INTERNATIONAL MONETARY FUND

SOMALIA

SELECTED ISSUES

December 2024

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SELECTED ISSUES

November 18, 2024

Approved By
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CONTENTS

INCREASING HUMAN CAPITAL THROUGH GREATER ACCESS TO EDUCATION AND CLOSING GENDER GAPS IN EDUCATION[1]

Somalia experienced significant loss in human capital over two decades of civil strife. Education outcomes in Somalia are among of the lowest in the world, and even worse for women. Model estimates show that increasing education access to the level of Low Human Development countries and closing gender gaps could raise real GDP by close to 40 percent over the next 25 years. Given extremely limited resources and capacity, Somalia will need to carefully prioritize policies that can deliver near-term wins as it gradually develops its public education system. Improving access and quality of education will require greater resources, supported by additional domestic revenues and sustained support from development partners.

A. Introduction

1.   Increasing access to education is a priority for the Somali government. So far, the state has played an insignificant role in providing education due to lack of resources and weak capacity, following years of conflict during 1991-2012. Access to education in Somalia is very limited, with disproportionate exclusion of girls, people in rural communities, and poor households. According to the Federal Government's 2022 Education Sector Analysis, the expected years of schooling is only 1.76 years for boys and 1.48 years for girls. Even when available, the quality of education remains low due to an insufficient number of qualified teachers, weak infrastructure, and non-application of standards, among others, which also stem from the underfunding and under-resourcing of schools (World Bank, 2021). Recognizing the critical role of education in promoting economic development and poverty reduction, the Somalia authorities have embarked on the implementation of their National Education Sector Strategic Plan 2022-2026 (Box 1) that addresses some of the barriers to educational access, quality, and equity. Education spending is considered to be a macro-critical issue in Somalia because—while it is key policy lever in promoting inclusive growth and reducing poverty and inequality—public education spending at less than 0.2 percent of GDP falls far short of what is needed to provide adequate access and quality of education.[2] Raising education spending will require raising domestic revenues as well as external financing to protect fiscal sustainability.

2.   This paper analyzes the state of educational attainment in Somalia and explores the potential growth dividends from increasing access to education and closing gender gaps in education. Based on the 2022 Somalia Integrated Household Budget Survey (SIHBS), this paper

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[2] Carapella et al (2023) estimate additional SDG spending needs in education in 2030 at 12.27 percent of 2030 GDP.

confirms that education outcomes in Somalia are among of the lowest in the world, and even worse for women. Model estimates show that increasing access to education can generate substantial growth dividends. Increasing boys' expected years of schooling from 1.76 to match the average of 9.66 in Low Human Development (LHD)[3] countries, while simultaneously raising girls' expected years of schooling at the same relative pace as current policy (from 1.48 to 7.36), could boost real GDP by 35 percent by 2050. Importantly, these output gains would only be achieved if girls' education also see substantial improvements. However, in this scenario, the gender gap in education widens somewhat. The model estimates also show real GDP gains would reach close to 40 percent if, in addition, these gender gaps in education are fully closed (that is, girls also reach 9.66 expected years of schooling).

3.   **It will be important that Somalia sets strong foundations for building its education system and expanding access to education, while mobilizing the resources to do so, with continued support from international partners.** The paper recommends that Somali authorities gradually increase education spending, by mobilizing both domestic and external resources. The tight budgetary environment also calls for greater efficiency of education spending, including by enhancing coordination between the Federal Government of Somalia (FGS) and the Federal Member States (FMS), leveraging the existing diversity of education provides in the country, and striking a balance between recurrent capital and capital spending in the education sector. Improving the quality of teaching calls for recruiting teachers with adequate skills and investing in teacher training programs, with a focus on expanding the pool of female teachers to also incentivize girls' enrollment. To reduce gender gaps in education, the authorities should consider adopting unambiguous legislation prohibiting child marriage, as well as implementing gender mainstreaming and budgeting.

4.   **The rest of the paper is organized as follows**: Section II discusses stylized facts in education in Somalia; Section III describes the empirical model and results; and Section IV lays out policy priorities.

B.   Stylized Facts and Comparative Analysis

5.   **Education outcomes in Somalia remain critically low and are worse for women.** Gross attendance rates[4] for primary education are significantly below the average of sub-Saharan Africa (SSA). According to the 2022 SIHBS, only 39 percent of Somali children are enrolled in primary school on a gross basis (SNBS, 2023b), compared with near-universal enrollment in SSA. While urban households do tend to have somewhat greater access to education than rural households, the difference with nomadic households is dramatic, where only 10 percent of children attend primary school. The 2022 SIHBS

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[3] The United Nations Development Program (UNDP) ranks countries according to their Human Development Index (HDI), a comparable measure across countries and over time based on health, education, income, and living standards. Countries whose HDI falls below 0.549 are considered Low Human Development (LHD) countries. According to the latest data, there are 33 LHD countries and Somalia figures as the one with the lowest HDI among the 193 countries considered.

[4] The gross enrollment ratio is the total number of school students, including overage or underage students, expressed as a percentage of the official school-age population.

underscores the extent of the educational deficit following years of conflict, revealing that approximately 65.5 percent of the population lacks any formal education, and fewer than 5 percent have completed secondary education (SNBS, 2023b). In nomadic areas, almost all the population (92.5 percent) lacks formal education. The educational disparity in Somalia disproportionately affects women. Only

School Enrollment Gross Rate
(Percent of school-age population)
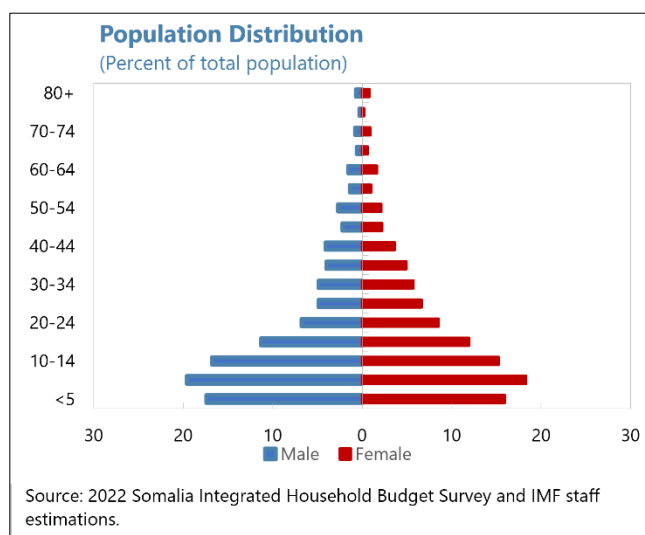
■ Primary ☒ Secondary

Source: WDI (2022), 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.

Educational Attainment
(Percent of population)

■ Male ☒ Female

Source: 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.

Literacy Rate
(Percent of population)

■ Male ☒ Female

Source: WDI (2022), 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.

Dependency Ratio by Place of Residence
(Percent)

Urban, 106 — 29%
Nomadic, 121 — 16%
Rural, 131 — 55%

Cumulative Share of Population

Source: 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.
Note: The numbers above the arrows indicate the cumulative share of the population represented by each category.

Primary Education Gross Enrollment Rate by Place of Residence
(Percent of school-age population)

Urban, 44.3% — 29%
Rural, 40.1% — 55%
Nomadic, 10.1% — 16%

Cumulative Share of Population

Source: 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.
Note: The numbers above the arrows indicate the cumulative share of the population represented by each category.

Population Lacking Formal Education by Place of Residence
(Percent of total population)

Urban, 59.5% — 29%
Rural, 68.6% — 55%
Nomadic, 92.5% — 16%

Cumulative Share of Population

Source: 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.
Note: The numbers above the arrows indicate the cumulative share of the population represented by each category.
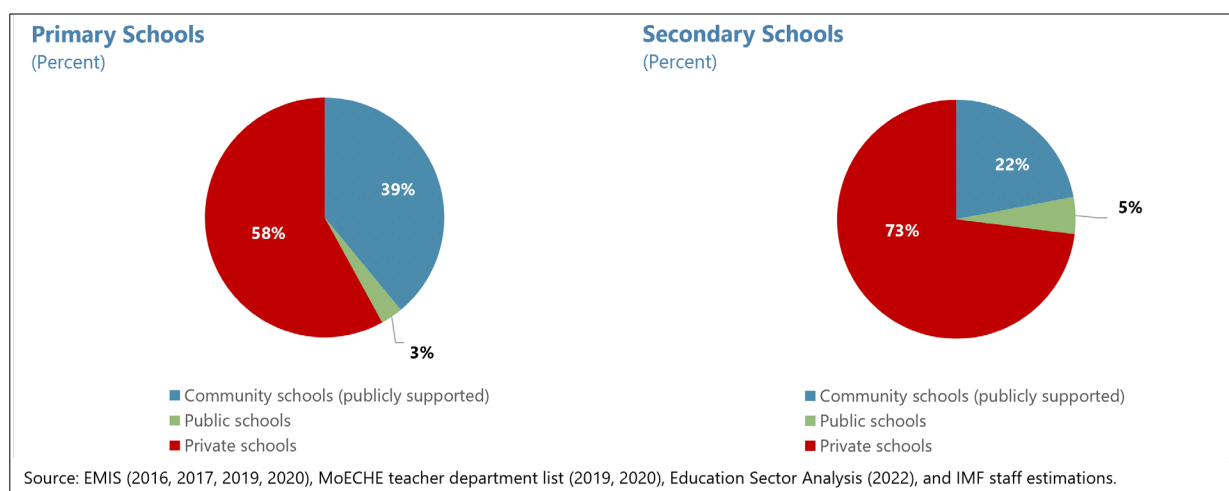
45.3 percent of adult women have basic literacy skills, compared to 63.6 percent for adult men, and the proportion of girls who complete secondary school is half that of boys.

6.   High birth rates and a predominantly young population exert substantial pressure on the education system. In 2024, the United Nations (UN, 2024) estimates that Somalia will have a fertility rate of 6 children per woman, reflecting a consistently high birth rate, including among adolescents. The current adolescent birth rate stands at 118 births per 1,000 women aged 15-19, above the sub-Saharan average of 100 (SNBS, 2023c). On average, households in Somalia have about 7 members. Moreover, children under the age of 15 constitute over half of the

Population Distribution
(Percent of total population)

Source: 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.

population (51.5 percent), as reported in the 2022 SIHBS. This results in a high dependency ratio[5] of 114 percent across the country, with even higher ratios in rural and nomadic areas, at 131 percent and 121 percent respectively. This demographic profile highlights the substantial capacity and resources needed to meet the demand for educational services in Somalia.

7.   Despite significant efforts in school construction since 2012, access to education remains limited, with the private sector dominating the educational landscape. Many schools in Somalia were destroyed during the civil strife. While the country has made considerable progress in rebuilding, the vast majority of schools are either privately owned or community-managed.[6] Public schools account

Primary Schools
(Percent)

Secondary Schools
(Percent)

Source: EMIS (2016, 2017, 2019, 2020), MoECHE teacher department list (2019, 2020), Education Sector Analysis (2022), and IMF staff estimations.

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[5] The dependency ratio is a measure of the number of dependents (population below 15 and above 64 years of age) divided by the population aged 15 to 64. It gives insight into the number of people not of working age, compared with those of working age.
[6] Community schools include schools receiving some form of financial support from the ministries of education in the FMS.

for only 3 percent of primary and 5 percent of secondary schools. In addition, a critical shortage of qualified teachers persists across all types of schools. Although pupil-to-teacher ratios are generally below 40, the ratio of pupils per qualified teacher exceeds 100 in all Somali schools, reaching nearly 200 in private primary and public secondary schools[7].
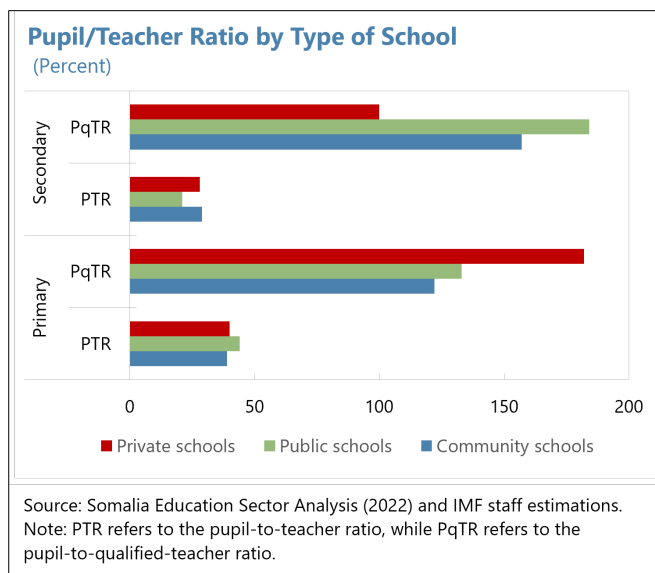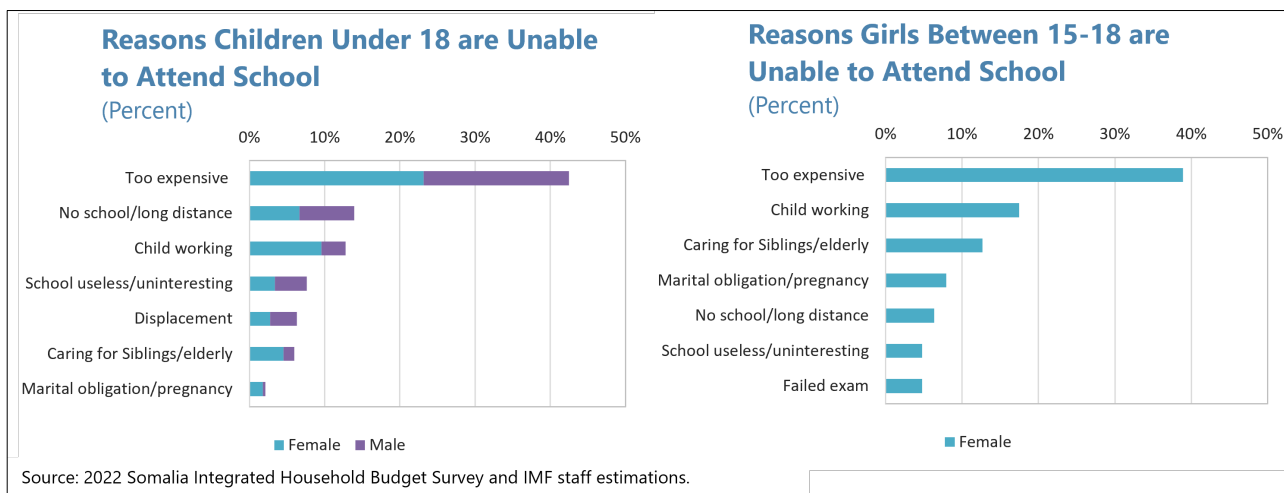
8.   Households point to the high cost of education as the main factor inhibiting access. According to the 2022 SIHBS, 42.5 percent of children are unable to attend school due to expensive costs, and limited access to schools is the second main factor (14 percent). Moreover, because of limited household resources, many children are engaged in labor or assume caregiving responsibilities within their families. Nearly 19 percent of children do not attend school because of employment or household duties, with girls accounting for more than two-thirds of this group (SNBS, 2023b).

Pupil/Teacher Ratio by Type of School
(Percent)

Source: Somalia Education Sector Analysis (2022) and IMF staff estimations.
Note: PTR refers to the pupil-to-teacher ratio, while PqTR refers to the pupil-to-qualified-teacher ratio.

9.   Girls also report being unable to attend school due to marital obligations, with child marriage remaining a widespread issue in Somalia. This practice disproportionately affects girls, with an estimated 45 percent of girls married before the age of 18 (SNBS, 2006). Pregnancy and marital obligations feature as important causes of non-enrollment among girls between 15 and 18 years old, with about 9 percent reporting those as the reasons for not attending school (SNBS, 2023b). In addition to traditional and cultural norms, poverty significantly contributes to child marriage, with low-income families marrying off their daughters as a harmful coping

Reasons Children Under 18 are Unable to Attend School
(Percent)

Reasons Girls Between 15-18 are Unable to Attend School
(Percent)

Source: 2022 Somalia Integrated Household Budget Survey and IMF staff estimations.

