieved a Textbook Student Ratio (TSR) of 1, providing each student with the needed textbook. However, since then, TSR at the primary level has declined. In school year 2019/20, primary schools across the country were able to provide on average one English textbook to 1.4 students and one math textbook to 1.6 students. Access to textbooks were slightly better at the middle school level with four

[51] Woldetsadik, Girma; Raysarkar, Chandrani. 2017. Textbook Provision for All in Ethiopia: Lessons Learned from the General Education Quality Improvement Project. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/27554 License: CC BY 3.0 IGO."

textbooks available for five students in both subjects. Moreover, more than one-fourth of textbooks were stored and not distributed to students in 2019/20. There is also wide regional variation in TSR, with Somali (both primary and secondary schools) and Afar at the primary level having the lowest TSR in major subjects (English and Mathematics) (Figure 25).

Figure 25 – Textbook-Student Ratio (2019/20)



Source: Authors' calculation based on data from ESAA

94. There are an estimated 639,000 teachers serving across pre-primary through secondary schools. The student-teacher ratio is very high at the pre-primary level (49 students per teacher, which is 75 percent higher than recommended rates) and primary level (48 students per teacher, or 20 percent higher than recommended rates), but is at manageable levels in middle and secondary schools (Table 6.)

Table 6 – Number of teachers and student teacher ratio by grade band

Grade band	Number of teachers	Share in public schools	Student Teacher Ratio	GPE Recommended Student Teacher Ratio
Pre-primary	38,652	58%	49:1	28:1
Primary Grades 1-6	345,941	95%	48:1	40:1
Primary Grades 7-8 (now middle school)	105,415	95%	32:1	30:1
Secondary	128,999	85%	27:1	25:1

Source: EMIS data

95. In recent years, the government of Ethiopia has made substantial investment to improve the supply of teachers and achieved a remarkable progress in relation to increasing the number of teachers in all the subsectors. While many teachers have at least teacher's certification from a Teachers Training Institute (TTI), only 28 percent of the teachers have a BA or MA degree, and another quarter have a General Education Diploma from upper secondary (Appendix figure 6).[52] While a larger share of secondary school teachers hold a higher education degree (Appendix figure 7), a large share of them end up teaching a subject other than they studies. For example, about 28 percent of math teachers teach a subject other than math

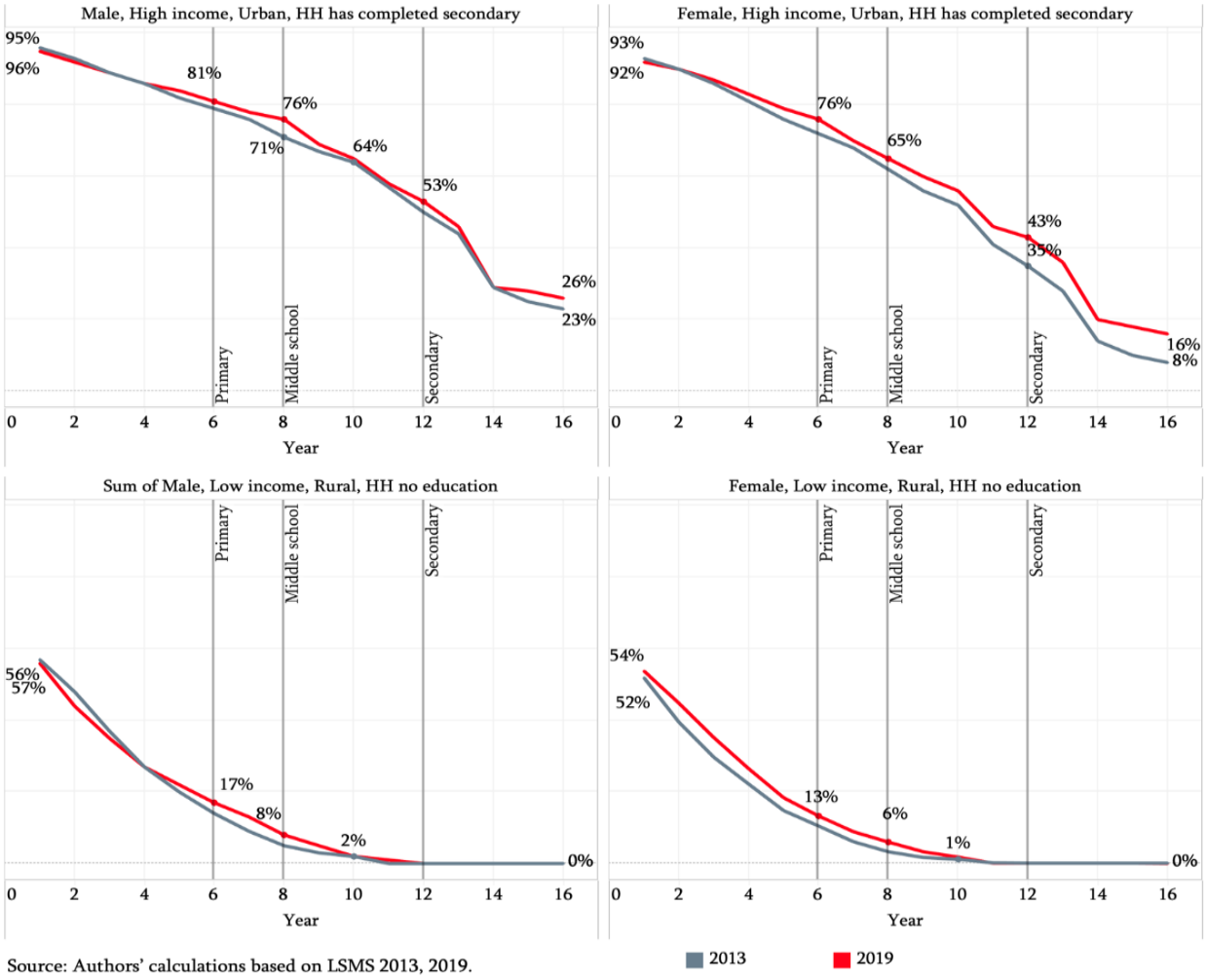
[52] EMIS data.

(Appendix figure 8) Moreover, since there is limited promotion, career development and incentive mechanisms, many teachers used to leave the education system each year. There is significant teachers' attrition in Benishangul Gumuz, SNNP and Addis Ababa, mainly from secondary education system. This, as will be discussed later, increases the cost-of-service delivery while making it difficult to improve the quality of education.

4.3. System retention and completion, and learning outcomes

96. While increased access and availability of resources are important, education outcomes are deeply connected to the schools' ability to retain and promote students and lead them to completion as well as the efficacy of learning that takes places when children and youth are in school. These metrics of retention, drop-out and repetition rates, completion rates, and learning outcomes can highlight system inefficiencies, which, if addressed effectively, can improve learning without significant expansions in funding needs.

Figure 26 – Cohort retention for various subgroups, 2013 and 2019



Source: Authors' calculations based on LSMS 2013, 2019.

97. The retention pattern through the education system improved slightly between 2013 and 2019, with gains accruing mainly to the cohort of students from advantaged socio-economic backgrounds—those

who live in high-income households in urban locations and educated parents or caregivers.[53] For this group, gains in retention were greatest for males at middle-school completion point with the share of students surviving through 8th grade increasing from 71 percent of the cohort to 75 percent. However, these gains did not translate into a higher retention rate at the secondary level: the share of the cohort leaving school by the end of 10th grade remained constant, at 40 percent, in both 2013 and 2019 (Figure 26).

98. **Among urban females, the greatest gains have been at the upper secondary with an 8 percentage-point increase in the share of the cohort that completes grade 12 (from 35 percent to 43 percent)**. Urban females from advantaged backgrounds also attended and completed a higher education institution at higher rates, doubling their chances of completing a four-year university or college from 8 percent in 2013 to 16 percent in 2018. In contrast, retention rates among rural youth and children remained showed modest rates at the primary and middle school completion level, but virtually no gains in subsequent years. For rural children from disadvantaged backgrounds, fewer than one in five complete primary school to go on to middle school, and only one in one hundred get past grade 10.

99. **Given the steep declines in retention for all students as they progress through their education, it is no surprise that dropping out and repetition are common events in Ethiopia's schools.** For example, of the nearly 16.6 million students enrolled at the primary level in the 2019/20 school year, more than 2.4 million would drop out (13.5 percent), and about 1.2 million would be repeating, or at some point, will repeat the same grade (5 percent).

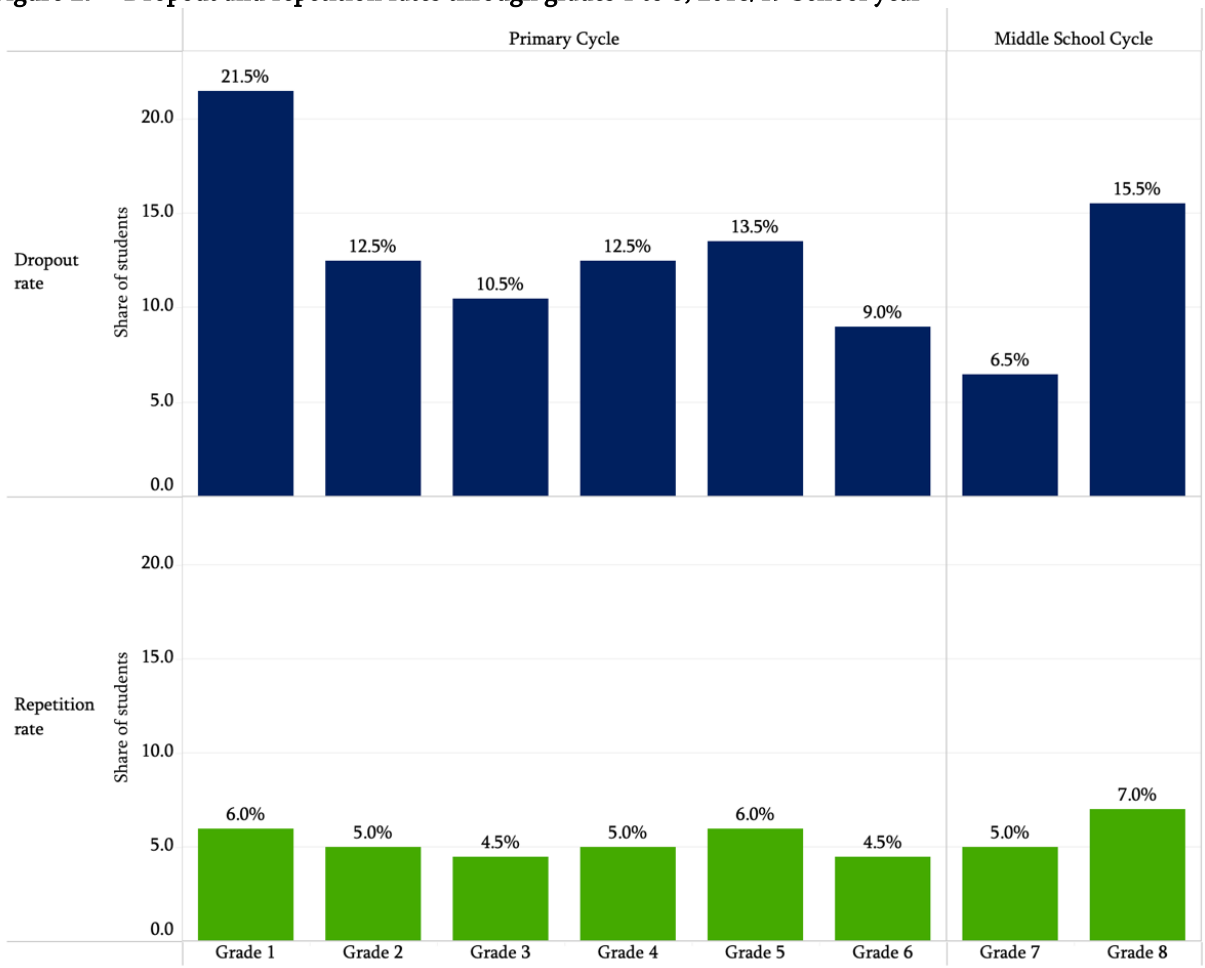
100. **First grade appears to be a make-or-break year for students' ability to continue with their education, with 21.5 percent of the students dropping out before they complete this grade and 6 percent repeating this grade.** As shown before, many of the student who complete the primary cycle continue to middle school (dropout rate at Grade 6, the last year of primary cycle, is 5 percent) but the share of students who drop out increase at the end of 8th grade to over 15 percent with another 7 percent repeating this grade. These high repetition and dropout rates indicate that the education system is challenged by internal factors that reflect the overall school environment, which may amplify some of the external factors for dropping out including students' interest in schooling, the need to work, general value attached to education (**Error! Reference source not found.**).

101. **Dropout and repetition rates vary across regions reflecting vast differences in the school environment, and attitudes towards education across the country or specific events happening in the region**. During the 2018/2019 school year, for example, 20 percent of primary school students dropped out in the Afar region likely due to the natural disaster. Oromia and Benishangul Gumuz—two regions that experienced instability and tension—also recorded dropout rates much above the national average, at 18 and 19 percent respectively.[54] Outside of these regions, primary dropout rates hovered at under 10 percent, and that year Addis Ababa recorded almost zero dropout rate. Sidama region also has highest repetition rate of 26.7 percent at the secondary level (Appendix figure 9)

[53] The analysis uses household surveys to track males and females between the ages of 7 and 30 from the poorest wealth quintile in rural areas with a household head who has no formal education and from the wealthiest quintile in urban areas whose household head has completed secondary education.

[54] The impacts of adverse events were not limited to primary school: At 39.4 percent, Benshangul region has the highest dropout rate at the secondary level.

Figure 27 – Dropout and repetition rates through grades 1 to 8, 2018/19 School year



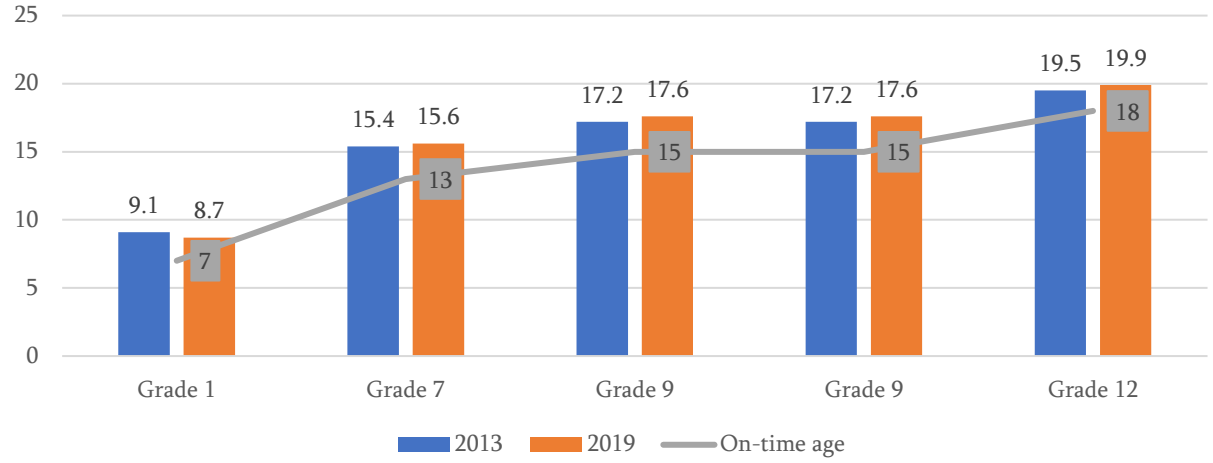
Source: Authors' calculation based on data from ESAA/EMIS

102. In Ethiopia, many students begin primary school at an age older than the official entry age, and delayed entry becomes a larger problem as students progress to higher grades. The average school start age in 2019 was 8.7, almost 2 years higher than the official school starting age of 7. While this is an improvement compared to 2013, when the average student was 2.1 years older than the official age (**Error! Not a valid bookmark self-reference.Error! Reference source not found.**), persistently high repetition rates mean that the issue of delayed entry has not improved at middle school (grade 7-8) and secondary school (grade 9-12) levels.

103. Entry age declined at the tertiary level, perhaps as a result of greater access to upper secondary among female students who are less likely to repeat at higher grades. Research shows that students who enter school late are more likely to repeat grades, drop out and perform more poorly, [55] suggesting that preparing students through pre-primary education can make a significant impact on dropout and repetition rates.

[55] Nonoyama-Tarumi, Yuko & Loaiza, Edilberto. (2010). Late Entry into Primary School in Developing Societies: Findings from Cross-National Household Surveys. http://lst-iiep.iiep-unesco.org/cgi-bin/wwwi32.exe/[in=epidoc1.in]/?t2000=028347/(100). 56. 10.1007/s11159-010-9151-2.

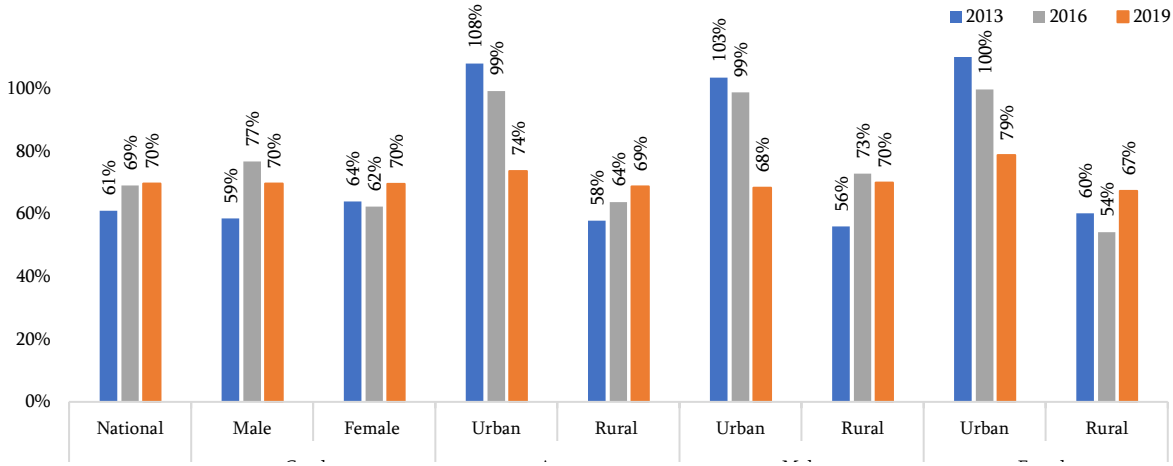
Figure 28 – Average age of students in grade



Source: Ethiopia LSMS 2019

104. Primary school completion rates (PCR) have improved between 2013 and 2019 suggesting that students tend to stay in school longer and a larger share of them complete the primary cycle. In 2019 the primary completion rate reached 70 percent, a 9-percentage point increase from 2013. Improvement in PRC was greater for males, who had lower completion rates compared to female students in 2013 and caught up by 2019 (Figure 29). PCR declined in urban areas from 108 to 74 percent but increased in rural areas from 58 to 69 percent from 2013 to 2019. Ethiopia's PRC is just below the average level for the SSA region (72 percent), but above the average level for the low income SSA countries (66 percent).

Figure 29 –Primary completion rate by gender and geography, 2013, 2016 and 2019

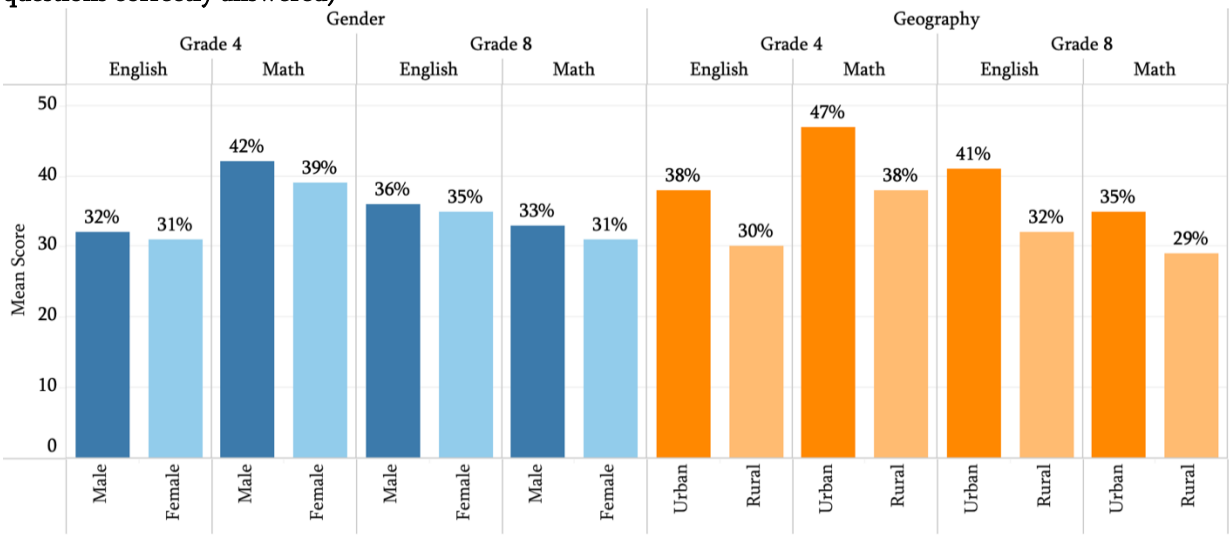


Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016

105. High levels of repetition and dropout, as well as significant declines in cohort retention through students' careers, suggest that learning takes place in a challenging environment. In fact, the 2019 National Learning Assessments (NLA) showed that the country still struggles in improving learning outcomes: In the

2019 NLA at grade 4, students were able to answer correctly approximately 30 percent of the questions in English and approximately 40 percent in Math, with male students slightly outperforming female students (Figure 30).

Figure 30 – Mean test scores for English and Math in the 2019 National Learning Assessment test (percentage of questions correctly answered)



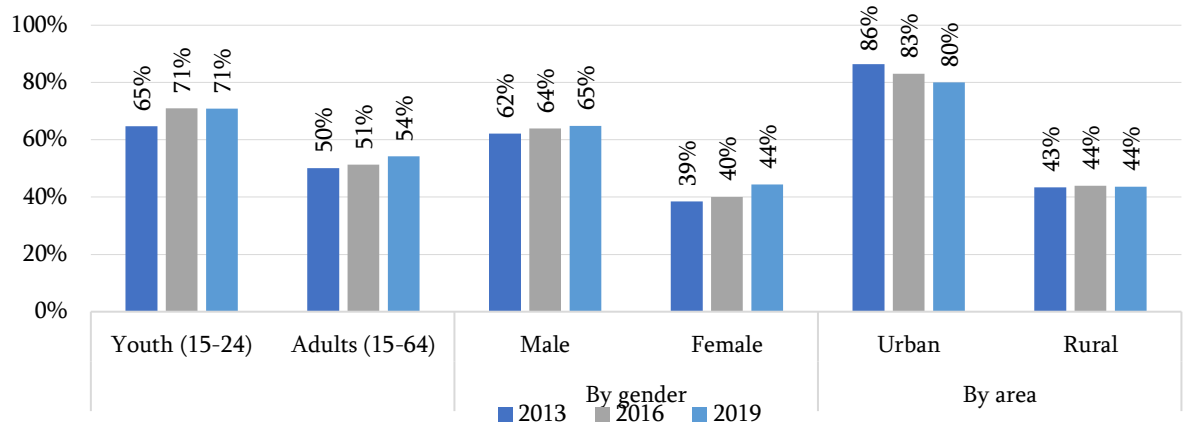
Source: 2019 National Learning Assessments Test

106. Student performance in English improved at grade 8, with a mean score of 35 percent, but Math scores declined by about 8 percentage points to 32 percent. A cross-sectional analysis of the NLA scores show that boys, students from higher socio-economic backgrounds, and students in urban areas respectively outperform girls, their peers from lower socio-economic backgrounds, and students in rural areas. Students from urban locations outperform students in rural locations by 6 to 9 percentage points. There are also significant variations in NLA scores across regions: for example, students from Addis Ababa outperform national outcomes by over 10 percentage points (Appendix figure 12). The variation in NLA scores across income groups is smaller, with students from the highest income quintile outperforming students from lowest quintile by just a few percentage points at grade 4. The gaps widen in later grades, but not by much (Appendix figure 13). Still, educational inputs and students' background seem to be correlated with learning outcomes. This suggests targeted intervention in improving educational inputs and students' household environment help improve learning outcomes.

4.4. System Outcomes

107. Adult literacy rate in Ethiopia, increased from 50.1 to 54.2 percent between 2013 and 2019 with gains among the younger adults aged 15 to 24 showing faster growth than all adults in the working age population (Figure 31). Literacy among females increased much faster, closing the gender gap by four percentage points. The urban/rural gap also closed, but this was achieved by a lower rate of literacy in urban areas, rather than improvement in rural areas. Literacy rates increase by income quintile (from 43 percent among those who are from the lowest quintile compared to 74 percent among those who are in the highest) and tend to be very low for females in rural areas. Among this group, literacy rate increased from 30.2 percent in 2013 to 31.6 percent in 2019 (Appendix figure 14).

