

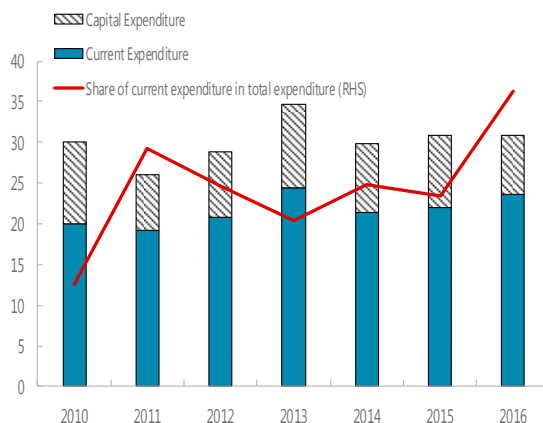
EFFICIENCY OF PUBLIC SPENDING ON HEALTH AND EDUCATION IN MALAWI

A. Background

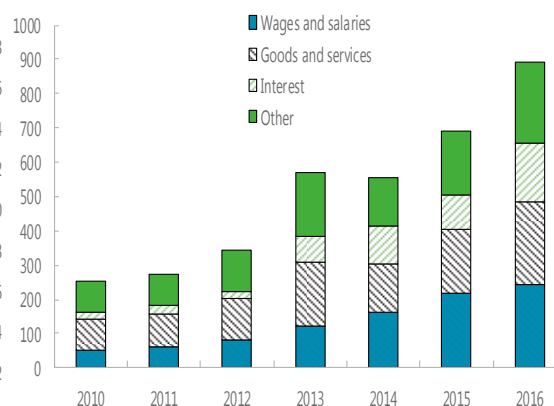
1. **Malawi has large development needs but limited fiscal space.** Fostering inclusive growth, building resilience and alleviating poverty all hinge on substantial improvements to the population's education and health—two key pillars of the Malawi Growth and Development Strategy (MGDS) III. The strategy envisions annual increases of 4 percent of GDP in total education and health spending over the next five years. Absent a surge in revenues or donor assistance, it will be challenging to meet these targets as debt sustainability concerns limit non-concessional borrowing options.
2. **Improving spending efficiency could help create fiscal space.** Increasing spending efficiency allows a country to achieve the same output with fewer resources or achieve higher output with the same resources. In other words, it helps ensure value for money, reduce waste of resources, and maintain fiscal discipline. However, the process of improving efficiency takes time and typically requires deep reforms to secure long-term gains.
3. **This paper benchmarks Malawi's public spending and identifies areas where there is scope to improve expenditure efficiency.** It documents recent public spending trends in Malawi with a focus on healthcare and education spending and compares with low-income countries' (LICs') averages. Applying the data envelopment analysis (DEA) methodology, the paper assesses public spending efficiency and provides policy suggestions for improving efficiency in education and health.

B. Public Spending on Health and Education: Trends and Impact

4. **In recent years, public spending has stagnated as a share of GDP—with interest spending crowding out priority spending.** Averaging 30 percent of GDP during 2010–16, public spending has been increasingly dominated by current spending (whose share rose almost 10 pps) at the detriment of capital spending. While all components of current spending have risen, increased government borrowing and higher borrowing costs have almost doubled the share of interest spending (from 10 to 18 percent of current spending during 2010–16, Figure 1).

Figure 1. Trends and Composition of Public and Current Spending**Figure 1. Malawi: Trends in Public Spending and Composition, 2010-2016**
(Percent of GDP)