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[7] For comparison, the average ratio of pupils per qualified teacher in sub-Saharan Africa, at the primary level, is approximately 58 (UNESCO, 2021). Higher values for this indicator imply less individualized teaching and lower levels of quality education.

mechanism, often perceived as a way for providing for their future (Parsons and McCleary-Sills, 2014). Despite Somalia's commitment to the Sustainable Development Goals[8], which include the eradication of child marriage by 2030 as a target, a number of constraints remain[9]. Notably, the absence of a clear legal definition for child marriage renders the law intended to prohibit it ineffective[10]. Furthermore, insufficient enforcement mechanisms and a lack of awareness regarding the detrimental impacts of child marriage exacerbate the issue.

Child Marriage
(Percent of Women aged 20-24 first married by age 15 or 18)

Source: UNFPA and IMF staff estimations.

Additionally, the limited access to education for girls creates a vicious cycle where the lack of schooling further diminishes the economic opportunities for women, impoverishing them and their families and perpetuating the lack of alternatives for girls as a major driver of early marriage (UNICEF, 2016). Further obstacles to female access to education also stem from the lack of educational infrastructure that meet the specific needs of girls and women (for instance separate school sanitary facilities for females) and low participation of women in Somalia's teaching force, among others (World Bank, 2024b).
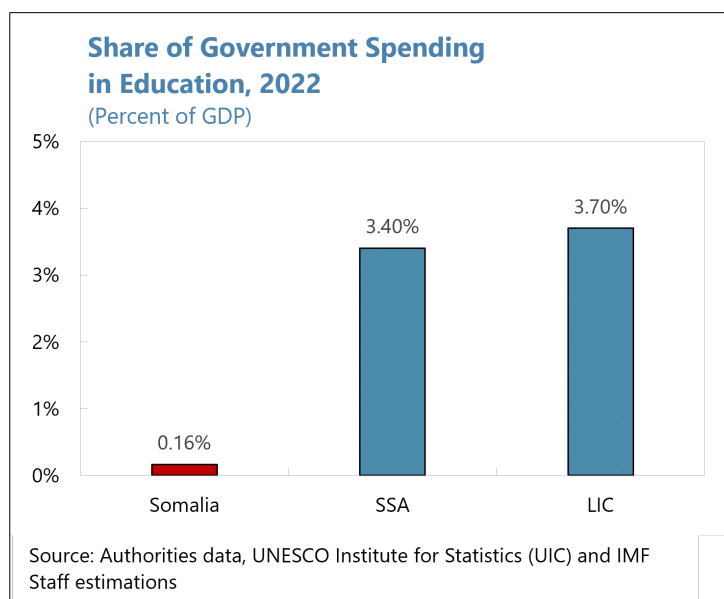
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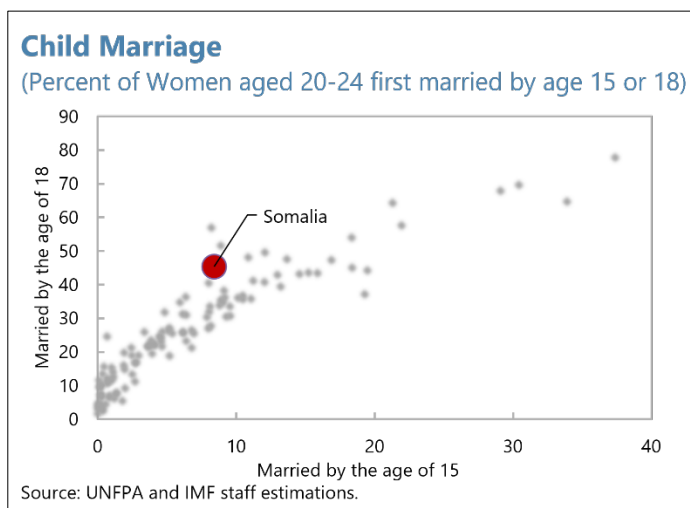
[8] In addition to the SDGs, Somalia also ratified the Convention on the Rights of the Child (CRC) in 2015, which explicitly sets the minimum legal age for marriage at 18. However, Somalia remains one of the few states that has not signed or ratified the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). Regionally, Somalia signed the African Charter on the Rights and Welfare of the Child in 1991, committing to uphold Article 21, which mandates the prohibition of child marriage. Furthermore, in 2006, Somalia signed the African Charter on Human and Peoples' Rights on the Rights of Women in Africa (also known as the Maputo Protocol), which under Article 6 establishes the minimum age for marriage at 18 and emphasizes the need for legal reforms to enforce this standard.

[9] The global framework for ending child marriage, as outlined in Target 5.3 of the Sustainable Development Goals (SDGs), refers to a comprehensive, international approach to eliminating harmful practices like child marriage by 2030. As part of this framework, governments are encouraged to enact or strengthen laws that prohibit child marriage, set a minimum legal age for marriage at 18, and ensure free and full consent to marriage. Countries are also urged to harmonize their domestic laws with international agreements, such as the Convention on the Rights of the Child (CRC) and CEDAW, to reinforce global standards for eliminating child marriage.

[10] Currently, article 28 of the provisional Somalian Constitution (2012) states that a "marriage shall not be legal without the free consent of both the man and the woman, or if either party has not reached the age of maturity." However, the Constitution does not define the age of maturity, meaning that girls could marry at any age under 18. In addition, according to article 16 of the Family Code (1975), the legal age for marriage in Somalia is 18 for both men and women. But it provides exceptions for girls to be married between 16 and 18 with a guardian's consent. The Court in cases of necessity, may also exempt the contracting parties from the observance of the age limits.

10.   Government spending on education is very low, given budgetary constraints. In 2022, FGS public spending on education represented around 0.16 percent of GDP[11], part of which is financed by the World Bank. This contrasts with the levels observed in other LICs and SSA, where spending on education typically exceeds 3 percent of GDP (UIS, 2022). The government has recently been making efforts to expand access to education—for instance the 2023 budget made room for the hiring of 3,000 new teachers. While Somalia receives considerable off-budget support from development partners for education projects, it is not possible to monitor these projects centrally to assess their impact and alignment with national development goals.

Share of Government Spending in Education, 2022
(Percent of GDP)

Source: Authorities data, UNESCO Institute for Statistics (UIC) and IMF Staff estimations

C.   Economic Benefits of Closing Education Gaps in Somalia

Model

11.   This paper uses a static production function approach to isolate the impact of closing education gaps over time. This method[12] likely underestimates the impact of education as it does not consider general equilibrium feedback effects that could, for example, increase investment in physical capital to adjust to the increased level of effective labor input and increase in labor force participation that responds positively to higher levels of education. Therefore, the results discussed next should be viewed as a conservative estimate of education's transformative impact on Somalia's economy. Consider a standard Cobb-Douglas production function defined as follows:

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha} \quad (1)$$

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[11] This spending includes administrative and maintenance costs not directly related to education delivery for the Ministry of Education and Higher Education and other Somali universities and academies.

[12] This approach has also been employed in studies for other countries, such as Angola (IMF, 2024b).

where Y_t represents GDP in real terms, A_t is total factor productivity, K_t denotes the stock of capital, L_t is effective labor input, and t corresponds to a period of one year. Effective labor is assumed to be the total of male and female effective labor inputs which are perfectly substitutable[13]:

$$L_t = L_t^f + L_t^m \quad (2)$$

where the subscripts f and m denote female and male, respectively. For each gender, effective labor input is characterized by two dimensions: the extensive and the intensive margins. The extensive margin refers to the number of employed workers of a given gender and their average annual hours worked, essentially capturing the breadth of labor engagement. Meanwhile, the intensive margin assesses the value of human capital per working hour, reflecting the depth of labor's contribution.

12.   The analysis employs a metric of education-based human capital proposed by Filmer et al. (2020), which is described as learning-adjusted years of schooling (LAYS). LAYS is defined as the product of the quantity of education (measured by the expected years of schooling) and the quality of learning (measured by relative standardized test scores). The result is the learning-adjusted measure of labor input summarized below:

$$L_t^g = \exp\left(LAYS_{t-5}^g R_t^g\right) H_t^g Q_t^g, \quad \forall g \in \{f, m\} \quad (3)$$

where $LAYS^g$ is the average learning-adjusted years of schooling, R^g is the returns to education, H^g is average hours worked in a year, and Q^g is the number of employed workers of gender g. Due to the time-to-build nature of human capital investment, changes in $LAYS^g$ are assumed to take 5 years to become observable.

13.   Projections for inputs of the model are based on the medium-term outlook and other parameters that are available for Somalia or its close peers. For simulation scenarios, potential GDP and capital[14] are first estimated by projecting both series forward until 2050 based on medium term growth forecasts under the IMF baseline. The trend component of this estimated GDP serves as the baseline GDP level. The employed population is projected using disaggregated employment by gender alongside population growth rates. Labor market data comes from the World Bank (2024a), which is based on the 2022 SIHBS. Data on expected years of schooling comes from Somalia's National Education Management Information System (EMIS), while the measure of quality of education of peer countries are used as proxies since Somalia lacks data on standardized test scores. Due to similar

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[13] The assumption of perfect substitutability between male and female labor inputs is appropriate for the current analysis due to its simplicity and the avoidance of additional parameterization in a context of limited data availability. However, Ostry et al. (2018) find that male and female labor are imperfect substitutes in production, highlighting the benefits associated with skill diversity in the workplace. Consequently, the authors argue that increasing women's participation in the labor force yields gains that go beyond simply increasing the number of male workers, including higher wages for men. Therefore, our simplifying assumption likely leads to understated results, as the further education and qualification of female workers would complement the education of male workers, resulting in greater output gains.

[14] Capital stock is estimated from perpetual inventory method, assuming 6 percent depreciation rate.

constrains, this paper also employs peer country data for gender-specific hours worked and applies the sub-Saharan African average returns to education by gender.[15]

Closing Education Gaps

14.   The baseline scenario represents the path for Somalia's economy in the absence of any educational reform. The education level is held constant at the current level of 1.48 and 1.76 expected years of schooling for girls and boys, respectively, and real GDP grows at an average rate of 4.3 percent. Given Somalia's fragilities and capacity constraints, estimating a baseline trajectory for expected years of schooling is challenging, which is why a constant case serves as our baseline. This approach also enables us to evaluate the benefits emanating from the Ministry of Education, Culture, and Higher Education's (MoECHE) current policies as per the [National Education Sector Strategic Plan 2022-2026](#) (ESSP). Before discussing the counterfactual scenarios, it is important to emphasize that the significant magnitudes observed in this analysis stem from the fact that the baseline scenario does not account for any growth in human capital.

15.   Three policy scenarios are analyzed for their impact on potential output driven by increases in the expected years of schooling at different rates for boys and girls. To evaluate the impact of accumulating human capital on potential output, three different scenarios are constructed that vary only in the human capital accumulation component of the labor input, while assuming total factor productivity, capital, and employed population grow at baseline growth rates.[16] Each scenario corresponds to an educational policy that raises the number of expected years of schooling for Somali girls and boys unevenly, keeping constant the quality and returns to education at their baseline levels.

- **Current policy** scenario corresponds to the objectives of the ongoing ESSP. The plan's objectives regarding net enrollment rates and other adult education programs translate into additional years of expected schooling, factoring in targeted completion rates as specified in the plan. Assuming thorough and successful implementation by 2026, boys will receive 3.96 years of education and girls will receive 3.11 years. While the ESSP is ambitious and would bring a significant improvement in access to education to both girls and boys, it does not address the existing gender gap in education. Implementation of the ESSP would therefore result in a widening of the gender gap as education attainment of girls relative to that of boys would decrease from 84 percent to 79 percent (Table 1).

- **Ambitious policy-persistent gender gap** scenario implements an educational policy that annually increases the expected years of schooling by the same amount as the current ESSP until the education attainment gap relative to the Low Human Development (LHD) countries for boys is closed. In a sense, this translates into sequential ESSPs post-2026, until a terminal year when the LHD level of educational attainment for boys is achieved. For this to occur, Somalia would have to

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[15] The peer countries selected as proxies for Somalia are Afghanistan, Ethiopia, and Yemen. This selection was guided by data availability, geographical proximity, similar reliance on agriculture and remittances, and/or ongoing challenges in political stability and infrastructure.

[16] Annual hours worked by the average worker by gender are assumed to remain constant.

implement 3.6 iterations of the same plan till 2039, achieving 9.66 expected years of schooling for boys, which is on par with the 9.63 of LHD countries. While achieving higher levels of education than the LHD benchmark would be desirable, achieving the LHD level would already a sufficiently ambitious goal. Other comparator groups, namely, Middle East and North Africa, sub-Saharan Africa, and Low-Income Countries, have higher educational attainment levels, and therefore require even more ambitious efforts. Notice that, despite substantially increasing schooling for girls who would achieve 7.36 years of expected schooling, each implementation of the policy further increases the gender gap (Table 1), since ESSP annual average increase in schooling for girls is lower than that for boys. As a result, under this scenario, girls are anticipated to attain 76 percent of the schooling expected for boys, indicating that female workers will trail behind in terms of human capital accumulation compared to their male counterparts.

- **Ambitious policy-no gender gap** scenario also closes gender gaps in addition to bridging the gap in boys' educational attainment in Somalia with respect to LHD countries. Under this scenario, after the first implementation of ESSP, the trajectory of girls' expected years of schooling increases linearly such that it reaches parity with that of boys at 9.66 expected years of schooling by 2039, the year in which boys' education align to the LHDs.

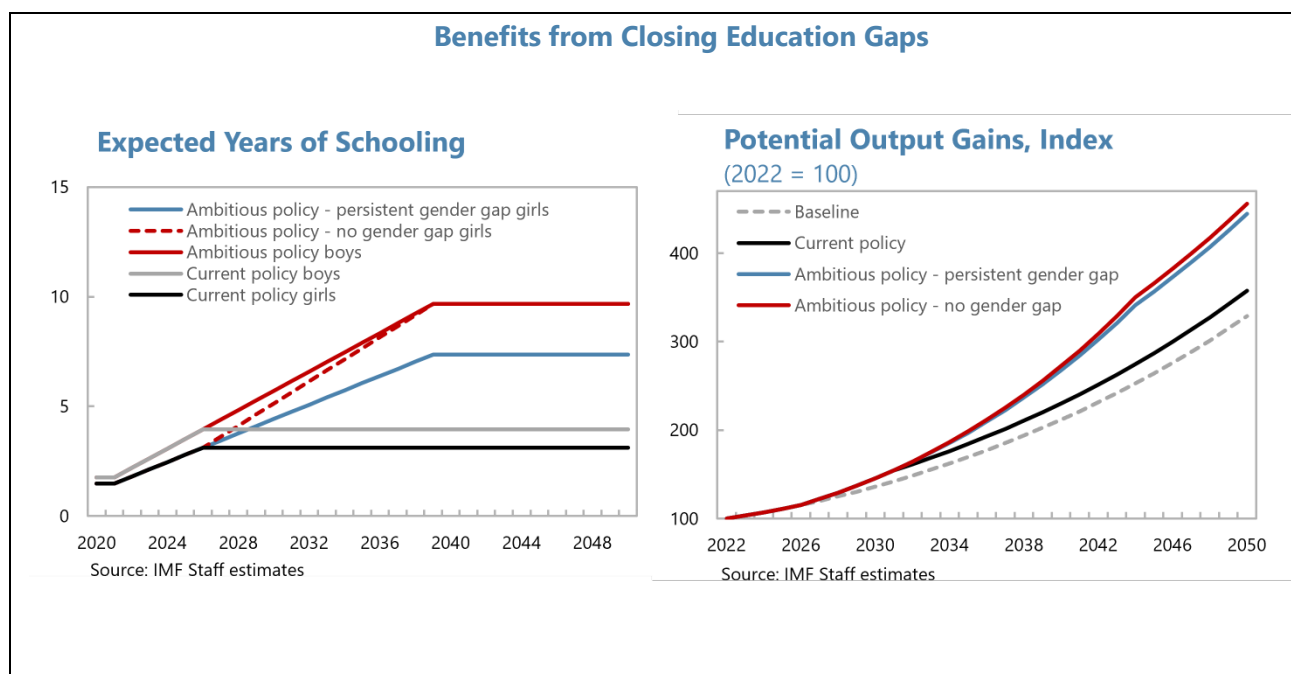| Table 1. Somalia: Summary of Scenarios for Educational Policies					
Scenarios	Period of education policy implementation	Expected years of schooling			GDP gains relative to baseline, 2050
		Boys	Girls	Ratio of girls to boys	
Baseline	NA	1.76	1.48	84%	NA
Current policy	2022-2026	3.96	3.11	79%	8.7%
Ambitious policy - persistent gender gap	2022-2039	9.66	7.36	76%	35.1%
Ambitious policy - no gender gap	2022-2039	9.66	9.66	100%	38.6%
Sources: Somalia authorities; IMF staff estimates					

16.   The model shows that full implementation of the ESSP would raise Somalia's real GDP by 8.7 percent. Under current policy, the higher educational attainment brought by ESSP leads to a 12.7 percent increase in Somalia's effective labor. This would result in an average real GDP growth rate of 4.6 percent, generating 8.7 percent higher GDP than in the baseline by 2050.