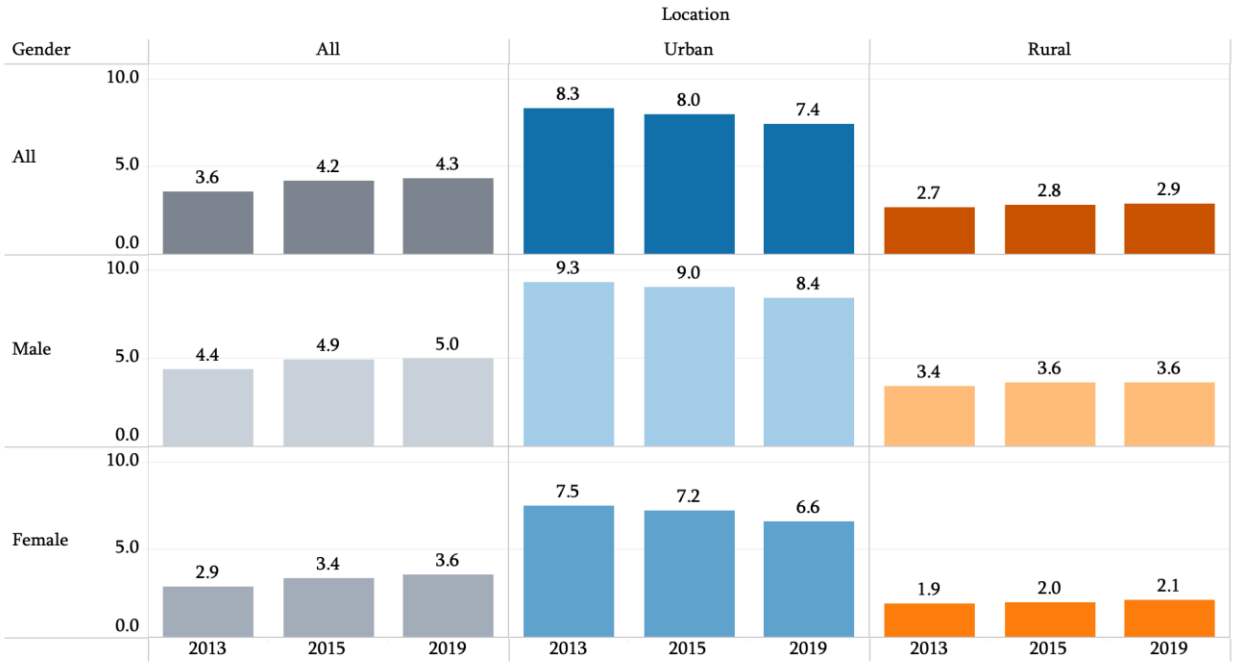
Figure 31 –Literacy rates, by gender and geography (%)



Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016

108. The average number of years of education of the working-age population has also increased over time from 3.6 in 2013 to 4.3 in 2019, but this top number hides some worrisome trends observed in recent years. First, years of schooling barely increased among rural females. Second, in urban areas, reported years of schooling declined for both males and females (Figure 32). Thus, the slight increase in years of schooling between 2013 and 2019 is largely driven by small gains made across the rural population which make up about 54 percent of Ethiopia's population. Although the average years of schooling has improved, it still lags the SSA average and only higher than the low income SSA countries average for youth (Appendix figure 15).

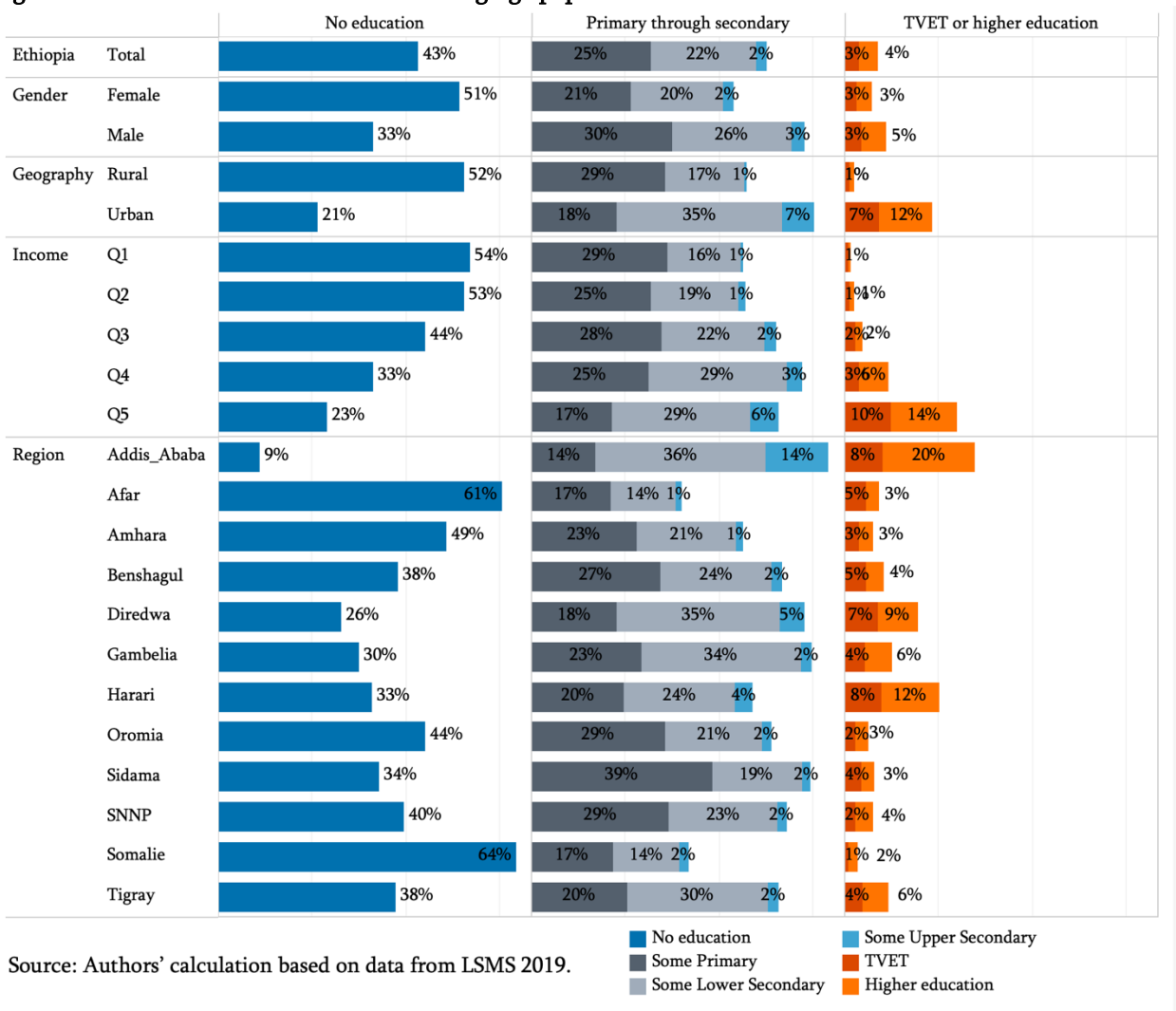
Figure 32 – Years of schooling, 2013, 2016, and 2019



Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016

109. While education outcomes have shown modest improvements in recent years, the changes are too recent to result a big shift in the educational outcomes of the entire working-age population in Ethiopia. As of 2019, about 43 percent of Ethiopia's working-age population had no education (Figure 33). Females, rural populations, and those from the bottom of the income distribution are more likely to be in this group. For example, 51 percent of females, 52 percent of the rural population, and 53 percent of people from the households in the bottom two quintiles of income distribution have no education. This level of exclusion in much higher than what is observed as the SSA average (26 percent) and the low-income SSA average (36 percent). In contrast, just under 5 percent of the working age population have attended or completed a higher education institution, and this share is twice the national share in urban locations, three times the national share among those from the highest income quintile, and four times the national share in Addis Ababa.

Figure 33 – Educational attainment of working-age population



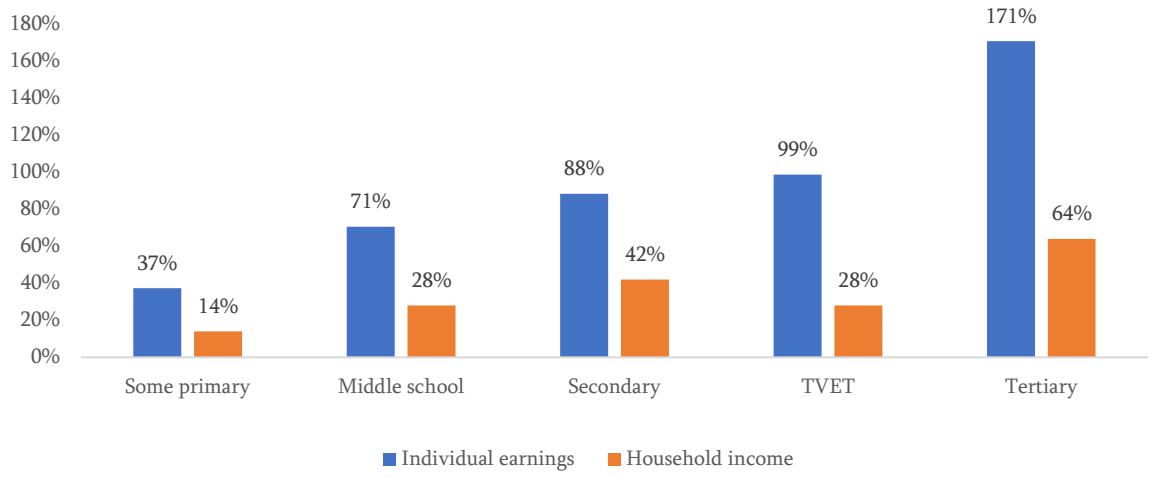
Source: Authors' calculation based on data from LSMS 2019.

110. Ethiopia's labor markets attach a high value to education. Overall, an additional one year of education is associated with an average increase of 10.6 percent in monthly earnings and 4.4 percent in household income. Similarly, additional education level of education is associated with better earnings and

household income at all education levels. For instance, workers who completed secondary education level earn 88 percent more than those with no education. Having a higher education degree is associated with 178 percent more income at the individual level compared to no education (Figure 34).

111. **Education increases the chances of employment in sectors with better conditions and higher wages**. Compared to a baseline of working in the agricultural sector, each year of education increases the likelihood of working in the industry sector by 29 percent and services sector by 32.8 percent (Appendix figure 16).[56] To wit, about 90 percent of workers with no education and 85 percent of workers with some primary education are employed in the agriculture sector (Appendix figure 17). In comparison only 14 percent of workers with a higher level of education, are employed in the agriculture sector. With each year of education, the likelihood of working in the public sector increases by 42 percent, and the probability of working in wage employment by 26.4 percent (with non-wage as base category). About 79 percent of workers with tertiary education have wage employment, but only 7 percent of workers with no education and 9 percent of workers with primary education are in wage employment (Appendix figure 18).

Figure 34 – Private rate of returns to education by level of education-2019



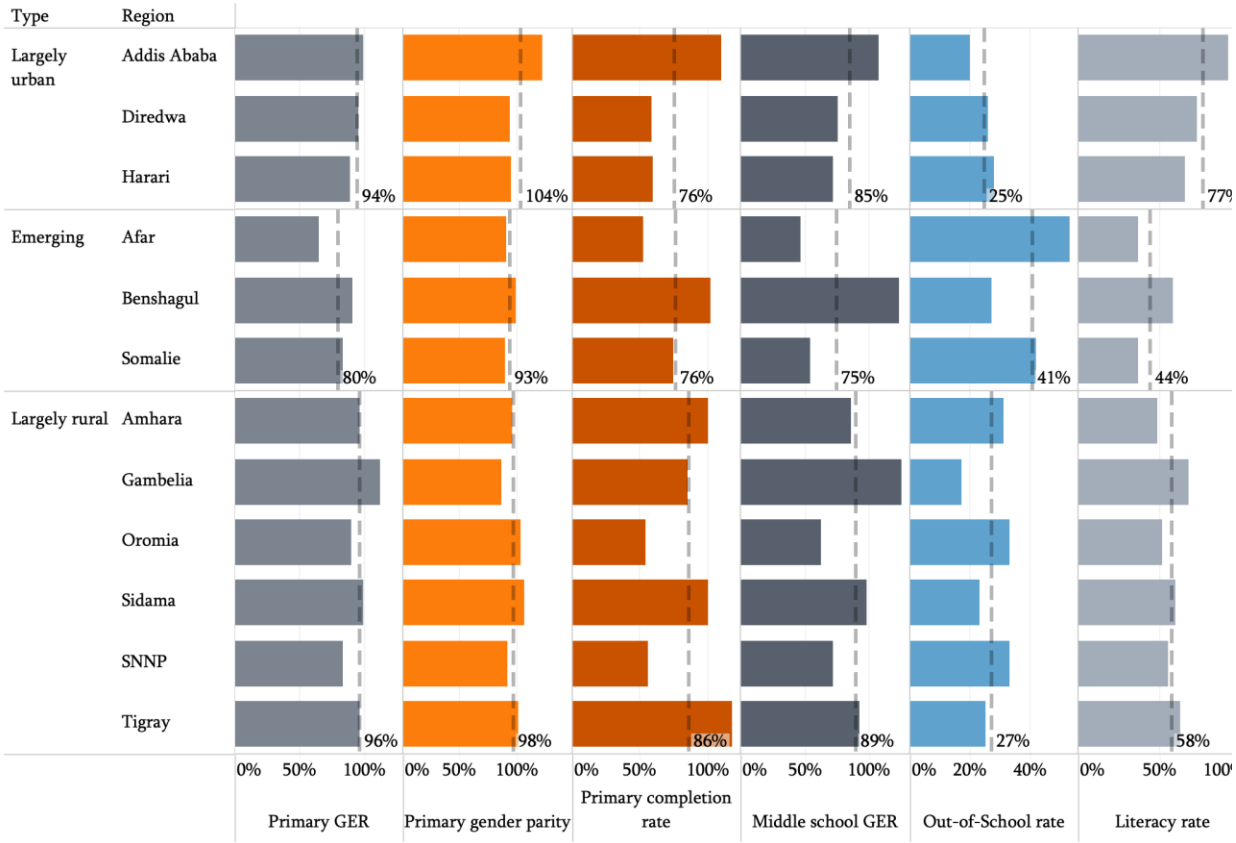
Source: Authors' calculations based on LSMS 2019

112. **Key indicators of education access and outcomes vary greatly across different regions of Ethiopia suggesting that some portions of the population—especially those who live in regions that are transitioning from largely rural to largely urban—are systematically falling behind** (Figure 35). For example, GER at the primary school level is 80 percent in the emerging states of Afar, Benshangul and Somalie, nearly 16 percentage points behind the national average. These states also have the lowest levels of gender parity for primary school enrollment, and the highest incidence of out-of-school youth and children. Interestingly, in 2019, school participation rates for the first two cycles of primary grade band were similar across largely urban regions (Addis Ababa, Dire Dawa, and Harrari) and the largely rural regions (Amhara, Gambelia, Oromia, Sidama, SSNP and Tigray), but education outcomes varied greatly between these two groups with a much higher average years of education (7 years v. 4 years) and literacy rate (77 percent v. 58 percent) in largely urban areas.

[56] These results are obtained through series of multinomial logit regressions confirm the importance of education in determining the sector and status of employment. For details, see the appendix.

113. **These suggest that there are significant quality differences in the education experiences of children and youth across Ethiopia**. And especially in regions where forces of urbanization are stronger, there appears to be greater constraints on children and youth's ability to attend and successfully complete schooling.

Figure 35 – Regional comparison of key indicators-2019



Source: Authors' calculations based on LSMS 2019.

Section 5. Equity of education spending

5.1. Summary findings

114. In Ethiopia, public spending on education disproportionally benefits higher income households. Students from lower income quintiles consistently receive a lower share of public funding compared to their share in enrollment. This outcome is partly due to enrollment patterns which reflect a lower participation rate for students from lower-income households; and partly driven by the concentration of low-income students in lower-budget regions and schools. These funding disparities begin at the primary level and widen as students progress through higher grade bands. At the same time, a higher share of students from higher-income households attends private schools and this has an equalizing impact on the distribution of benefits from public expenditures. This holds true for both different grade bands, and across regions where private education participation is higher.

115. While the distribution of benefits from public education funding is skewed towards higher income households, public education spending has a leveling effect through the secondary cycle relative to the underlying economic inequities. At the primary level, benefits incidence is evenly distributed across students regardless of their economic status. At secondary level, even though a larger share of benefits accrues to higher-consumption households, the distribution of education funding is more equitable than the distribution of consumption. For higher education, however, funding distribution is even more inequitable than consumption distribution: households in the top consumption quintile account for almost half the consumption in Ethiopia, yet they receive 65 percent of the benefits from public spending at the post-secondary level.

116. Household out-of-pocket expenditures account for about 15.3 percent of all resources that support education in Ethiopia, with significant variations across grade bands and between public and private schools. Across all public schools, households bear about 9 percent of the costs, but this share is higher at lower grade bands—14 percent of all household expenditure on education at the primary levels (grade 1 through 6). Of all household out-of-pocket expenditures, 45 percent of the total education spending is for private schools, but this share is especially high in pre-primary schools (92 percent).

117. Education expenditures account for about 6 percent of total household spending and 23 percent of per capita spending by households. While the share of education expenditure both in households' total consumption and per capita expenditures increased from 2013 to 2019, this increase has been primarily driven by increased education spending among middle-income households. In fact, education expenditures in the household budgets of the poorest families declined between 2013 and 2019, worsening the gap between the poor and the rich.

118. The cost of attending private schools compared to public schools is much higher at earlier grade bands compared to later grade bands. For example, for the first six years of the primary cycle, households spend Birr 4,522 per each child enrolled in a private school. This amount is more than twenty times the out-of-pocket expenses families incur for a student enrolled in public schools. At the secondary level household spending per student at a private school (6,566 Birr) is seven times the out-of-pocket expenses for a similar student in a public school. At TVET, that ratio goes up to five-to-one; and for tertiary education, full public costs are nearly fifteen times the private school costs.

119. Households in the poorest quintile spend much less out of their pocket for their students at all levels of education, but costs become a real barrier as students progress into higher grade bands. For the poorest

households, out-of-pocket expenses increase by a factor of 2.5 between primary and secondary schools; while for the richest households, the comparable increase is only 44 percent.

120. While the cost of education has become a bigger push-factor over time, it is not the main explanation for why children and youth are out of school. The share of households who mentioned costs as a main reason increased mainly because of the increases in perceived costs for older students. For students who are at upper-secondary age group, parents mentioned costs twice as often in 2019 (20 percent) compared to 2013 (10 percent). But parents more frequently mention quality (which captures a large bucket of reasons), and for primary-school aged children, that their child is "too young to attend" as the main reasons why children stay out of school.

5.2. Benefit incidence of public education spending

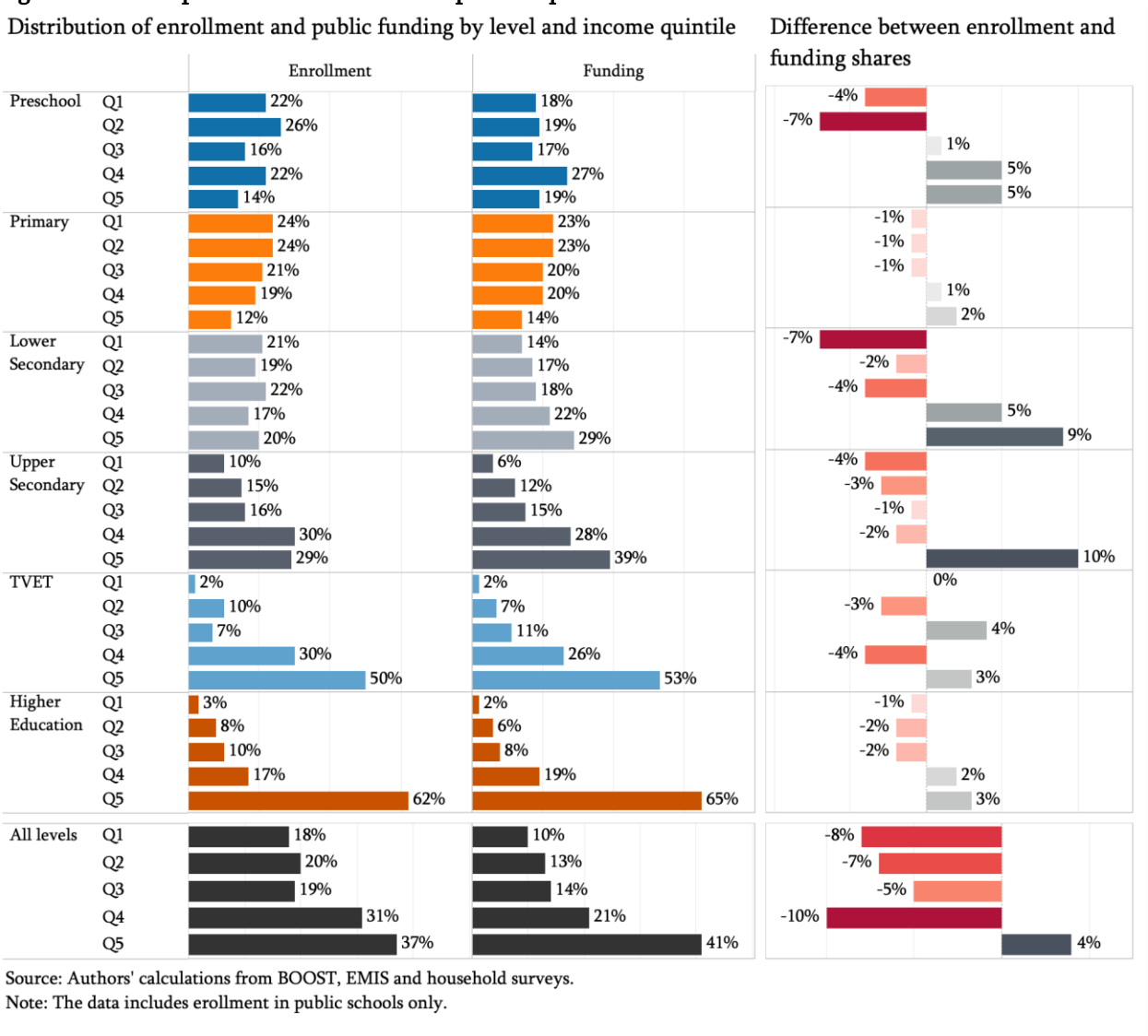
121. In Ethiopia, public spending on education disproportionally benefits higher income households.[57] While some of this inequality stems from a higher rate of participation in education among the children of higher income households, data suggest that there are other layers of inequity in the system that create additional benefits for students from higher income households.

122. A comparison of enrollment by income quintile and public expenditure at different levels of education show that students from lower income quintiles consistently receive a lower share of public funding compared to their share in enrollment. These gaps begin at the primary level (grades 1 to 8,)[58] and widen as students progress to higher grade bands. For example, at the lower secondary level, students from the bottom two quintiles make up 40 percent of enrollment but capture 31 percent of the benefits from public funding. The impact of disproportionate participation is most apparent in the benefit incidence analysis for higher education which shows that 65 percent of all public funding for higher education (this is a quarter of all public funding in Ethiopia) benefits youth from the highest income households. Across all levels, students from the highest income quintiles receive 41 percent of funding, which is disproportionally high compared to their enrollment share, and students from the lowest income quintiles receive 10 percent of public funding, which is disproportionally low compared to their enrollment share (Figure 36).

[57] See Annex A methodological notes, Note 1.

[58] The analyses presented here only focuses on public schools. The numbers shown for pre-primary education include only 61 percent of all pre-primary enrollment in the country.

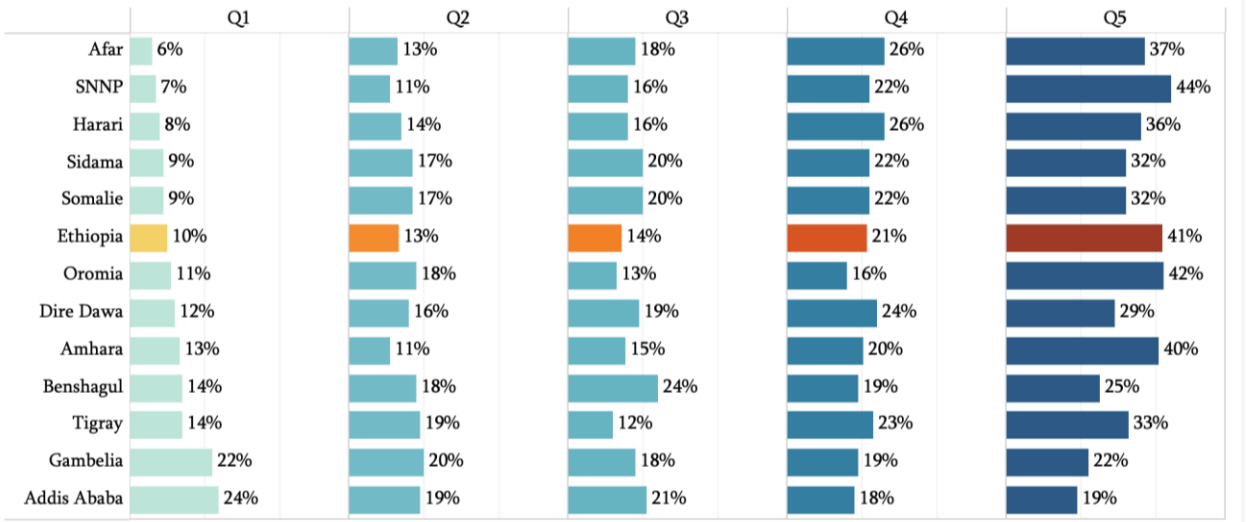
Figure 36 - Discrepancies in enrollment and public expenditure benefits



Source: Authors' calculations from BOOST, EMIS and household surveys.
Note: The data includes erollment in public schools only.

123. The distribution of benefits from public education expenditures is less regressive in some regions than others. Only in two regions (Addis Ababa and Gambelia) the distribution of benefits is almost equal across all income quintiles (although arguable, still regressive). In Afar and SNNP, the benefits that accrue to the students from the highest income quintile households are over five times that for lowest quintile households; in Harrari, Sidema, and Somali, the highest quintile households reap three times the benefits from public education spending compared lowest income household. These differences are also largely driven by enrollment patterns across different income quintiles (Figure 37).

Figure 37 – Distribution of public expenditure in education by income quintile and regions, 2018/19

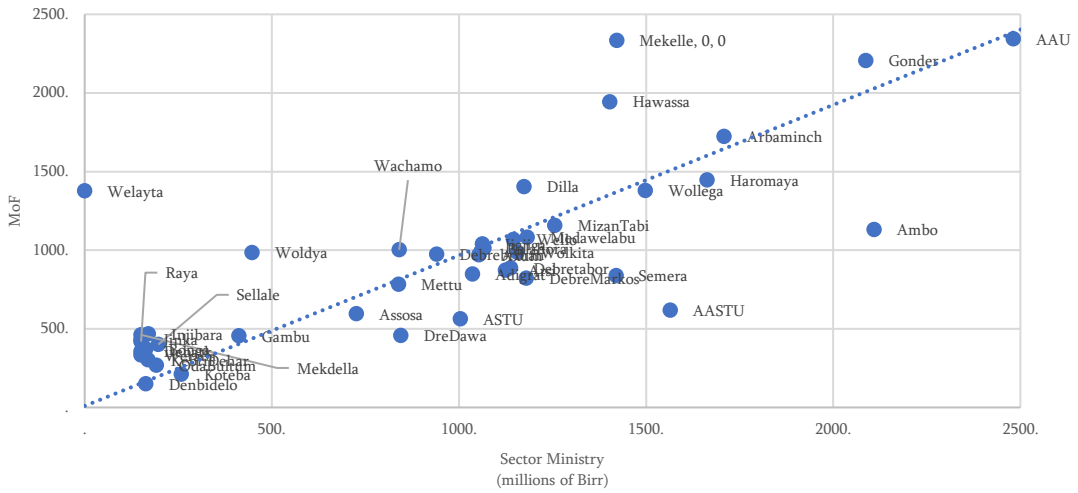


Source: Authors' calculations from BOOST, EMIS and household surveys.