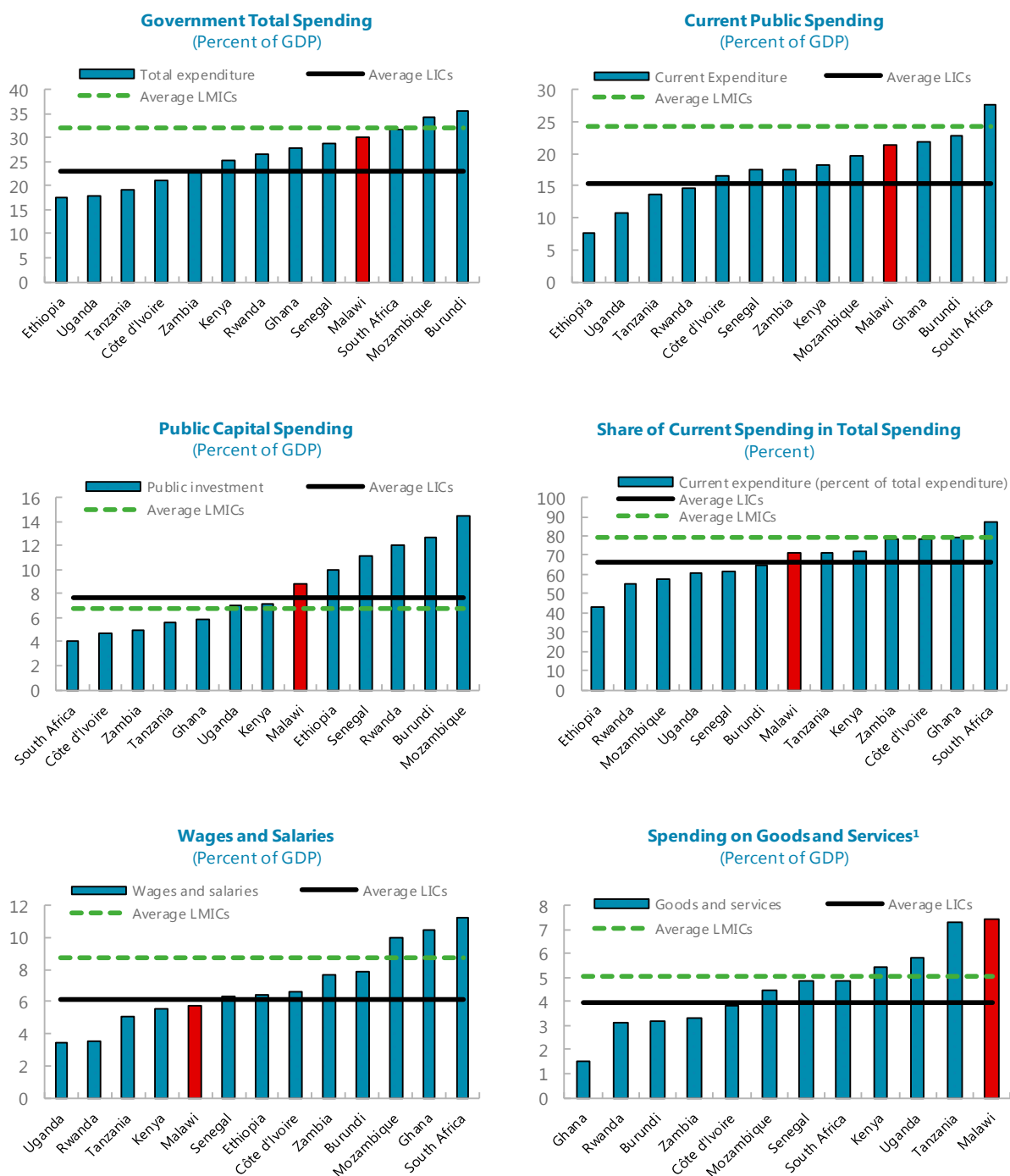
Sources: Country authorities; IMF staff estimates.

Figure 2. Malawi: Composition of Current Spending, 2010-2016
(Billion kwacha)

Sources: Country authorities; IMF staff estimates.

5. Compared to other LICs, spending (particularly on goods and services) is above average (Figure 2). In 2010-15, Malawi's government spending was well above the LIC average due to high current spending. Despite recent declines in the share of goods and services out of total spending, Malawi's spending in this area as a share of GDP is still one of the highest in Sub-Saharan Africa (SSA). In contrast, wages and salaries is below the LIC average and capital spending is close to the LIC average.

