Who benefits from public spending on higher education in South Asia and Sub-Saharan Africa?

Sonia Ilie [1] and Pauline Rose [2]

[1] Faculty of Education University of Cambridge, 184 Hills Road, CB2 8PQ, Cambridge, UK, pmr43@cam.ac.uk

[2] Faculty of Education University of Cambridge, 184 Hills Road, CB2 8PQ, Cambridge, UK, isi22@cam.ac.uk

Abstract: Most countries are far from achieving the new sustainable development target of equal access to higher education by 2030, with those in South Asia and sub-Saharan Africa furthest behind. This raises questions about the allocation of public resources across the education system to promote equity. We use data from Demographic and Health Surveys and UNESCO Institute for Statistics in 31 countries in these regions to assess who benefits from public spending on education. Our results reveal an overall pattern of pro-rich education spending, increasing with education level. We find that this pattern can be traced to an allocation of resources to higher education that is disproportionate to the sub-sector's size: even when higher education spending overall represents a small proportion of total educational expenditure, per-capita expenditure is extremely high. Given that the richest predominantly gain access to higher education, the current spending patterns are likely to reinforce wealth-driven education inequalities.

Introduction

Higher education is gaining momentum as a priority policy area on the global agenda. This is after a period of neglect over the past fifteen years, during which the Millennium Development Goals targeted attention towards achieving universal primary schooling. While

these goals were not fully met with the distribution of success unequal amongst and within countries, overall increases in access have led to greater demand for higher education, and recognition that more attention needs to be paid to this. This is viewed to be even more imperative in the context of the benefits from higher education that are understood to accrue to individuals in the form of higher wages, as well as to societies in the form of economic growth and poverty reduction.

In recognition of both the increasing demand for higher education along with its perceived benefits, Sustainable Development Goals agreed by world leaders in September 2015 include a specific target for achieving equitable access to higher education. A key question that arises from the setting of this target is whether current patterns of public spending on education are likely to support, or inhibit, its achievement.

This paper builds on our earlier work (Ilie and Rose, 2016) that identified wide gaps in access to higher education by wealth and gender. It takes that analysis forward by identifying the current distribution of public spending on education between and within levels of education. It aims to show whether countries' allocation of resources is supportive of a pro-poor approach to education in ways that could help towards achieving equal access to higher education, regardless of background, in the coming fifteen years. We focus on countries in sub-Saharan Africa and South Asia, which are currently furthest from achieving education goals, drawing primarily on combined data from the Demographics and Health Surveys, and UNESCO Institute for Statistics databases.

The paper is organized as follows: we first present our rationale for the study based on previous studies and our methodological approach; we then report our results with respect to the relative expenditure on education for the richest and poorest within countries, both overall and disaggregated by level of education; next, we identify potential drivers of inequalities in public education spending. We conclude with a discussion of the implications of the identified highly unequal higher education expenditures. We argue for sustained efforts to increase and equalise access to primary and secondary education, and for attempts to re-balance expenditure across the three levels of education as a potential pathway towards more equal higher education systems.

Current evidence on patterns of access to, and financing of, higher education

Despite expansion in enrolment in recent years, inequitable access to higher education remains an entrenched global problem (Ilie and Rose 2016; Marginson 2016; Salmi and Bassett 2014; McCowan 2015). In many high-income countries, higher education has become undergone a period of rapid massification (Trow 2007). Yet inequalities persist, notably with respect to wealth. In some of these countries, such as the UK, much of the wealth-driven inequalities in higher education access can be explained by differences in earlier school attainment (Jerrim and Vignoles 2015). Gender inequalities have experienced a changing pattern, with young women out-numbering young men in higher education in most OECD countries (OECD 2016).