124. A benefit analysis incidence using a Lorenz-type curve that compares the distribution education spending to the distribution of consumption show that public education spending has a leveling effect through the secondary cycle.[59] First, the distribution of consumption across households (the black line) are highly unequal: the bottom fifth of households with the lowest level of consumption account for close to 5 percent of total household consumption in Ethiopia, whereas the top fifth of households with highest level of consumption account for nearly half of all household consumption in the country. In contrast, at the

[59] This chart depicts the Lorenz curve by using a population metric that adjusts for different household characteristics (enrollment rate and number of school age children) at different income quintiles. The same chart that does not adjust for demographic characteristics at the household level by income quintile shows a slightly pro-poor public spending (

Appendix figure 20 – Discrepancy between budget report by the sector ministry and MoF



Source: Data reported by MoF and the sector ministry.
Note: MosHE is now dissolved, and higher education is now a part of the Ministry of Education.

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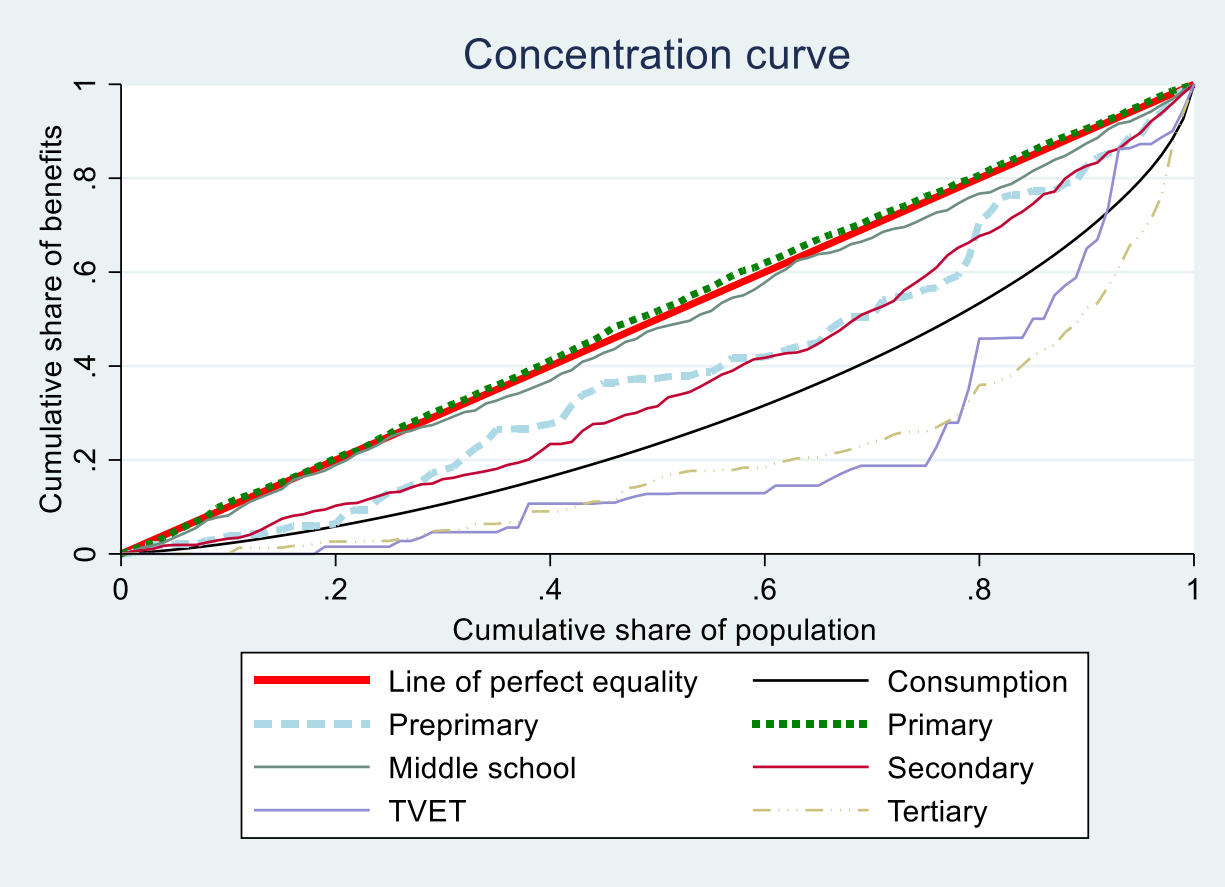
primary and middle-school levels, the benefits incidence of public education spending coincides almost directly with the 45-degree line which represents a perfectly proportional distribution of benefits over the population. At preprimary and secondary levels, the benefits distribution curve lies below the 45-degree line, but above the consumption distribution curve, suggesting that the distribution of the incidence of education spending at these levels is more equitable than the distribution of consumption, but lower-consumption households still receive a disproportionally lower share of education spending compared to their size in population. For TVET and higher education, however, the Lorenz curve shows even a higher discrepancy than what is observed across consumption. According to this analysis, households in the top consumption quintile receive over half the public spending at the TVET level and nearly 65 percent of the public spending at the post-secondary level (Figure 38).

Figure 38 – The distribution of consumption and public expenditure in education across households



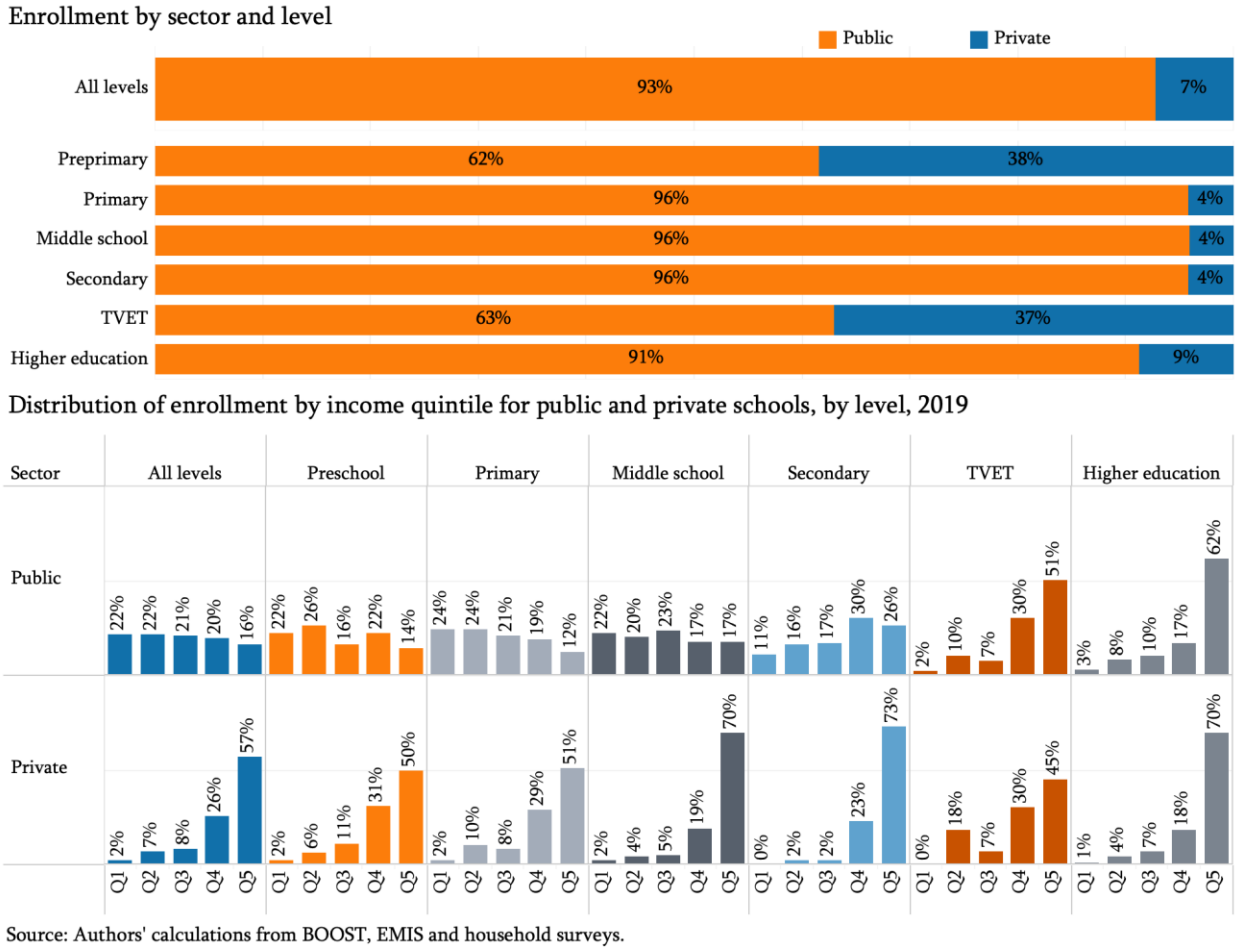
Source: EMIS 2019

Note: The distribution is adjusted for household size across different levels of consumption. The same analysis done at the household level without adjusting for household size is presented in Appendix figure 21.

5.3. The role of private schools and private school enrollment in the benefits incidence of education funding

125. Differences in public and private school participation across income quintiles explain why the distribution of benefits from public education expenditures is more uniformly distributed at the primary level and middle school levels. Across these grade bands, student enrollment is more uniformly distributed across income bands. At higher grade bands, however, while higher income families dominate private enrollment, they also tend to occupy a larger share of seats at public schools. This pattern reaches its peak at post-secondary education where nearly seven out of ten students in public institutions are from the top two income quintiles (Figure 39).

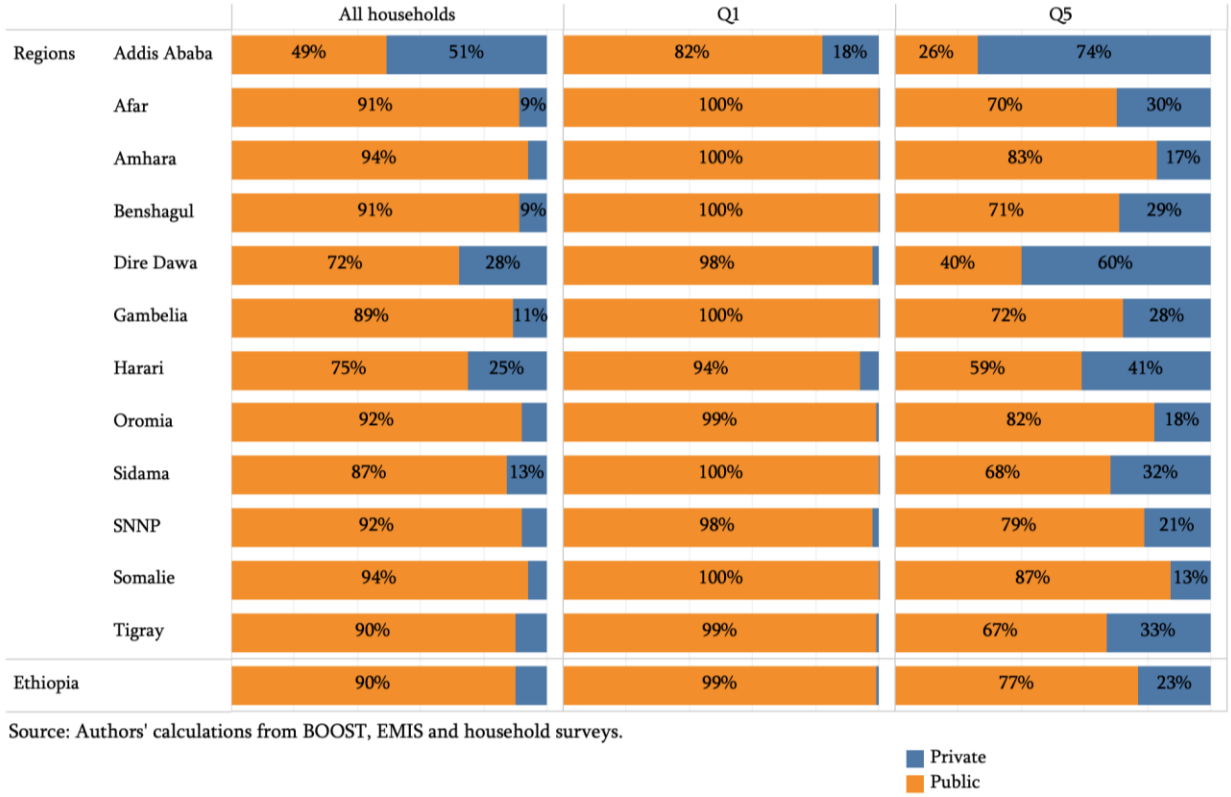
Figure 39 – Share of private school enrollment in different grade bands, and distribution by income



Source: Authors' calculations from BOOST, EMIS and household surveys.

126. **Private school participation also varies greatly across regions.** Private school enrollment as a share of total enrollment is highest in Addis Ababa where more than half the students attend private schools, and even among the lowest income quintiles, participation in private schools (18 percent) is nearly twice the national rate (10 percent) (See Appendix figure 22**Error! Reference source not found.** for additional breakdown). This high share of private school enrollment is largely due to a significant number of children being enrolled in private schools at the pre-primary and primary levels in Addis Ababa (see Appendix figure 23). In contrast, in six regions (Afar, Amhara, Benshagul, Gambelia, Sidama and Somalie) no children from the lowest income quintile attend private schools, and in Oromia, which accounts for about a quarter of total enrollment, only one percent of the children and youth from the lowest income quintile attend private schools. These differences explain why public education expenditure benefit incidence is more evenly distributed in Addis Ababa and Gambelia, where a larger share of the students—especially students from highest income households—are enrolled in private schools, leaving a larger share of public expenditure benefiting students from lower-income households (Figure 40).

Figure 40 – Distribution of enrollment by sector and region



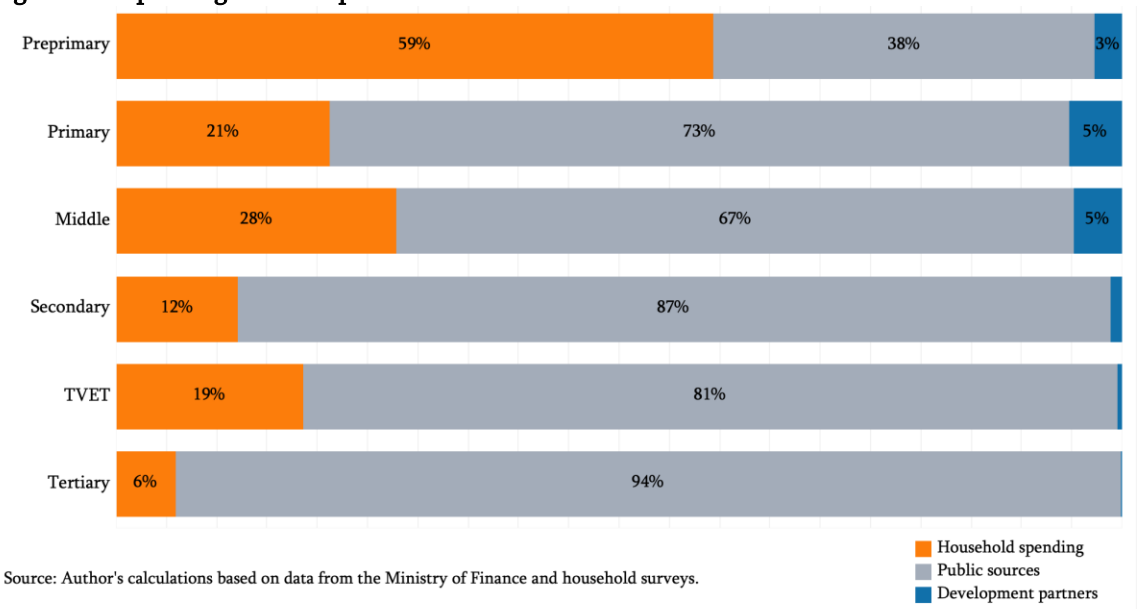
Source: Authors' calculations from BOOST, EMIS and household surveys.

5.4. Household spending on education and affordability

127. **Households' out-of-pocket expenditures account for about 15 percent of all resources that support education in Ethiopia, but the share of education expenditures paid for by households varies greatly by grade band and between public and private schools.** Across all public schools, households bear about 9 percent of the costs, but this share is higher at lower grade bands.

128. **At the primary level, households pay for about 21 percent of all expenditure on education and at the secondary level, household share declines to 12 percent.** As will be shown later, the higher share of household contribution in public schools at the primary level is not related to out-of-pocket spending per pupil but is largely driven by the higher participation at public primary schools. At the higher education level, household spending make up only 4 percent of total education spending (Figure 41).

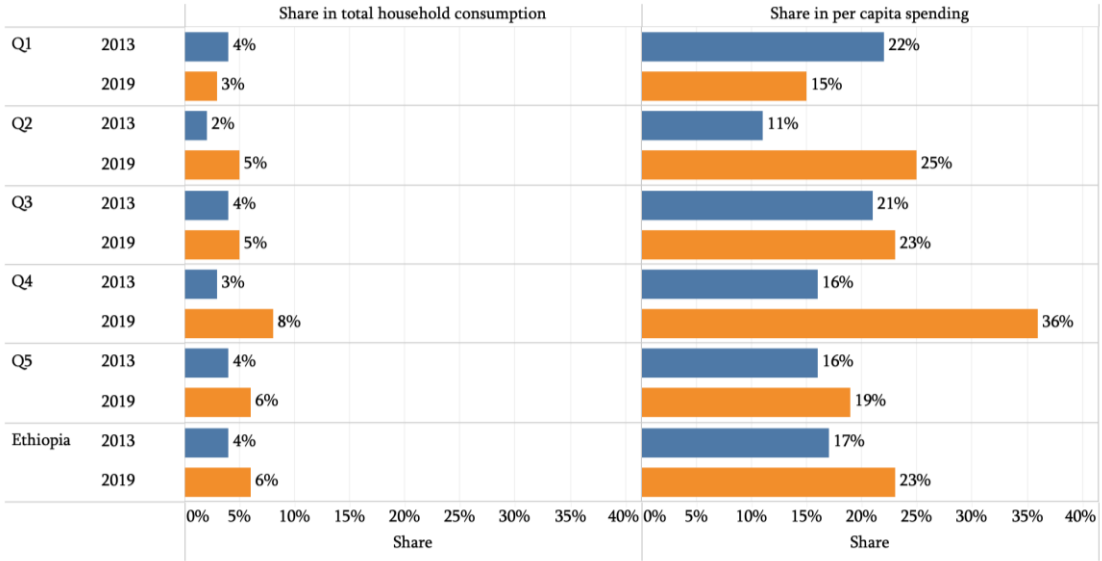
Figure 41 – Spending shares in public schools



Source: Author's calculations based on data from the Ministry of Finance and household surveys.

129. **Education expenditures account for about 6 percent of total household spending, and 23 percent of per capita spending by households.** The increase in the share of education expenditure both in households' total consumption and per capita expenditures from 2013 to 2019 has been primarily driven by middle-income households. In fact, the poorest families' education spending as a share of both consumption and per capita household spending decreased between 2013 and 2019, worsening the gap between the poor and the rich. This is disconcerting as it implies kids for poorest households are at disadvantages compared to their peers from non-poor households, suggesting a rationale for government intervention to narrow the gap in education and promote inclusive growth (Figure 42).

Figure 42 – Education spending as a share of total household consumption and per capita spending, by income quintile, 2019

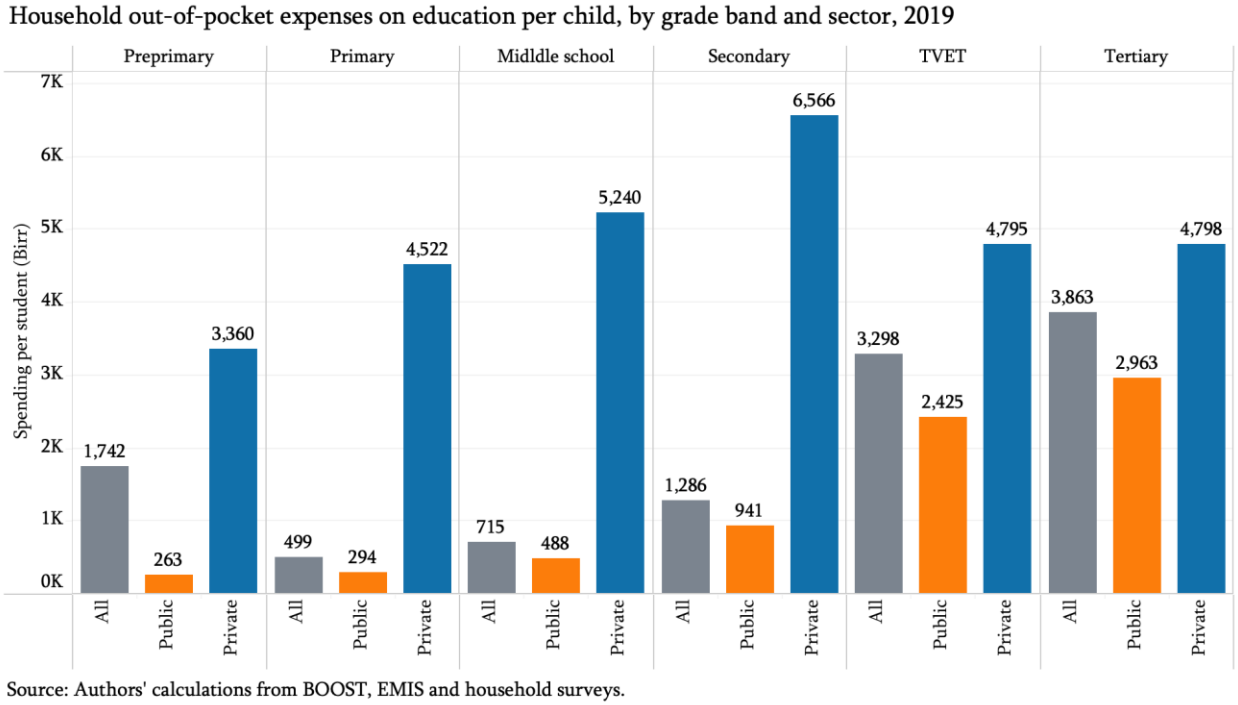


Source: Authors' calculations from BOOST, EMIS and household surveys.

130. Out-of-pocket expenditures per student at private schools, compared to public schools, are much higher at earlier grade bands. For example, for the first six years of the primary cycle, households spend Birr 4,522 per each child enrolled in a private school (Figure 43). This amount is more than twenty times the out-of-pocket expenses for public schools, and even twice the full unit cost at public schools— (the sum of public unit costs and the household expenditures per child in public primary schools, or Birr 2,097). Households' willingness to pay high unit cost for private education compared to what they are willing to pay to public education is partly explained by better quality education provided by private schools. Anecdotal evidence also supports the argument that private schools in Ethiopia provide relatively better-quality education compared to public schools, especially at primary and secondary education levels.

131. The unit cost structure differences between public and private schools begin to change at the secondary level: at this level, household spending per student at a private school (6,566 Birr) is seven times the out-of-pocket expenses for a similar student in a public school, but the total unit cost of education in a public school (10,512 Birr) is 1.6 times the cost of private tuition and associated expenses. At TVET, public education unit costs are five times the unit costs in private schools, and for tertiary education, full public costs are nearly fifteen times the private school costs

Figure 43 – Household out of pocket expenses by grade level and sector, and the unit costs by level and by payer

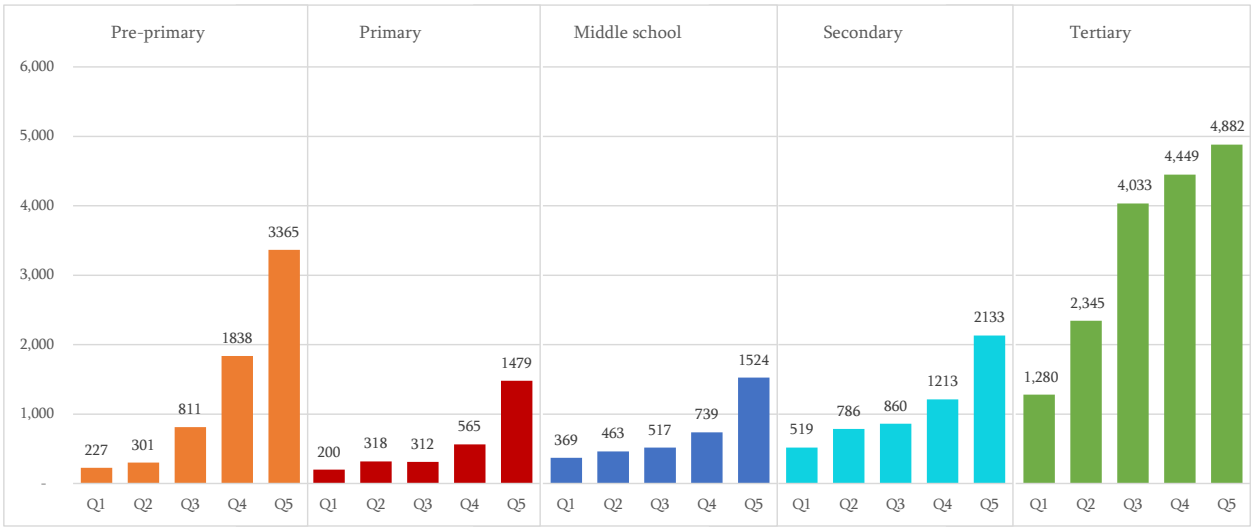


Source: Authors' calculations from BOOST, EMIS and household surveys.

132. Households in the poorest quintile pay the lowest per student out-of-pocket expenditures at all levels. This low level reflects what they can afford, and not the real out-of-pocket spending needs for students. To wit, a household from the lowest income quintile with children in primary school only would have increase its overall education spending 8 times to be able to have the same level of out-of-pocket expenses as a household from the highest income quintile.