17.   The sequential implementations of ESSPs until closing the education gap relative to the LHD average for boys could boost output by 35 percent. The "ambitious policy-persistent gender gap" scenario leads to substantial increases in expected years of schooling for both boys and girls, significantly enhancing Somalia's human capital stock. By 2050, the overall effective labor input increases by 53.6 percent. That is, the average Somali worker would be able to produce 53.6 percent more in the same hour worked. As a result, real GDP grows at an average rate of 5.4 percent and, by the end of the period, real GDP is 35.1 percent larger compared to the baseline scenario. Importantly, these gains would

only be achieved if the education for girls also sees a significant jump to 7.36 expected years of schooling, though it would remain below that of boys at 9.66 expected years of schooling.

18.   Closing the gender gap in education would further raise GDP. Under the "ambitious policy-no gender gap" scenario—which closes the gender gap in education by bringing the expected years of schooling to 9.66 for both girls and boys—the overall effective labor input increases by 59.4 percent. As a result, Somalia's 2050 GDP will be 38.6 percent higher than under the baseline, or 3.5 percentage points higher than under the ambitious policy with persistent gender gaps. Although this additional boost may seem modest compared to the one in the previous scenario, the costs to implementing this additional step would also be significantly lower. In the "ambitious scenario with persistent gender gaps", the total gain in expected years of schooling amounts to 13.8, while closing gender gaps only requires 2.3 extra years of expected schooling. In essence, in the long-run, ESSP would forfeit 3.5 percentage points of Somali GDP by not equitably addressing education for both genders.

Benefits from Closing Education Gaps

Expected Years of Schooling

Ambitious policy - persistent gender gap girls
Ambitious policy - no gender gap girls
Ambitious policy boys
Current policy boys
Current policy girls

Source: IMF Staff estimates

Potential Output Gains, Index
(2022 = 100)

Baseline
Current policy
Ambitious policy - persistent gender gap
Ambitious policy - no gender gap

Source: IMF Staff estimates

Box 1. National Education Sector Strategic Plan 2022–2026

The Ministry of Education, Culture, and Higher Education (MoECHE) of the Federal Government of Somalia (FGS) has developed a five-year plan to expand access to schooling. The National Education Sector Strategic Plan 2022-2026 (ESSP) emphasizes the importance of education as a pillar in Somalia's state-building efforts, while acknowledging the challenging environment. Beyond access and quality issues, the ESSP also discusses governance weaknesses and financing needs, pointing out the need for continued support from development partners, including to help bridge investment gaps. The ESSP implementation is estimated to cost US$387.9 million (about 3.5 percent of GDP) over the five-year period, requiring resources from the FGS, FMS, and partners.

Box 1. National Education Sector Strategic Plan 2022–2026 (concluded)

Some of the key performance indicators to be achieved by 2026 include:

- Increase the gross enrollment rate in pre-primary education from zero to 10 percent, with a gender parity index of 1.

- Raise the gross enrollment rates in primary education from 24 to 34 percent for males and from 22 to 28 percent for females.

- Improve the primary completion rate from 80 percent to 95 percent.

- Provide 9,000 scholarships (cash grants) for learners in primary schools, with higher focus on girls.

- Improve the percentage of primary schools with accessible WASH facilities (drinking water, sanitation and hygiene services) from 10 to 30 percent.

- In secondary education, increase gross enrollment rates from 26 to 35 percent for males and from 18 to 30 percent for females, while increasing the gender parity index from 0.68 to 0.8.

- Provide dignity kits to 137,500 girls attending primary (134,000) and secondary (3,500) education and an extra 1,000 to girls in emergency-affected schools to avert emergency-caused dropouts.

- Raise the national literacy rate from 40 to 45 percent through increasing access to adult education.

- Raise enrollment in public Technical and Vocational Education centers from 8,701 to 30,000, ensuring 50 percent female participation.

- Expand the number of students enrolled in higher education from 94,500 to 300,000, with females constituting 50 percent of the total.

- Double the number of Somali National University Campuses constructed and/or rehabilitated to six.

D. Policy Priorities

19.   Given extremely limited resources and capacity, Somalia will need to carefully prioritize policies that can deliver near-term wins as it gradually develops its public education system. The authorities are taking steps to raise educational attainment. In addition to their existing efforts, the upcoming National Transformation Plan (NTP) will feature a pillar on social and human capital development, with a particular focus on increasing access to schooling and closing gender gaps. However, securing sufficient financing for the large spending needs in education, as in other development areas, is a daunting task. Hence, trade-offs are inevitable. Drawing on recommendations from key partners with sectoral expertise, in particular the World Bank, priorities for the sector include[17]:

- **Additional resources for the sector.** In addition to making room in the budget for more spending on education by mobilizing domestic revenues (IMF, 2024a), financial and technical support from development partners will continue to be critical. A robust fiscal framework is also

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[17] Policy priorities draw from Kadama and others (2018), World Bank (2019), World Bank (2021), World Bank (2024b), as well as engagement with the authorities and development partners during the Article IV consultation.

needed that, among others, will support greater and more efficient education spending while maintaining macroeconomic stability (IMF, 2024a).

- **Sustained support from development partners to help finance the large education spending needs.** It would be important for partners to gradually channel their support through the budget and country systems. This will ensure better alignment with government priorities under the national development plan and NTP, raise spending visibility, and facilitate monitoring and evaluation. Some key partners have already been channeling resources through the budget, including the World Bank and Global Partnership for Education.

- **Leverage the existing diversity of education providers and provide school grants to lower the cost of education for households.** It will take considerable time for the government to build a wide network of public institutions that can provide free access to quality education. Therefore, it is important to leverage the existing diverse set of institutions that provide education across the country. By facilitating access to existing institutions—in particular by providing school grants that would reduce tuition costs for households—Somalia would be able to substantially increase in the near-term the number of children in school. This would need to be accompanied by steps to enhance the standards and regulations governing existing providers. Relatedly, the capacity and resources of the MoECHE should be strengthened, which will enhance the design and implementation of education policies.

- **Improve the quality of teaching by recruiting teachers with adequate skills and investing in teacher training programs, with a focus on expanding the pool of female teachers.** A key priority in this area is the development of a national teacher training curriculum to standardize teacher education and qualifications across the country. Enhancing female employment in schools is crucial to incentivize girls' enrollment. Preliminary data show that that only about 15 percent of teachers recruited in 2023 were female, underscoring that systematic efforts will be needed to reduce the underrepresentation of women in education.

- **Strike a balance between recurrent and capital spending in the education sector.** When increasing spending on education, the authorities should balance its composition between building schools and hiring teachers. Educational infrastructure should also be tailored to meet the specific needs of girls and women (including sanitary facilities) to foster a conduce learning environment. Special consideration will be needed on how to reach children in nomadic households.

- **Advance fiscal federalism reforms to clearly define education spending and revenue responsibilities between the FGS and FMS.** As part of the broader fiscal federalism reforms, Federal and FMS education and finance ministries should agree on responsibilities on education spending and its financing through taxation and other funds. Moreover, stronger collaboration and transparency are needed, including in sharing financial data and improving budget management, which is a prerequisite for increasing public spending on education.

- **Take further steps to eradicate child marriage.** This macro-critical reform will contribute to close the gender gap in secondary education, a key step toward expanding female participation in the labor market. As more educated women are more likely to participate in the workforce, it

leads to increased economic activity and productivity. As a result, the potential GDP gains from this reform could surpass those projected by our static framework.

- **Implement gender mainstreaming and budgeting to ensure equal access to education for both girls and boys, particularly at the secondary level.** Somalia can draw valuable lessons from countries like Rwanda and Sierra Leone[18] to allocate resources effectively towards programs that prioritize gender equality considerations and support female enrollment across all education levels. An example of a successful measure adopted by those countries is the establishment of a Gender Budgeting Unit or a Gender Monitoring Office within institutions such as the Ministry of Finance or the Office of the Prime Minister. These entities would focus on ensuring that budget allocations effectively address gender disparities without inadvertently exacerbating them, as with the ESSP.

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[18] See Kadama et al. (2018) and Government of Sierra Leone Ministry of Finance (2024).

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SOMALIA AND THE EAST AFRICAN COMMUNITY[1]

Somalia's accession to the East African Community (EAC) presents opportunities for the country, as well as challenges and risks. This paper identifies the key channels through which Somalia can gain from its membership to the EAC, which include trade diversification, accelerated state-building and fiscal reforms, stronger incentives for consensus-formation across the FGS and FMS, and capacity support from the EAC. It also maps some of the challenges and risks associated with joining the EAC and provides policy guidance on managing them.

A. Background

1.   In March 2024, Somalia joined the East African Community (EAC), a regional economic community established in 1999 that comprises eight countries: Kenya, Tanzania, Rwanda, Burundi, Uganda, South Sudan, Democratic Republic of Congo, and now, Somalia.[2] The EAC aims to broaden and deepen economic, political, social, and cultural integration, with the objective of improving the quality of life of the people of East Africa through increased competitiveness, value-added production, trade, and investment. The market bounded by the EAC comprises an estimated 302 million people and a GDP of approximately US$345 billion as of 2023. It is a de jure customs union, with

duty-free intra-EAC trade and a common external tariff. The EAC is also a de jure common market, with Partner States required to ensure free movement of labor and capital within the EAC's borders. The EAC aims to establish a monetary union, with a current target date of 2031,[3] in the context of greater economic and political integration. Further, the EAC ultimately aims to achieve a political confederation as a long-term goal, including having common foreign and security policies. Given the long-term nature of goals related to the establishment of a monetary union and political

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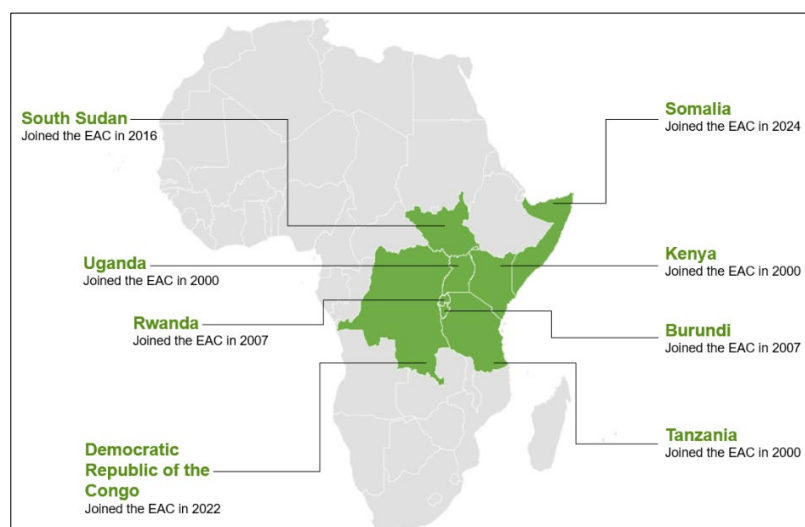
[1] This note was prepared by Ali Abbas (SPR) and Dallal Bendjellal. The authors would like to thank Dr. Abdusalam H. Omer, Somalia's Presidential Special Envoy for the EAC, and the Somali authorities for helpful comments and suggestions.

[2] Somalia was admitted as a full member of the EAC on November 24, 2023. The Federal Parliament of Somalia ratified the Treaty of Accession in February 2024, and the instrument of ratification of the Treaty of Accession was deposited by the authorities with the EAC Secretary General on March 4, 2024, making Somalia officially, the eighth Partner State of the EAC.

[3] In 2022, the target date for the East African Monetary Union (EAMU) was postponed from 2024 to 2031.

confederation, this paper focuses on Somalia's near- to medium-term engagement in the customs union and common market.
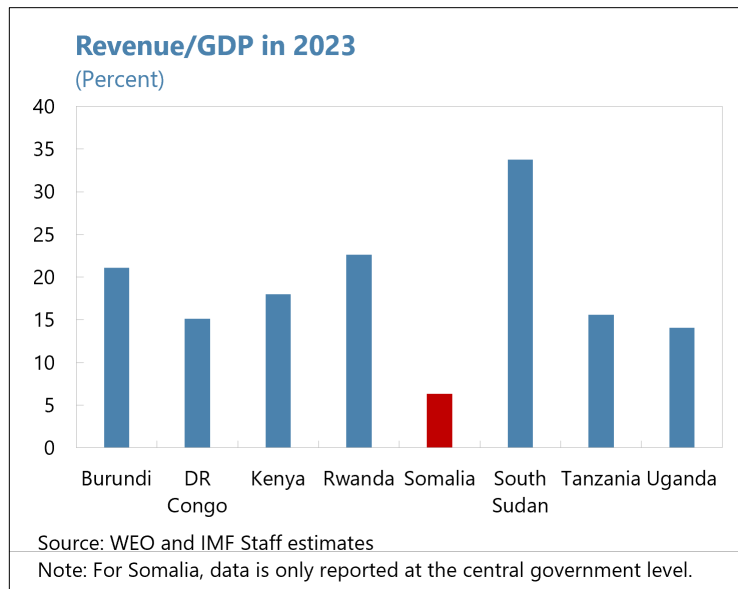
2.   Upon a country's acceptance into the EAC, integration is undertaken through a gradual process. Partner States are currently at different levels of integration, especially in the context of the customs union and common market. Following Somalia's membership into the EAC, the FGS and EAC Secretariat jointly prepared an ambitious roadmap for Somalia's integration into the EAC, outlining the plan and timeline for achieving alignment of Somalia's national laws, regulations, and administrative guidelines with the EAC's legal and regulatory framework, with the objective of meeting requirements under the integration pillars, especially the customs union and common market. Further, the authorities are planning to initiate full participation in the EAC's legislative and judicial bodies, by appointing nine members to the East African Legislative Assembly (EALA), and a member to the East African Court of Justice (EACJ).