In low- and lower-middle income countries, higher education expansion has been much more recent. In sub-Saharan Africa, only around one in 10 young people access higher education. Progress has been faster in South Asia, although still significantly lower than in richer countries, reaching around one in five young people on average. For most countries in sub-Saharan Africa any expansion that has occurred has almost entirely benefited the rich, with the poorest young people still extremely unlikely to gain access to higher education. Even in South Asian countries with higher enrolment rates overall, such as Bangladesh, Nepal and Pakistan, only around 5% of the poorest half of young people gain access to higher education. Even in these countries, a rich young person is 3 to 5 times more likely to attend higher education than a poor young person (Ilie and Rose 2016).

One reason for unequal access to higher education is enduring inequalities in access to primary and secondary education. Inequalities across and within levels of education are in turn potentially related to current funding distribution within education. The aim of our paper is to explore the distribution of public financing on education, in particular to ascertain the extent to which it is equitable, and so has the potential to support the achievement of the sustainable development target of equal access to higher education.

Heated debates on who should pay for higher education are common across the world (Oketch, 2016). Three sets of arguments are put forward to justify the allocation of public resources to education in general, and to higher education in particular. The first argument relates to the positioning of education, including higher education, as a right (McCowan 2010; McCowan 2012). The second argument centres on evidence that higher education contributes to society through economic growth (Petrakis and Stamatakis 2002; Gyimah-Brempong et al. 2006), including as a result of technological advancement (Bloom et al. 2014), and through reducing poverty (Oketch et al. 2014). In addition, returns to higher education are sometimes found to be higher than to other levels of education, although this is tempered by arguments that private returns to higher education outweigh social returns (Psacharopoulos 1994; Psacharopoulos and Patrinos 2004; Colclough, Kingdon and Patrinos 2009; Montenegro and Patrinos 2014). This leads some to conclude that those who benefit from this level education should contribute to its cost. The evidence on returns is not, however, clear-cut (Fasih et al. 2012). In addition, most measures do not fully capture social benefits (McMahon 2009), and account also needs to be taken that returns to higher education and prior levels are intricately related (Teal 2011). As such, Oketch (2016) argues that funding policies should not be guided purely by rate of return analyses as these do not sufficiently account for higher education's contribution to sustainable development.

The third argument put forward to inform the allocation of public spending to different levels of education relates to the extent to which public spending is equitable, and so disproportionately benefits the poor. Benefit incidence analysis is an approach that has been commonly used to identify the distribution of resources to wealth groups within countries for this purpose in education as well as other social sectors. This approach is the main focus of our paper.

A compilation of earlier studies using benefit incidence analysis suggests that overall spending is pro-rich, in particular in sub-Saharan Africa and Asia and the Pacific. For example, across 10 country studies in sub-Saharan Africa, the richest 25% of the population was found to receive 33% of resources while the poorest 25% received just 13%. This pattern holds across levels of education, and becomes increasingly more pro-rich, with poor young people receiving only 5% of funds allocated to tertiary education compared with 54% reaching the rich (Davoodi et al. 2003). These findings reinforce a comparative study of nine sub-Saharan African countries which similarly found that public spending was increasingly pro-rich at higher levels of education with very limited benefit of higher education spending for the poorest (Castro-Leal et al. 1999).

Studies of individual countries have aimed to identify the impact of particular policies on the distribution of spending. For example, primary education spending was found to become increasingly pro-poor in Malawi over the 1990s following the abolition of primary school fees, indicating the policy was successful in improving the distribution of resources. Over the same period, secondary education spending also became less regressive (with 17% of public spending reaching the poor in 1997/8 compared with just 7% in 1990/1). A potential reason given for this was a shift in enrolment of the richest into non-subsidised private secondary schools (Al-Samarrai and Zaman 2007). Similarly, a recent study in Kenya finds that the poorest quintile's disproportionate share of primary education spending following the introduction of free primary education is explained in part by the distribution of the school-age population (given poorer households have more children, on average), and also because children from rich households are more likely to be in private primary schools (Gaddis and Demery 2012). And in Burundi, despite recent budgetary increases to primary education where spending is more pro-poor, 15% of total public education spending is found to reach the poorest quintile while the top quintile benefits from 29%. The reason for the overall regressive distribution is found to be related to the weight of secondary and especially higher education in the budget, as well as lower enrolment at those levels among the poor (Tsimpo and Wodon 2014).