133. Burdens on households from the lowest income quintiles increase rapidly as students progress to higher grade bands. For these households, the average out-of-pocket expenses per student at the middle school level nearly twice the average at the primary level, and for a middle school student to continue to secondary schools, the same household's out-of-pocket spending must increase by a factor of 2.5. In contrast, for households from the highest income quintile, the increase in out-of-pocket expenses from frimary to secondary level is 44 perecent. Thus, out-of-pocket costs serve as a real barrier for households, especially those from lower income quintiles (Figure 44)

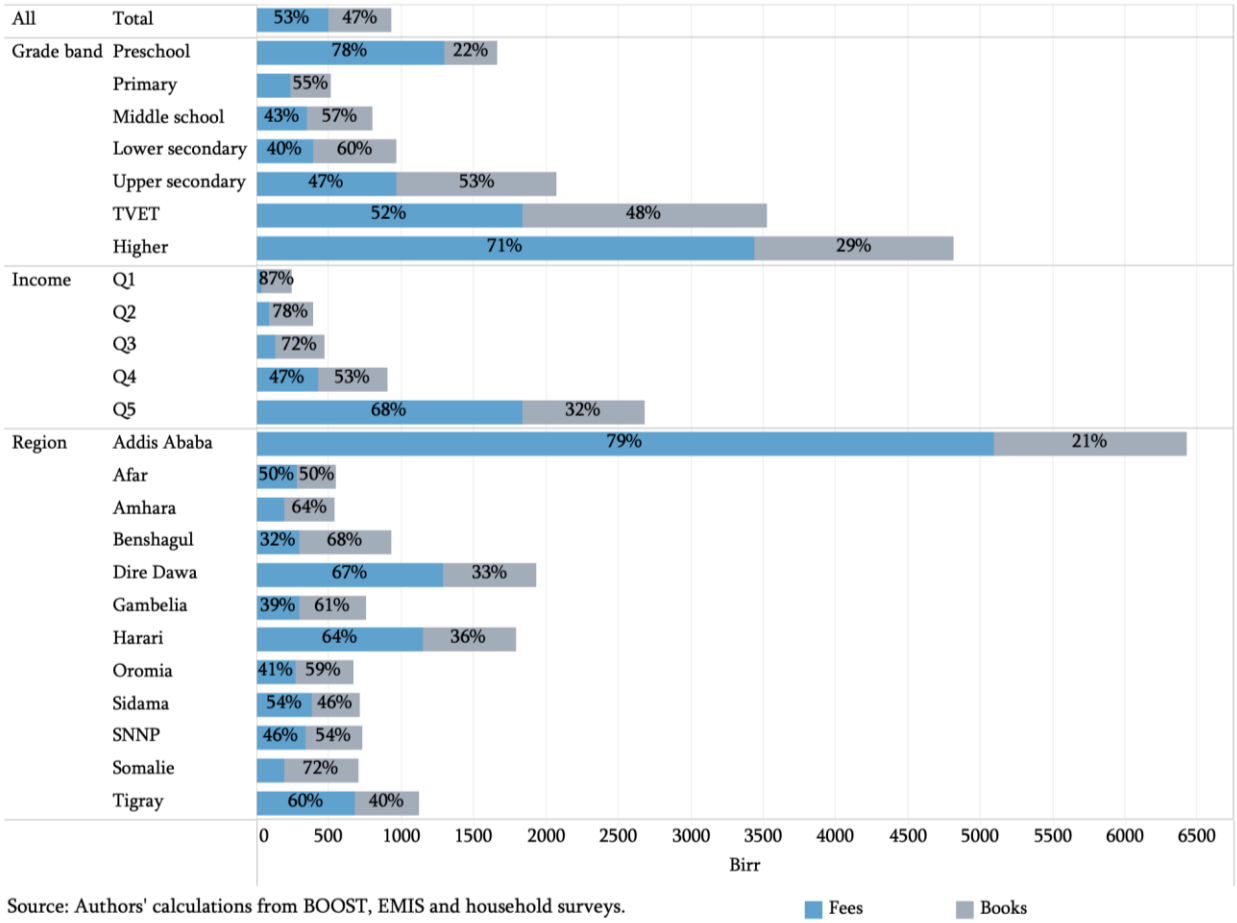
Figure 44 – Per student out-of-pocket expenditures by grade band and income quintile (in Birr)



134. There is great variation across different grade bands, income quintiles, and regions in how much households spend on each of their students, and how they allocate these spending. Across entire Ethiopia, household spending is split nearly equally between school fees and books. But expenses on textbooks consume a much larger share of household spending for low- and middle-income families, accounting for 87 percent of education spending per each student for households from the lowest quintiles, and over 70 percent for households from the second lowest and middle-income quintiles (Figure 45).

135. While the cost of education is mostly driven by school fees for pre-primary, TVET, and higher education, books drive the cost of education for primary and secondary education. The fact that school fees account for relatively lower share of education cost for primary and secondary education is partly explained by that fact that public education at primary and secondary levels are free of charge in Ethiopia. For higher income families, the costs are largely driven by fees, which is likely a result of higher participation in private education for the highest-income households. Likewise, fees are the main driver of household expenditures on education in Addis Ababa, Dire Dawa, and Harari where a larger share of students attend private schools.

Figure 45 – Level and share of household spending on each student, by type of spending, income quintile, grade band and region, 2019

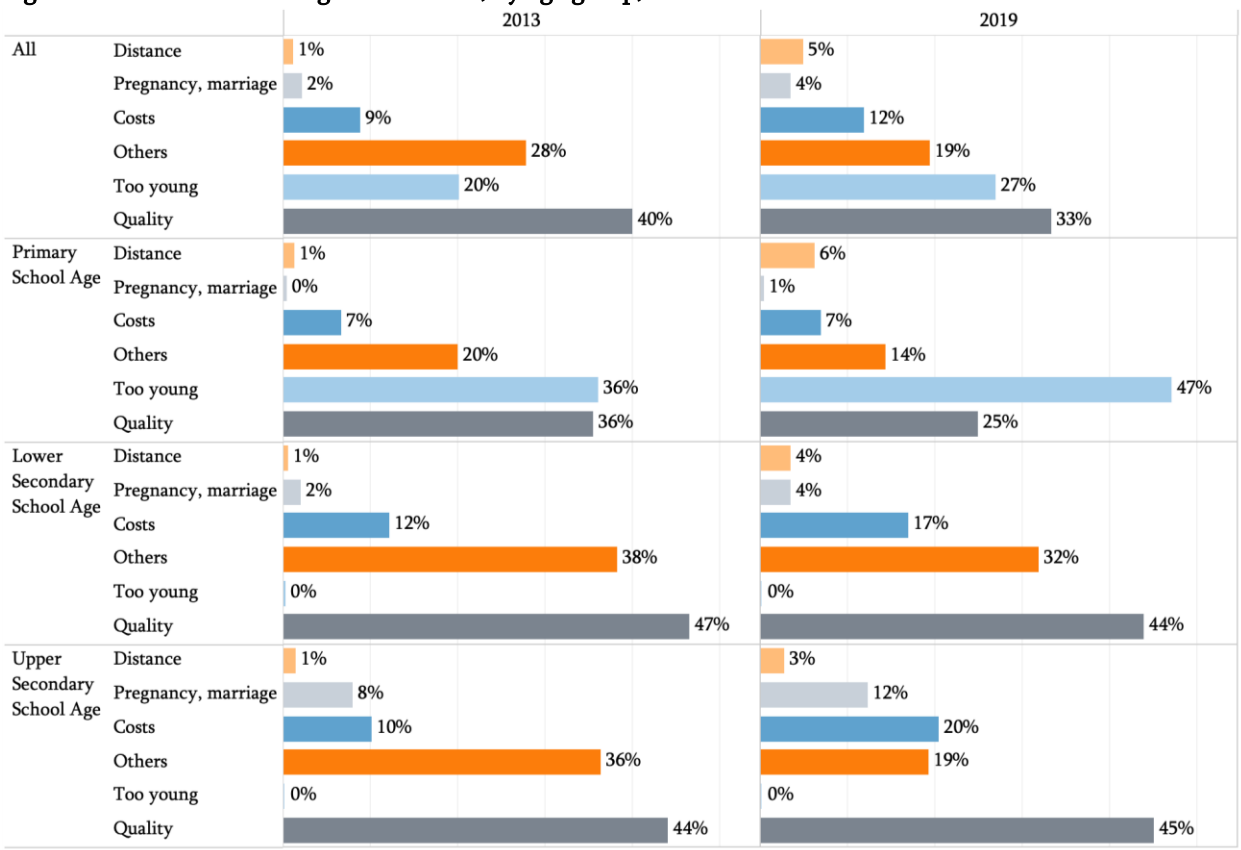


Source: Authors' calculations from BOOST, EMIS and household surveys.

136. Over time, the required out-of-pocket expenditures have become a bigger push-factor, but this is not the main explanation for why children and youth are out of school (Figure 46**).** The share of households who mentioned costs as a main reason increased mainly because of the increases in perceived costs for older students. For students who are at upper-secondary age group, parents mentioned costs twice as often in 2019 (20 percent) compared to 2013 (10 percent).

137. The detailed breakdown of reasons for out-of-school status by level of education shows quality concerns ranked the highest among the reasons listed for children being out-of-school at secondary levels. It is important to note that "quality" is a comprehensive term that may include many factors such as the classroom environment, school environment, teacher and school communications, and the students' ability to learn or complete assignments. That said, it is distinct from other reasons that are driven by non-school factors such as commute time necessary to get to school, or student specific characteristics such as age, pregnancy, or marriage. For primary school age children (7-12), parents increasingly mention that their children are 'too young' to attend school (up from 20 percent in 2013 to 27 percent in 2019). This response, too, might be capturing a multitude of factors, such as the distance between home and school, which may require parental time or funds if the child is considered too young to walk alone. In similar fashion, stunted growth in early childhood may undermine proper development of the child and may affect his/her readiness for school. Such issues can be addressed by provision of early child development (ECD) programs in combination with other child development activities including nutrition programs.

Figure 46 – Reasons for being out of school, by age group, 2013 and 2019



Source: Authors' calculations based on LSMS 2013 and 2019.

Section 6. System inefficiencies, bottlenecks, and sustainability of public spending

6.1. Summary findings

138. While Ethiopia dedicates a relatively large share of its public resources to education, per pupil spending, especially at earlier grade bands, is relatively low, limiting quality improvements. Thus, the main funding challenge for the country is to find a way to investment in improving quality and access in a relatively narrow fiscal space. This means, in the long run, the resources necessary to increase access to public education will have to be found within existing resources by elimination of inefficiencies, reallocating of existing budgets to higher-value investments. But in the short run, such system efficiency improvements will require additional funding to improve learning quality (for example through a highly qualified teacher workforce, and other school-level interventions that could reduce repetition and drop-out rates).

139. It is also unlikely that the households—especially lower-income households and households in rural areas—will be able to increase their education expenditures. Thus, funding necessary to increase their access and participation would have be found elsewhere.

140. Analysis of efficiency metrics show that there is much room for improvement. Current dropout and repetition rates show that for every 100 children that start Grade 1, only 9 will complete upper secondary education within the prescribed 12 years and without any delays; 46 will be repeating at least a year, and 41 students would drop out—most by the end of the primary cycle.

141. High repetition and dropout rates result in the loss of 3 percent of public education spending and about 4 percent of household spending on education. This is the equivalent of about a loss of 0.11 percent of GDP for the public sector, and 0.04 percent total household consumption for families with school age children. When one includes the indirect costs off lost wages for students who drop out, the annual cost of the inefficiencies in moving students through grades bands goes up to 2.2 percent of GDP.

142. Schools across woredas vary greatly in terms of how they use their resources. Compared to the schools in best-performing woredas that deliver the greatest access and learning for a given level of resources, the average schools used its resources 25 percent less efficiently. There is even great variation in efficiency within zones, suggesting that better outcomes are related to factors other than inputs, and schools—especially those that share a zone or a region—can learn from each other and emulate the management and operational practices of similarly-resourced schools with less inefficiencies.

143. Eliminating efficiencies in the system is a difficult task as it would require investments in education quality and improved management and operating practices at schools. But if achieved, this could allow Ethiopia to reach its access goals with existing resources in the system. For example, achieving universal or near-universal education by 2030 would imply a 64 percent growth in enrolment. This growth would largely be driven by growth in the population of school-age children and youth, as well as the system's ability to move students to higher grades. With universal access to basic and secondary education, new entrants to higher education would also nearly double by 2030, and total higher education enrollment would increase from 805,000 to 1.4 million (keeping share of students transitioning to higher education constant at 5 percent and the proportion of new entrants constant at 34 percent). If current patterns of public and private

enrollment hold through this ten-year period, by 2030 private school enrollment would increase to 5 million (86 percent growth), and public school enrollment would increase to 39 million (66 percent growth).

144. With this level of enrollment, even if the student-teacher ratios remained at current levels, the number of teachers serving preprimary through secondary levels would have to increase by about 500,000 (75 percent) over the next ten years. Adding new teachers to bring student teacher ratios to recommended levels would require expanding the teacher pool by 115,000 today to nearly 735,000 teachers and increase it to over 1.2 million by 2030. About 85 percent of the growth in teachers would be in the public sector, bringing the number of teachers serving in public schools from 561,000 to 973,000 under current staff ratios or to 1.2 million under recommended staffing ratios.

145. To reach universal coverage by 2030, the total spending in education from all resources would have to increase by about 89 percent, even if one kept unit costs constant (in USD). Growth in spending would outpace growth in the underlying enrollment (68 percent) because a larger share of student would be attending upper grades by 2030, where the per pupil costs are higher both for households and the public.

146. Investing in quality would require a higher level of resource commitment from the public sector. Allowing for a 4 percent growth in unit costs, for example, would require Ethiopia to set aside nearly 5.2 percent of its GDP for public education by 2030 compared to the current allocation of about 4.6 percent.

147. Much of the resources needed for enrollment growth can be found in existing sources, but this would require policy changes that might not be popular. For example, pausing capital investments at higher education for ten years could generate resources that is the equivalent of about half of percent of GDP. Similarly shifting half the operating costs of higher education to households by increasing tuition share to 50 percent from its current 15 percent can generate resources equivalent of 0.4 percent of GDP.

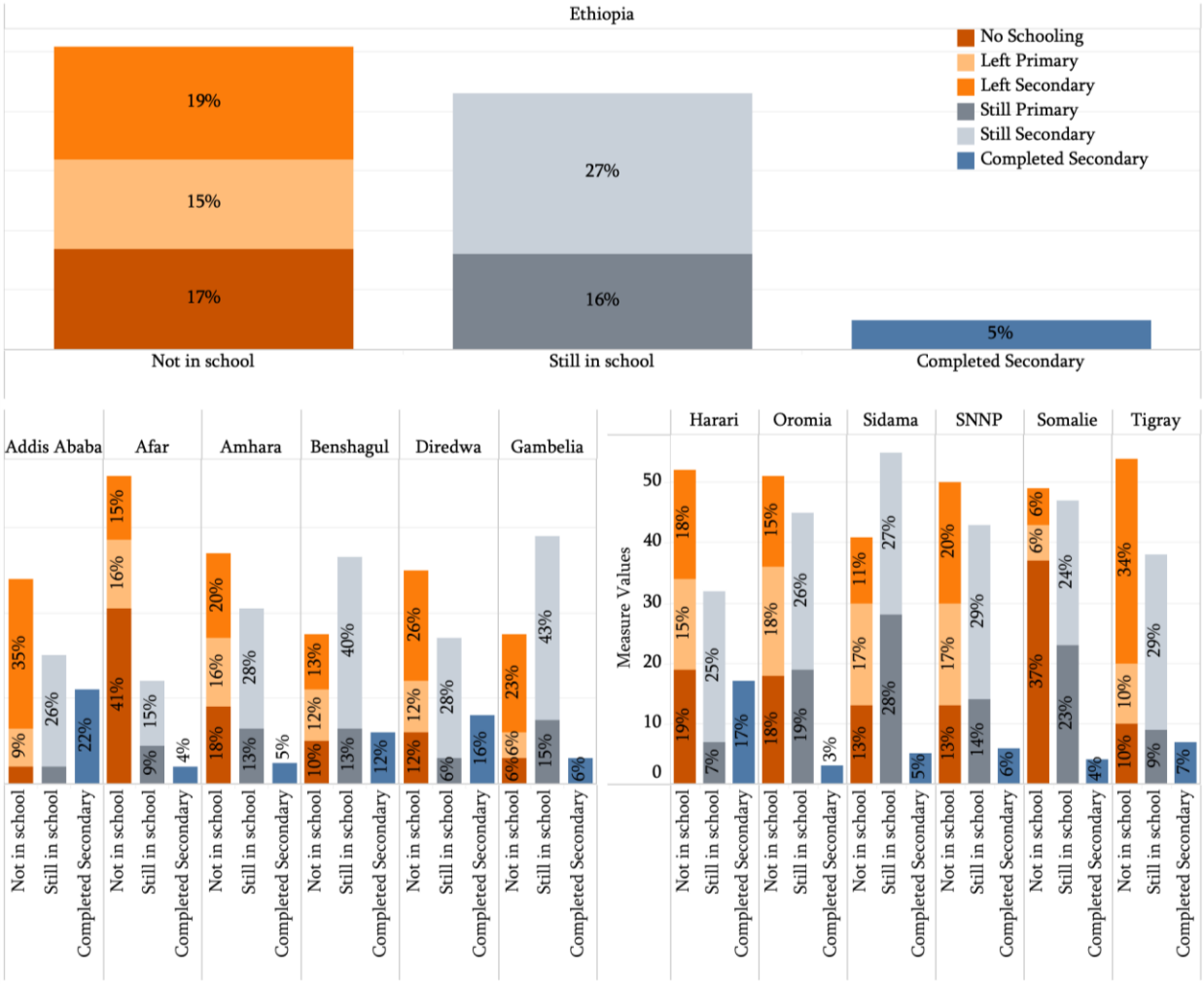
6.2. Internal inefficiency

148. The main sources of internal inefficiency in the public education system are the high rates of repetition and drop-out. Importantly, repetition and dropout rates are higher among lower-income students and rural students suggesting that improvements in these metrics would also increase equity in the system. As discussed in Section 4, during the six years between 2014 and 2019, the repetition rate averaged at 6 percent and the dropout rate averaged at an astounding 12.3 percent through the primary cycle. This means for each cohort of 100 students that begin Grade 1, only 20 complete the primary cycle within 8 years, 36 leave school, and 44 repeat a grades at least once.[60] Dropout and repetition rates remain high through the secondary school, with an additional 8 students leaving school and 2 repeating earlier year and leaving 9 out of the original cohort completing school on time.

149. As a result, 34 percent of the youth and children who at one time attended school drop out before graduating. And, with an additional 20 percent of school age children and youth never attending school, at any time, more than half (51 percent) of the school-aged children and youth (age 15-24) are out of school across the entire country. The share of youth who have started school and then left is greatest in Addis Ababa and Tigray (four out of ten drop out before the end of secondary), and lowest in Somalie (where one out of ten drop out), but the overall out-of-school rate is relatively stable across regions meaning when dropout rates are low, the main reason is that the share of children and youth excluded from education is high (Figure 47).

[60] See Figure 27**Error! Reference source not found.**on page 40.

Figure 47 – Schooling status of school-aged children and youth, 2019



Source: Authors' calculations based on LSMS 2013 and 2019.

150. High rates of repetition and drop out mean that some resources spent on education by the government and by the households are not as productive as they could be. An analysis of the cost impacts based on the number of students who repeat or drop out, and the unit costs of education (both public and private) show that approximately 3 percent of all public expenditures and 4.7 percent of household expenditures on education go to waste because of repetition or dropping out. In addition, children and youth who drop out will have lower wages, so there is an opportunity cost in the form of foregone wages, which is expected to reduce household consumption over the life of the child by 2.9 percent. When put together, the total costs and forgone opportunities because of repetition and dropping out exhaust 2.6 percent of Ethiopia's GDP (Table 7). It is important to note that while improving repetition and drop-out rates will allow Ethiopia to recoup the wasted household and government expenditure relatively quickly, it will take years to reverse the negative impacts of these inefficiencies on earnings of residents. That the greatest benefits of reduced inefficiencies are dispersed, in the future, and uncertain, makes it difficult to focus attention on the high repetition and dropout rates.

Table 7: Costs of internal efficiency and dropout rates (in millions of Birr)

		Repetition	Dropout	Total	Share of GDP	Share of Consumption	Share of spending
Public spending	Primary	1,495	302	1,796			5%
	Lower secondary	661	33	694			2%
	Upper secondary	519	15	534			2%
	Total	2,675	350	3,025	0.11%		3%
HH spending	Primary	435	88	523			5.0%
	Lower secondary	71	4	74			3.3%
	Upper secondary	132	4	135			5.0%
	Total	637	95	733		0.04%	4.7%
Forgone earning	Primary	25,441	18,364	43,806			
	Lower secondary	2,916	2,990	5,905			
	Upper secondary	2,651	2,078	4,728			
	Total	31,008	23,431	54,439		2.9%	
Grand total	Primary	27,371	18,754	46,125			
	Lower secondary	3,647	3,026	6,674			
	Upper secondary	3,302	2,096	5,398			
	Total	34,320	23,877	58,197	2.2%	3.1%	
Share of GDP		1.3%	0.9%	2.2%			

Source: Authors' calculations based on BOOST, EMIS and household surveys

151. The costs associated with repetition and dropout vary by region. For instance, public funding exhausted due to repetition and dropout at the primary and secondary levels is 7.7 percent in Dire Dawa and 2.6 percent in Addis Ababa (Appendix figures 24 and 25). Similarly, households' loss of their total current spending on education at the primary and secondary levels are 11.8 percent in Dire Dawa and 4.7 percent in Addis Ababa. The variation in costs associated with repetitions and dropout across regions in Ethiopia has direct implication on educational inequalities across regions. Thus, successful government interventions that improve repetitions and dropout rates in low performing regions help narrow down the internal inefficiency gap across regions, and hence narrows down education inequalities across regions.

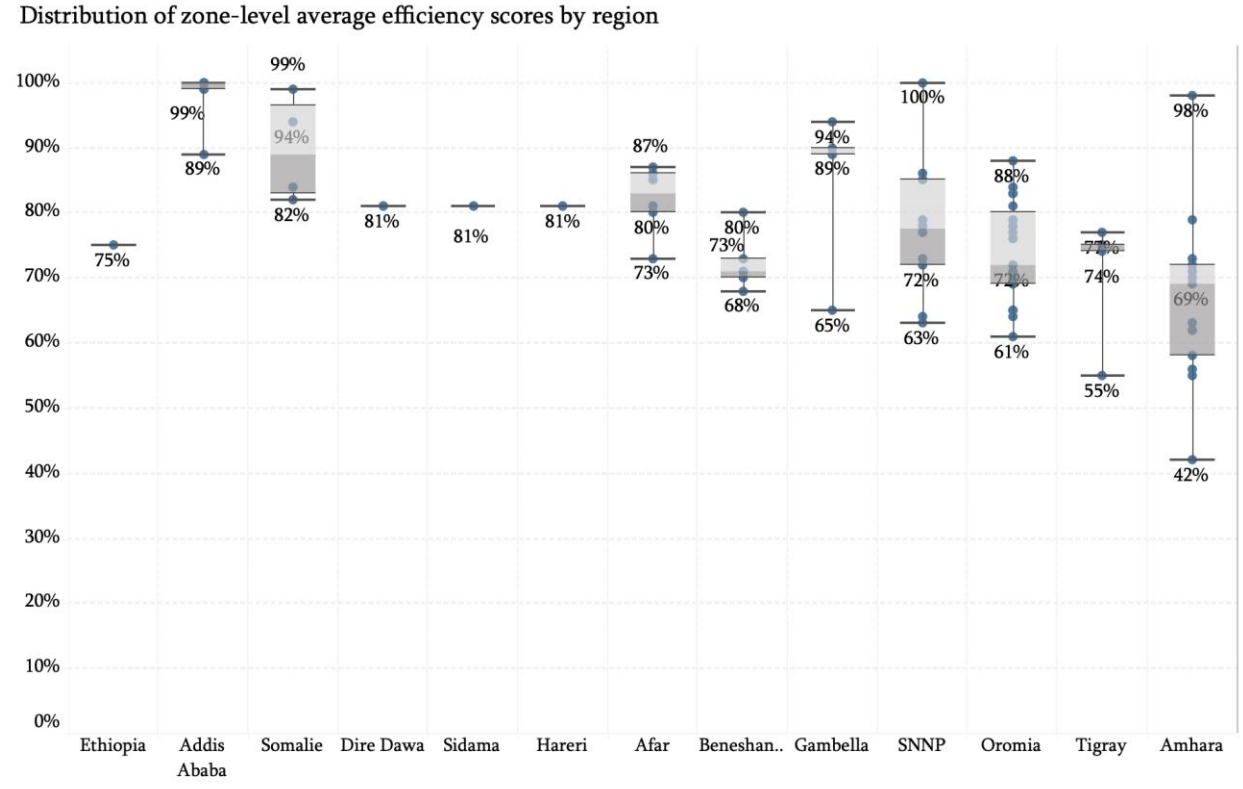
152. High repetition and drop-out rates stem from both internal and external factors. Low teaching quality, an unwelcoming school environment, distance from school, and household constraints such as costs collectively contribute to high dropout rates. Given the value parents attach to quality in deciding whether their students should be in school or not, schools would need to invest in quality education and a more positive student engagement to reduce repetition and drop-out. While an automatic promotion policy which Ethiopia has already adopted for primary grades can help move students more efficiently to higher grades, it should also be done with sufficient investments in education quality so not to compromise learning outcomes.

6.3. System inefficiencies

153. Repetition and dropout rates are two indicators of how well the public education system uses its resources. But these two indicators are a result of many other system-level characteristics such as the number of students that go through the system, availability, quality, and motivation levels of teachers who teach them, and the resources, such as textbooks, available to schools to educate students. Further outcomes such as student access, test scores, and ability to attend school at the appropriate age also matters in the assessment of the efficiency of the entire system.

154. To assess overall system efficiency, this report employed a Data Envelopment Analysis model with various system inputs that measure resources and need and system outputs that measure outcomes. The DEA analysis uses school level differences to estimate what inputs would be necessary across the entire country to produce the same education outcomes if each school operated with the same efficiency as the most efficient school (see Annex A methodological notes). The estimate is from primary school level and all indicators are at school level except per student spending which is linked at woreda level. The five inputs employed in the model are student teacher ratio, number of teachers, teacher salary, per student public spending, and enrollment. The six outputs employed are the gross enrolment ratio, Grade 5 survival rate, gender parity index, test scores, Grade 2 to Grade 1 enrollment ratio, and share of pre-primary school age children in school. The model calculated detailed efficiency scores at the school level, but the below figures present the aggregated average scores at region and zone levels, respectively.