B.   Opportunities for Somalia of Joining the EAC

3.   Integration into the EAC's customs union can be a strong incentive to further modernize and harmonize the customs regime, which w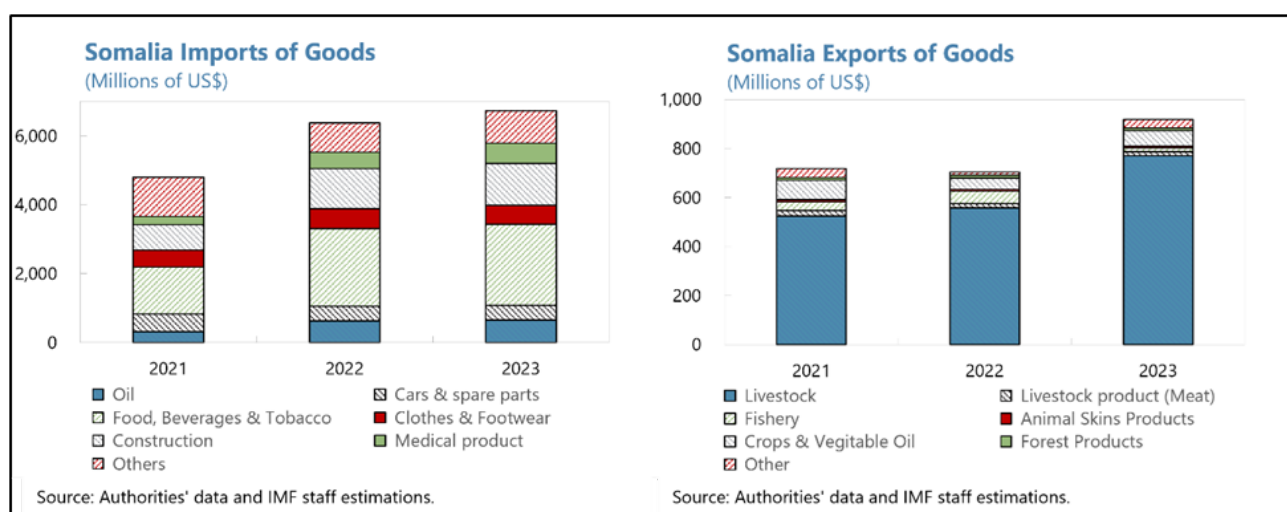ould boost Somalia's fiscal position. Somalia has taken significant strides in building infrastructure for collecting domestic revenues since 2013. However, at close to 3 percent of GDP, domestic revenues remain extremely low. Even including external grants, Somalia has one of the lowest revenue-to-GDP ratios in the EAC (6 percent in 2023). As a member of the EAC, Somalia will be expected to collect ad valorem customs duties on imports from outside the union, based on the value of invoices at ports. Prior to joining the EAC and as part of the HIPC process, Somalia harmonized its tariff rates at ports in Mogadishu and Kismayo (partially) using the community's tariff structure. As part of EAC integration, aligning valuations (to invoice value) with those used in the customs union, and harmonizing customs across all major ports in the country is expected to significantly increase customs revenues.

Revenue/GDP in 2023
(Percent)

Source: WEO and IMF Staff estimates
Note: For Somalia, data is only reported at the central government level.

4.   Accession to the EAC presents a strategic opportunity to strengthen trade and economic growth. By joining the EAC's regional economic bloc, Somalia stands to benefit from expanded access to a larger and more integrated market, which could significantly boost export potential and attract investment inflows. The reduction of both tariff and non-tariff barriers

within the EAC will facilitate the movement of goods and services, thereby expanding the export market for Somalia. The customs union could also play an important role in supporting Somalia's export diversification by easing trade restrictions and fostering interconnectivity among Partner States. However, this will require adequate transport infrastructure, structured and regulated cross-border markets,[4] and structural reforms to enhance productivity. As a member of the EAC, Somalia could benefit from regional infrastructure projects and harmonization of trade policies which would help enhance connectivity, lower transportation costs, and improve trade efficiency. Somalia's exports to EAC Partner States amounted to approximately $0.8 million in 2022 and $0.75 million in 2023, with livestock representing the primary export product. This low level of trade can be elevated if Somalia effectively leverages the benefits of integrating into the EAC by implementing structural policies that provide essential infrastructure, improve institutional quality, and build both human and physical capacity. Such measures would enable Somalia to consolidate its position in the existing exports markets and lay the foundations for broader diversification.

Source: Authorities' data and IMF staff estimations.

Source: Authorities' data and IMF staff estimations.

5.   Somalia has the potential to become a more attractive destination for foreign direct investment (FDI). Accession to the EAC could significantly enhance this potential by creating a more stable and predictable economic environment. By aligning with the EAC's harmonized policies and reducing barriers to entry, Somalia would present a more favorable landscape for investors. Increased FDI inflows can stimulate economic growth through increased capital, technology transfer, and employment opportunities.[5]
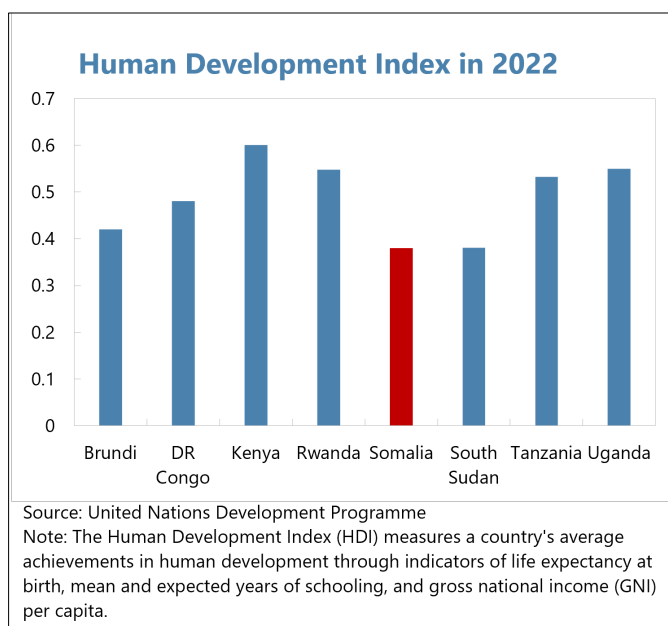
6.   Integrating into the EAC will allow Somalia to accelerate reforms aimed at building critical institutions. The need to align with the EAC on areas such as the judiciary and governance

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[4] Shepherd, B., & Wilson, J. S. (2007). Trade, infrastructure, and roadways in Europe and Central Asia: New empirical evidence. Journal of Economic Integration, 723-747.

[5] Baldwin, R.E., & Venables, A.J. (1995). Regional Economic Integration. In G.M. Grossman & K. Rogoff (Eds.), Handbook of International Economics (Vol. 3, pp. 1597-1644). Elsevier.

can provide momentum for institutional reforms. For example, the EAC requires Partner States to establish court systems that can effectively and equitably adjudicate between civilians and entities – both public and private – across Partner States. Doing so will allow Somalia to jumpstart judicial reforms. Given that the scope of policies that Partner States need to converge on remains broad, Somalia can use the goal of convergence and experiences of other Partner States to accelerate the development of state institutions and civic infrastructure.

7.   Somalia can benefit from the EAC's regional projects and programs to improve its infrastructure and human capital. Somalia's road and transportation systems are underdeveloped, with only a small fraction of roads that are paved and many transport networks in need of significant repair. The country's unit price for electricity is one of the highest in Africa.[6] Somalia ranks as one of the lowest on the World Bank's Human Development Index (HDI). In this context, Somalia could benefit from a variety of regional infrastructure and social sector projects implemented through the EAC, for example oil and gas pipeline projects, that are currently projected to service five Partner States including Kenya, Uganda, Burundi, Rwanda, and Tanzania; six existing road development projects expected to service five Partner States; and education and health initiatives such as educational scholarships at the EAC Regional Centre of Excellence for Vaccines, Immunization, and Health Supply Chain Management.

Human Development Index in 2022

Source: United Nations Development Programme
Note: The Human Development Index (HDI) measures a country's average achievements in human development through indicators of life expectancy at birth, mean and expected years of schooling, and gross national income (GNI) per capita.

8.   Somalia could benefit from the EAC Financial Sector Development and Regionalization Project (EAC-FSDRP), designed to promote deeper financial integration within the community. By leveraging the East African Payments System (EAPS), Somalia can enhance cross-border financial transactions, enabling smoother and more efficient trade settlement, reducing transaction costs, and facilitating greater financial inclusion. The harmonization of financial laws and regulations across the EAC will also provide Somalia with a more robust regulatory framework, fostering investor confidence and enabling Somali financial institutions to operate across the region.

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[6] US Department of Commerce, International Trade Administration, 2024, Somalia Country Commercial Guide

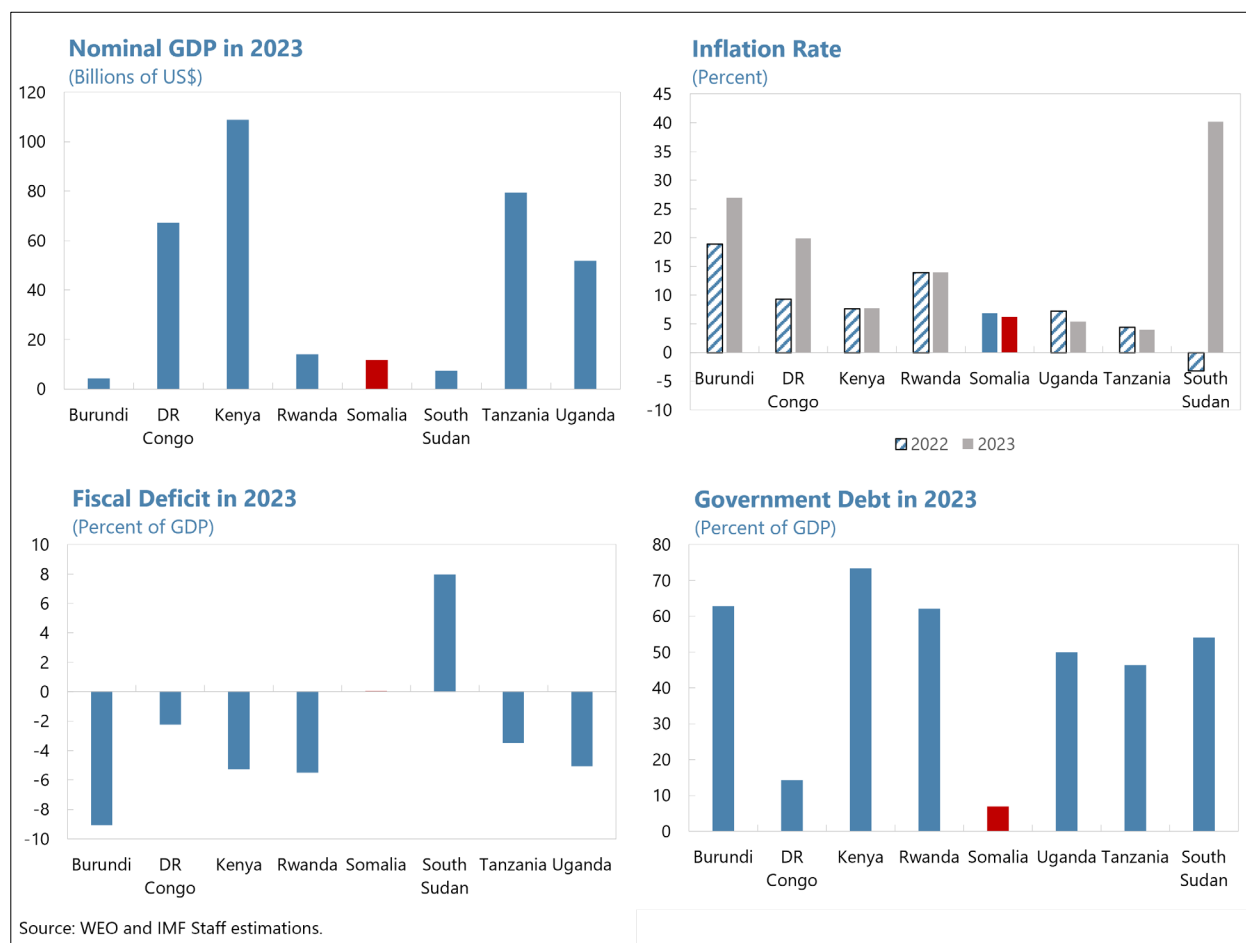## C. Challenges Related to Somalia's Integration into the EAC

9.   Integrating into the customs union and common market on a national level will require agreement between the FGS and FMS. However, such integration is a gradual process and will take time. While it can be challenging to reach agreement on key issues related to labor and capital mobility, and tariff rates and valuations, the EAC creates strong incentives for doing so. For example, the requirement for the harmonization of tariff structures and valuations across all ports under the customs union can be used as an anchor for finding common ground with the FMS.

10.   Aligning domestic regulations and administrative guidelines with those of the EAC presents a complex challenge for Somalia. The existing disparity in regulatory practices between FGS and FMS makes it difficult to establish a cohesive national framework. This lack of uniformity could hinder a seamless transition to the EAC's regulatory environment, complicating integration efforts. FGS will need to reach a political consensus with FMS to successfully harmonize laws, regulations, and administrative guidelines at a national level.

11.   Capacity and resource constraints along with potential resistance to change can adversely impact the ability of FGS to meet the EAC's integration requirements. Limited human capital, weak financial development, and dearth of technical resources within the FGS and FMS could hinder the development and enforcement of policies needed for full integration, specifically for the customs union and common market in the near-term. Any material resistance to change that might arise as the authorities move towards implementing the ambitious roadmap developed by the FGS and EAC Secretariat can hamper efforts at integration.

12.   Maintaining macroeconomic stability in Somalia will be crucial to fully benefit from the country's integration into the EAC. A stable macroeconomic environment, characterized by low inflation, prudent fiscal deficits, and sustainable public debt levels will be essential for enhancing trade, bolstering investor confidence, and ensuring equitable participation in the common market. Somalia currently has one of the lowest inflation rates and fiscal deficits within the EAC, along with the lowest government debt ratio following the achievement of the HIPC Completion Point in December 2023. However, Somalia remains highly vulnerable to natural and external shocks including natural disasters, supply chain disruptions, and security issues, which makes it particularly challenging to maintain macroeconomic stability. Instability, together with increased labor and capital mobility under the common market, can potentially lead to capital flight and labor migration to more stable EAC Partner States, in the process also hurting the competitiveness of Somali exports. Moreover, the interconnected nature of the common market means that external shocks, such as sharp declines in commodity prices, can rapidly propagate and intensify across the region. Somalia's increased trade openness within the EAC could increase its vulnerability to such shocks, making it more challenging to address an adverse scenario.
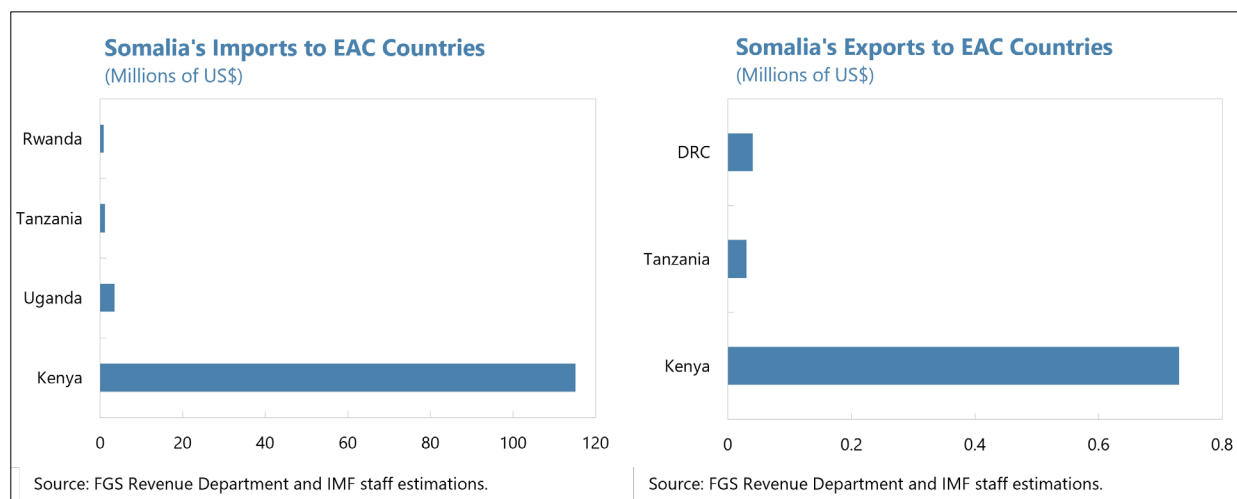
Nominal GDP in 2023
(Billions of US$)

Inflation Rate
(Percent)

Fiscal Deficit in 2023
(Percent of GDP)

Government Debt in 2023
(Percent of GDP)

Source: WEO and IMF Staff estimations.

D. Risks from Joining the EAC

13. **The negative fiscal impact of tariff removals is expected to be limited due to the high level of informality in Somalia's trade with EAC partners.** Given that most imports from EAC Partner States to Somalia come through porous land borders, especially from Kenya (95 percent of imports in 2022), it is likely that the loss of revenue from lower tariffs on these imports will be more than compensated by increased revenue from the common external tariff (CET) and corresponding valuation base imposed imports from non-EAC states. There could also be a negative impact on domestic revenues due to reduced customs duties that are currently received from Khat imports from Kenya, as well as due to the elimination of visa fees on travelers from EAC Partner States, under freedom of movement under the common market.