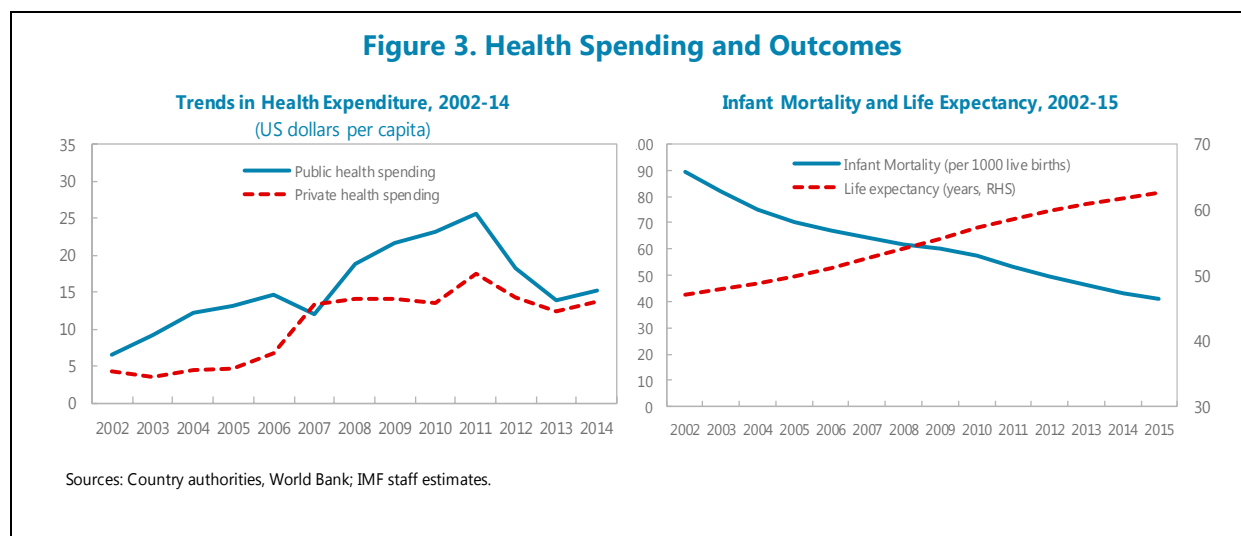
6. Public health spending—spanning goods and services, wages, and capital spending—has declined since 2011 but health outcomes are steadily improving (Figure 3). Public spending on health peaked in 2011 and then fell by more than \$10 per capita between 2011-13. However, at \$15 per capita, it remains just above the average level of the early 2000s. Private health spending (including some off-budget donor financed spending) also decreased since its peak in 2011 but by only one third as much. Despite reduced spending, health outcomes continue to improve. Infant mortality decreased by almost 50 per live birth and life expectancy increased by 15 years since the early 2000s.

Figure 2. Public Spending in Malawi in a Cross-Country Perspective, 2010–15

Sources: Country authorities; IMF staff estimates.

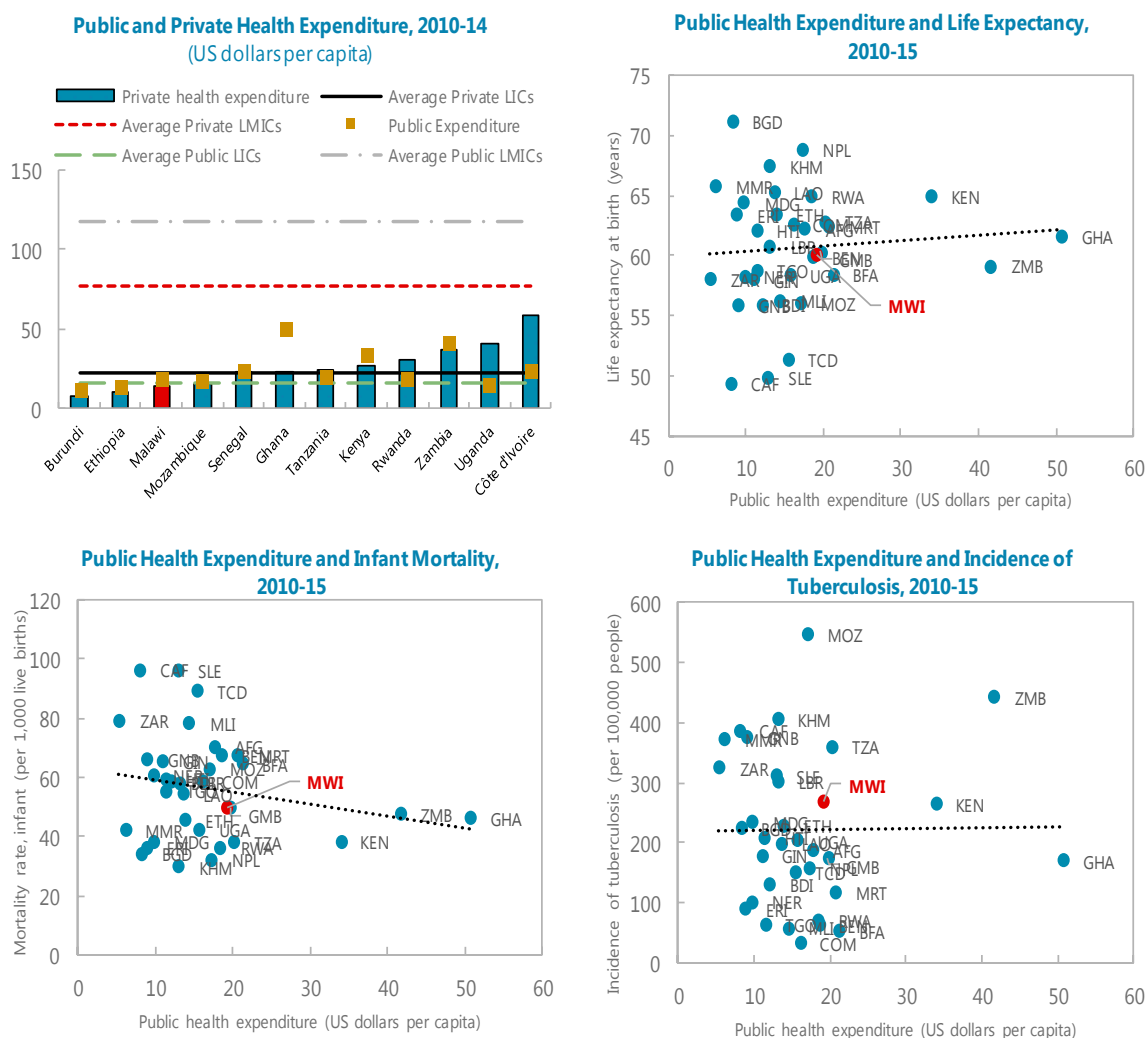
¹Data on expenditure on goods and services is not available for Ethiopia.