Figure 48 – Distribution of average efficiency scores, by region

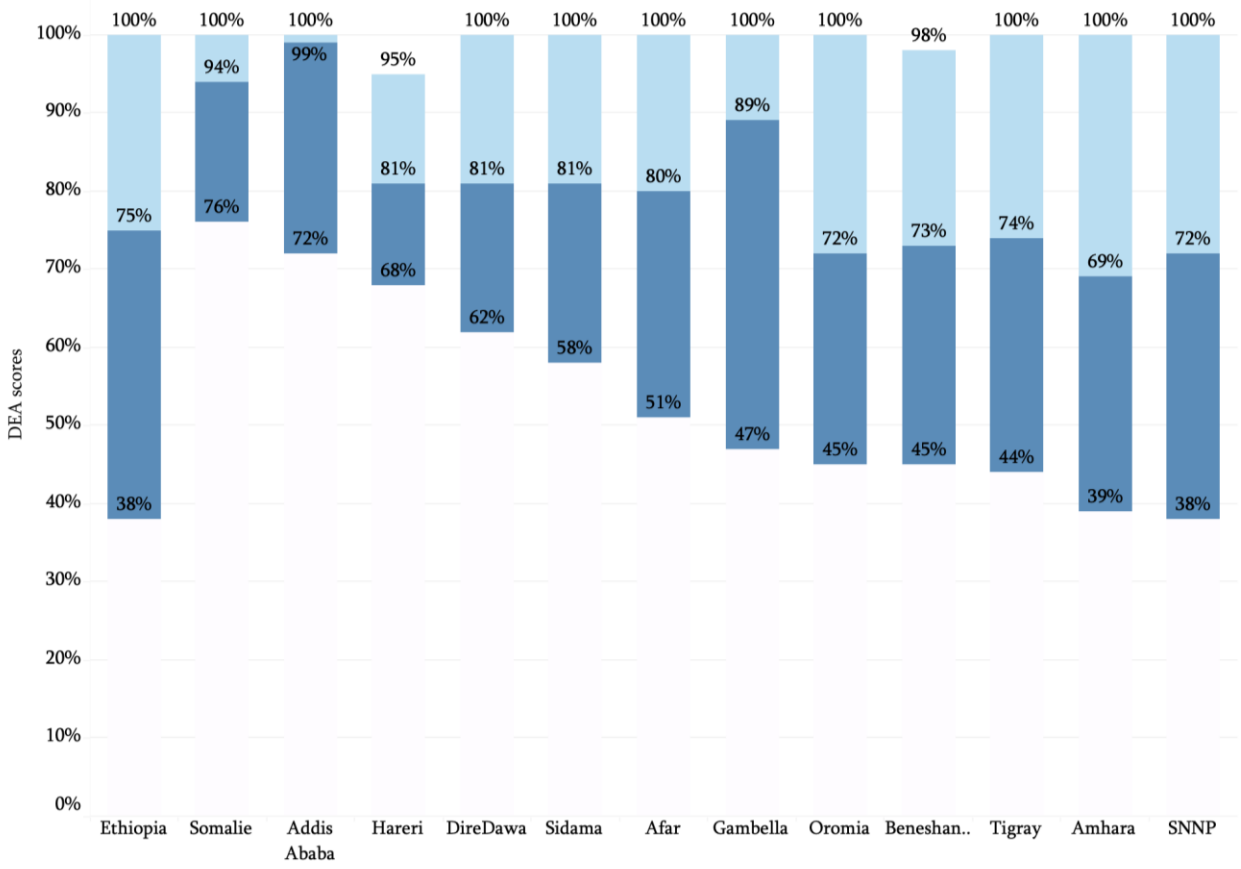


Source: Authors' calculations based on the DEA analysis.
Note: the values are the average and interquantile range for each region.

155. Results from the DEA model projects a national efficiency score of 75 percent for the public education system. This means, the same level of education outcomes (in access and quality) could have been achieved with about 25 percent less resources if all schools were as efficient as the schools in the most efficient woreda in the sample. There are, however, substantial variation across the performance of woredas across regions and even across zones within regions. Take Amhara region as an example, where the efficiency score varies from the lowest 42 percent in Bahir Dar city to the highest 98 percent in Dessie city. A similar within-region variation in efficiency score is observed across regions in Ethiopia, except in Addis Ababa where average efficiency scores across zones are comparable (Figure 48).[61]

156. Variations in system efficiency is also great at the woreda level. Across entire Ethiopia, 25 percent of all woredas have schools that operate at maximum efficiency levels, but another 25 percent are operating at 38 percent efficiency, meaning nearly 60 percent of their resources are wasted. In Addis Ababa, schools in half the woredas are operating at 99 percent efficiency, whereas the bottom 25 percentile of schools have an efficiency score of 72 percent of less. In contrast, In Amhara and SNNP, schools in the bottom 25 percent of the woredas have an efficiency score below 40 percent (Figure 49).

Figure 49 – 25th percentile, median and 75th percentile of zone level DEA scores, by region



Source: Authors' calculations based on the DEA analysis.

157. Some of the inefficiencies in the system is driven by several factors which are discussed in previous sections. These include limited resource availability, which forces students to learn in crowded schools and

[61] Dire Dawa, Sidama, and Harreri had only one observation each.

classrooms, high dropout and repetition rates and delayed entry. But there are possibly school-specific reasons such as the business and management practices of schools, sub-optimal teachers' development programs and teachers' absenteeism. The substantial within-region variation in schools' efficiency suggests that reasons for inefficiencies go beyond system level constraints. On the upside, this great variation in efficiency outcomes suggest that within each region, woredas and schools can learn from each other. For example, regions can identify a model school with strong efficiency score outcomes and support other schools to emulate the operations and management practices of the model school.

6.4. Projections of enrollment and resource needs

158. Ethiopia's education sector is facing the dual challenge of improving access and improving learning outcomes. Meeting these challenges would require adding more resources such as teachers and schools, while improving the learning environment to reduce repetition and drop-out rates.

159. The main determinants of enrolment growth over the next ten years will be (a)the growth in school age population; (b) gross enrolment rates, which, in return rely on gross intake and promotion rates; and (c) increase in access, measured by the change in share of children and youth who never attend school. The projections presented here are driven by a universal enrolment goal at Grades 1 through 12 by 2030, hence reducing out-of-school youth and children to near zero (see Annex A methodological notes, Note 3). Other assumptions that drive the model are presented in Table 8:

Table 8 – Assumptions underlying enrollment projections, Grades 1 to 12

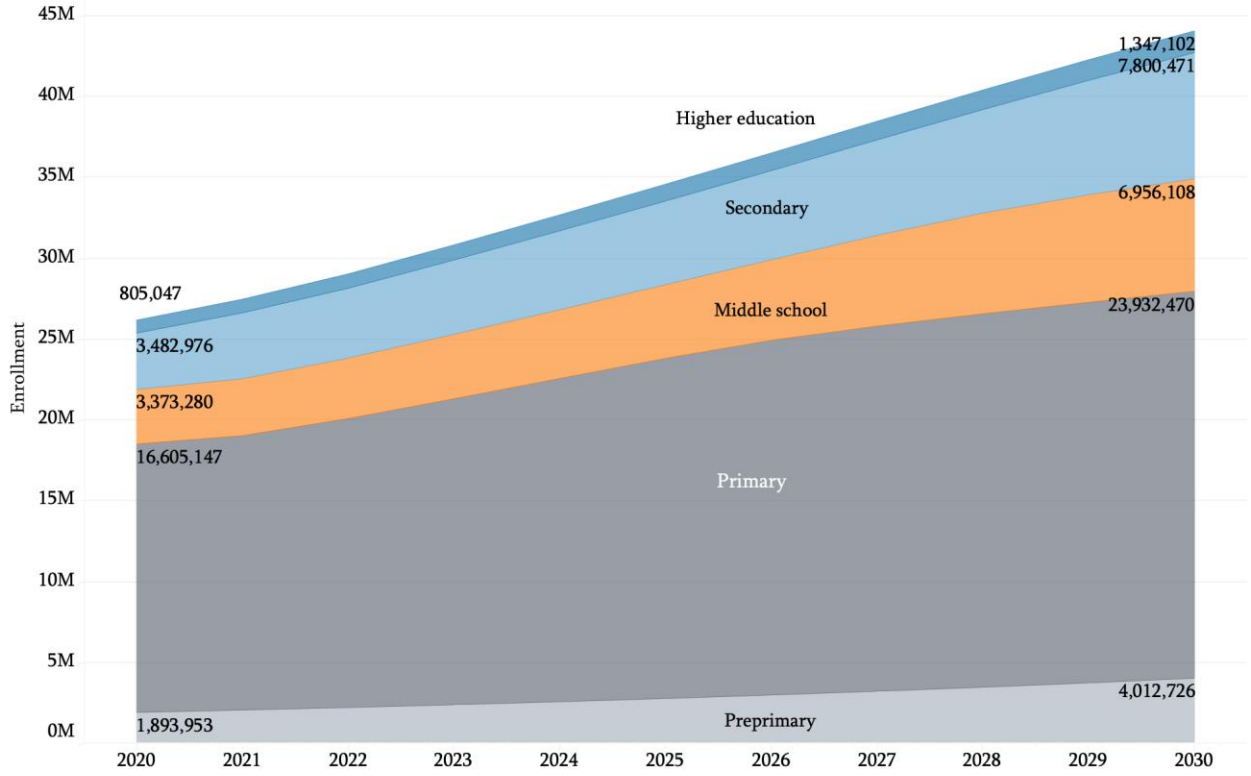
	2020	2030
Gross intake rate	128%	125%
Grade 6 completion rate	69%	103%
Grade 8 completion rate	60%	88%
Gross Enrollment rate primary	95%	117%
Gross enrollment rate of middle school	62%	112%
Gross enrollment rate secondary	20%	54%
Gross enrollment rate ECD	15%	28%

160. With these assumptions, total enrollment in Grades 1 to 12 would increase by 64 percent from 23.4 million in 2020 to 38.6 million in 2030. Additionally, with many more students completing secondary schooling, new entrants to higher education would also increase from 291,000 to 487,000 (even when holding the share of students continuing into higher education constant, at 5 percent) increasing total higher education enrollment from 805,000 to 1.4 million

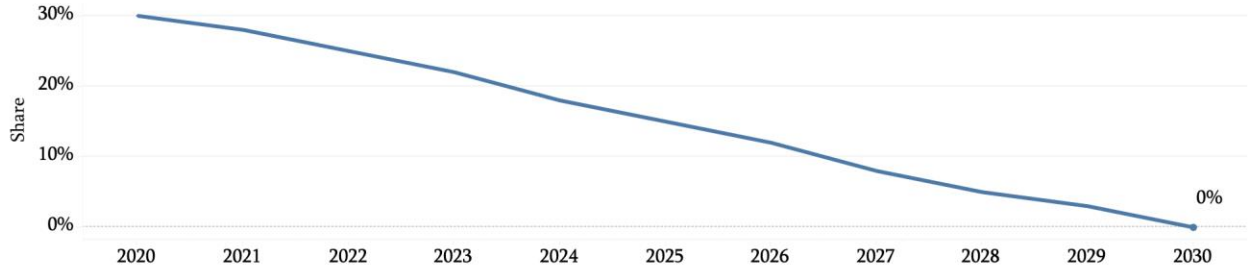
161. Small changes in GER would result in large enrollment increases over time. For example, if GER at the pre-primary level were to increase from 15 percent to 28 percent, pre-primary enrollment would increase from 1.9 million to 4 million (211 percent growth).

162. Taken together, these modest changes in repetition, drop-out, and GER rates could increase total enrollment in all schools from 26 million to 44 million, providing near-universal schooling for the population aged 5 to 18 by 2030 (Figure 50). If current private school enrollment patterns hold through this ten-year period, by 2030 private school enrollment would increase to 5 million (86 percent growth), and public school enrollment would increase to 39 million (66 percent growth).

Figure 50 – Projections of enrollment with a goal of universal education by 2030



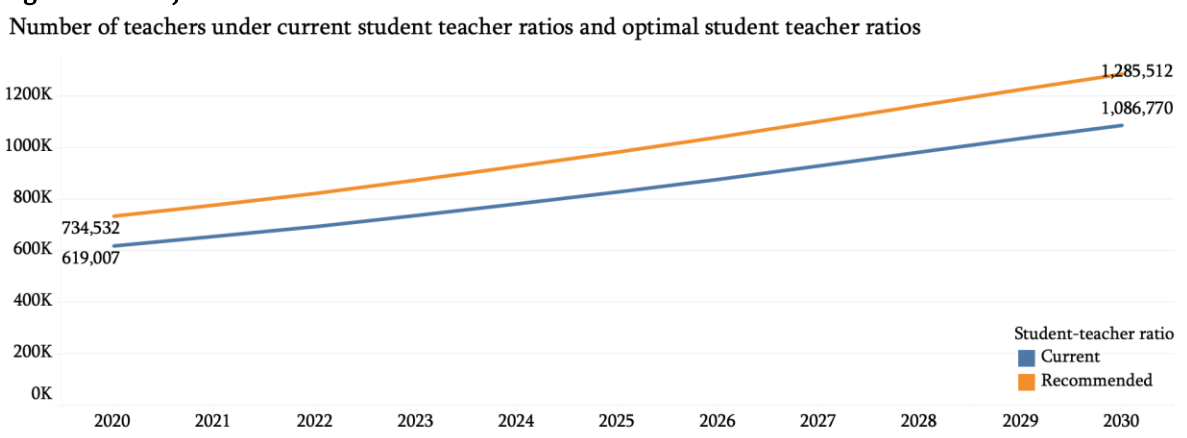
Share of out-of-school children aged 6-18



Source: Authors' calculations.

163. With this level of enrollment, even if the student-teacher ratios remained at current levels, the number of teachers serving preprimary through secondary levels would have to increase by about 500,000 (75 percent) over the next ten years (75 percent). Adding new teachers to bring student teacher ratios to recommended levels would require expanding the teacher pool by 115,000 today to nearly 735,000 teachers and increase it to over 1.2 million by 2030 (Figure 51). The number of teachers would have grow faster at preprimary, middle, and secondary schools, largely driven by the model assumptions of faster increase in access at these levels. At the same time, moving from the current student teacher ratios to optimal ones would require the greatest number of teachers be added at the preprimary and secondary levels. This is because, as shown earlier, the student-teacher ratios at higher grade bands are currently close to recommended ratios (Table 6 on page 37). About 85 percent of the growth in teachers would be in the public sector, bringing the number of teachers serving in public schools from 561,000 to 973,000 under current staff ratios or to 1.2 million under recommended staffing ratios.

Figure 51 – Projections of teachers under current and recommended student-teacher ratios



Number of teachers needed by level

		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Preprimary	Current	38,652	41,666	44,915	48,417	52,192	56,261	60,648	65,377	70,474	75,969	81,892
	Recommended	67,641	72,915	78,600	84,729	91,335	98,457	106,134	114,409	123,330	132,946	143,312
Primary	Current	345,941	353,627	372,408	394,238	416,589	438,353	457,107	470,505	481,203	490,431	498,593
	Recommended	415,129	424,353	446,890	473,086	499,907	526,023	548,528	564,606	577,444	588,518	598,312
Middle school	Current	105,415	109,950	116,599	124,448	132,670	142,297	155,474	175,367	194,602	207,705	217,378
	Recommended	112,443	117,280	124,373	132,745	141,515	151,783	165,839	187,058	207,576	221,552	231,870
Secondary	Current	128,999	150,962	160,121	170,199	180,800	191,709	204,253	218,737	237,001	262,198	288,906
	Recommended	139,319	163,039	172,930	183,815	195,264	207,046	220,593	236,236	255,961	283,174	312,019

Source: Authors' calculations.

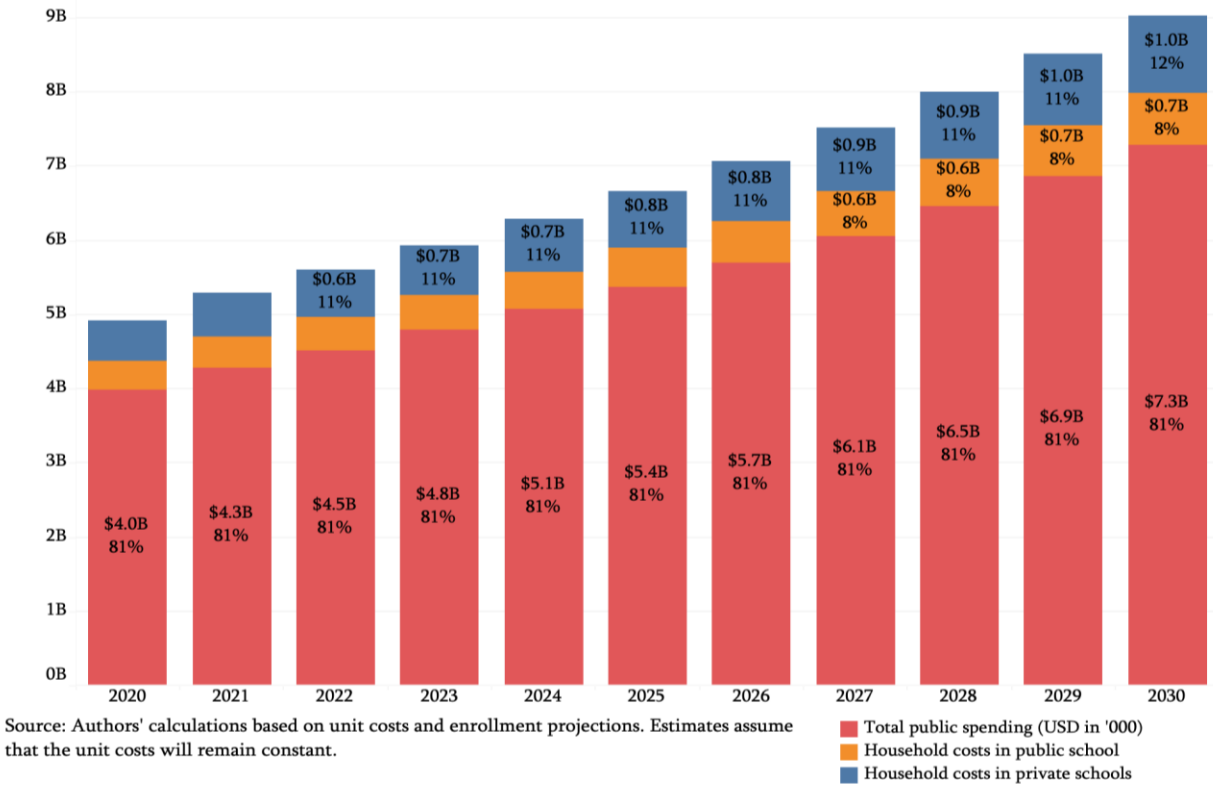
164. The total spending for the education sector will depend on the unit costs at public schools, out-of-pocket expenses for households for students enrolled in public schools, and the full cost of education for households when their students are enrolled in private schools. As shown in Section 3, unit costs vary greatly across levels and are higher in private schools for earlier grades. Total spending and how it is divided between public funding and households also depends on the share of enrollment in private schools. This share, across all grade bands is 10 percent, but is heavily tilted towards private schools at the preprimary level and for higher education. The cost projections used here assume that the shares will not change over time. If a larger share of students begins attending public schools, for example, then the overall financing burden will shift from households to the public sector (Table 9).

Table 9 – Assumptions underlying enrollment projections, Grades 1 to 12

Level	Public	Household Public out of pocket	Household Private	Share of enrollment in private schools
Preprimary	$67	$8	$151	42%
Primary	$67	$11	$186	5%
Middle school	$190	$18	$221	5%
Secondary	$354	$35	$300	15%
Higher Education	$2,909	$141	$203	49%

Note: The exchange rate underlying the estimates is 27 Birr per USD reflecting the exchange rate from 2018 when the unit cost estimates were obtained

Figure 52 – Spending projections, by source of funding



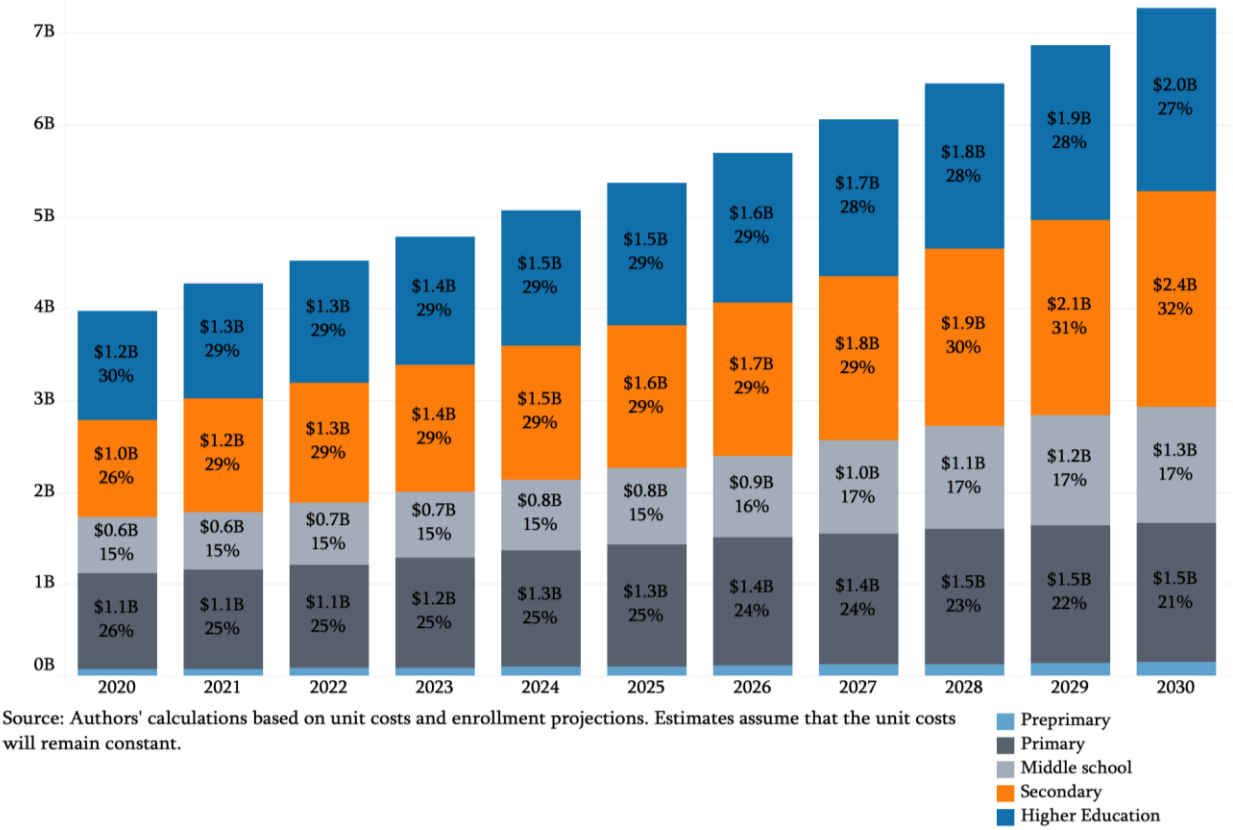
Source: Authors' calculations based on unit costs and enrollment projections. Estimates assume that the unit costs will remain constant.

165. With these assumptions, the total spending in education will increase from $4.9 billion in 2020 to $9 billion in 2030, growing by about 89 percent (Figure 52). About 81 percent of this spending will be funded by public resources, and the remainder by households and household costs would be split about equally between public schools. Household spending would be split about equally between out-of-pocket expenditures for students in public schools and household spending for students in private schools where about 11 percent of the students would be enrolled.

166. Growth in spending would outpace growth in the underlying enrollment (68 percent) because a larger share of student would be attending upper grades by 2030, where the per pupil costs are higher both for households and the public. Accordingly, the share of expenditures on primary education will decline over time from 28 percent to 22 percent of all spending, while the share of expenditures on middle and secondary schools will increase from 41 percent of all spending to 48 percent of all spending (and the share of student enrolled at these levels would increase form 26 percent to 33 percent). (Appendix figure 26).

167. If unit costs did not change in real terms, total public expenditures on education would increase from $4 billion in 2020 to $7.3 billion in 2030 (Figure 53). Public spending would account for about 91 percent of all spending in public schools—households would be paying another 9 percent out-of-pocket supporting the needs of the students. With constant unit costs, higher education would continue to account for a relatively high share of expenditures, but by 2030, it would no longer be the largest use; rather, the large share of spending would be at secondary level at 33 percent of all public expenditures.

Figure 53 – Public expenditure projections under constant unit costs, by grade band

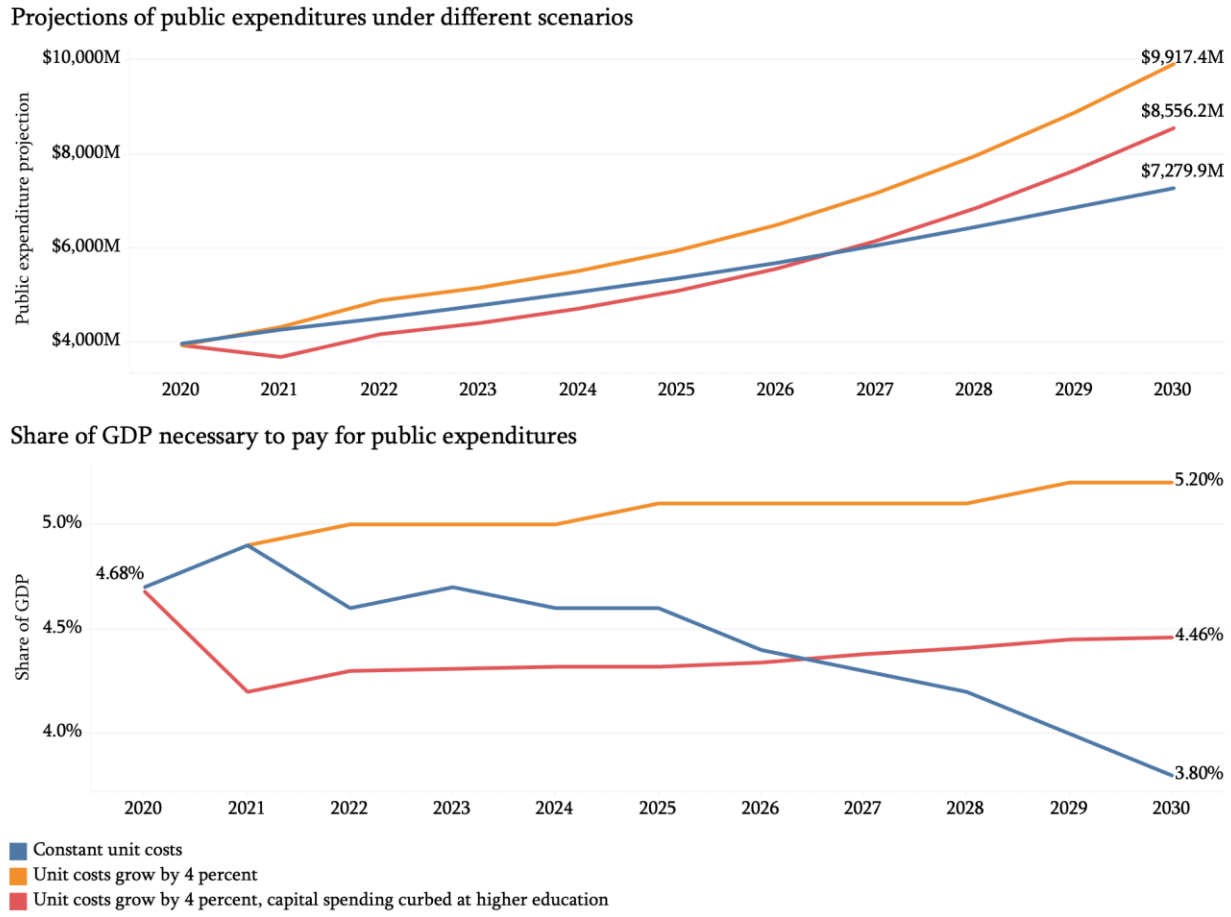


Source: Authors' calculations based on unit costs and enrollment projections. Estimates assume that the unit costs will remain constant.