14. **Freedom of movement can increase the risk of spillover of security threats.** Despite the significant progress that Somalia has made in its fight against al-Shabab, the security situation remains challenging. The spillovers of security risks within the region is likely to increase as the flow of people across borders in the EAC becomes less regulated under a common market.

15.   Somalia's participation in the EAC risks widening trade imbalances with EAC Partner States. Given significant trade imbalances skewed in favor of other EAC Partner States vis-à-vis Somalia, there is a risk that the customs union and common market lead to a further widening of such imbalances. The nascent state of industry, weak agricultural sector, and low human capital levels imply that there is potential for more developed Partner States to dominate trade relations.

Somalia's Imports to EAC Countries (Millions of US$)

Source: FGS Revenue Department and IMF staff estimations.

Somalia's Exports to EAC Countries (Millions of US$)

Source: FGS Revenue Department and IMF staff estimations.

E.   Mitigating the Risks of EAC Accession

16.   Somalia can mitigate the risk of trade relations being dominated by Partner States by undertaking structural reforms to increase productivity and enhance the competitiveness of domestic producers. Such measures will be critical for spurring innovation and growth and preventing Somalia from becoming merely a consumption hub for EAC exports. Somalia can also mitigate associated risks by concentrating on comparative advantage in the near-term and developing human and physical capital over the medium-term, supported by the potential increase in FDI flows due to improved investor confidence achieved from joining the EAC.

17.   Regional coordination on security policy can mitigate the risk of security spillovers. For instance, coordination with Partner States on security issues under the EAC's Regional Strategy for Peace and Security could support the ability of Somalia and the broader east African region to counter security threats more effectively.

18.   Somalia can minimize the expected small negative fiscal impact of eliminating intra-EAC tariffs by considering a gradual, phased approach. There is scope for Somalia to negotiate a gradual reduction of tariffs from other Partner States and there are precedents for such flexibility, with Tanzania and Uganda negotiating such a gradual removal of tariffs with Kenya over a number of years.[7] Under Article 7 of the EAC treaty on the principle of variable geometry that enables

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[7] Authorities can also negotiate for certain items to be marked as sensitive or excluded, allowing for intra-EAC duties to remain on them in some form.

Partner States to integrate at varying speeds across different dimensions, Somalia will likely go through a protracted period of discussions and negotiations with the EAC on tariff arrangements.

19.   To surmount the lack of capacity and human capital required for the ambitious implementation of the integration roadmap, a sustained commitment to institutional reform will be needed. Targeted investment in technical assistance and capacity-building initiatives will also be critical. It will also be important to effectively communicate the benefits of joining the EAC to all stakeholders, as well as actions to be taken towards mitigating risks from joining the community.

20.   To maintain macroeconomic stability, Somalia should continue its efforts to build resilience against climate shocks, strengthen tax capacity, and reduce imports dependence. Given the frequency and intensity of climate shocks in Somalia and their profound economic repercussions, climate change adaptation is essential to maintain macroeconomic stability. This will require substantial investments in infrastructure, human capital, and the agriculture sector. To support these efforts and to maintain buffers against shocks in the medium- to long-term, Somalia needs to create fiscal space, improve public spending efficiency, and seek financial and technical assistance from international partners.

21.   Membership to the EAC can support the strengthening of relations between the FGS and FMS. Somalia's integration into the EAC can boost incentives for the FMS to increase collaboration with the FGS and harmonize policies and institutional frameworks. As an EAC member, Somalia will have direct access to the domestic markets of Partner States together with access to regional projects and programs. These benefits can be used to incentivize country-wide harmonization of laws, regulations, and administrative guidelines.

HARNESSING SATELLITE DATA FOR ECONOMIC MONITORING IN FRAGILE STATES: APPLICATION TO SOMALIA [1]

This paper aims to explore the potential of utilizing satellite data as a novel source of economic data, with a specific focus on its application in fragile states like Somalia that often lack adequate and timely data with full geographical coverage. Harnessing satellite imagery and sensor data for economic monitoring offers valuable insights into economic trends and key economic sectors, inform policy decisions, and facilitate development initiatives in these challenging environments.

A. Overview

1.   **A critical obstacle in policy design in fragile and conflict-affected states (FCS) is often lack of adequate and timely data, crucial for advancing analytical work and policy design.** The adequacy of data depends on comprehensive data coverage, accuracy, reliability, periodicity, and timeliness. In FCS, these factors are often compromised by limited data collection capacities— including because of lack of resources, insufficient staffing, and technical capacity—and, in some cases, disruptions caused by conflict or social and political instability. Somalia has made significant progress in strengthening its macroeconomic statistics, including with IMF capacity development support. Nonetheless, limited geographical coverage of official data constraints the ability to carry out comprehensive and timely assessments of recent economic developments, the impacts of climate shocks, and other events to inform policy design.

2.   **To address these data shortcomings, the IMF has been exploring innovative methods, such as using remote sensing and non-traditional data sources.** Satellite imagery and sensor data can be used to enhance the coverage, accuracy, and granularity of economic analysis and can contribute to more informed decision-making processes in fragile contexts.

3.   **This paper provides examples of how non-traditional data can be leveraged to better understand economic developments and inform macroeconomic policies.** Section B explores the use of satellite imagery data for monitoring economic activity, including monitoring vegetation as a proxy for agricultural production, and analyzing nightlights and landcover as indicators of urbanization and development. Section C delves into new insights in trade and passenger statistics derived from sensors on board of commercial ships and aircrafts, offering a more granular understanding of domestic economic dynamics and the effects of external shocks. Section D concludes, highlighting areas for further work.
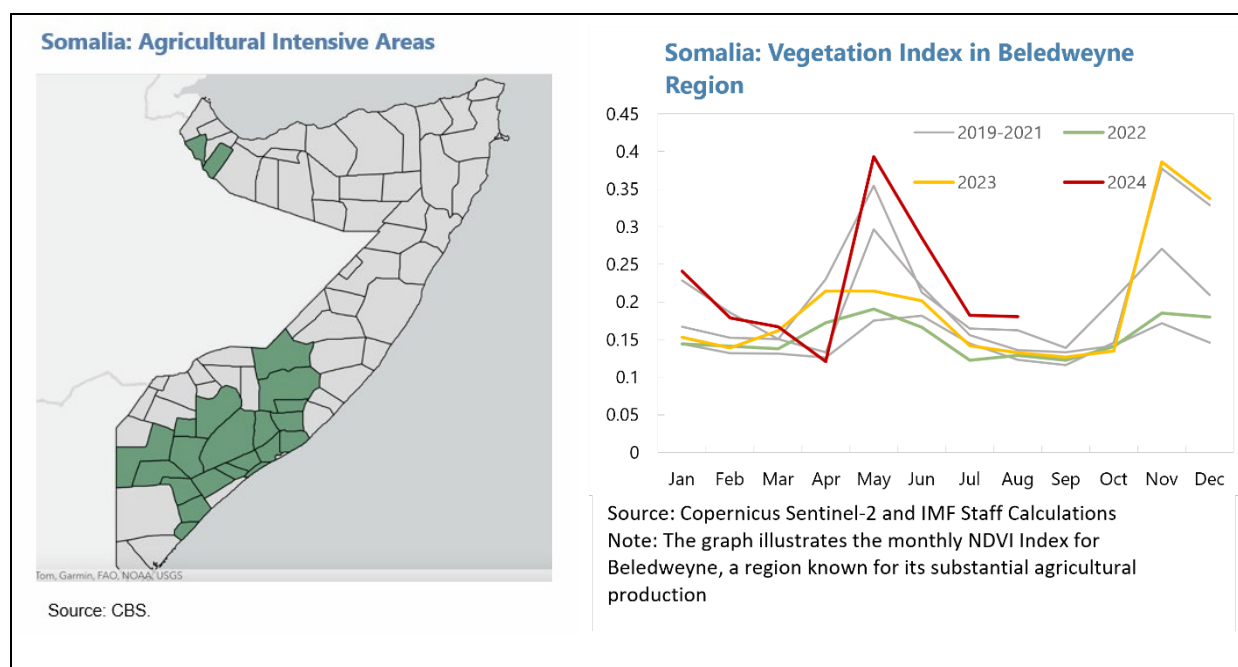

B. Satellite Imagery Data for Monitoring Economic Activity

Monitoring Vegetation as a Proxy of Agriculture Production

4.   Key advantages of satellite imagery are its high frequency, short time lag, and extensive geographical coverage that can be used to inform economic monitoring of immediate ecosystem health and landcover changes. Translating the images into a numerical vegetation index is an important innovation that facilitates comparisons over time and across subregions, to better assess the severity of the situation. Vegetation indexes[2], in combination with landcover of crops, provide insights into vegetation health, important for assessing agricultural productivity, land degradation, and ecosystem health. They can help detect early onsets of water stress related to drought or flooding conditions, its severity, and spatial extent over key regions for agricultural production. The short time-lag of the satellite data[3] (5 days) provides the opportunity for "real-time" information that can facilitate rapid policy responses if they are needed.

Somalia: Agricultural Intensive Areas

Source: CBS.

Somalia: Vegetation Index in Beledweyne Region

Source: Copernicus Sentinel-2 and IMF Staff Calculations
Note: The graph illustrates the monthly NDVI Index for Beledweyne, a region known for its substantial agricultural production
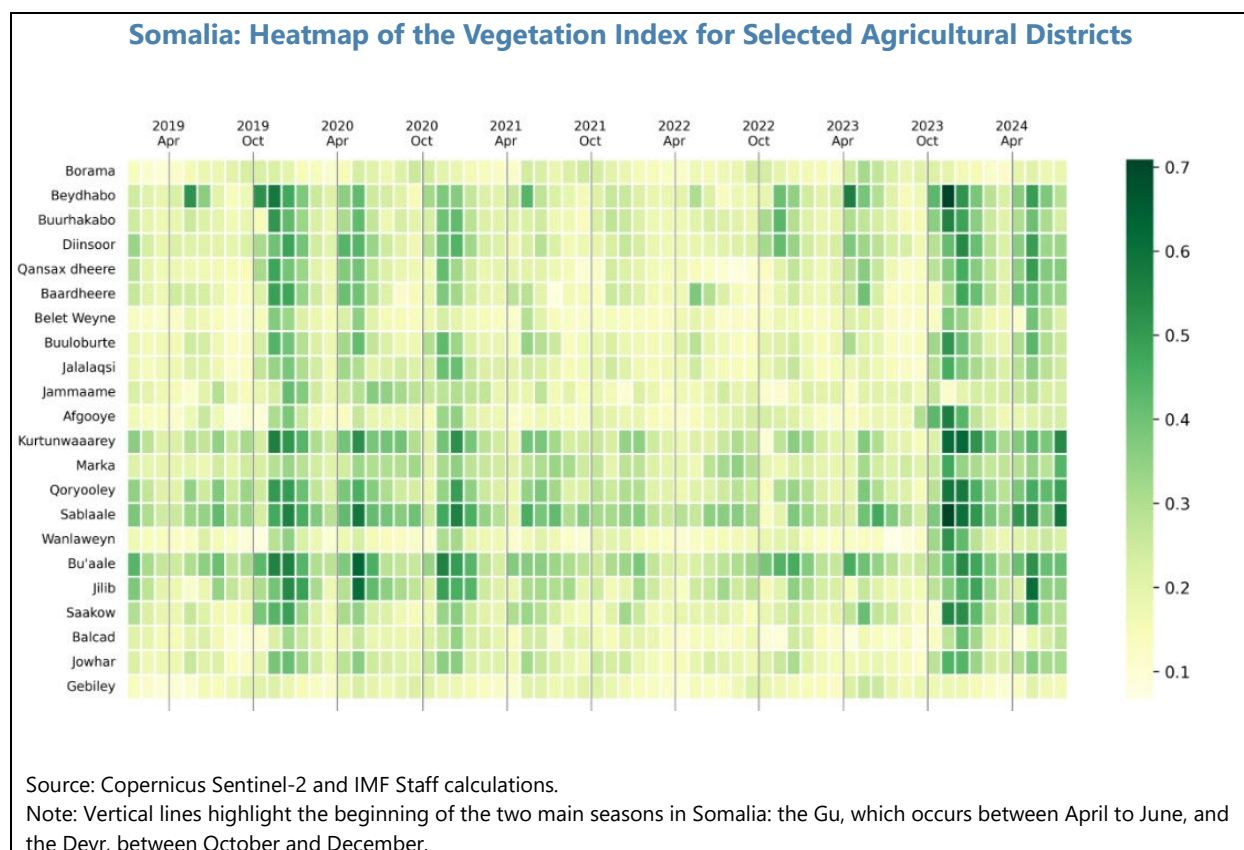
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[2] Land cover data, averaged over multiple years, is used to identify cultivated areas. The Normalized Difference Vegetation Index (NDVI) is then computed to evaluate the health of vegetation by analyzing how light is reflected in the visible red and near-infrared (NIR) spectrums. Healthy plants reflect more NIR light and absorb more red light, whereas stressed or non-vegetative surfaces reflect less NIR light.
$$NDVI = (NIR - Red)/ (NIR + Red)$$
NDVI values range from -1 to 1, where values closer to 1 indicate healthy vegetation, 0 represents bare soil or water, and values near -1 signify non-vegetative surfaces. NDVI is widely used in agriculture, forestry, and ecology to monitor vegetation health, detect stress, and classify vegetation types over time.

[3] Both land cover data and vegetation indexes are derived from 10-meter resolution images produced by Sentinel-2, a European wide-swath, high-resolution, multi-spectral imaging mission for land monitoring. Sentinel-2 is characterized by a high revisit frequency of 5 days at the Equator (in cloud-free conditions). Images, available from 2016-present, becomes accessible via the Google Earth Engine in near real-time.

5. **In the case of Somalia, vegetation indexes clearly captured the impact of the drought in 2021-2022, as well as the recovery when rains resumed in 2023.** Interpreted as a proxy for agriculture production, this indicator suggests that GDP and exports would have weakened during 2021-2022 and started to recover in 2023, as was confirmed by official statistics that was later published with a lag. Monitoring the vegetation index will allow policymakers to detect a deterioration of agriculture production early on, to inform action as needed—for instance the need to expand the coverage of social safety nets or increase the amounts provided to prevent a deterioration in food insecurity. Monitoring the vegetation indexes across different areas of the country also provides insights into the differences in vegetation across the country and would inform the need for a differentiated policy response.

Somalia: Heatmap of the Vegetation Index for Selected Agricultural Districts

Source: Copernicus Sentinel-2 and IMF Staff calculations.
Note: Vertical lines highlight the beginning of the two main seasons in Somalia: the Gu, which occurs between April to June, and the Deyr, between October and December.

Monitoring Nightlights and Landcover as a Proxy of Urbanization and Development

6. **Growth rates of nightlights[4] are useful in scenarios where countries lack timely and comprehensive official GDP estimates and where official sub-national GDP is unavailable.**

The intensity of nightlights reflects both outdoor and some indoor lighting use. More broadly, most evening consumption activities depend on lighting. As income increases, so does per capita light usage, driven by both consumption and investment activities. Nightlights also serve as an indicator for certain production-related activities, such as construction and mining during nighttime hours. Powerful applications of nightlights in economics include the nowcasting of quarterly GDP in Sub-Saharan African countries, analyzing the impacts of natural disasters, assessing lockdown measures during the COVID-19 pandemic, as well as an alternative method to measure non-registered economic activity in Mexico[5].