7. Malawi's health outcomes are mixed relative to LICs with similar levels of health spending per capita (Figure 4). Public and private health spending per capita are just under the LIC average. Compared to other LICs with similar levels of health spending per capita, Malawi has relatively lower infant mortality and about average life expectancy but the incidence of tuberculosis is higher.



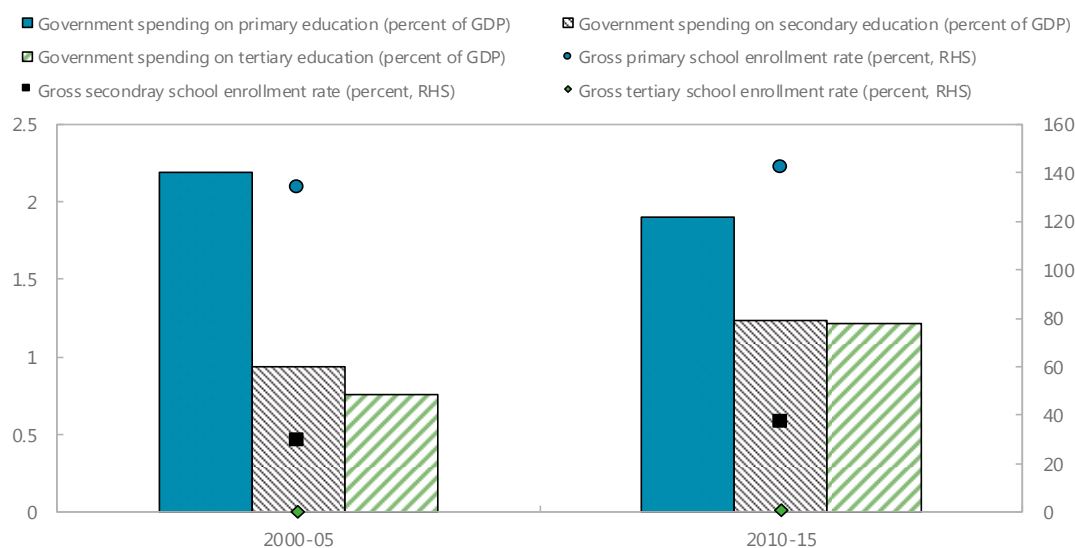
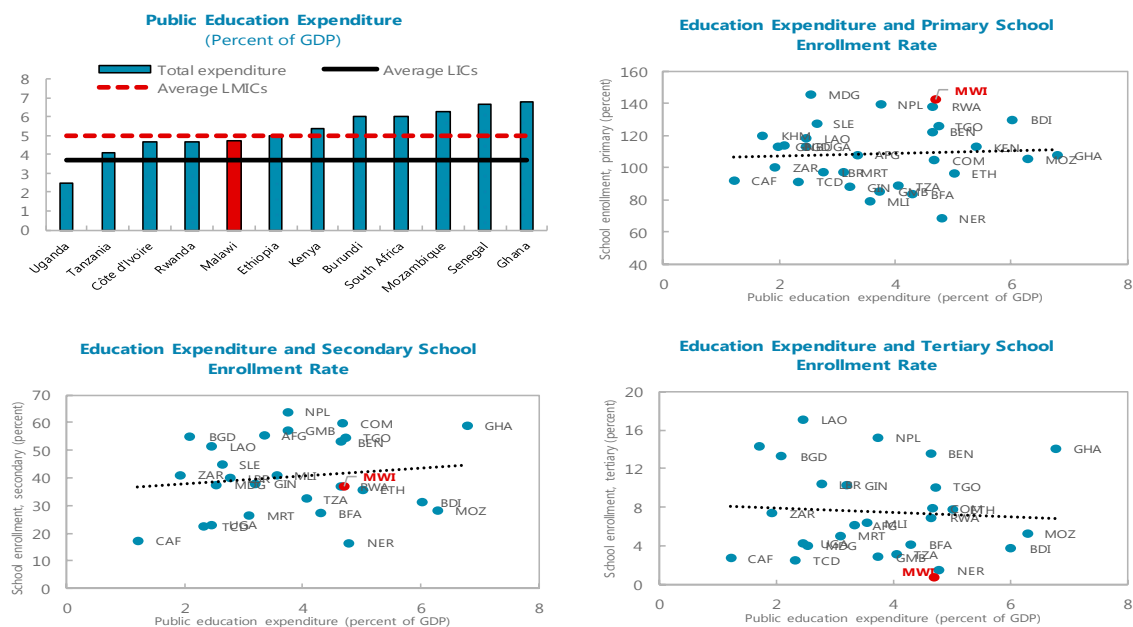
8. Government spending on education,—also spanning goods and services, wages, and capital spending—especially secondary and tertiary, has increased since the early 2000s but performance remains broadly unchanged (Figure 5). Average spending during 2010–15 rose by 0.5 pps to 4.5 percent relative to the average for 2000–05. The largest increases were in secondary and tertiary education spending of 0.3 and 0.5 pps, respectively. However, secondary school enrollment rates only increased by 8 pps and tertiary school enrollment rates did not change. In contrast, primary school spending fell by 0.3 pps but enrollment rates increased slightly by 9 pps.