One study using benefit incidence analysis also raise important policy questions about government subsidies to private schools. In 2007, Uganda introduced a public-private partnership arrangement, whereby the government pays tuition and registration fees for eligible students who enrol in private secondary schools. This led to a doubling of these schools such that by 2014 half of Ugandan secondary schools were privately owned. A benefit incidence analysis of the publicly-subsidised private schools found that the those from rich households primarily benefited: 38% of government spending reached those in rich households in these schools compared with just 12% of the poorest. This distribution differed markedly from the overall spending pattern on secondary schools which was considerably less regressive (Wokadala and Barungi 2015).

Some country-specific studies have provided further disaggregation to inform policy decisions about the distribution of resources within different parts of a country or for other population groups, such as gender. These have shown that patterns can vary across different

regions or provinces of a country, including once the cost of services in more hard-to-reach areas is taking into account for example (for example, Lassibille and Tan 2007 in Madagascar; and Asghar and Zahra 2012, and Malik and Rose 2015 in Pakistan). This has implications for decisions about the distribution of resources at both national and sub-national levels. Further disaggregation by gender in Pakistan identifies that poorest girls in more disadvantaged regions are least likely to benefit from public resources: estimates have shown that, in Balochistan, males in the poorest quartile receive 14 percent and 17 percent of the subsidy at primary and secondary levels compared with 9 and 4 percent, respectively, for females in the poorest quartile (Sabir 2002).

Despite the usefulness of such analysis for informing public policy decisions, comprehensive data are not available on the incidence of education spending using the same methodology to allow comparisons across and within countries. This paper helps to fill this gap by using the same approach across 31 countries with available data in the regions in which public education spending has previously been found to be most skewed towards the rich – namely those in sub-Saharan Africa and South Asia. We further extend previous benefit incidence analyses by seeking to understand some of the mechanisms that are associated with the patterns we observe. Such analysis should both help to inform public policy decisions on the allocation of resources, as well as to serve as a benchmark for identifying whether sustainable development goals are on track for achieving their aim of leaving no one behind.

It is important to note that benefit incidence analysis does not include the incidence of raising funds. Even if the pattern of spending is regressive, the overall distribution of resources might still be pro-poor if it is financed through a progressive tax system. However, this is very rarely the case for the countries included in our analysis (Zubairi and Rose 2016).

A lack of systematic evidence on who benefits and who can afford to pay for higher education gives rise to an unresolved debate about the suitable choice of levels of state subsidy and private contribution, with debates about the appropriateness of strategies such as student loans, graduate taxes and vouchers in contexts struggling to expand their higher education systems, and to do so equitably (Colclough 1990; Johnstone & Marcucci 2010; Salmi and Hauptman 2006; Woodhall 2007; World Bank 2010; Oketch 2016). At the same time, private universities are growing largely in response to a mismatch between demand and supply, including in sub-Saharan Africa and South Asia (Teferra & Altbach 2004; Oketch 2009; Tilak 2014).

It is not the purpose of this paper to resolve the right mix of state and private financing or provision of higher education which, in any case, would need to be determined based on each individual's country's circumstances. Rather we aim to add to the evidence on who is benefiting from public education spending at the outset of the sustainable development goal process, giving a more complete and systematic picture of patterns across and within countries furthest behind as a means to informing these policy debates.

Data and methods

The main aim of this paper is to explore the extent to which public financing for education reaches the poorest and, in particular, how pro-poor higher education financing is. It provides a comparative perspective on the benefits of public education spending to different wealth groups to inform strategies to promote equitable access, which for the purposes of the paper refers to ensuring higher educational opportunities for young people are based on merit rather than their background, across the education system, as a means to support the achievement of the education Sustainable Development target on equitable access to higher education. Our focus is on sub-Saharan African and South Asian countries, where access to higher education remains low and highly unequal.