Somalia: Changes in Built-up Area Landcover from 2016 to 2023 in Mogadishu Area
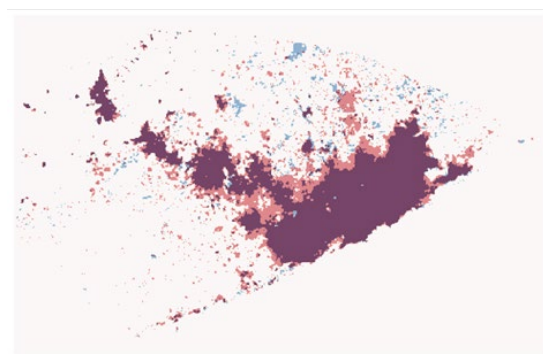
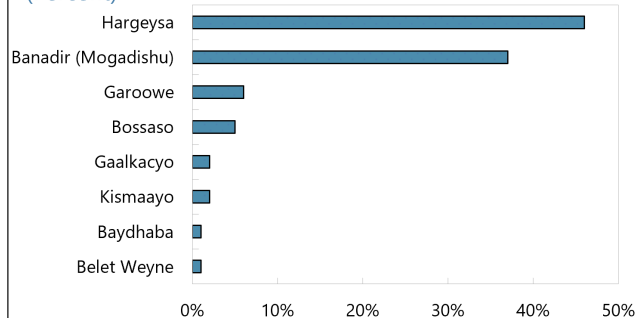
● 2016 ● 2023 ● Overlap 2016-2023

Sources: Dynamic World, NOAA and IMF Staff calculations.

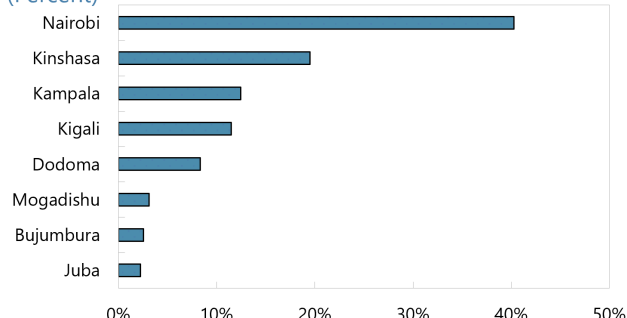**Somalia: Cities Extent Based on High Intensity Nightlights**
(Percent)

Sources: NOAA and IMF Staff calculations.

EAC: Cities Extent Based on High Intensity Nightlights
(Percent)

Sources: NOAA and IMF Staff calculations.
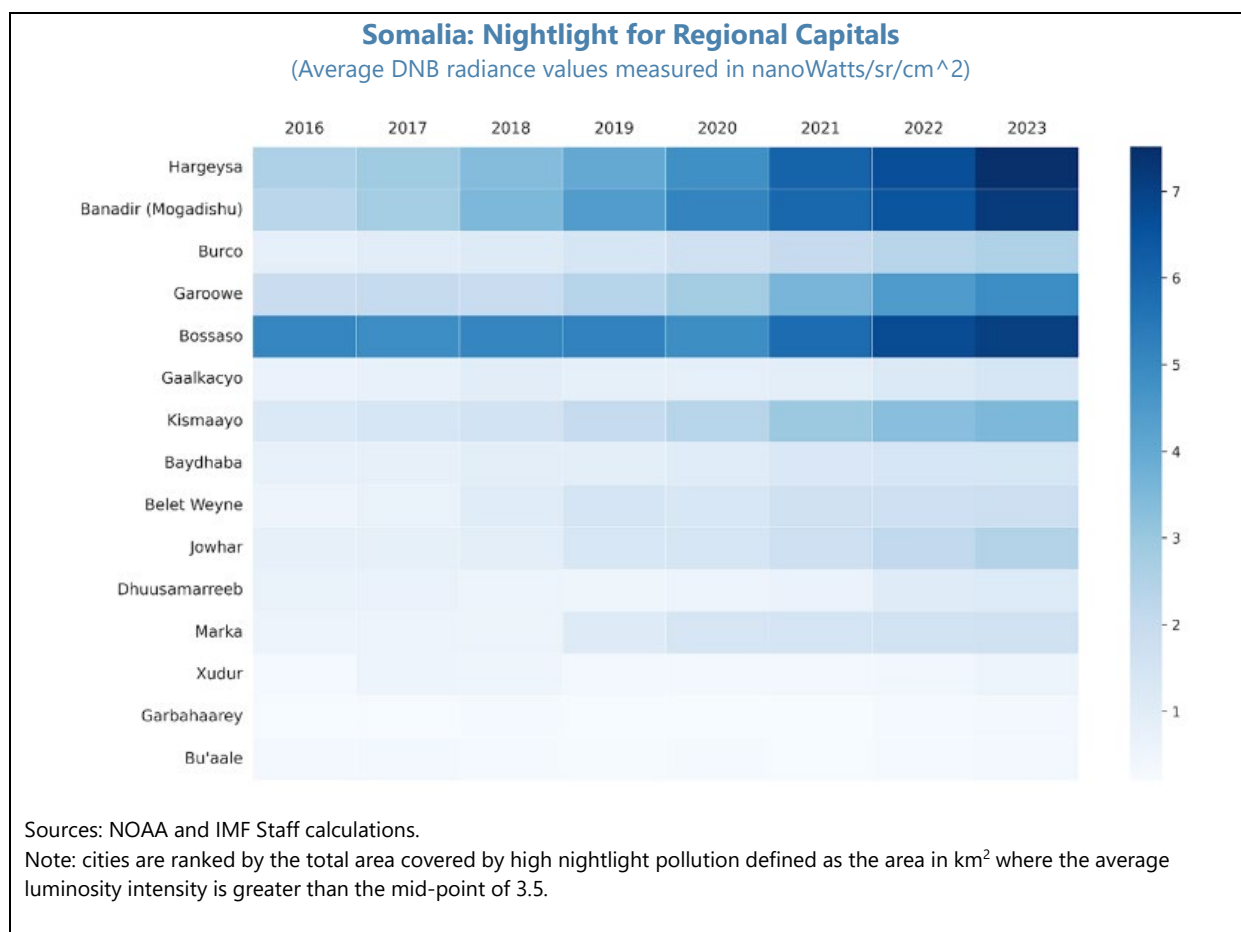
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[4] We use nightlights data from the Visible and Infrared Imaging Suite (VIIRS) Day Night Band (DNB) on board of JPSS satellites. VIIRS data are accessible from the Google Earth Engine from 2012-onwards, at a 100-meter resolution.

[5] See e.g. Gonzalez and Llamosas-Rosas 2019, Debbich 2019; Hu and Yao 2022; Beyer, Hu, and Yao 2022, Akbal, Choi, Narita, and Yao, 2023.
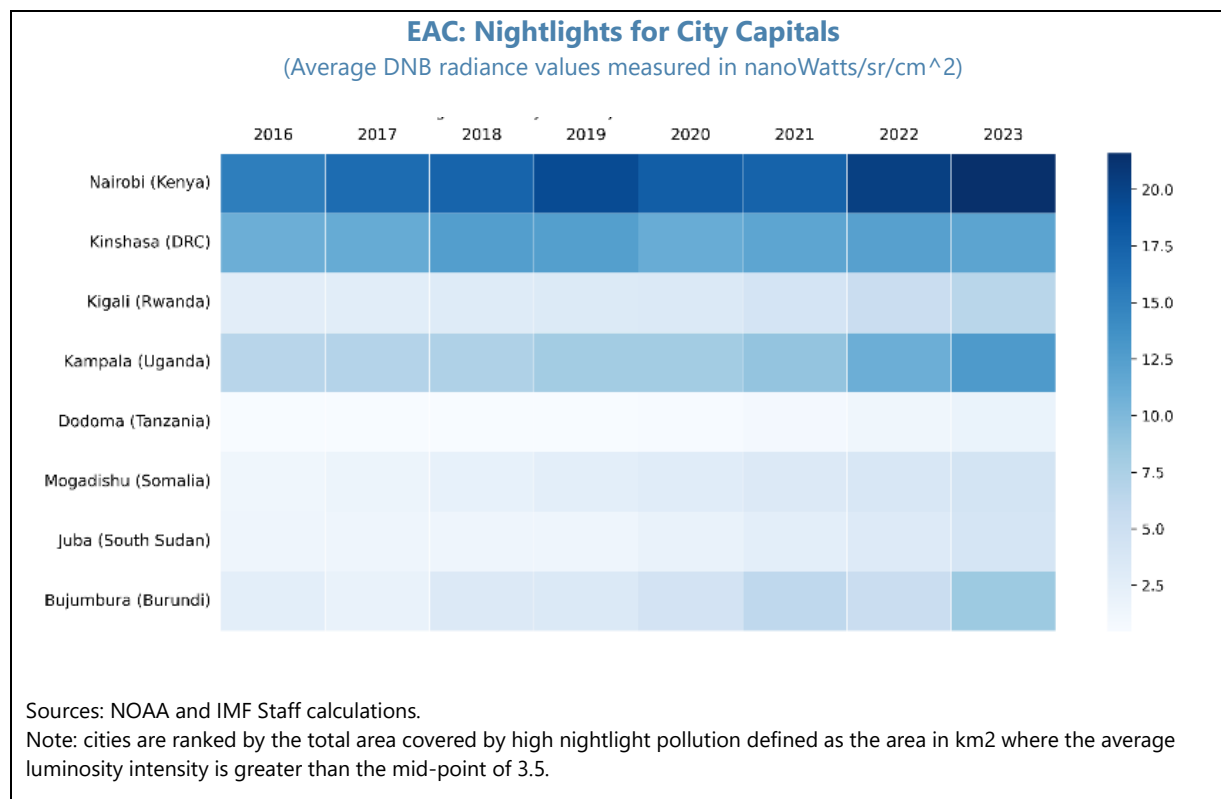
7.   Night light data can provide insights as to differences in development across the different urban centers in Somalia. Mogadishu ranks second in terms of total area covered by high night pollution, with a rapid urbanization since 2016.[6] A combination of nightlights and high-frequency landcover data for Mogadishu further underscores the rapid development of peri-urban areas.[7] At the same time, according to this measure, Mogadishu remains smaller than the capitals of other countries in the region. Meanwhile, cities like Bossaso, Garoowe, and Kismayo show notable increase in the concentration of nightlight emissions over recent years, signaling ongoing urbanization. Analysis of these trends can help inform policies relating to energy and infrastructure needs.

Somalia: Nightlight for Regional Capitals
(Average DNB radiance values measured in nanoWatts/sr/cm^2)

Sources: NOAA and IMF Staff calculations.
Note: cities are ranked by the total area covered by high nightlight pollution defined as the area in km^2 where the average luminosity intensity is greater than the mid-point of 3.5.

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[6] The area covered by high nightlight pollution is defined as the area in km^2 where the average luminosity intensity is greater than the mid-point of 3.5.

[7] According to the UN, Somalia has one the highest urbanization rates in the region: 45 percent of population lived in urban areas as of 2018 with an annual growth rate of 4.23 percent (See https://unhabitat.org/somalia). Some analyses have linked this rapid urbanization to an increasing internal displacement driven by climate-induced rural-to-urban migration (See https://reliefweb.int/report/somalia/no-going-back-new-urban-face-internal-displacement-somalia

EAC: Nightlights for City Capitals
(Average DNB radiance values measured in nanoWatts/sr/cm^2)

Sources: NOAA and IMF Staff calculations.
Note: cities are ranked by the total area covered by high nightlight pollution defined as the area in km2 where the average luminosity intensity is greater than the mid-point of 3.5.

C. New Insights in Trade and Passenger Statistics with Sensor Data

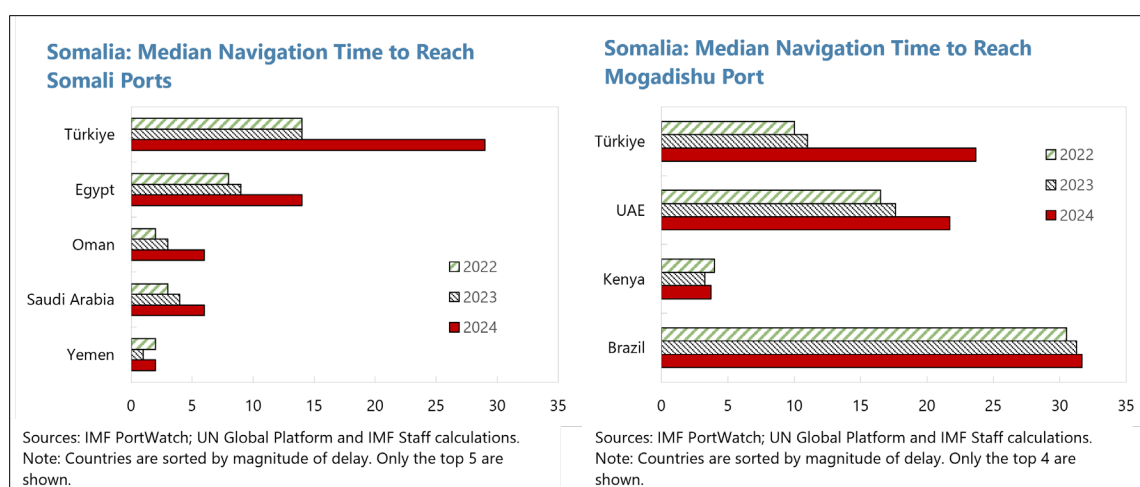*Tracking Ships Geolocations to Monitor Trade Disruptions and as a Proxy of Trade*

8.   Recent research has leveraged IMF PortWatch[8] and AIS[9] satellite data to develop timely indicators of maritime trade, enhancing the accuracy of trade nowcasting. Arslanalp et al. (2019 and 2021) introduced AIS-based trade indicators for Malta and Pacific-Island countries, validated against official statistics, while Cerdeiro et al. (2020) expanded this approach globally. Besides trade nowcasting, the IMF has extensively utilized AIS data in macroeconomic monitoring, including highlighting trade shifts due to sanctions to Russian oil trade in the World Economic Outlook 2023 and assessing economic disruptions in specific country and regional reports. Analytical studies have employed AIS data to examine the impacts of COVID-19 on global trade, disruptions to supply chains from restrictions on transits through the Panama Canal, and to assess the impact to port operations due to natural disasters, illustrating the broad applicability of this data in economic analysis.

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[8] The IMF PortWatch (portwatch.imf.org) is an online platform, publicly launched in November 2023, that uses AIS data to derive port activity and trade volume estimates for 1648 ports and 24 major maritime passages around the World. For Somalia, 4 major ports are covered: Mogadishu, Berbera, Bossaso and Kismayo. We complement the published data with an ad-hoc dataset derived from AIS records for the port of Garacad.