9. Malawi's education spending is above the LIC average but outcomes are mixed (Figure 6). During 2010–15, Malawi spent about 1 percent of GDP more than the LIC average on public education. Spending more than half its education budget on primary education, Malawi achieved very positive results for primary school enrolment—Malawi had one of the highest enrolment rates among LICs during 2010–15. In contrast, secondary and tertiary school enrolment was much lower than in peers spending similar amounts. Ideally, the analysis should complement these indicators on the quantity of education with ones on the quality of education. Completion rate and standardized test scores (such as the Program for International Student Assessment) are some examples. However, given the scarcity of data in these areas for a large number of LICs, these indicators were not included in this analysis.

Figure 4. Health Spending and Outcomes in Malawi and Comparator Countries, 2010–15¹

Sources: Country authorities, World Bank; IMF staff estimates.

¹Latest available data in WDI for health expenditure is 2014.

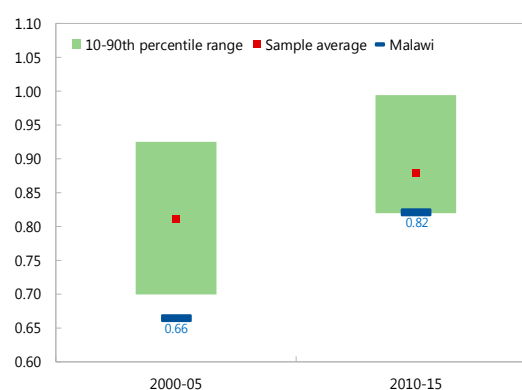
Figure 5. Public Spending on Education and School Enrollment Rate, 2000–15**Figure 6. Public Education Spending and Outcomes in Malawi and Comparator Countries, 2010–15**

C. Public Spending Efficiency in Health and Education

10. Public spending on health and education is assessed using the data envelopment analysis (DEA) approach. This methodology allows capturing of the relative efficiency of a country in translating public spending (inputs) into measurable outcomes (outputs). The frontier is estimated based on best performer countries with similar levels of input—countries that maximize output for a given level of inputs, or minimize the use of inputs for a given level of output—and then countries are ranked according to how far they are from the “efficient frontier”. The resulting efficiency score lies between 0 and 1, with 1 being the score for the most efficient countries. For a given country, the distance to the frontier is the output increase that could be achieved with the same inputs should the country be at the efficiency frontier—or alternatively the reduction in inputs that could be achieved while leaving output unchanged. The DEA approach has the advantage of being simple and easy to implement and of not requiring assumptions regarding the production function. However, it does not control for a large number of variables.¹ To reduce country heterogeneity the analysis is focused on a sample of LICs (34 for the health DEA and 27 for the education DEA) with data available for the period 2010-15.^{2,3} The analysis is replicated for the period 2000-05 to assess whether public spending efficiency has worsened or improved over time. The DEA model adopted is an output-oriented model with variable returns to scale.⁴

11. The DEA model indicates scope to improve efficiency of health spending in Malawi. A one input-one output model is applied with the output indicator being health adjusted life expectancy (HALE)⁵, as this represents a broad measure of the health status of a country, while total health spending per capita is the input.