We use data from two main sources for the analysis. Firstly, we use nationally-representative Demographic and Health Surveys (DHS) (DHS and ICF International, various years) to obtain estimates of attendance and participation in primary, secondary and higher education levels. We also make use of the DHS wealth index (Rutstein and Johnson 2004) to obtain an estimate of the relative levels of household wealth in each country and rank individuals according to their household wealth levels. We only include countries with a DHS more recent than 2007 to take account of potential recent growth in higher education access.

Secondly, we collect information from the UNESCO Institute of Statistics (UIS) database on educational expenditures at each level of education. Expenditure data are reported both as per-capita of enrolled person expenditure at each level; and total expenditure at each level as proportion of the country's GDP. We use these indicators to estimate total government expenditure per level of education in purchasing power parity (PPP)$. We further use these data to analyse the distribution of government educational expenditure to different wealth groups. Not all countries with recent DHS data report expenditure information to the UIS. This analysis is, therefore, limited to countries with recently-available expenditure data, resulting in a total of 31 countries.

Approach to benefit incidence analysis

To answer our question regarding the distribution of government expenditure to different wealth groups we carry out a benefit incidence analysis, which is an analytical approach that disaggregates total government expenditures by population wealth groups. It takes into account the access of each group to the good (in this case education) that is being subsidized by government. In carrying out the benefit incidence analysis we follow guidelines set out by the World Bank (Demery 2000), and undertake a set of pre-defined steps to calculate the proportion of public educational spending received by each wealth group.

First, from the DHS data, we use a survey question asked of all respondents under the age of 25 on "What educational level are you currently attending?" From this, we calculate enrolments for primary, secondary, and higher education, and identify those who are not enrolled in any level of education at the time of the survey. Second, we use the DHS wealth index to rank individuals in each country and group them in 10 equally-sized groups (deciles), enabling us to refer to the richest and poorest 10% of populations in each country. Third, we

obtain estimates of the 'total subsidy', or total expenditure, for each level of education. We achieve this by using (1) the UIS indicator on total expenditure at each educational level as a proportion of the country's GDP, and (2) each country's GDP (expressed in current purchasing power parity dollars PPP$) for the year corresponding to the most recent DHS wave in each country.

A formalization of the above for each separate level of education (adapted from Demery 2000) is:

$$X_j = \sum_{i=1}^{3} E_{ij} \frac{S_i}{E_i} = \sum_{i=1}^{3} \frac{E_{ij}}{E_i} S_i$$

(1)

In our case, X_j represents the total value of the education expenditure for group j. E_{ij} refers to the total enrolments of group j at educational level i, relevant to the first step mentioned above, and obtained in this analysis from DHS educational attendance estimates. S_i is the total government expenditure for educational level i, derived from the UIS database, and E_i represents the total enrolments in educational level i, from our DHS calculations; in our case i varies from 1 to 3, related to primary, secondary and higher education, respectively. From equation (1) we can also derive the benefit of public expenditure for separate levels of education to enable us to identify whether the distribution of higher education expenditure by wealth groups is more or less equal (or pro-poor) than primary and secondary education.

Ideally we would use net government expenditure to estimate the benefit to a particular wealth group. That is, we should take account of spending by students, their parents, or other organizations made to enable access to education. This would take into account fees that may be charged for access to government institutions at different levels of education. If we assume that fees in government institutions will be equally charged to rich and poor families, the relative government expenditures for these groups will remain accurate.