168. The assumption that unit costs would remain constant (measured in USD) is a conservative one, because it implies that there are no quality improvements or adjustments. It is likely that unit costs would have to grow, especially with the necessary investment in learning that can help reduce repetition and dropout rates. To explore potential impacts, we explored an alternative scenario where unit costs grew by an annualized rate of 4 percent total expenditures would grow much faster compared to the baseline scenario of constant unit costs and reach nearly $10 billion in 2030 (Figure 54). This would require Ethiopia to set aside nearly 5.2 percent of its GDP for public education by 2030 compared to the current allocation of about 4.6 percent.[62]

[62] Estimated based on 2017/18 expenditures.

Figure 54 – Projections under three scenarios, and share of GDP necessary to pay for public education expenditures



Source: Authors' calculations

169. As shown earlier, there are inefficiencies in the system that could pay for the increased need from existing resources. For example, repetition and drop out costs are the equivalent of about 0.1 percent of the GDP excluding foregone wages and salaries. Importantly, as shown earlier, about 44 percent of total higher education spending (which accounts for about 25 percent of all public education spending) is now invested capital spending in higher education, supporting the building of new universities and expanding existing universities. We modeled a case where that spending would be curtailed back for the next ten years, reducing capital spending to about 15 percent of higher education spending. Under this scenario, the country can pay for higher unit costs, while keeping the share of education spending under 4.5 percent of GDP. Similarly, shifting half of the operating costs in higher education to students (from its current rate of 15 percent) can generate additional resources equivalent of 40 percent of GDP. These resources, alone, or combined, would create sufficient funding to pay for growing enrollment and investments in quality (Table 10).

Table 10 – Potential sources associated with system changes and improvements

Available resources	Share of GDP
Repetition and drop out	0.10%
Capital spending in higher education	0.50%
Shifting half the cost of operating costs to students at higher education	0.40%

Source: Authors' calculations

Section 7. Recommendations for the future

170. Ethiopia's education sector now faces multiple challenges including returning all students back to the classroom, catching up with unfinished learning, improving learning outcomes, and expand access to accommodate the fast-growing population of school-age children and youth. To achieve these outcomes, reforms will have to be accompanied with both increased resource mobilization as well as improved efficiency and equity in the allocation and use of resources.

171. In the long run, the greatest pressure will come from its large and growing school-age population. In the short run, the main funding challenge for the country is to find a way to investment in improving quality and reducing inefficiencies in a relatively narrow fiscal space.

172. As shown in the last section, achieving universal or near-universal education by 2030 would imply a 64 percent growth in enrolment and 75 percent growth in the number of teachers. And adding new teachers to get to recommended student-teacher ratios would require an additional 115,000 teachers, mostly at earlier grades. Under the current cost structure, paying for this growth would imply total education spending (government and household spending combined) would have to increase by 89 percent and public expenditures increasing from the current levels of approximately $4 billion to over $7 billion in 2030, which is approximately the 4.5 percent of the projected GDP for that year. The costs pressures would increase if the country increased unit costs to improve quality of services. A 4 percent growth in unit costs, for example would require Ethiopia to increase its spending to 5.2 percent of its projected GDP by 2030.

173. While increasing access would require more resources, in the case of Ethiopia, may have to be found within existing budgets, since the country is already spending a significant level of public resources on education. It is plausible for Ethiopia to reach a goal of universal education by 2030 without permanent increases in education spending. This would require the country to better coordinate funding goals across different levels of government and use existing funding in a different way.

174. Increasing access may require household-level interventions as out-of-pocket expenses are a real barrier for lowest income households. But the perception of low quality of schools is even a bigger barrier, underscoring the importance of investing in quality and creating a welcoming environment at schools.

7.1. To improve funding strategies Ethiopia could consider the following:

175. Expand the country's fiscal space and improve revenue mobilization. Revenue mobilization has been on the decline in Ethiopia since 2015, impacting all public expenditures including education. Between 2015 and 2020, the share of revenues in the GDP declined from 16 percent to 11 percent, falling further behind the government target of 17 percent. As a result, the Ethiopian government implemented expenditure reductions to keep the fiscal deficit in order. While major revenue reforms as the country is pulling out of a period of significant economic stress may not be possible, reforms that strengthen the revenue regime over time can create significant resources. For example, increasing revenue mobilization to 17 percent of GDP while keeping the share of education spending in the budget would increase public education funding by 54 percent.

176. Coordinate financing strategy across all levels of government: At present, there is no coordination between federal and regional governments on education goals or funding strategies. While the MoE provides guidelines on the distribution of the block grants, which reflect certain expenditure needs at the regional level, there is no regional responsibility to report back to MoE how these funds were used. While the principles of fiscal federalism provide for local autonomy, a regional commitment to improving education

outcomes through the implementation of regional funding formulas can increase resource availability at the regional level.

177. **Benchmark education spending for regions and woredas:** One potential means of creating a coordinated financing strategy would be to benchmark education spending for regions and woredas. At a minimum, maintenance of effort requirements on the use of block grants at the regional and woreda levels can ensure that schools budgets do not decrease from year to year.

178. Develop mechanisms to increase non-public revenue at the tertiary level. Spending on tertiary education accounts for 40 percent of total public funding yet enroll 3 percent of all students. At the tertiary level, households contribute about 6 percent of total spending and approximately 10.3 percent of total spending. Since returns to higher education is largely capitalized in wages, the share of tuition paid for students can be increased from its current 15 percent to a higher level. Shifting a greater share of the costs to households at the tertiary level can free a significant amount of resources. For example, if students paid half of the operating costs for higher education, this would have freed resources that are the equivalent of about 0.4 percent of GDP, creating additional funding to invest in earlier grades or pro-poor funding policies.

179. **The country can set targets so that household's contribution to tertiary education spending matches or exceeds their contributions across earlier grade bands.** For example, at present household's share in total tertiary education spending on education is the equivalent of 10 percent of recurring expenditures. Increasing this share to 21 percent (which is what households pay at the primary level) would free Birr 3.1B or 3 percent of the total recurring expenditures across all levels of education. If cost sharing looked more like what it is at the preprimary level, where households pay 59 percent of all costs, the education sector would have Birr 14.6B (14 percent of the recurring expenditures) that could be invested in increasing access and quality.

Table 11 – Potential resources that could be freed by shifting a higher cost burden to households at the tertiary level

	Public Spending	Household spending	Household share	Public resources that can be freed for other uses
Current recurring expenditure	Birr 26.7B	Birr 3.1B	10.3%	NA
Costs shared at levels similar to primary	Birr 23.6B	Birr 6.3B	21%	Birr 3.1B (3 percent of recurring expenditures)
Costs shared at levels similar to pre-primary	Birr 12.2B	Birr 17.6B	59%	Birr 14.6B (14 percent of recurring expenditures)

7.2. To use funding more effectively Ethiopia could consider the following:

180. **Prioritize spending to add capacity and quality improvements where they are needed the most:** Education spending in Ethiopia is capital-heavy and heavily favors higher education that enrolls a small number of students. While access and availability of higher education is an important goal, too many children and youth are out of school or never attain the necessary levels of education to attend higher education. Ethiopia's spending in primary and secondary education, as a share of total education spending

is behind SSA levels. Bringing these shares to regional levels can help support earlier grade bands, especially to increase access to and quality of public education at these levels.

181. **Consider short term changes to the functional allocation of public education funding, especially investments in higher education:** In the last ten years, Ethiopia has invested a considerable amount of resources in creating new universities and expanding existing universities. As a result, while higher education accounts for only 4 percent of enrollment, it receives 40 percent of public resources, half of which are dedicated to capital expenditures. Halting capital investments in higher education for a limited period can free up to half a percent of GDP each year. These funds can then be used to invest in quality improvements, targeted interventions to reduce repetition and dropout rates, and expansions in earlier grades. Since these resources are under federal control, they can be spent, for example, to increase school grants or to incorporate pro-poor weights into school grants.

182. **Create opportunities for schools, woredas, zones, and regions to learn from each other:** The DEA analysis presented in the report shows that there is great variation in the efficiency of input use across schools and zones—even across those that are close to each other. Creating opportunities for schools, woredas, zones, and regions to learn from each other in how to improve resource use can help support broader adaptation of better school management and resource use practices.

183. **Conduct an adequacy study to control unit costs at the secondar and tertiary levels.** There is great variation on per pupil spending across regions at the secondary level and across universities. At the secondary level, the per pupil spending can be as low as Birr 6,375 or 66 percent of national average (Sidama) or as high as Birr 26,178 or nearly three times the national average (Afar). Ethiopia should consider conducting an adequacy study with spending targets that adjust for regional needs and costs as a guidance for regional governments to control costs. At the tertiary level, per pupils spending can be as low as Birr 6,726 (Medela Amba University) and as high as Birr 1.3 million (Jimma University). While capital investments can explain some of these differences, the nearly 200-fold increase between the lowest- and highest-spending university suggests that higher education institutions can similarly benefit from budgeting guidelines that could help the country keep unit costs under control.

184. **Improve data collection on school finances, especially at the tertiary level.** There are often disparities in data reported by MoE and MoF on higher education expenditures. These disparities might mark inefficiencies in funding use. Having better data can help develop stronger budgets at the higher education level and help the government right size these budgets.

7.3. To improve education quality and increase access Ethiopia could consider the following:

185. **Consider targeted supports for lower-income households to increase participation.** As shown, out-of-pocket costs serve as a real barrier for households, especially those from lower income quintiles. And these costs increase at a faster rate for the poorest households as their students progress into higher grades. These burdens can explain, partly, why learning outcomes vary so greatly across different income groups. Providing targeted supports to families from the lowest income quintiles conditional on school enrollment can significantly increase participation in education.

186. **Invest in pre-primary and school readiness:** At present, the first year of primary school is a make-or-break year, with the highest drop-out rate across all grade levels (20 percent). This suggests that many

students who being Grade 1 are not ready for school. Investing in school readiness, especially in rural parts of the country can improve outcomes for students who are furthest away from opportunity.

187. **Incorporate pro-poor weights into school grants:** As shown in Sections 3 and 4, in Ethiopia, students' backgrounds seem to be correlated with access and learning outcomes. Further, students from higher income households attend higher-resourced schools, and as a result tend to reap higher benefits from public spending on education relative to their shares in enrollment. This suggests targeted intervention in improving educational inputs and students' household environment help improve learning outcomes. This can be achieved by incorporating into school grants, which are now tied to enrollment only, pro-poor weights, which can shift resources to regions where access to and quality of education needs the greatest improvements.

188. **Invest in adult education and programs for out-of-school youth at the federal level:** As shown over half the adults in rural areas are illiterate, and 12.5 million school-aged children and youth (6.7 percent of all school-age children and youth) are out of school. The analysis suggests that regions lack the capacity to serve these groups through alternative programs. Shifting responsibility to adult and alternative education to the federal level, at least temporarily, can help create a national strategy and programming for these groups.

7.4. To prepare for future growth, Ethiopia could consider the following:

189. **Adjust teacher career structures to make the profession more desirable:** As shown, achieving universal public education by 2030 would require the teacher pool to increase six to nine times the current levels. Ethiopia should invest in teacher career reforms, including implementing attractive salary structures and creating more pathways for teachers to grow in their professions

190. **Invest in teacher training, possibly through TVET organizations:** Significant expansions in the number of teachers would require significant expansions in the state capacity to train teachers. Ethiopia could consider expanding TVET education for teacher credentialing to ensure that there is enough capacity to train teachers and grow the number of teachers.

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Annexes

Annex A. Methodological notes

Note 1: Benefit Incidence Analysis

1. A BIA illustrates how public expenditure on services is distributed among population subgroups, utilizing both the service provision costs and participation or usage rates of a specific service (Heltberg, Simler, and Tarp 2003). Benefit incidence studies are particularly useful in determining the extent to which public spending on social sectors—for the present chapter, education—benefits the poorest strata and therefore, creates a well-targeted instrument for poverty reduction.[63] A BIA can likewise analyze expenditure by different groups or regional locations though this analysis requires greater disaggregation in spending data which was not available for this analysis. This chapter has been therefore limited to the income group (denoted by expenditure quintile).

2. A BIA requires three elements: household-level survey data which gather (a) information from which to construct a proper welfare indicator (that is, per capita household consumption expenditures, appropriately adjusted) and (b) utilization of or participation in the public service of interest (enrollment in school) and administrative or budget data that provide (c) unit costs to the government for the provision of those same services (for example, the cost of one year of schooling per student).

3. In the case of Ethiopia, the LSMS 2019 is an adequate instrument to conduct a BIA with as it gathers appropriate information on both enrollment figures as well as consumption measures for constructing accurate welfare indicators. Welfare, in this case, is measured by the aggregate household consumption over the last 12 months, after incorporating food consumption, non-food consumption, housing, and benefits derived from durable goods. The unit costs of education are derived from figures for public spending on education reported by the Ministry of Finance for Public Spending on Education. By utilizing government expenditure sources in addition to household expenditure on education, a more accurate unit cost can be calculated.

4. Individuals (or households) must first be ranked by their measure of welfare according to the household survey and then aggregated into population groups to compare how the subsidy itself is distributed across these groups. These groups are typically quintiles or deciles. This analysis utilizes expenditure quintiles, in which the first quintile holds the poorest 20 percent of the population and so on.

5. Next, using the data provided in the household survey, the total number of individuals who participated in or used the publicly provided service in question (those who were enrolled in school) must be identified. Each user (or household) is then multiplied by the unit cost of service provision and finally, these beneficiaries are aggregated into their appropriate population groups (consumption

[63] The concept of BIA was originally pioneered by studies by Gillespie on Canada 1965 and extended to developing countries context by Meerman (1979) on Columbia and Seloswski (1979) on Malaysia and in its modern stage, by Selden and Wasylenko (1992), Sahn and Yonger (1999) on Africa, and Demery (2000).

quintiles). It is the distribution of this in-kind transfer of the population that constitutes a BIA. The BIA model for Ethiopia can be expressed as

$$X_j \equiv \sum_{i=1}^{4} E_{ij} \frac{S_i}{E_i} \equiv \sum_{i=1}^{4} \frac{E_{ij}}{E_i} S_i ,$$

where X_j is the value of the total education subsidy imputed to consumption quintile j. E_{ij} represents the number of school enrollments of consumption quintile j at education level i and E_i the total number of enrollments (across all consumption quintile) at that level. S_i is government spending on education level i and i (= 1,...,4) denotes the level of education (primary, lower secondary, upper secondary, and tertiary). Note that S_i/E_i is the unit subsidy of providing a school place at level i (Demery 2000).

6. The resulting profile illustrates the distribution of public spending on education that is allocated to each welfare group (expenditure quintile) or the 'benefit incidence'. Concentration curves can then be plotted that show the cumulative distribution of these benefits across households and can be compared to the cumulative distribution of total consumption (what is typically referred to as the Lorenz curve). The Lorenz curve is a graphical interpretation of the cumulative distribution of income on the vertical axis against the cumulative distribution of population on the horizontal axis. The progressivity of spending is pro-poor if the poor receive more of the services' benefits than the non-poor as well as a share greater than their share of the population; graphically this line appears above the diagonal line as this is the line indicating that each quintile in the distribution is receiving the same share, in this case, 20 percent of spending. Pro-poor spending is an indication of the successful targeting of public service benefits toward poorer households (Heltberg, Simler, and Tarp 2003). 'Not-pro-poor but progressive' refers to a scenario where the non-poor receive more than the poor, but the poor still receive a share larger than their share of consumption; graphically this line appears below the diagonal but above the Lorenz. 'Not-pro-poor and regressive' occurs if the non-poor receive more than the poor and the share of the poor is less than their share of consumption; graphically this line appears below the diagonal and below the Lorenz.

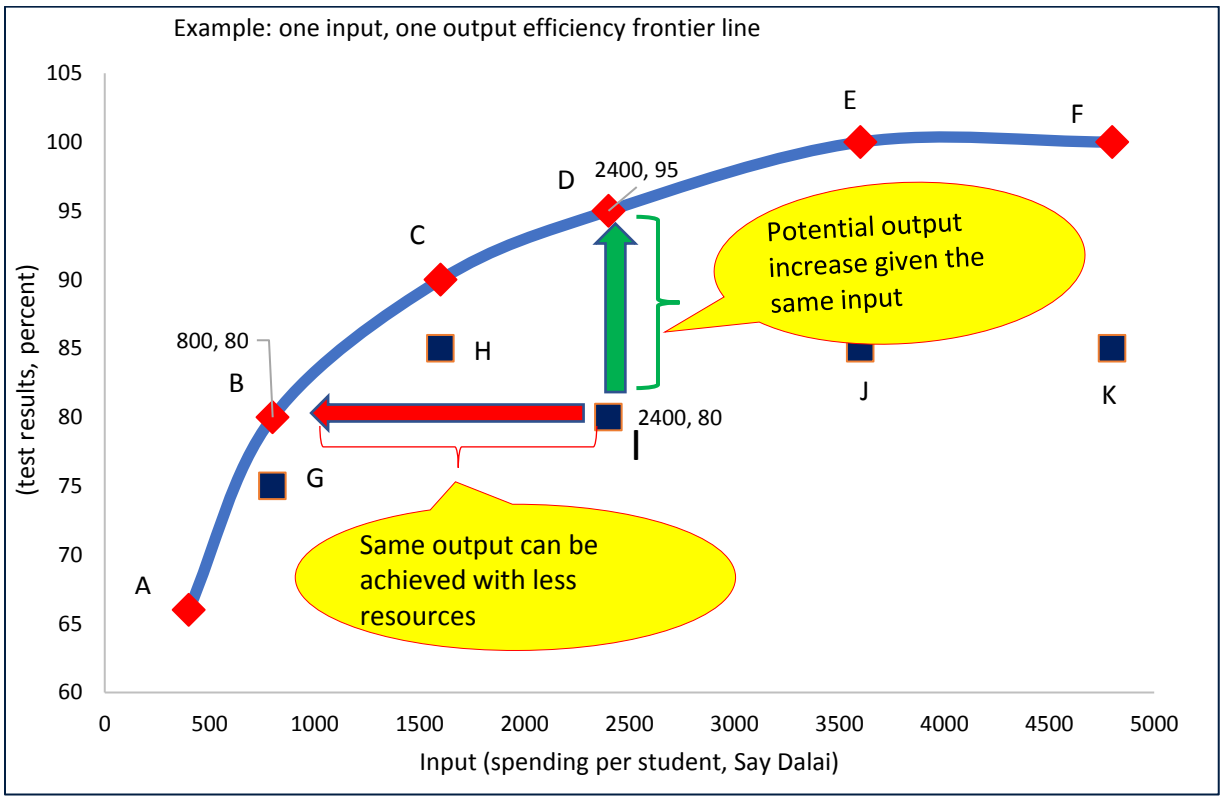
7. When determining enrollment as an element of BIA, its distribution can be interpreted in one of two ways: (a) net enrollment (the share of children of school-age groups attending the corresponding school level) or (b) gross enrollment (the share of all children regardless of their age who are attending a specific school level). The differences in these two can add depth to further interpretations of the benefit incidence analysis. In Ethiopia, given the overages, older children still enrolled in primary school contribute to differing enrollment rates and the GER is used.

Note 2: DEA Methodology

8. A DEA is based on the construction of an empirical non-parametric production frontier and the measurement of efficiency through the distance between the observed data and the optimal value of these data given by the estimated frontier (see annex A, Note 2 for methodology). In the current analysis, the production frontier approximates the maximum quality or access to education (the output) that could be achieved given different levels of educational resources (the inputs) as compared to the best-performing schools in the country. Figure A2 illustrates the efficiency measurement with the DEA in a hypothetical case of one input—unit cost that is used to produce one output—average grade 12 test result.

9. The frontier gives maximum levels of the output that could be achieved given the different quantities of input used. Decision-Making Units (DMUs) are schools—that is, the input and output are measured and determined at the school level. The DMUs that are on the frontier are relatively efficient—from the 12 schools taken for the purpose of demonstration, schools A to K, 6 schools are on the frontier line and they are relatively efficient compared to the other 5 schools below the frontier line. While the model considered both input- and output-oriented approaches, the demonstration is only for an output-oriented model. For an input-oriented model, the DMU needs to reduce input to be efficient while in an output-oriented model, the DMU needs to increase the output to be efficient (for further explanation about the model, please see Charles, Cooper, and Rhodes [1981], see Annex A Note 2). The focus of the demonstration below is to show the potential for schools in Ethiopia to improve learning outcomes given the existing resources. The key summarized points from the graph include the following: (a) all schools on the frontier line (A to F) are equally efficient in resource utilization (efficiency score 100 percent); (b) all schools below the PPF are inefficient with different levels of efficiency score; (c) schools E and F have the same output but school E uses fewer resources to produce the same output as school F; (d) school A uses fewer resources and produces less output relative to all points on the graph but is equally efficient as school E; (e) school E and F have high results (100 percent) and no room for improvement but school F can use fewer resources to achieve the same output as school E by doing the same thing that school E did; (f) for example, schools B and I have the same result (80 percent) but the unit cost in I is higher (2,400 versus 800); hence, if school I adopts similar resource utilization patterns to school C, it can produce the same output while reducing its resource use by 1,600; and (i) because the result for I is low compared to the other school (D) which has the same unit cost but produces 95 percent, if school I can increase the efficiency of resource use like school D, it will produce results similar to those of school D (that is, increase in test results from 80 percent to 95 percent).

Figure A1: Concept behind the efficiency measurement and interpretation, hypothetical school



Note 3: Assumptions for Projection

10. The projections employ a reconstructive cohort method to calculate the enrollment flow, using several key assumptions on the inputs. The assumptions are: (i) that the growth in the appropriate age for the particular level of education—ages 4-6, preschool, 7-12 for primary, ages 13–14 for middle school, and 15-18 for secondary, follow the UNPD projections; (ii) the current pattern of student flow (intake rate, promotion, repetition, and transition rate etc.) is extrapolated based on the trend from 2018/19 and 2019/20 EMIS; (iii) the drop in the out-of-school incidence at the primary school level continues to drop at the current rate; (iv) the current unit costs (public and household unit costs) remain the same in nominal terms in $USD assuming US dollar is more stable over the projection time; (v) the share of students directly enrolled in private schools remains unchanged in all levels of education; (vi) the STR remains the same for the model (but based on actual observed STR and GPE recommended benchmark STR); (vii) The current share of recurrent and capital expenditure remains the same, and (viii) key macroeconomic indicators are based on world bank macro team (EFI GP provided project for key macro indicators until 2020 and the same patterns extrapolated until 2030 with exchange rate projection displayed in the table below)

Table A2: Key assumptions driving the enrollment, inputs, and cost projections

Assumptions about the growth in indicators	Preprimary	Primary	Middle School	Secondary	Tertiary
Annual promotion rate change		4.9%	4.9%	1%	
Annual repetition rate change		-3%			
Annual completion rate change		3.5%	2.8%		
Annual out-of-school rate change		-2%			
Student teacher ratio	49	48	32	27	
New entrants Higher education					5%

Table A3: Nominal and Real GDP, government expenditures, and exchange rate projections

Year		Nominal GDP (million birr)	Real GDP (million birr)	Total government expenditures (million birr)	Exchange rate
2020	Actual	3,374,349	2,109,122	488,243	40
2021	Projected	4,132,565	2,159,741	577,262	47
2022	Projected	5,253,730	2,252,610	762,474	54
2023	Projected	6,250,888	2,399,030	961,342	61
2024	Forecast	7,437,307	2,554,967	1,212,079	68
2025	Forecast	8,848,907	2,721,041	1,528,212	75
2026	Forecast	10,528,430	2,897,909	1,926,800	82
2027	Forecast	12,526,726	3,086,273	2,429,346	89
2028	Forecast	14,904,299	3,286,881	3,062,967	96
2029	Forecast	17,733,135	3,500,529	3,861,848	103
2030	Forecast	21,098,884	3,728,064	4,869,093	110

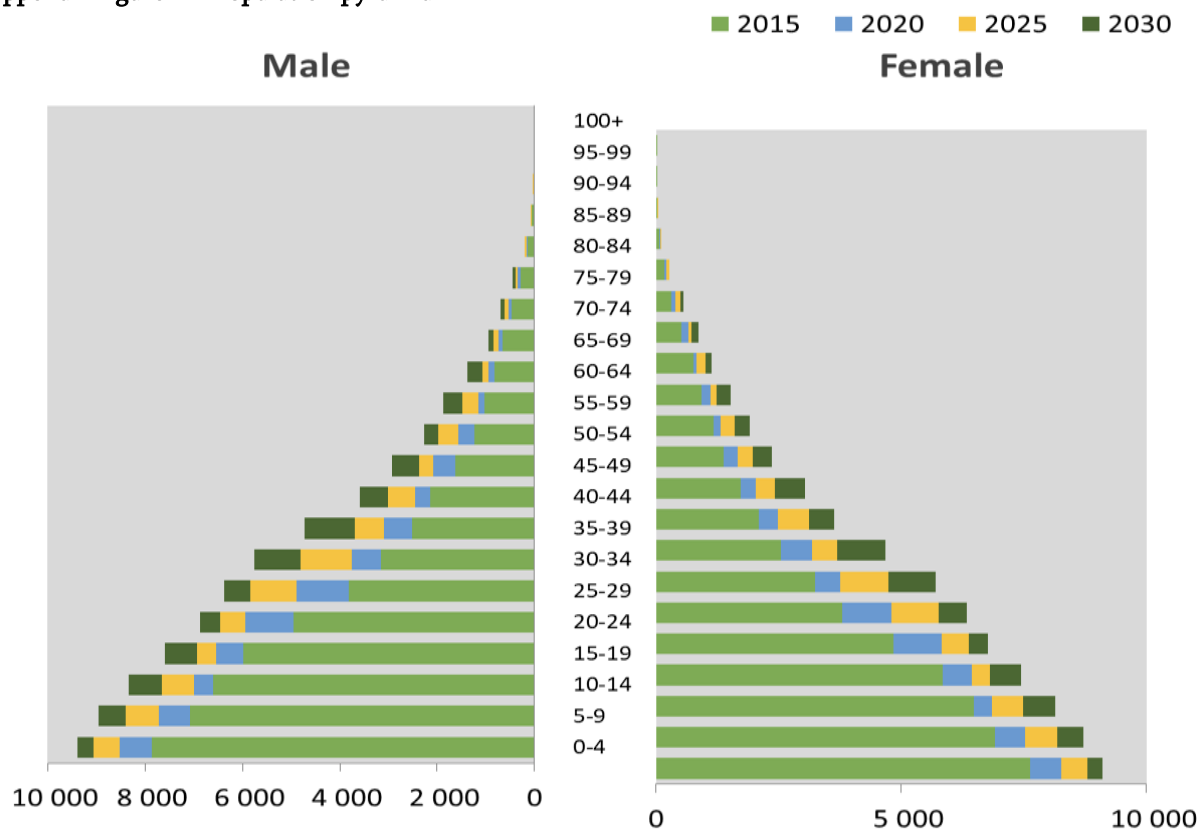
The two alternative scenarios offered make the following adjustments to the base model:

(1) **Alternative projection A. Increasing unit costs.** The base model keeps unit costs constant in real term. The alternative model assumes an annual 4 percent growth in unit costs, to account for potential additional investments in quality-improving inputs (textbooks, teachers, higher salaries, etc.)