Figure 7. Efficiency Score of Health Spending per Capita



Sources: IMF staff estimates.

¹ For a discussion on efficiency approaches, see Gupta and Verhoeven (2001), Herrera and Pang (2005), and Grigoli and Kapsoli (2013). In particular, there is significant off-budget donor support in many countries in the sample, including Malawi. If off-budget support in education or health is more (less) efficient than on-budget support then there will be an upwards (downwards) bias in the results.

² The country sample varies with data availability.

³ The DEA data set and underlying analysis applied in this paper is an extension of the work in Kpodar (2016).

⁴ In an output-oriented model, the objective is to assess by how much output could be expanded without altering the quantities of inputs. The assumption of variable returns to scale implies that production technology may exhibit increasing, constant, and decreasing returns to scale. With constant returns to scale, output will change by the same proportion as inputs are changed.

⁵ HALE estimates the number of healthy years an individual is expected to live (at birth) by subtracting the years of ill health, weighted according to severity, from overall life expectancy. Data is sourced from the World Health Organization (WHO).

Malawi's efficiency score is 0.82 in 2010-15, implying the HALE could have been 18 percent higher (from 51 years to 60 years) if there were no inefficiencies and the current health spending level is maintained (Figure 7). Malawi's efficiency score is well-below the sample average (near the bottom 90th percentile). However, it has improved significantly since 2000-05 when it was the second lowest in the sample with a score of 0.66.⁶

12. One source of inefficiency in the health sector is a lack of appropriate human, technical, and financial resources. Since 2013, the Malawian government has been spending less than US\$30 per capita on health, far below the SSA average (US\$98). An implication of the very low per-capita health sector government budget is critical shortages of skilled personnel, drugs, hospital equipment and other supplies. There is one surgeon per 100,000 people, one physician per 5200 people and one nurse per 3500 people.⁷ Doctors and nurses frequently operate without requisite tools and medical supplies. Thus, staff motivation and morale is often low – breeding absenteeism, corruption and underperformance.

13. The composition and misallocation of scarce resources have also created inefficiencies. The majority of health sector resources are for recurrent expenditures, especially salaries and wages. In 2017–18, almost 80 percent of the sector's resources were for recurrent expenditures, mainly salaries and wages. Limited resources are sometimes spent on high cost and low impact programs, usually curative interventions, at the expense of low cost and probably more effective preventative interventions. For example, several cost effective preventative health interventions, according to Disability Adjusted Life Year (DALY), are sometimes not prioritized in government budgets (UNICEF Malawi, 2017). Curative services have absorbed more than 95 percent of other recurrent transactions for the Ministry of Health over the past five years. Most health sector resources from donors are earmarked to responding to specific diseases such as cholera, HIV/AIDS, tuberculosis and malaria; they are less commonly directed to general health systems strengthening. For example, approximately 49 percent of donor contributions were earmarked for HIV and AIDS related interventions between 2011 and 2015 (UNICEF Malawi, 2017).

14. Health budgets are sometimes not spent or disbursed in accordance with projected timelines. In 2016-17, for example, the drugs budget for District Councils was nearly fully exhausted in the first half of the year. Compounding the situation is a lack of robust health monitoring and evaluation systems, which prevents the government from effectively monitoring performance of the health sector to identify inefficiencies and suggest remedial actions (Chirwa, 2013). Delays in disbursement of funds to departments and health facilities is another cause of inefficiency. Several districts have reported between two to five months of delay in transfers of funds from the national level.⁸ Further, when received, the funds are often less than what was requested.

⁶ The generally high efficiency scores in the sample could reflect the fact that in many LICs public health spending is in large part funded by donors through grants and loans. In some cases, direct donor interventions bypass the budget, suggesting that actual public health spending may be higher than observed in the data.

⁷ Calculations based on World Development Indicators data.

⁸ UNICEF Malawi, Staff Field Reports.