[9] The Automatic Identification System (AIS) is a mandatory self-reporting system for all ships above 300 gross tons.
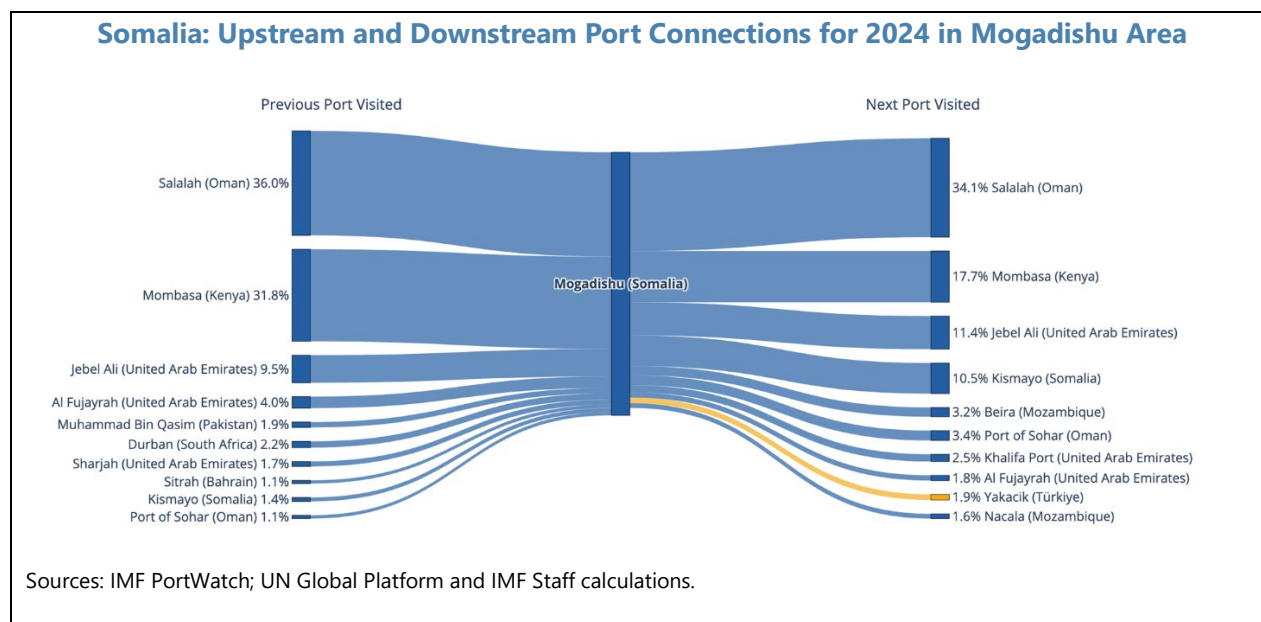
9.   In Somalia, trade developments, measured using PortWatch and AIS satellite data, provide insights into trade flows at Somali ports. Due to lack of data from outside of Mogadishu, official trade estimates are inferred by using data from Mogadishu port that is extrapolated for the whole country.[10] Starting in 2024, these official estimates have been upgraded by using the relative shares of the different ports as derived from PortWatch data.[11]

10.   High-frequency data shows that in early 2024 trade into Mogadishu through the Red Sea was steady despite regional security risks but navigation time increased. Since mid-December 2023 attacks on vessels in the Red Sea have caused a sharp drop in traffic through the Bab al-Mandab Strait and Suez Canal, affecting several countries in the Middle East region (REO MCD – April 2024). Bilateral flows derived from detailed PortWatch data for Mogadishu port reveals that traffic patterns and throughput have remained stable. However, the data also show that there have been significant increases in the time for goods to be delivered, particularly from Türkiye (+14 days), Egypt (+5 days), Oman and Saudi Arabia (+3 days) across all Somali ports. This is likely to have affected transportation and insurance costs, and impacted import prices. Customs data confirmed the temporary impact of delays on customs collections in Mogadishu, which have since recovered. Monitoring of high frequency trade data can help the authorities assess their sensitivity to regional disruptions and anticipate fluctuations in customs revenues.
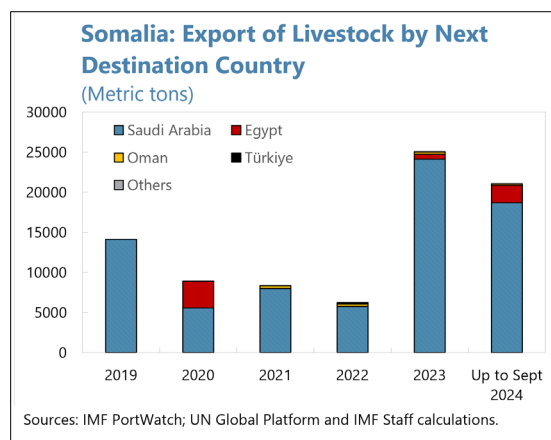
Somalia: Median Navigation Time to Reach Somali Ports

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.
Note: Countries are sorted by magnitude of delay. Only the top 5 are shown.

Somalia: Median Navigation Time to Reach Mogadishu Port

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.
Note: Countries are sorted by magnitude of delay. Only the top 4 are shown.

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[10] According to customs data from the Somalia Customs Automated System (SOMCAS) for Mogadishu, 95 percent of merchandise imports take place by sea. It is important to note however that there is also a considerable amount of trade that enters Somali informally through porous land borders.
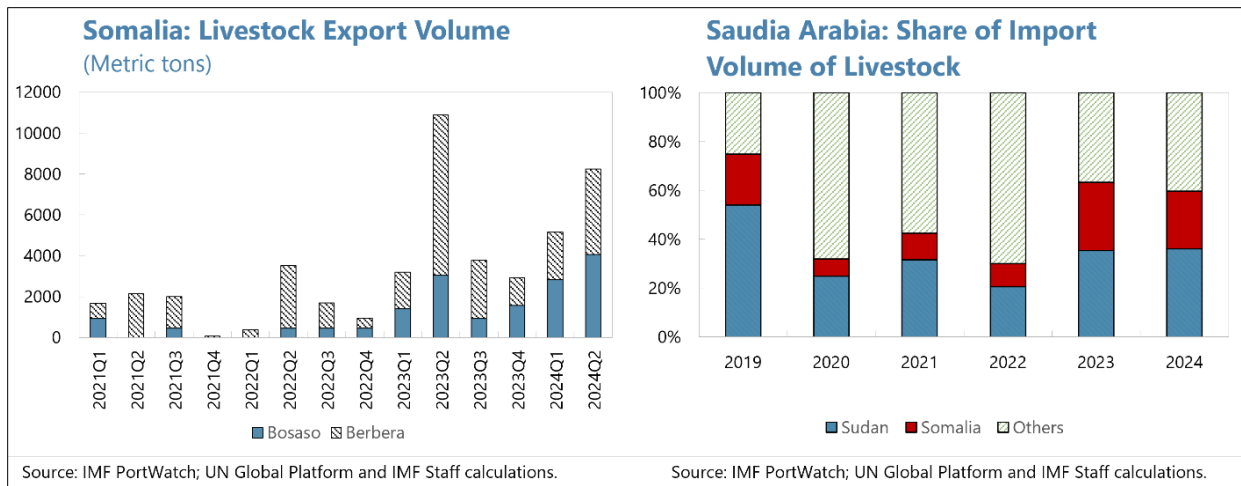
[11] Following IMF technical assistance recommendations, yearly shares derived from IMF PortWatch data have been used by the authorities to update the assumptions on the share of imports and exports through Mogadishu Port in total imports and exports through all ports in Somalia.

Somalia: Upstream and Downstream Port Connections for 2024 in Mogadishu Area

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.

11.   Detailed AIS-derived estimates of livestock carriers[12] indicates a surge in livestock exports (in metric tons) at the beginning of 2023 that has been sustained. This trend was confirmed by the latest available GDP by the SNBS showing livestock exports growing at the highest rate ever. Shipments depart mostly through the port of Bossaso, currently not covered by the federal customs revenue collection system, and are directed mainly to Saudi Arabia. The high jump in livestock exports is linked to gains in market share in Saudi Arabia, following the lifting of

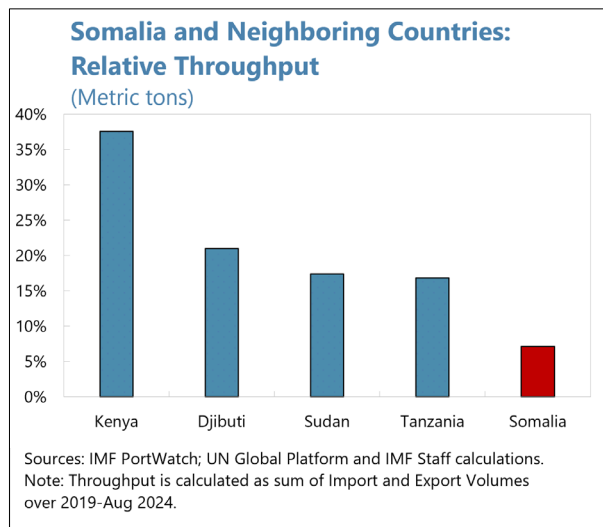**Somalia: Export of Livestock by Next Destination Country**
(Metric tons)

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.

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[12] Livestock carriers are dedicated cargo vessels used to transport cattle, sheep, goats, cows, buffaloes, etc.

Somalia: Livestock Export Volume
(Metric tons)

Source: IMF PortWatch; UN Global Platform and IMF Staff calculations.

Saudia Arabia: Share of Import Volume of Livestock

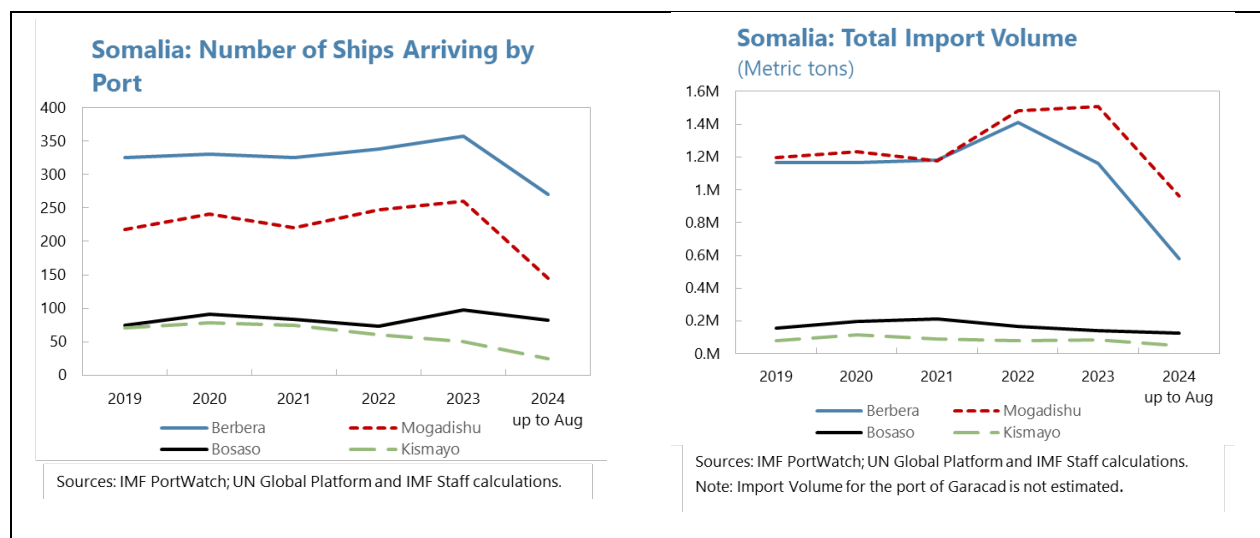Source: IMF PortWatch; UN Global Platform and IMF Staff calculations.

the livestock import ban and lower exports from other countries including Sudan.[13] Despite being one of the trade routes at risk due to the heightened security risks in the Red Sea, AIS-derived export volume remained robust in 2024H1. With livestock exports currently being Somalia's main export product, monitoring of high frequency exports data can help the authorities assess balance of payments developments and detect early signs of shifts in export behavior that could affect economic activity.

12.   AIS data can help to monitor activity across all of Somalia's ports, which is not captured by official statistics. Mogadishu receives an average of 240 port calls, compared to 335 for Berbera and 84 for Bossaso. However, in terms of volume, Mogadishu port receives

Somalia and Neighboring Countries: Relative Throughput
(Metric tons)

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.
Note: Throughput is calculated as sum of Import and Export Volumes over 2019-Aug 2024.

8 percent more than Berbera. The data also show that vessel activity has been picking up in the recently developed Garacad Seaport since late 2021. By providing real-time information on vessel movements, AIS data is invaluable for monitoring current as well as new port developments. Timely information on the activity at different ports can provide important insights as Somalia continues to advance customs modernization and moves towards integration with the East African Community.

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[13] In March 2023, the Government of Saudi Arabia lifted the partial livestock ban imposed on Somali livestock, which had been in place since November 2016.
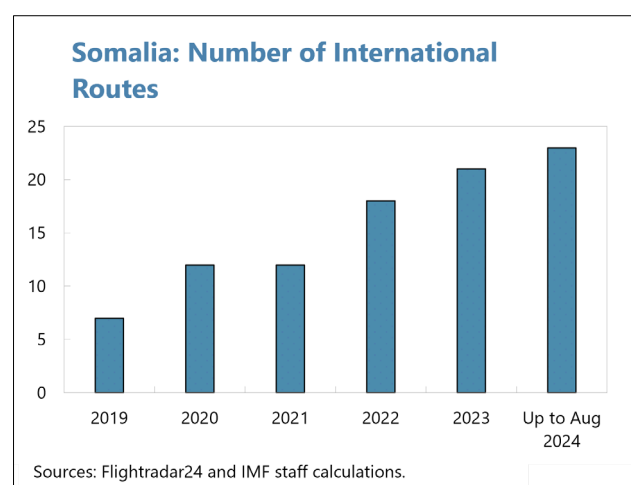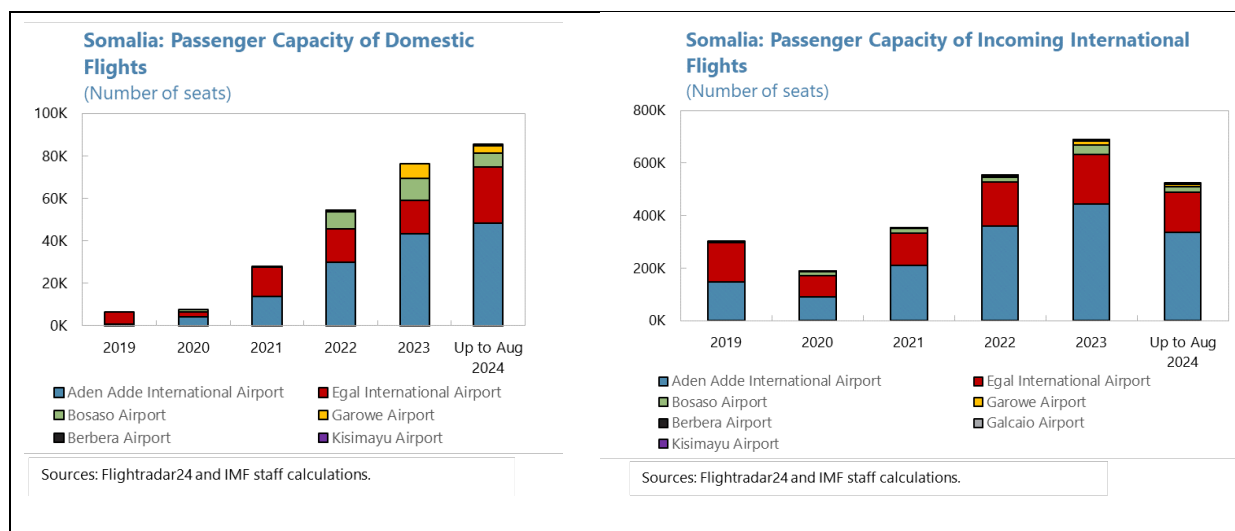
Somalia: Number of Ships Arriving by Port

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.

Somalia: Total Import Volume (Metric tons)

Sources: IMF PortWatch; UN Global Platform and IMF Staff calculations.
Note: Import Volume for the port of Garacad is not estimated.

Tracking Flights Geolocations as a Proxy of Passenger Movements

13.   Passenger capacity allows for comparison across airports while considering the size and seating capacity of planes. Flights data have been extensively used for surveillance to assess flights disruptions, monitor tourism recovery and anticipate external balance assessments.

14.   We use passenger capacity[14] estimates derived from aircraft sensors to draw a picture of Somali airports, not captured by official statistics. Somalia has been experiencing a diversification of international routes, which have tripled from 7 routes in 2019 to 23 in 2024. The airport in Mogadishu (Aden Adde) accounts for 61 percent of the overall passenger capacity from international flights and Hargeisa Egal airport

Somalia: Major Commercial Airports

Source: FlightRadar24.

following with 33 percent. Passenger capacity on domestic flows also shows consistent growth, with 2024 data up to August already 12 percent higher than the total for 2023. In addition to providing insights into economic activity, flight information can be useful as the Federal Government seeks to increase its revenues from overflight fees.

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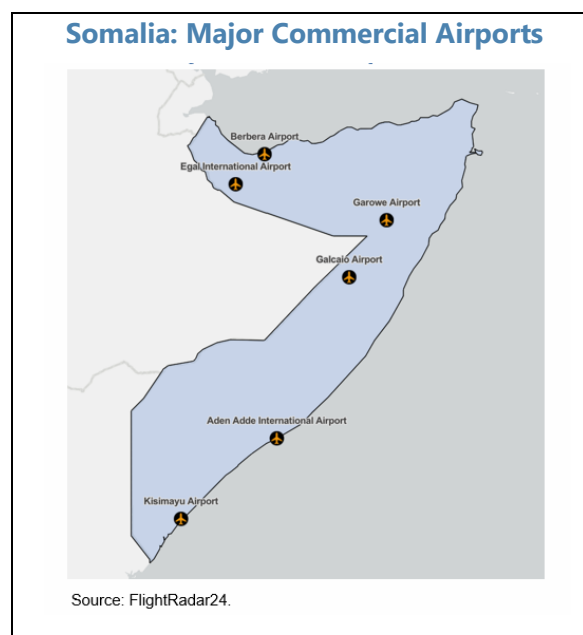
[14] Passenger capacity is computed by linking flight aircraft models to design characteristics that include information on seating capacity.