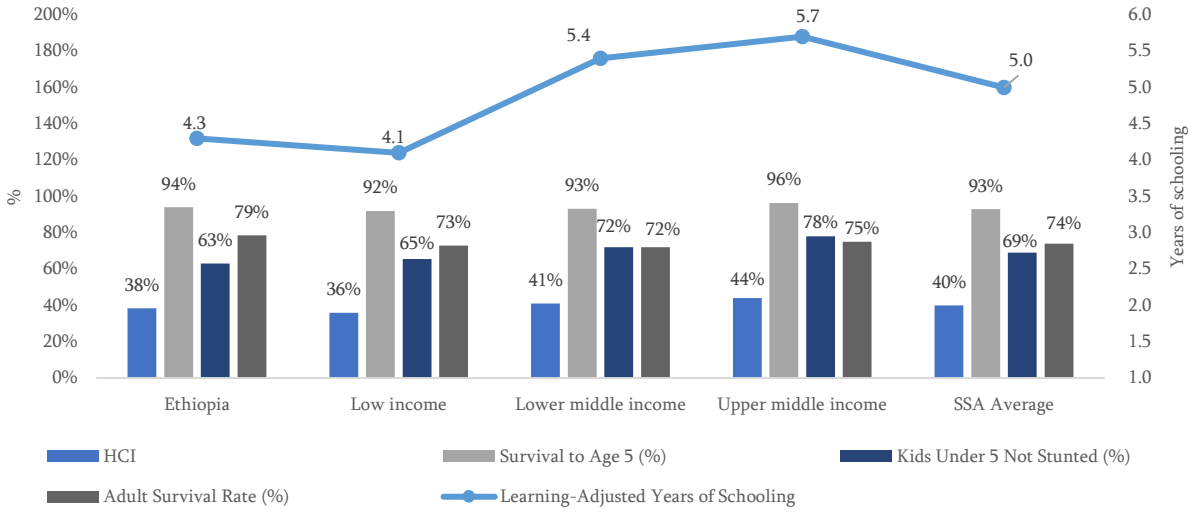
(2) **Alternative projection B. Reduced capital investments**. This alternative incorporates an assumption that for a period of ten years, capital expenditures (which are largely incurred at the higher education level) are cut in half. This scenario allows us to examine how much room such a strategy can create under the current funding structure that can go to support other investments in the education sector.

Annex B. Figures and Tables

Appendix figure 1 – Population pyramid

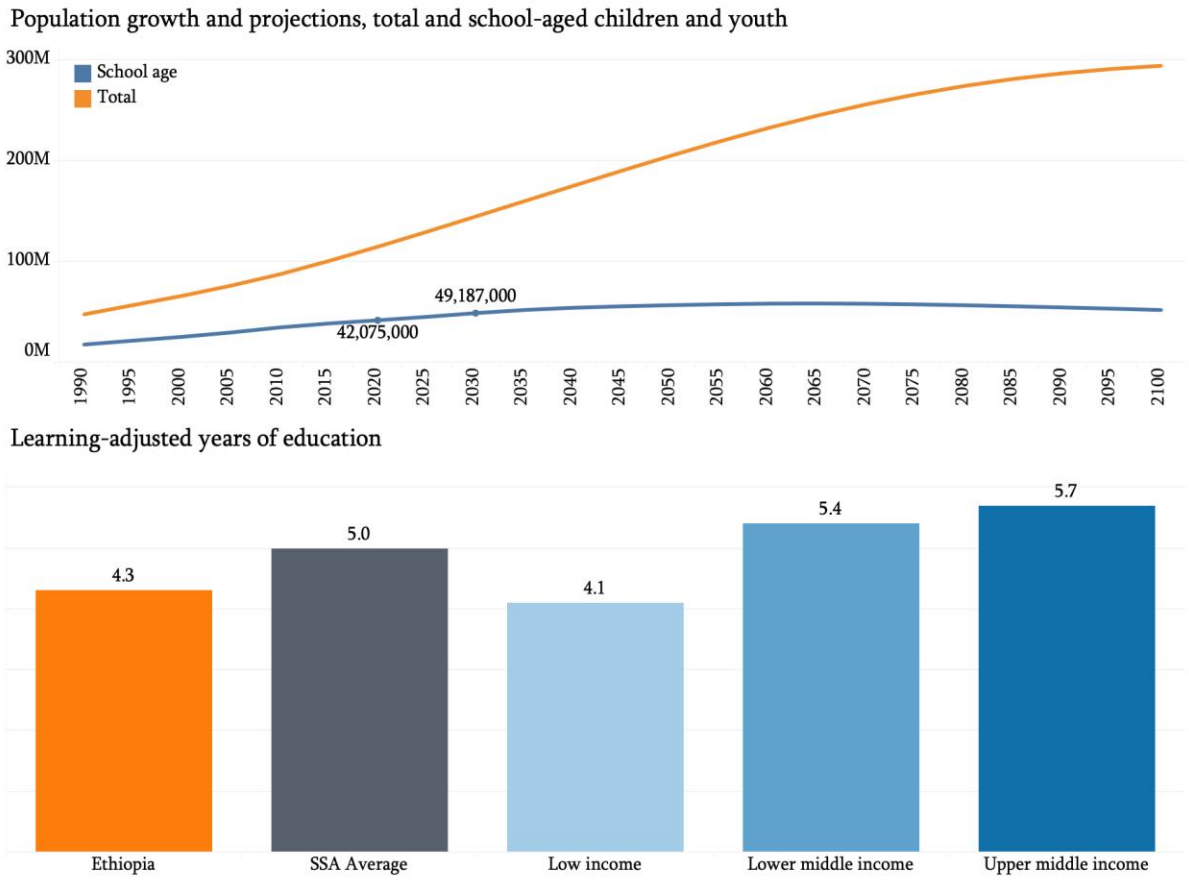


Appendix figure 2 – HCI metrics



Source: World Bank Group, HCI (2020).

Appendix figure 3 – Population growth, and learning-adjusted years of education



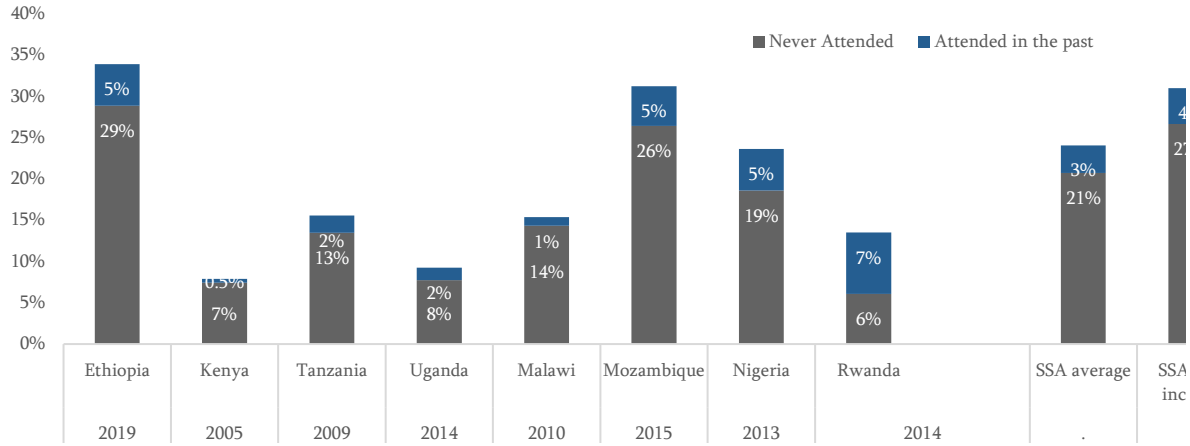
Source: Population data from the United Nations population division; learning-adjusted years of education from United Nations Education Statistics

Appendix figure 4 – GER by region and level

	Pre primary			Primary			Middle school			Secondary			TVET			Higher education		
Area	2013	2016	2019	2013	2016	2019	2013	2016	2019	2013	2016	2019	2013	2016	2019	2013	2016	2019
Addis_Ab..	45%	44%	63%	133%	110%	99%	92%	79%	107%	60%	51%	51%	4%	3%	2%	36%	21%	55%
Afar	1%	8%	6%	134%	105%	65%	71%	61%	47%	22%	31%	22%	1%	1%	1%	0%	4%	17%
Amhara	6%	24%	13%	97%	111%	96%	49%	51%	86%	21%	25%	26%	1%	2%	1%	6%	6%	12%
Benshagul	1%	18%	12%	105%	89%	91%	70%	97%	123%	35%	39%	36%	0%	0%	2%	7%	11%	33%
Diredwa	28%	30%	32%	100%	111%	95%	56%	74%	75%	34%	40%	41%	4%	1%	3%	19%	24%	51%
Gambelia	10%	12%	24%	134%	129%	112%	105%	124%	125%	54%	68%	40%	3%	1%	1%	15%	13%	22%
Harari	30%	35%	29%	95%	105%	89%	53%	86%	72%	73%	72%	38%	6%	1%	3%	16%	21%	52%
Oromia	7%	6%	12%	85%	104%	90%	50%	61%	62%	22%	24%	22%	1%	1%	1%	7%	7%	9%
Sidama	5%	12%	9%	95%	116%	99%	56%	78%	98%	18%	45%	27%	2%	1%	1%	1%	15%	12%
SNNP	7%	13%	23%	95%	97%	83%	60%	90%	72%	25%	34%	27%	1%	1%	1%	4%	6%	19%
Somalie	2%	4%	5%	87%	78%	83%	27%	47%	54%	19%	28%	24%	0%	0%	0%	2%	6%	8%
Tigray	7%	19%	20%	102%	75%	96%	87%	76%	92%	33%	43%	34%	1%	1%	2%	4%	9%	21%

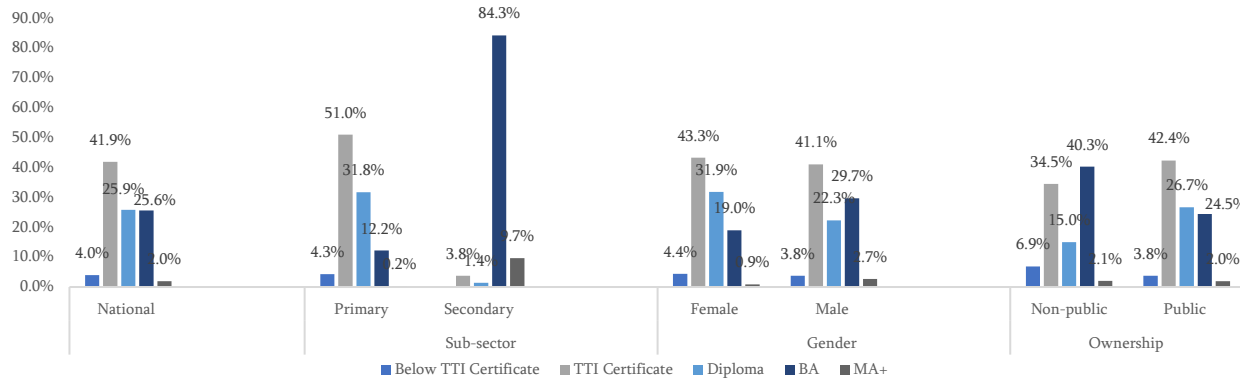
Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016.

Appendix figure 5 – Primary out-of-school SSA comparison



Source: World Bank education statistics

Appendix figure 6 –Teachers' Qualification (National, 2019/20)



Source: Authors' calculation based on data from ESAA

Appendix figure 7 –Teachers' Qualification across key Subjects/Courses (National, 2019/20)

Subjects/certification	Below TTI Certificate	TTI Certificate	Diploma	BA	MA+	Not reported
Business	0.1%	1.6%	1.4%	89.6%	6.7%	0.7%
Languages	1.6%	50.4%	16.2%	28.4%	3.0%	0.3%
Mathematics	1.3%	53.4%	16.2%	27.5%	1.2%	0.3%
Natural sciences	0.3%	32.9%	17.7%	45.9%	2.8%	0.3%
Social science	0.5%	34.6%	17.7%	43.8%	3.1%	0.3%
Other	2.6%	41.8%	20.6%	30.5%	4.1%	0.3%

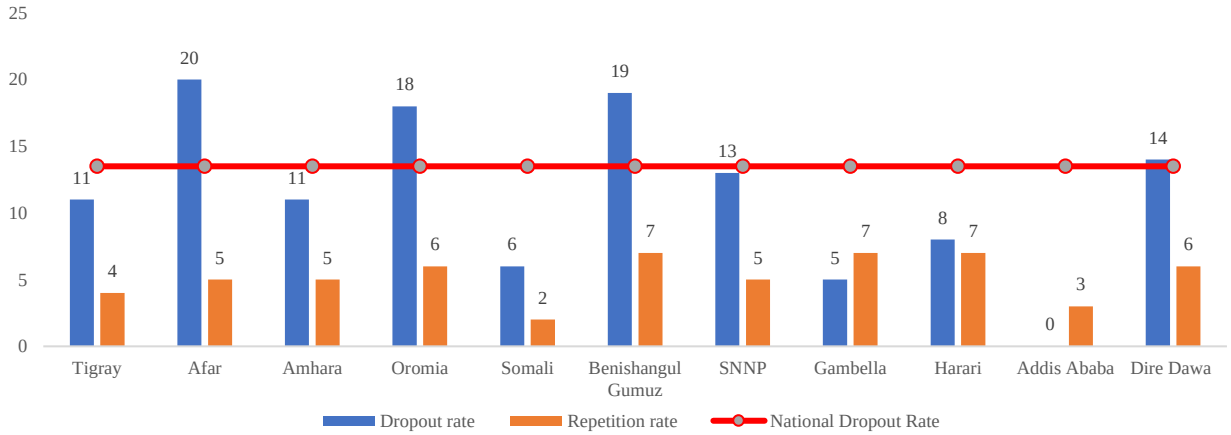
Source: Authors' calculations based on data from ESAA

Appendix figure 8 – Match between teachers' qualification and the subjects they teach 2019/20

Subjects/certification	Business	Mathematics	Natural Science	Social Science	Language	Others	Not reported
Business	88.7%	0.7%	2.1%	2.0%	1.4%	3.8%	1.3%
Mathematics	0.0%	72.7%	14.4%	3.3%	3.2%	5.4%	1.1%
Natural sciences	0.0%	6.7%	85.9%	1.6%	1.8%	2.9%	1.1%
Social science	0.1%	1.3%	2.6%	86.8%	2.2%	5.8%	1.2%

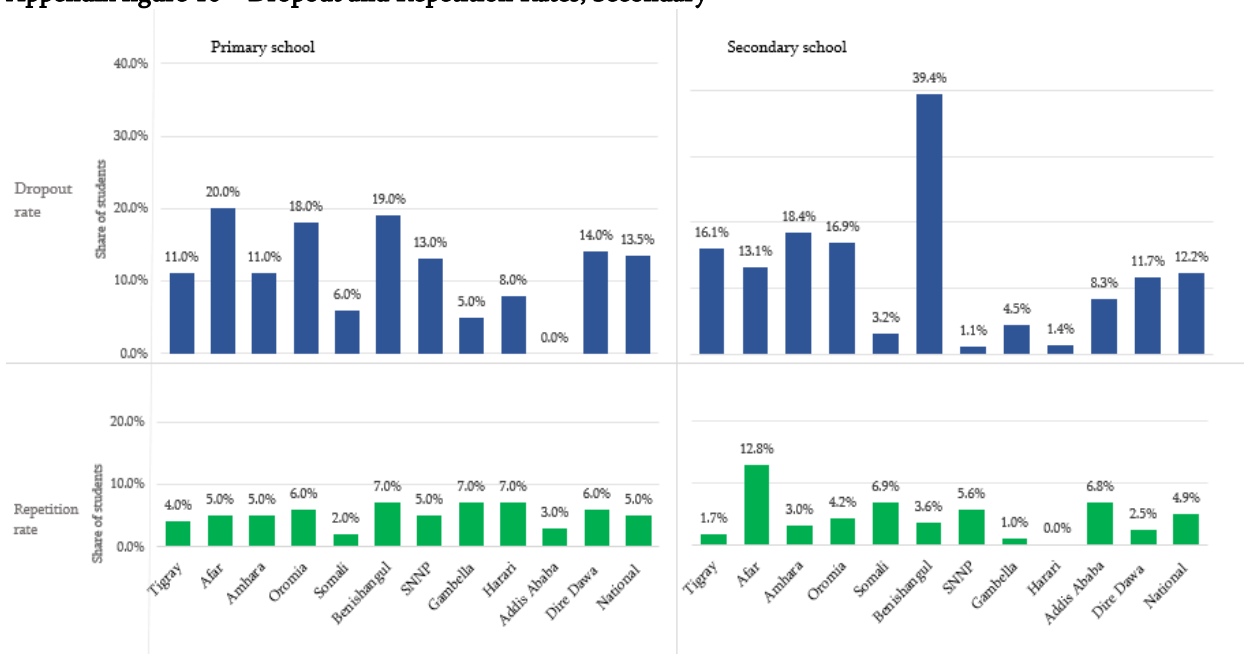
Source: Authors' calculations based on data from ESAA

Appendix figure 9 – Dropout and Repetition Rates, Primary (Regional, 2018/19)



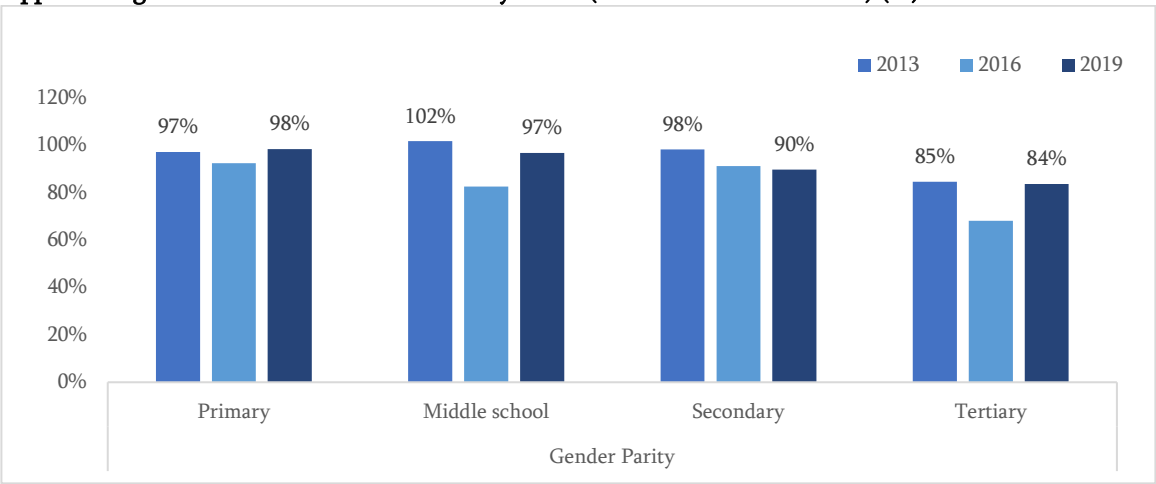
Source: Authors' calculation based on data from ESAA/EMIS

Appendix figure 10 – Dropout and Repetition Rates, Secondary



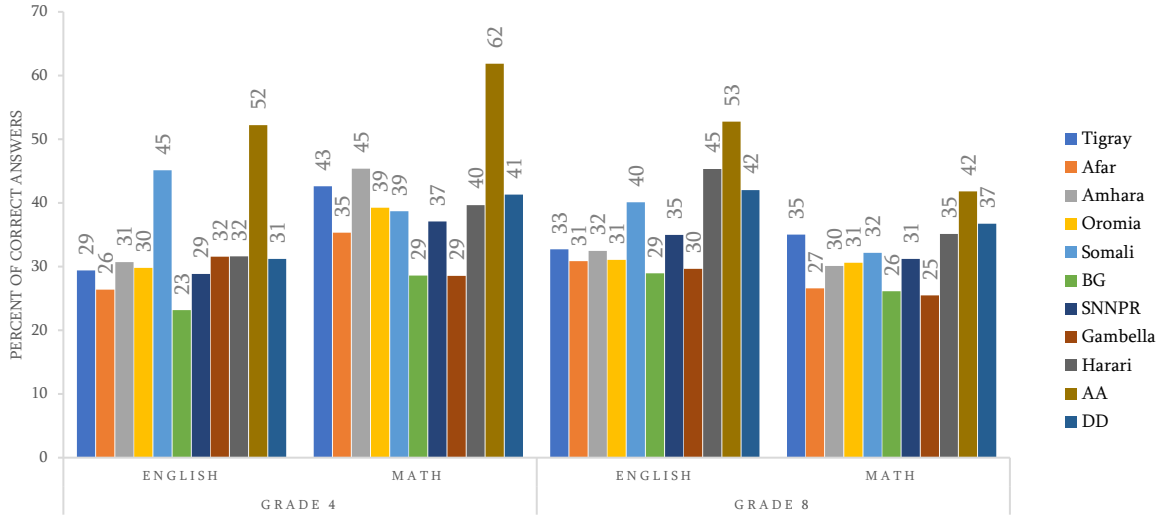
Source: Household surveys

Appendix figure 11 – Trends of Gender Parity index (Female GER/ Male GER) (%)



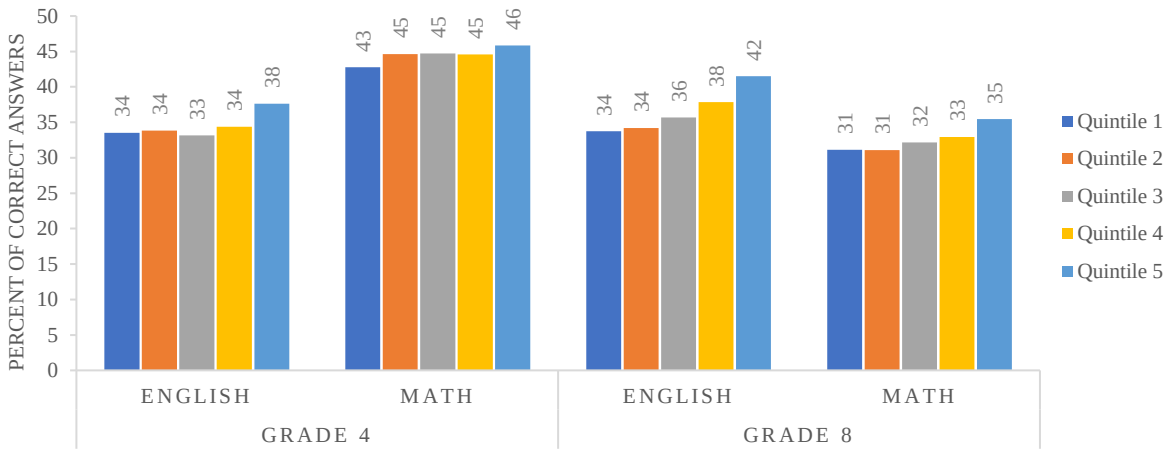
Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016