15. Waste and corruption also pose significant risks to efficient health spending in Malawi.

Health sector leakages arise from several sources, including inadequate inventory control, poor record keeping, weak public supply management system and inaccurate reporting of receipts, stock levels and other supplies (Government of Malawi, 2006). Drugs and other items are sometimes issued to patients without being properly recorded. Essential medicines are the poorest documented commodities, especially at the health facility level. Where they exist, records are sometimes unreliable and not consolidated nor standardized across commodities and departments. Recent evidence suggests that 94 percent of leakages happen at the health facility level compared to 6 percent at the warehouse level (CHAI, 2013). Leakages within the HIV/AIDS sector alone have been estimated to be at least nine percent of national expenditures on the same (CHAI, 2013). Additionally, the pharmaceutical market in Malawi has sometimes been flooded with fake and substandard medicines (Chirwa, 2013).

16. The DEA model finds varying results within the different levels of Malawi's education system (primary, secondary and tertiary).

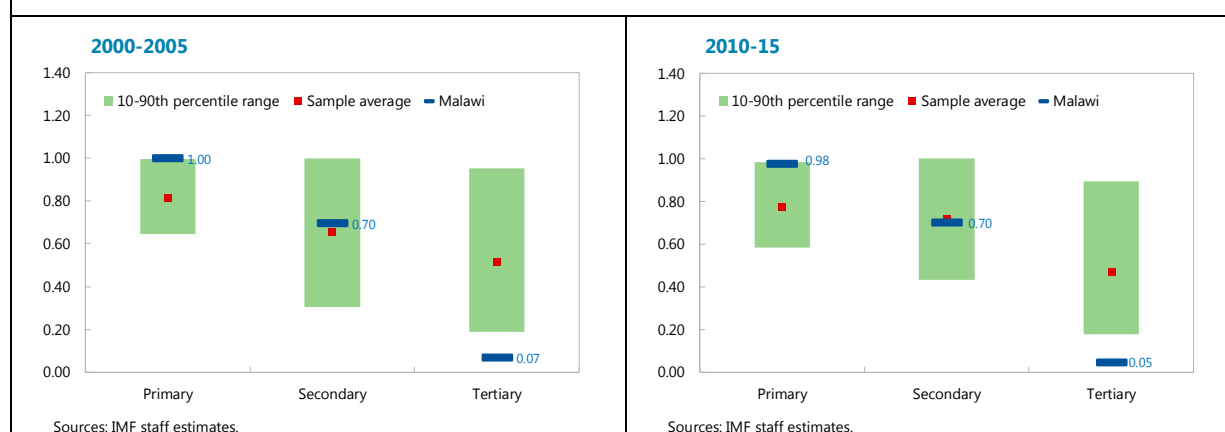
The DEA one input-one output model was applied to evaluate efficiency of spending within the three levels of education. In this model the input is education spending (per capita) per each level with enrollment rate as the output.^{9,10} The results showed high efficiency for primary education, which appears to mirror the very high enrolment rates (Figure 8). Caution is required in interpreting these results. They focus only on enrollment and do not account for other critical factors such as quality of education. In addition, high enrolment rates in primary education are due to numerous factors in addition to public investment in basic education, including increased public awareness of the role of education, targeted social protection programs (such as schools meals, cash transfers and other forms of educational assistance helping poor families in Malawi), and significant financial contribution from development partners to support construction of schools. Malawi's efficiency scores fall substantially in secondary and tertiary education, where inefficiencies cost up to two fifths and almost all of the output, respectively.

17. The mix of education spending influences efficiency where high impact and low cost interventions are not adequately resourced.

Although Early Childhood Development (ECD) is one of the highest impact areas, it received just 0.26 percent of the education budget in 2017-18. Secondary education also received significantly less funding (14 percent) compared to tertiary education (25.5 percent).

⁹ Private education spending is not included due to a lack of data. Since education is primarily financed by public funds in LICs, this omission should not significantly affect the results. The model used to measure efficiency in education spending is admittedly simplified. The main weakness of the model is that enrollment does not reflect the full context of education spending. The model tends to mask other key output and education quality indicators such as teacher absenteeism, pupil-teacher ratio, pupil-classroom, and pupil-text-book ratio.

¹⁰ Another version of the model was run, using primary and secondary completion rates as the output. However, due to limited data availability and therefore a low sample size, this model has the risk of not being statistically significant.

Figure 8. Efficiency Score of Education Spending per Capita

18. Insufficient inputs generate inefficiencies and ineffectiveness, as it is extremely challenging to effectively deliver a quality education with inadequate resources. The education sector lacks adequate supply across multiple indicators, including trained teacher-pupil ratios (1:80 for primary and 1:44 for secondary) and student-text book ratio (five students in standard 5 and 6 share one textbook in English, Mathematics, and Chichewa). Low teacher morale, absenteeism, and limited professional development exacerbate existing inefficiencies. Furthermore, the very low supply of public secondary schools (747 public secondary school against 5470 primary schools) is a key factor behind low secondary enrolment, especially for girls. Only 16 percent of children transition from primary to secondary school; of those, only eight percent move on to tertiary education (Government of Malawi, 2017).