In addition, we should also take into account the fact that some students pay fees to attend privately-funded schools or higher education institutions. The DHS data do not allow for a differentiation between enrolments in state and private education institutions and, in most countries included in our analysis, data are not available that provide reliable information on enrolment in private institutions by wealth. Our estimates therefore assume that all those attending education are enrolled in a state institution, potentially biasing our overall estimates of the unit-subsidy downwards. If wealthier children are more likely to attend privately-funded institutions (and so incur the costs of provision themselves rather than receiving government funding) this could then mean that the extent of inequality in funding allocations is overestimated. The patterns are not necessarily straightforward, however. For example, wealthier households might invest in better-quality private schooling at lower levels of education, enabling their children to benefit from larger subsidies in public institutions at higher levels. Further research that focuses on specific countries with data on private spending and enrolment by wealth at each education level would provide further insights into how such enrolment patterns affect the overall distribution of education spending. However, reliable data are not currently readily available in most countries to permit such analysis.

Evidence on the incidence of public spending to the poor

Patterns in public spending on poor and rich deciles across countries

We begin by comparing public spending on the richest and the poorest deciles in each country in order to identify the extent to which there is parity in education spending (Figure 1). Parity would be achieved if the poorest decile received the same resources as the richest decile in which case the bar would reach 100% (i.e. the ratio between the expenditures for the poorest and the richest would be equal). It is important to note that parity in spending is not the same as equitable spending. Parity implies equal spending between the rich and poor, while equity would require a redistribution in public spending towards the poor who are less able to pay. In all thirty-one countries in our analysis, the richest group benefits disproportionately from public spending, and so none have achieved parity.

However, countries do not exhibit the same pattern of inequality. For the purposes of our analysis, we distinguish between three groups. The first group is composed of countries that are closest to parity. Nepal, Comoros, Bangladesh, and Namibia are part of this group, and exhibit a pattern whereby the poorest decile receive at least 50 percent of the amount of public expenditure that the richest decile receives. Nepal is closest to equal spending on the poor and rich, with poor households receiving $99 for every $100 received by rich households. However, even this cut-off point of 50 percent results in relatively large gaps for other countries in the group. In Namibia, for instance, the poorest only receive around $58 for every $100 received by the richest.

The second group of countries exhibits moderate to large gaps in public spending, with the poorest decile receiving 10 to 50 percent of the amount spent on the richest decile. This group includes 23 of the 31 countries in our analysis, such as Ethiopia, Ghana, Kenya, Tanzania, and Senegal. In Ghana, for example, the poorest households only receive $16 for every $100 spent on rich households.