Appendix figure 12 – Mean Test Scores on 2019 NLA by region



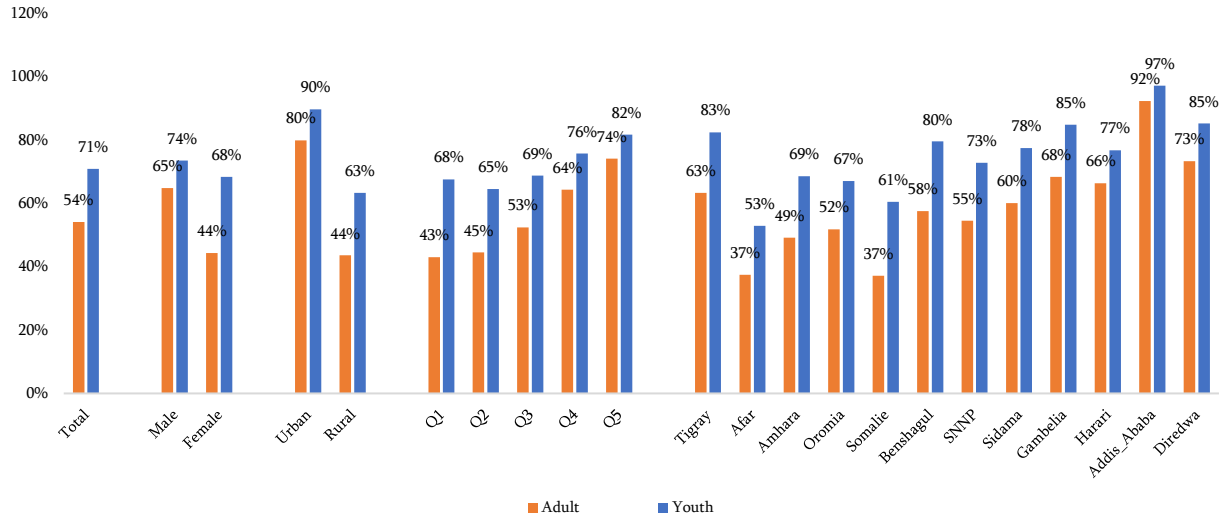
Source: National Learning Assessment results

Appendix figure 13 – Mean Test Scores on 2019 NLA by quintile



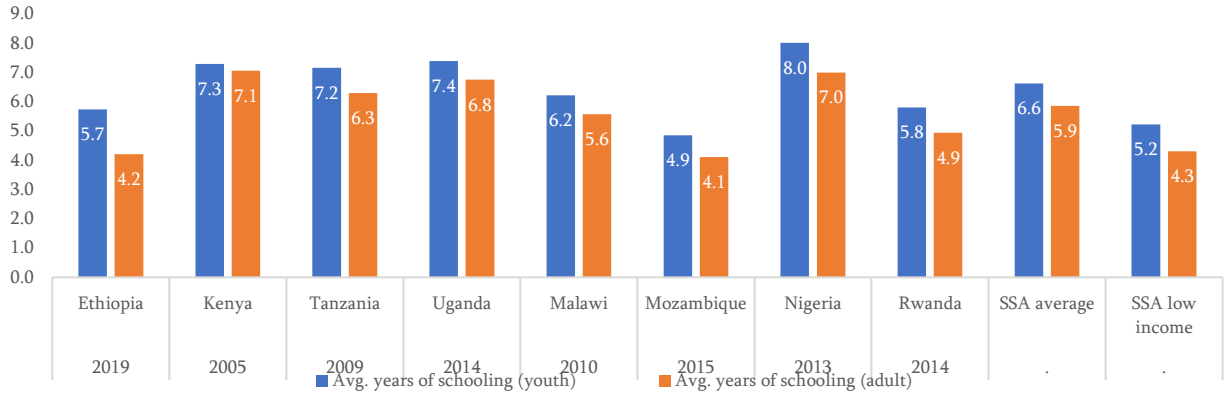
Source: National Learning Assessment results

Appendix figure 14 – Literacy rates for youth and adults in 2019



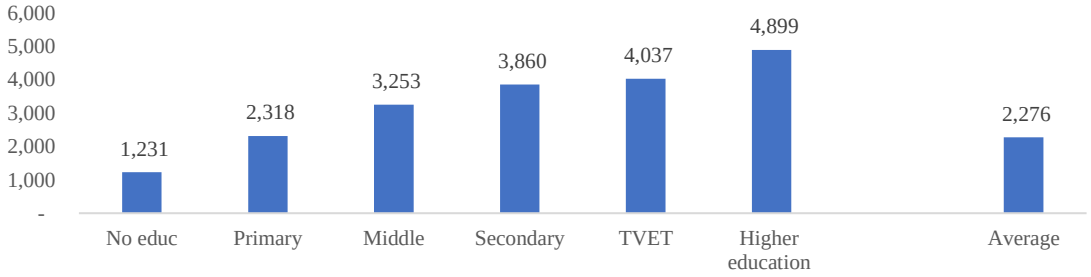
Source: Authors' calculations based on LSMS 2013, 2019 and HCES 2016

Appendix figure 15 – Average years of schooling for youth and adult (%) SSA comparisons



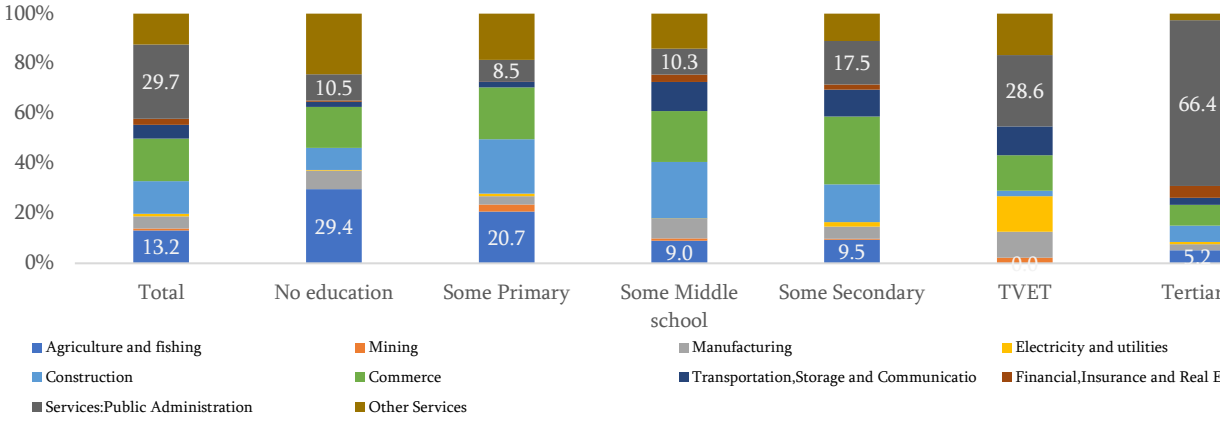
Source: World Bank data and Authors' calculations based on LSMS 2019

Appendix figure 16 – Average wage by level of education -2019



Source: Authors' calculations based on LSMS 2019

Appendix figure 17 – Employment industry of working-age population-2019

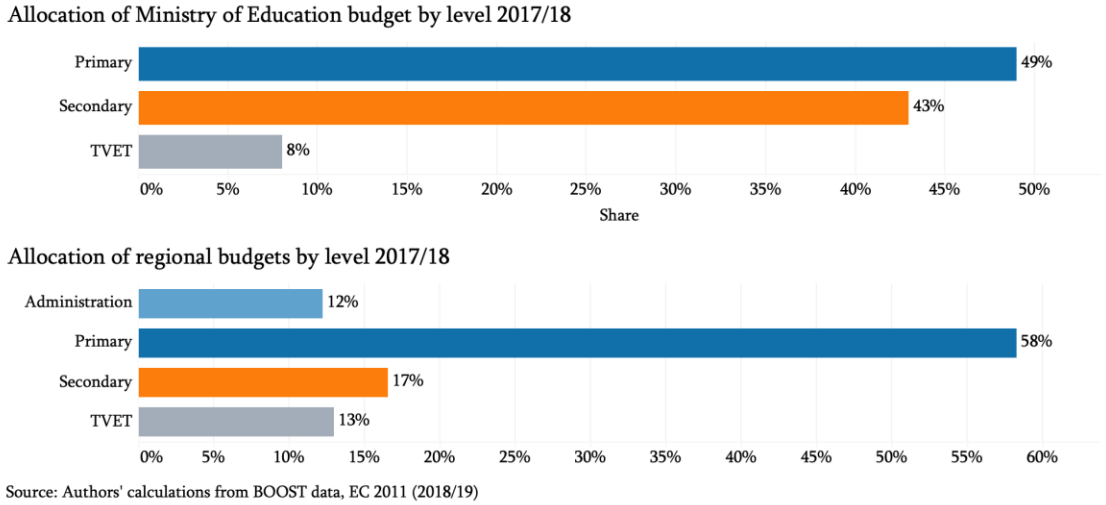


Source: Authors' calculations based on LSMS 2019

Appendix figure 18 – Average wage by sector, 2019

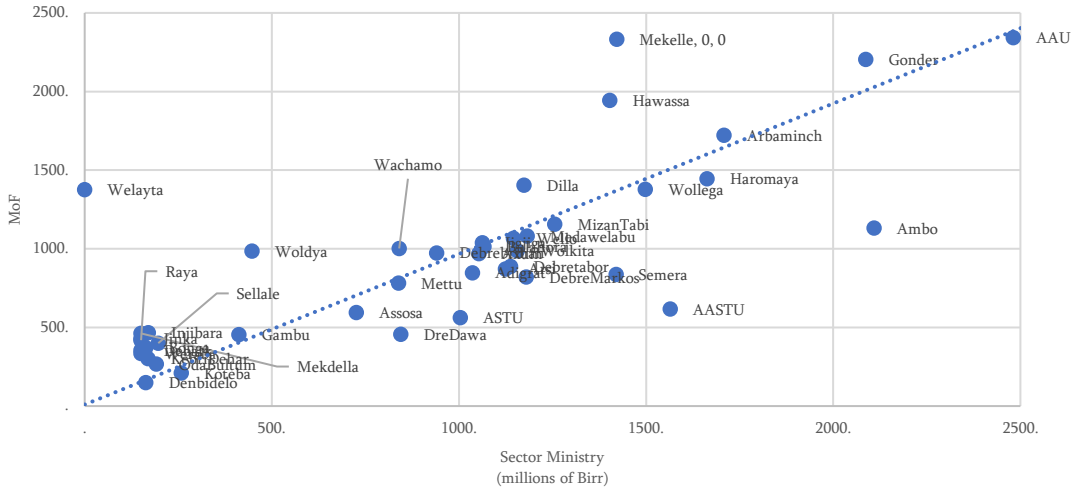
Source: Authors' calculations based on LSMS 2019

Appendix figure 19 – Budgets for primary, secondary, and TVET



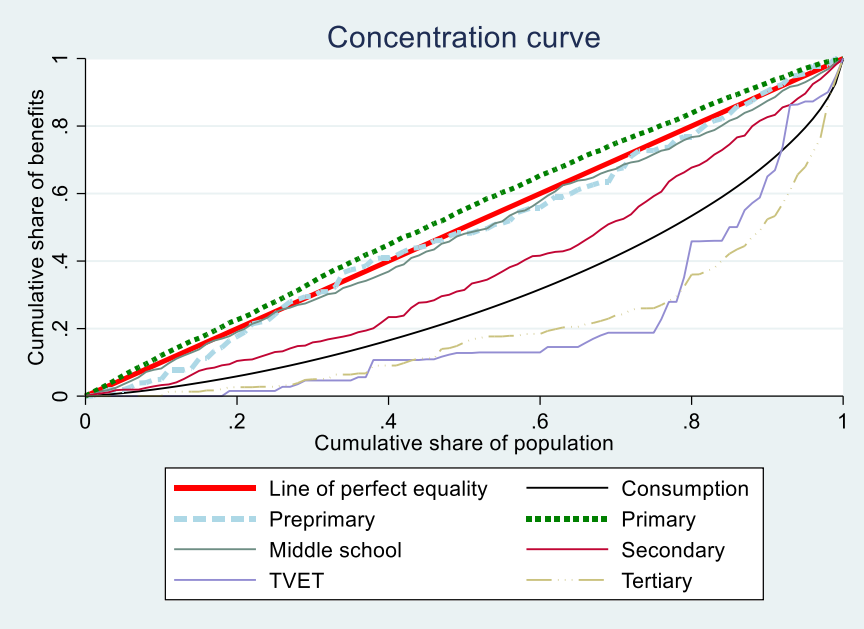
Source: Authors' calculations from BOOST data, EC 2011 (2018/19)

Appendix figure 20 – Discrepancy between budget report by the sector ministry and MoF



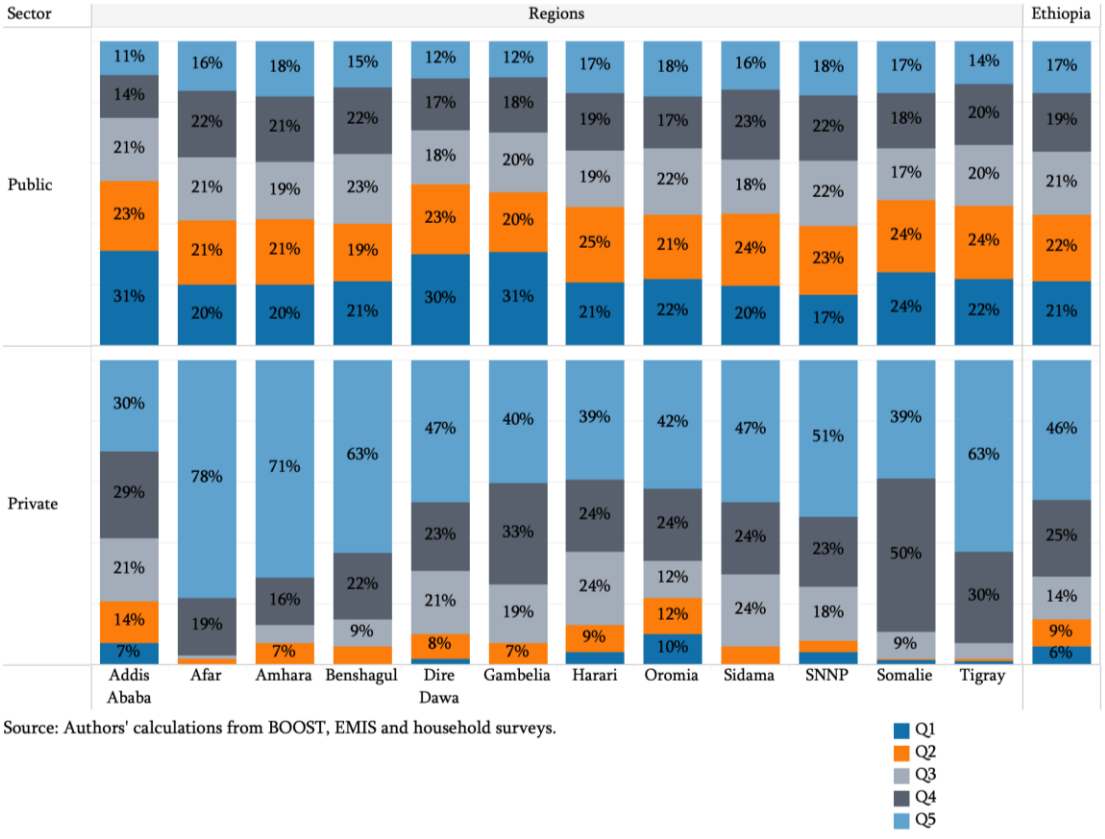
Source: Data reported by MoF and the sector ministry.
Note: MosHE is now dissolved, and higher education is now a part of the Ministry of Education.

Appendix figure 21 – Concentration curves not adjusted for household characteristics, 2019



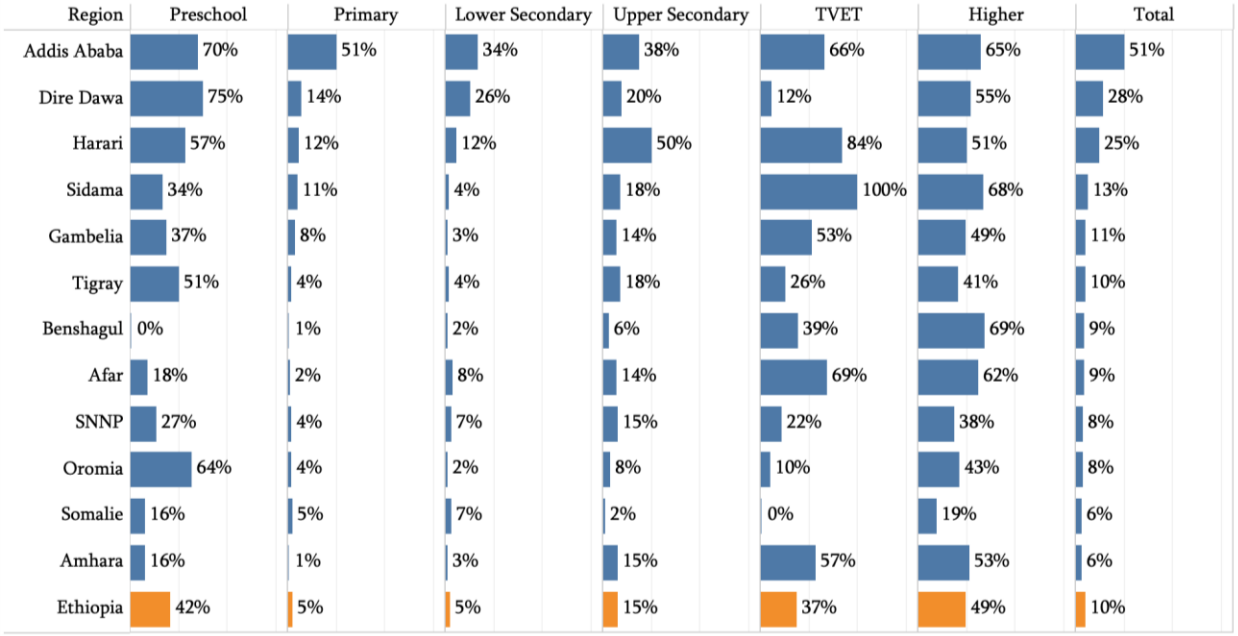
Source: 2019 EMIS

Appendix figure 22 – Distribution of enrollment by income quintile in public and private schools, by region



Source: Authors' calculations from BOOST, EMIS and household surveys.

Appendix figure 23 – Private school enrollment as a share of total enrollment by region, 2019



Source: Authors' calculations from BOOST, EMIS and household surveys.

Appendix figure 24 – Costs of internal efficiency and dropout rates- Dire Dawa

		Repetition	Dropout	Total	Share of GDP	Share of Consumption	Share of spending
Public spending	Primary	32	2	34			15.0%
	Lower secondary	27		27			12.6%
	Upper secondary	2		2			0.8%
	Total	61	2	63	1.15%		9.6%
HH spending	Primary	12	1	12			12.0%
	Lower secondary	4		4			15.8%
	Upper secondary						2.6%
	Total	16	1	17		0.44%	11.8%
Forgone earning	Primary	368	86	454			
	Lower secondary	93	7	100			
	Upper secondary	6	3	9			
	Total	468	96	564		15.1%	
Grand total	Primary	412	88	500			
	Lower secondary	124	8	132			
	Upper secondary	8	3	11			
	Total	544	99	643	11.8%	17.2%	
Share of GDP		10.0%	1.8%	11.8%			

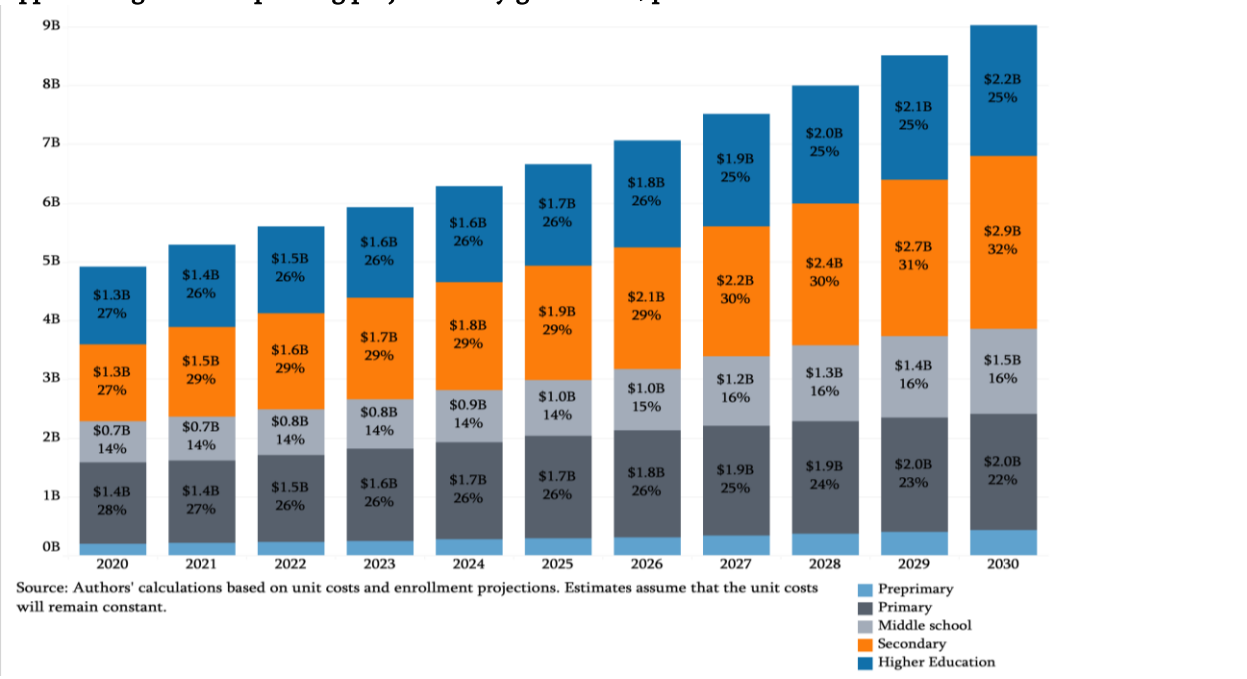
Source: Authors' calculations based on BOOST, EMIS and household surveys

Appendix figure 25 – Costs of internal efficiency and dropout rates- Addis Ababa

		Repetition	Dropout	Total	Share of GDP	Share of Consumption	Share of spending
Public spending	Primary	127	34	160			6.7%
	Lower secondary	52	2	55			2.5%
	Upper secondary	82	1	82			3.8%
	Total	261	37	298	0.15%		4.4%
HH spending	Primary	139	37	176			4.8%
	Lower secondary	16	1	17			2.5%
	Upper secondary	33		34			6.9%
	Total	188	38	226		0.16%	4.7%
Forgone earning	Primary	790	1,101	1,891			
	Lower secondary	130	130	260			
	Upper secondary	230	129	358			
	Total	1,149	1,360	2,509		1.8%	
Grand total	Primary	1,055	1,172	2,227			
	Lower secondary	198	134	331			
	Upper secondary	345	130	474			
	Total	1,598	1,435	3,033	1.5%	2.2%	
Share of GDP		0.8%	0.7%	1.5%			

Source: Authors' calculations based on BOOST, EMIS and household surveys

Appendix figure 26 – Spending projections by grade band, public and household resources combined



Source: Authors' calculations based on unit costs and enrollment projections. Estimates assume that the unit costs will remain constant.

Appendix figure 27 – Public expenditure projections by grade band and type of spending

		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total public spending (USD in '000)	Preprimary	$73.3M	$79.1M	$85.2M	$91.9M	$99.0M	$106.8M	$115.1M	$124.0M	$133.7M	$144.1M	$155.4M
	Primary	$1,053.2M	$1,076.6M	$1,133.8M	$1,200.2M	$1,268.3M	$1,334.5M	$1,391.6M	$1,432.4M	$1,465.0M	$1,493.1M	$1,517.9M
	Middle school	$610.0M	$636.3M	$674.7M	$720.2M	$767.7M	$823.4M	$899.7M	$1,014.8M	$1,126.1M	$1,202.0M	$1,257.9M
	Higher Educa..	$1,194.2M	$1,257.3M	$1,323.7M	$1,393.7M	$1,467.3M	$1,544.8M	$1,626.4M	$1,712.3M	$1,802.8M	$1,898.0M	$1,998.3M
	Secondary	$1,049.4M	$1,228.1M	$1,302.6M	$1,384.6M	$1,470.8M	$1,559.6M	$1,661.6M	$1,779.4M	$1,928.0M	$2,133.0M	$2,350.3M
Capital spending	Preprimary	$4.5M	$4.8M	$5.2M	$5.6M	$6.0M	$6.5M	$7.0M	$7.5M	$8.1M	$8.8M	$9.4M
	Primary	$64.0M	$65.5M	$68.9M	$73.0M	$77.1M	$81.2M	$84.6M	$87.1M	$89.1M	$90.8M	$92.3M
	Middle school	$85.5M	$89.2M	$94.6M	$100.9M	$107.6M	$115.4M	$126.1M	$142.2M	$157.8M	$168.5M	$176.3M
	Higher Educa..	$524.9M	$552.6M	$581.8M	$612.6M	$644.9M	$679.0M	$714.9M	$752.6M	$792.4M	$834.3M	$878.3M
	Secondary	$147.1M	$172.1M	$182.6M	$194.1M	$206.2M	$218.6M	$232.9M	$249.4M	$270.2M	$299.0M	$329.4M
Operating excluding salaries	Preprimary	$4.0M	$4.3M	$4.6M	$5.0M	$5.3M	$5.8M	$6.2M	$6.7M	$7.2M	$7.8M	$8.4M
	Primary	$56.9M	$58.2M	$61.2M	$64.8M	$68.5M	$72.1M	$75.2M	$77.4M	$79.1M	$80.6M	$82.0M
	Middle school	$37.2M	$38.8M	$41.1M	$43.9M	$46.8M	$50.2M	$54.8M	$61.8M	$68.6M	$73.2M	$76.6M
	Higher Educa..	$279.6M	$294.3M	$309.9M	$326.3M	$343.5M	$361.6M	$380.8M	$400.9M	$422.0M	$444.3M	$467.8M
	Secondary	$63.9M	$74.8M	$79.3M	$84.3M	$89.6M	$95.0M	$101.2M	$108.4M	$117.4M	$129.9M	$143.2M
Salaries	Preprimary	$64.9M	$70.0M	$75.4M	$81.3M	$87.7M	$94.5M	$101.9M	$109.8M	$118.4M	$127.6M	$137.5M
	Primary	$932.3M	$953.0M	$1,003.6M	$1,062.4M	$1,122.7M	$1,181.3M	$1,231.8M	$1,268.0M	$1,296.8M	$1,321.7M	$1,343.6M
	Middle school	$487.4M	$508.3M	$539.1M	$575.4M	$613.4M	$657.9M	$718.8M	$810.8M	$899.7M	$960.3M	$1,005.0M
	Higher Educa..	$389.7M	$410.3M	$432.0M	$454.8M	$478.9M	$504.2M	$530.8M	$558.8M	$588.4M	$619.4M	$652.2M
	Secondary	$838.4M	$981.1M	$1,040.7M	$1,106.2M	$1,175.1M	$1,246.0M	$1,327.5M	$1,421.6M	$1,540.3M	$1,704.1M	$1,877.7M

Source: Authors' calculations based on unit costs and enrollment projections. Estimates assume that the unit costs will remain constant.