19. Inefficiencies also arise from poorly utilized education budgets. The vast majority of education budgets are applied to salaries and wages, leaving very few resources for essential supplies such as books, desks, and other teaching and learning materials. Recurrent costs absorbed an average of 85 percent of the national education budget for the Ministry of Education between financial years 2013-14 and 2017-18 (UNICEF Malawi, 2018). This means only 15 percent of the budget remains for development such as construction of schools. Education sector public expenditure tracking surveys have revealed delays exceeding five months in the disbursement of education resources such as School Improvement Grants (CSEC, 2017). Schools in rural and remote areas are underserved. Centralized procurement of teaching and learning materials also contribute to inefficiencies in education spending. Inadequate systems are also exemplified by poor rates of distribution and repayment of tertiary education loans (World Bank, 2013).

D. Policies

20. Enhancing the level and allocation of health and education budgets. Efficiency would improve with a sub-sectoral rebalancing of the composition of education and health spending and prioritization of human, technical, and financial resources towards these critical sectors. This includes increasing allocative efficiency and equity in budget allocations to primary, secondary, and tertiary health and education services, and prioritizing low-cost but high impact interventions—such as preventative and community health and ECD. Similarly, there is a need to balance infrastructure creation with maintenance. In recent years, budgets for Other Recurrent Transactions (ORT) have been increasing at a significantly slower pace in comparison to Personal Emolument (PE)—as evidenced by ORT budgets to District Councils for education and health.

21. Strengthening procurement functions, supply management, and other elements of the public expenditure chain. Within the health sector, the focus should be on enhancing the capacity and role of the Central Medical Stores (CMST), given parallel procurement systems in the country and reports of leakages within the CMST supply chain. There is also a need to strengthen national health accounts and improve transparency, forward planning and timeliness of procurements in line with the new Procurement Act (2017). Effective planning, prioritization and timely payment of goods and services purchases is key to improving the efficiency of both health and education expenditures.

22. Enhancing fiscal transparency and accountability at national and sub-national levels throughout the budget cycle. Public spending achieves better health and education outcomes if it is done in a transparent and accountable manner (Swaroop et al., 2002). Financial accountability, including comprehensive financial reporting on allocated budgets to ministries, departments, agencies (MDAs) and district councils, should be enhanced. Enforcement mechanisms and sanctions for non-compliance should be strengthened. It is also essential that key budget documents, including in-year reports, annual financial statements and audit reports, be publicly available for scrutiny, including by legislatures.¹¹ Transparency should also be enhanced when making financing and contracting decisions, especially for big capital projects. Public participation in budgeting and social accountability actions by citizens should also be encouraged.

23. Strengthening Program-Based Budgeting (PBB) and stimulating efficiency in frontline service delivery. The recent introduction of PBB holds great potential to improve efficiency, but stronger links are required between PBB and sector plans, and the monitoring and evaluation of PBBs requires significant attention. Performance and incentive systems for frontline staff should be enhanced. Efficiency of frontline staff could be improved through incentive schemes such as performance-based financing, and encouragement of cost-containment measures by MDAs in addition to reconfiguration and integration of service delivery. MDAs should be supported to use appropriate technology and strengthen their monitoring, evaluation and audit functions, and to periodically publish performance information. The rollout of the national identity registration system

¹¹ The recently released Open Budget Survey results (2017) shows that Malawi's performance with regards to budget transparency has significantly gone down from 65/100 in 2015 to 26/100 in 2017.

is an opportunity for improving data and information systems, including understanding how and whether frontline service delivery is impacting citizens.

E. Conclusions

24. There is significant room to improve public spending efficiency. Malawi performs poorly in health and education spending efficiency. Spending in these areas will need to be stepped up to achieve better living standards and higher, more inclusive growth. Improving spending efficiency (including the composition of spending) would also increase fiscal space for increased spending in these and other growth-enhancing areas.

25. Four key reforms can have an immediate impact. A rebalancing of the composition of education and health spending—including greater prioritization of low cost-high impact spending and balancing maintenance against capital spending—would yield immediate results in both health and education. Strengthening the public expenditure management chain, especially procurement and supply management, will be important. These reforms would go hand in hand with greater fiscal transparency and accountability in these sectors. Similarly, program-based budgeting is critical to better planning. Finally, a strong incentive system would improve the efficiency of staff.

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