The third group consists of the countries that are furthest away from parity. In Malawi, Guinea, Congo and Liberia the poorest can expect to receive less than $10 for every $100 spent on the richest decile. The highest level of inequality is found in Liberia, where the poorest decile receive just $5 for every $100 spent on the richest.
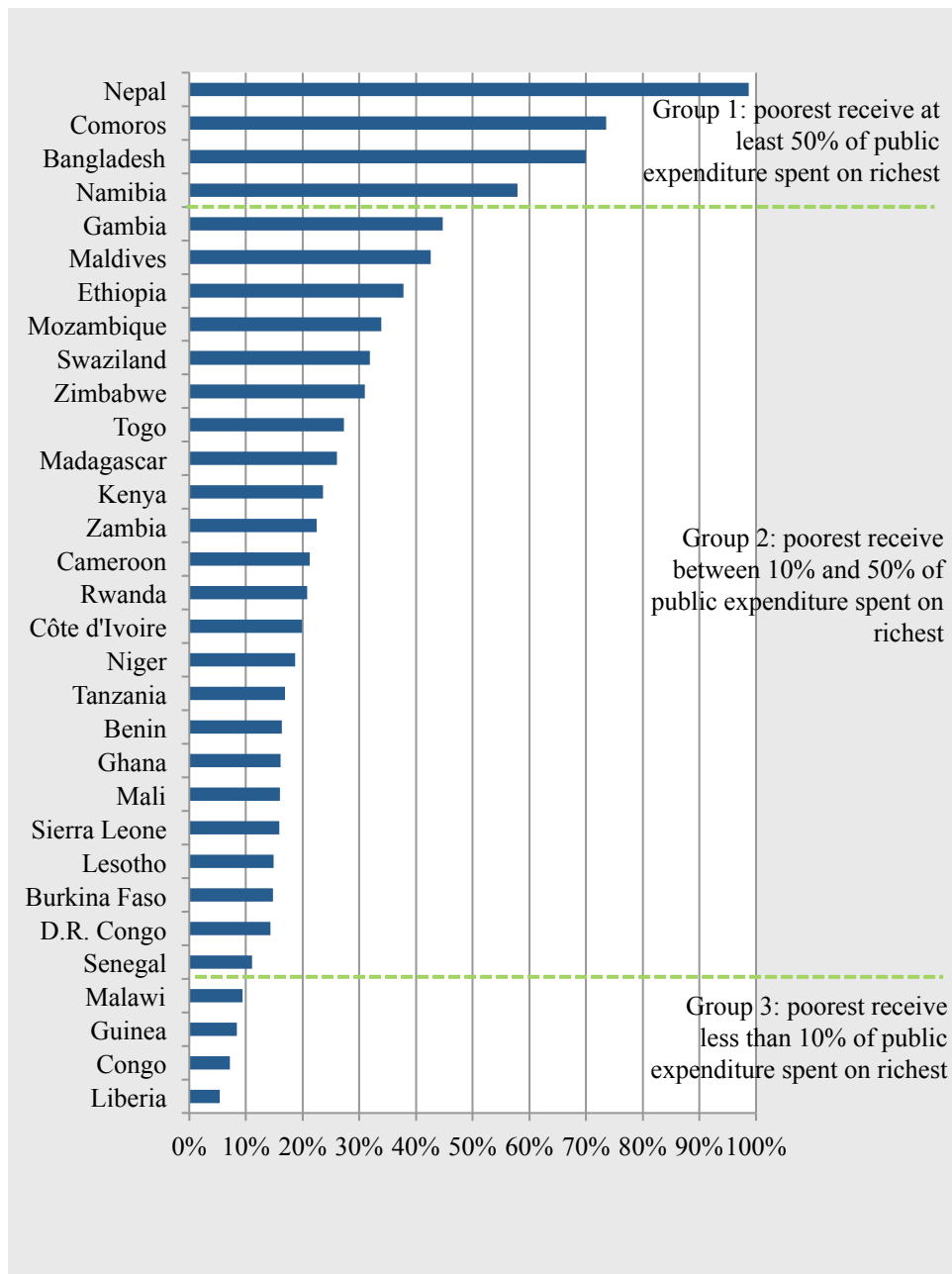
Figure 1. Public education spending on the poorest decile relative to spending on richest decile.

Source: Author calculations based on UIS and DHS data

To illustrate further the expenditure patterns of each of the three groups of countries identified above, we focus on three countries: a country in group 1 that is close to parity (Nepal), one in group 2 that represents an average pattern across the countries (Ghana), and one in group 3 that displays disproportionately pro-rich allocations (Malawi). For these three countries, we calculate the cumulative proportion of educational expenditure for each additional wealth decile (namely, the Lorenz curve of government expenditure distribution). We also calculate the average cumulative pattern for the sub-Saharan African countries in our