Somalia: Passenger Capacity of Domestic Flights
(Number of seats)

Legend: Aden Adde International Airport, Egal International Airport, Bosaso Airport, Garowe Airport, Berbera Airport, Kisimayu Airport

Sources: Flightradar24 and IMF staff calculations.

Somalia: Passenger Capacity of Incoming International Flights
(Number of seats)

Legend: Aden Adde International Airport, Egal International Airport, Bosaso Airport, Garowe Airport, Berbera Airport, Galcaio Airport, Kisimayu Airport

Sources: Flightradar24 and IMF staff calculations.

Somalia: Number of International Routes

Sources: Flightradar24 and IMF staff calculations.

D.   Looking Forward

15.   Indicators derived from satellite imagery and sensors data can complement official data by filling data gaps, offering more comprehensive geographical coverage and providing timely, high frequency indicators. Somalia has made significant strides in recent years in improving its statistical system, data reporting and data transparency. These efforts have led to improvements in data collection methodologies, expansion of survey coverage, and enhanced transparency and accountability in statistical processes. Upcoming new developments include GDP by production, the first census in 40 years, and a new agricultural census. This paper showcases the potential for using non-traditional data to complement official statistics, to enhance monitoring and analysis of economic activities to help inform policy design.

16.   As the country's statistical capacity strengthens, the nowcasting of economic and trade activity can be explored further with IMF support. Ongoing IMF research and CD are already using remote sensing and other Big Data sources to produce nowcasts of quarterly real GDP growth for some countries in Sub-Saharan Africa.[15] As official GDP statistics in Somalia improve, nowcasting of GDP could be pursued with IMF CD. The Somali authorities are encouraged to continue engaging with the IMF and other international organizations to leverage non-traditional data sources and innovative techniques. In this regard, the IMF Big Data Center plans to expand the Fund's interactions with member countries so that they can also maximize the value of Big Data to improve macroeconomic, macro-fiscal, and financial market surveillance as well as statistical capacity.

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[15] The Bank of Botswana is now producing its own quarterly GDP nowcasts, after participating in an IMF workshop.

CIVIL SERVICE PENSION REFORM [1]

The new civil service pension scheme enacted in 2024 is a pay-as-you-go defined benefit scheme, with current revenues financing current expenditures. The application of the Act should be preceded by a fiscal impact assessment informed by the planned civil service pay and grade reform and a realistic implementation plan.

Context

1.   On April 1, 2024, a new Civil Service Pension and Gratuity Act was enacted. The drafting of the Act and the analysis of its expected fiscal consequences and welfare implications were assisted by the World Bank. The new Pension and Gratuity Fund will be a pay-as-you-go financed, defined benefit scheme. The scheme will cover old age, disability and survivor benefits. The Act reflects both good practice and the unique circumstances of Somalia. It is advised that the authorities pursue preparatory activities for the implementation of the law at a pace that takes into account scarce fiscal resources and competing priorities.

2.   The Public Service Pension and Gratuity Act – developed with World Bank technical assistance – seeks three purposes: (1) enabling the government to mandate the retirement of federal government civil servants over age 65 and replacing them with younger, more productive employees[2]; (2) to provide for consumption smoothing at retirement for civil servants; and (3) to act as an instrument of state building by ensuring civil servants' lasting commitment to the rule of law and the effective operation of the federal government.

Main features of the Public Service and Gratuity Act

3.   Employees covered. The Act covers all public sector workers[3] employed at the time of the law's applicability by the federal government on a permanent – pensionable - contract irrespective of their hiring date.[4] Former public sector workers who already left employment prior to the enactment of the law will not receive pension benefits. The scheme covers the approximately 5 thousand permanent employees but leaves temporary (non-pensionable) workers without a pension benefit. These workers - despite their characterization as "temporary" - often perform jobs similar to those in permanent jobs and have similar work histories. Treatment of temporary workers is to be decided in the context of the implementation of the pay and grade reform.

4.   Eligibility. Eligibility for a benefit is based on age and employment records. The Act sets the normal retirement age at 65 for both men and women. This may be seen as relatively high in light of Somalia's demographic characteristics – however, it is worth pointing out that life

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[1] This note was prepared by Csaba Feher (FAD).

[2] Anecdotal evidence suggests there is a significant number of employees well into their seventies and eighties.

[3] In Somalia, public sector employees and civil servants are not differentiated.

[4] Employees of sub-sovereign entities—such as Somaliland, Puntland—are not provided for by the law.

expectancy at 65 is 12.5 years and 13.5 years for men and women, respectively, according to UN population projections[5] and that public employees probably have a higher life expectancy at retirement than the general population. The fiscal constraints of the country also argue for strict eligibility criteria.

5.   **Mandatory retirement age.** The retirement age at 65 years is a mandatory one: all public sector workers must retire at this age, without exception. This is an important feature of the law: as opposed to many social security systems where early retirement results in the effective retirement age falling well below the normal retirement age. Public sector pension schemes in low-income countries with underdeveloped social safety nets and scarce private sector employment opportunities often face a different risk: employees continuing in their jobs well beyond reaching the normal retirement age. The situation is similar in Somalia and one of the objectives of the new law was to enable the unilateral retirement of elderly, less productive workers. While deferred (late) retirement is not permitted, early retirement, of no more than 60 months (5 years) is possible, resulting in an early retirement penalty of 0.5 percent per month. The rate of deduction is in line with good practice, although it is unknown - due to the lack of local, civil service specific mortality tables - how close it is to an actuarially fair reduction.

6.   **Contribution rate.** The contribution rate is 10 percent, equally shared by employees and the government, as employer.

7.   **Benefits.** Benefits are paid as a monthly pension for people with at least 10 years of work history in pensionable (permanent) positions, or as a gratuity for workers reaching retirement with shorter service periods. Old age pensions are calculated on the basis of career average basic wages, using a 1.5 percent accrual rate, resulting in a minimum replacement rate of 15 percent. Pension benefits are also subject to a 75 percent maximum replacement rate, which would be practically unattainable after introducing the 65-year mandatory retirement age. There is no minimum benefit. Past wages counting towards the pension formula are valorized in line with wages while benefits in payment are to be indexed to prices.

8.   **Benefits for workers with less than 10 years of service.** Workers reaching retirement with less than 10 years of service time are paid a lumpsum gratuity equal to one month of their average (valorized) wage for every year of service. If a person retires from the civil service before reaching 65 (with less than 10 years of service), the lumpsum is reduced in a stepwise fashion: retiring between ages 50 and 59, the lumpsum is reduced by 10 percent, between 40 and 49 it is reduced by 20 percent. If the person re-joins the civil services, they may become eligible for an annuity if the total service time exceeds 10 years. In that case, the individual needs to repay the lumpsum collected earlier as a condition to recognize past service periods at the time of retirement.

9.   **Service time and wage histories.** Service time and wage histories for the years since 2007 have been recorded and serve as the basis for establishing eligibility and calculating pensions with

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[5] In low-income countries of the region, life expectancy at birth is heavily impacted by perinatal and child mortality rates; people living to 65 can expect a relatively long remaining lifespan.

regard to the past 18 years. These records, however, are only partial for many older workers. Given the lack of historic employment and wage records for the period before 2007, the government decided – on advice from the World Bank – to use age (birth year) to estimate service years credited for the period before 2007. The age-dependent recognition of pre-2007 service times was designed to grant a service history of 30 years to everyone who has an uninterrupted work record since 2007. The 30-year service time translates into a 45 percent replacement rate. It is important to recall that the recognition of past service time is irrespective of the fact that no contributions were or will have been made prior to the application of the new Act and that the provisions of the Act immediately create both a pension liability with respect to the service histories recognized, as well as benefit payment obligation towards civil servants 65 years or older.

10. **Disability benefits.** Eligibility is conditioned on total incapacity to work, and benefits are calculated in the same way as old age pensions. Scheme rules differentiate between the causes of disability and the resulting benefits also differ. While in the general case, it is actual work histories that are considered, in case of work-related disability it is assumed that the individual would have continued working in the same position as at the onset of the disability.

11. **Survivor pensions.** Survivor pensions are available to spouses (until re-marriage), sons up to the age of 18, daughters until marriage without age limit, and to parents who can prove having relied predominantly on the deceased member's earnings for subsistence. It is important to note that the law recognizes both legal and "customary" marriages, i.e., cohabiting with more than one female spouse. The benefit is equal to 50 percent of the originating old age or disability pension in case of a single survivor and 70 percent in case of more survivors, divided among all claimants. While the number of survivors cannot increase the total periodic benefit above 70 percent of the originating pension, the age structure of the survivors materially impacts the duration of benefit payments, especially in the presence of large age differences between a deceased husband and the youngest wife or unmarried daughter.

12. **Institutional framework.** The Pension and Gratuity Fund will be governed by the Pension and Gratuity Oversight Committee (PGOC), a newly created, independent government agency, reporting directly to the President. The PGOC will operate with 5 voting members, including the Minister of Finance, Minister of Labor, a representative of civil service trade unions, and a representative of the National Civil Service Commission. The day-to-day operation of the scheme, including contribution collections, investment of reserves accumulating in the Pension and Gratuity Fund, record keeping, assessing eligibility, and paying pensions will rest with the Pension and Gratuity Directorate (PGD). In addition to overseeing the policies and operational practices of the PGD, the PGOC is also tasked with preparing triannual actuarial assessments as well as long-term projections every five years. The Act is unclear with respect to the differences in scope and consequences of the two types of reports.

Fiscal and Welfare Implications of the Pension Law

13. **The new pension scheme will observe the defined benefit principle and it will be financed in a pay-as-you-go manner, with current revenues financing current expenditures.** In

a manner similar to many other public pay-as-you-go defined benefit schemes (notably: social security and civil service occupational schemes), the new scheme will start paying benefits straight away, with pensions based on (actual and assumed) work histories and wages. The new pension scheme will recognize past service histories – for which no contributions were collected - and will therefore mature faster than under a scenario where only work periods accruing after introduction and covered by contributions would count towards benefit entitlements. The defined benefit nature of the scheme also implies that benefit obligations and resources (revenues and reserves) diverge, creating unfunded liabilities.

14. **The contribution rate of 10 percent over the basic salary falls short of the equilibrium level, i.e., the contributions needed to ensure the scheme's long-term self-sufficiency.** For this reason, as well as because of the recognition of past service histories, the new scheme will begin its operations with an unfunded obligation which will require attention in the coming 15-20 years.[6] For the initial phase of the scheme's operation, while current revenues will slightly exceed expenditures, a reserve fund will accumulate. These reserves will then rapidly disappear, starting in the early 2030s. From the early 2050s, the scheme's contribution revenues will only cover approximately 2/3 of the benefit expenditures.

15. **The combined employer and employee contributions will not ensure the scheme's long-term financial self-sufficiency**.[7] Instead, starting around 2035, the scheme's cash flows will turn negative, and reserves accumulated in the first decade of operations will begin contracting. Reserves are projected to be fully depleted within 25 years of the scheme's launch, from which point onward the scheme will require budget subsidies in order to maintain its liquidity.

16. **While setting contribution rates higher would be desirable, the option is constrained by various factors.** The main constraints to establishing, at the time of the scheme's launch, contributions closer to the equilibrium rate are two-fold:

- (1) Severe constraints on fiscal resources do not allow for higher levies (which, in terms of employer contributions, would translate into a higher wage bill, and may imply even further

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[6] Pension schemes' financial position can only be understood by assessing their long-term obligations and the resources available to cover the same set of obligations. The new scheme's obligations to its existing members – in other words, the liquidation value of the scheme: the amount that would be needed to "cash out" all members of all ages – will exceed the value of the scheme's resources measured at the point of the theoretical liquidation. This approach is known as measuring accrued-to-date net liabilities. Other approaches of actuarial assessment may also be applied but, under current parameters, their results would be worse.

[7] Civil service pension schemes are not sensitive in the same way and to the same extent to population demographics as social security regimes covering the majority of the population: while the growth of life expectancy at the retirement age is important, fertility rates, overall population size and age distribution enters civil service schemes through the filter of hiring policies. The projections of the system's contributors and beneficiary numbers reflect a baseline assumption that the number of civil servants in pensionable positions (including teachers and medical professionals) will grow in line with the country's population. This is a relatively conservative approach, given the current availability and quality of public goods and services. Importantly, the projections rely on the assumption that temporary workers would not be elevated into pensionable positions. Should that happen, the number of contributors would double and so would double the number of future beneficiaries.

outlays if the higher employee contributions were to be partly or fully compensated for in order to keep net wages at levels observed before the launch of the scheme).

- (2) Any reserves accumulated while the equilibrium contribution rates yield revenues in excess of annual expenditures need to be invested in reasonably safe, liquid, and transparently priced instruments earning positive real returns. In Somalia, such instruments do not exist, and any reserves are likely to end up financing public debt (which risks turning the pension scheme into a captive investor) or in illiquid assets of dubious quality. It was therefore concluded - and clearly articulated in the technical assistance documents prepared by the World Bank – that the contribution rates will need to be gradually increased over time. Given the country's economic situation, the limited institutional capacity, and the human resource needs of federal agencies, the above approach is considered appropriate. These constraints argue for a more gradual contribution rate increase. While this approach curtails the growth of reserves requiring investment quality assets, repeated contribution rate increases—even if along a pre-announced timetable—always carry a certain degree of risk in terms of policymakers' commitment and the political circumstances of the day.

17.   Using the same assumptions as in the baseline but increasing the total contribution rate to 15 percent from 2030 onwards would make the scheme's cashflows positive until around 2075, and reserves ensuring liquidity for several years afterwards. The net fiscal impact of a contribution rate increase would depend on whether it would be assumed by the employer (in which case the net gains in the scheme's financial position would be offset by a higher wage bill, potentially lower primary balances and higher public debt level) or the employees, without corresponding compensating measures (implying lower net take-home wages).

Implementation Issues, Uncertainties, and Risks

18.   There are a number of uncertainties and risks surrounding the Act and its implementation. The sources of the main fiscal uncertainties are:

- (1) The government's ability to keep temporary workers out of the new scheme permanently; In order to address these uncertainties, the government may wish to embark on designing a medium-term policy that would compensate temporary workers for the absence of pension entitlements. Such policies may help reduce the pressure to include temporary workers in the same, scheme as pensionable civil servants. Over the longer run, as part of reforming the government's human resources policies, the share of temporary workers (currently roughly equal to that of pensionable civil servant) should systematically be reduced, and clearly defined career paths should be established leading into pensionable positions in case of appropriate performance.

- (2) The impact of the pay and grade reforms and the human resource policies currently under consideration. It is important to have sufficient clarity and detail on the proposed wage bill and human resource reforms to determine the post-reform remuneration of civil servants, as this will

impact both the contribution revenues and the pension entitlements. This is a precondition to producing revised financial projections of the new scheme's operations.

- (3) The number and age structure of eligible survivors. Currently, no information is collected by any public agency regarding the number, legal status, and age of household members potentially eligible for a survivor pension. In the absence of such information, no reliable financial projections can be produced. The creation of a dependent registry is also important for reducing the likelihood of legal challenges brought to common or sharia courts after the main beneficiary's death.

- (4) The placement and returns of the reserves expected to accumulate (and then decumulate) in the next 25-30 years. Regarding the investment opportunities of the PGOC, there is little that can be done in the near term, given the state of capital markets and financial intermediation in the country.

19.   The application of the Act should be preceded by a fiscal impact assessment informed by the planned civil service pay and grade reform and a realistic implementation plan. Although financial projections were conducted by the World Bank in 2021, these estimates will need to be updated once the details of the planned civil service pay reform are known. The detailed implementation plan should cover the establishment of the Pension and Gratuity Directorate, the Oversight Committee (Board of Trustees), and the Pension and Gratuity Fund itself. The implementation plan needs to include a detailed and realistic estimate of the operating costs and initial investments of the Directorate, the Committee, and the Fund, as well as an assessment of the technical and financial assistance needed during the first years of operation.