sample (taking account of the population size of each country in the region). We find the sub-Saharan African pattern to be very similar to that of Ghana (Figure 2).
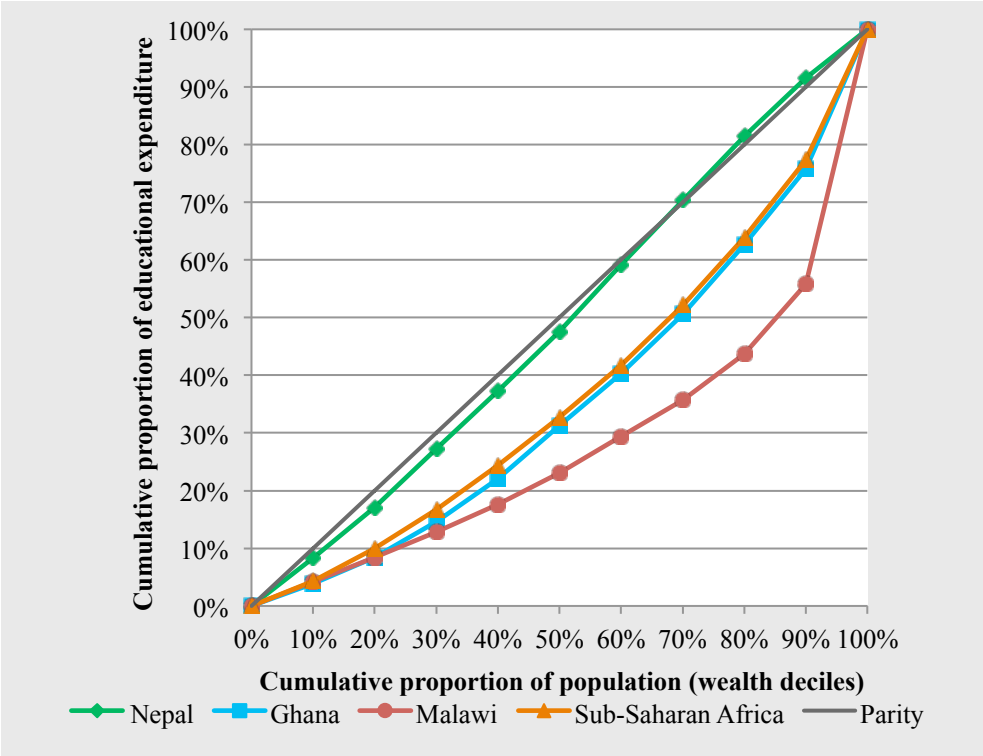

Figure 2. Cumulative distribution of total educational expenditure by wealth decile in Nepal, Ghana, Malawi and Sub-Saharan Africa

Source: Author calculations based on UIS and DHS data

Nepal's expenditure patterns are very close to the 45 degree line which represents parity across the wealth deciles – i.e. each wealth decile (whether rich or poor) receives around 10% of the share of public spending. In Ghana specifically, and the sub-Saharan African group of countries on average, the richest 10% of the population receives around the same amount of public spending as the poorest 45% of the population. In Malawi, the wealthiest 10% receive the same amount of public spending as the poorest 80% of the population, indicating extreme pro-rich bias in the allocation of resources.

Patterns in public spending between poor and rich deciles by level of education

The next step in our analysis involves differentiating patterns of spending on the rich and poor according to level of education in order to identify how the patterns identified overall are reflected in different parts of the system. For this, we use the same approach to the benefit incidence analysis as outlined above, this time separating for primary, secondary and higher levels of education (Figure 3). The results suggest the shape of the resource distribution is pro-poor for one-third of the countries included in our analysis at the primary level, but becomes progressively skewed towards the rich in all countries at secondary and higher levels of education, with higher education displaying particularly wide pro-rich patterns of resource allocation.

More specifically, we find that a third of the countries in our analysis exhibit pro-poor patterns in public spending at the primary level, whereby the poorest decile benefit from larger shares of expenditure than the richest decile (Figure 3(a)). This is likely to be thanks to recent increases in access to primary education across most of the countries in this analysis that have disproportionately benefited those from poorer households who were previously out of school. At the secondary level, public spending in all countries is pro-rich, although countries such as Nepal and Namibia (group 1 in Figure 1) are close to parity (Figure 3(b)). For higher education, public expenditure is clearly skewed in favour of the richest decile, and significantly so in the majority of countries in our analysis (Figure 3(c)).
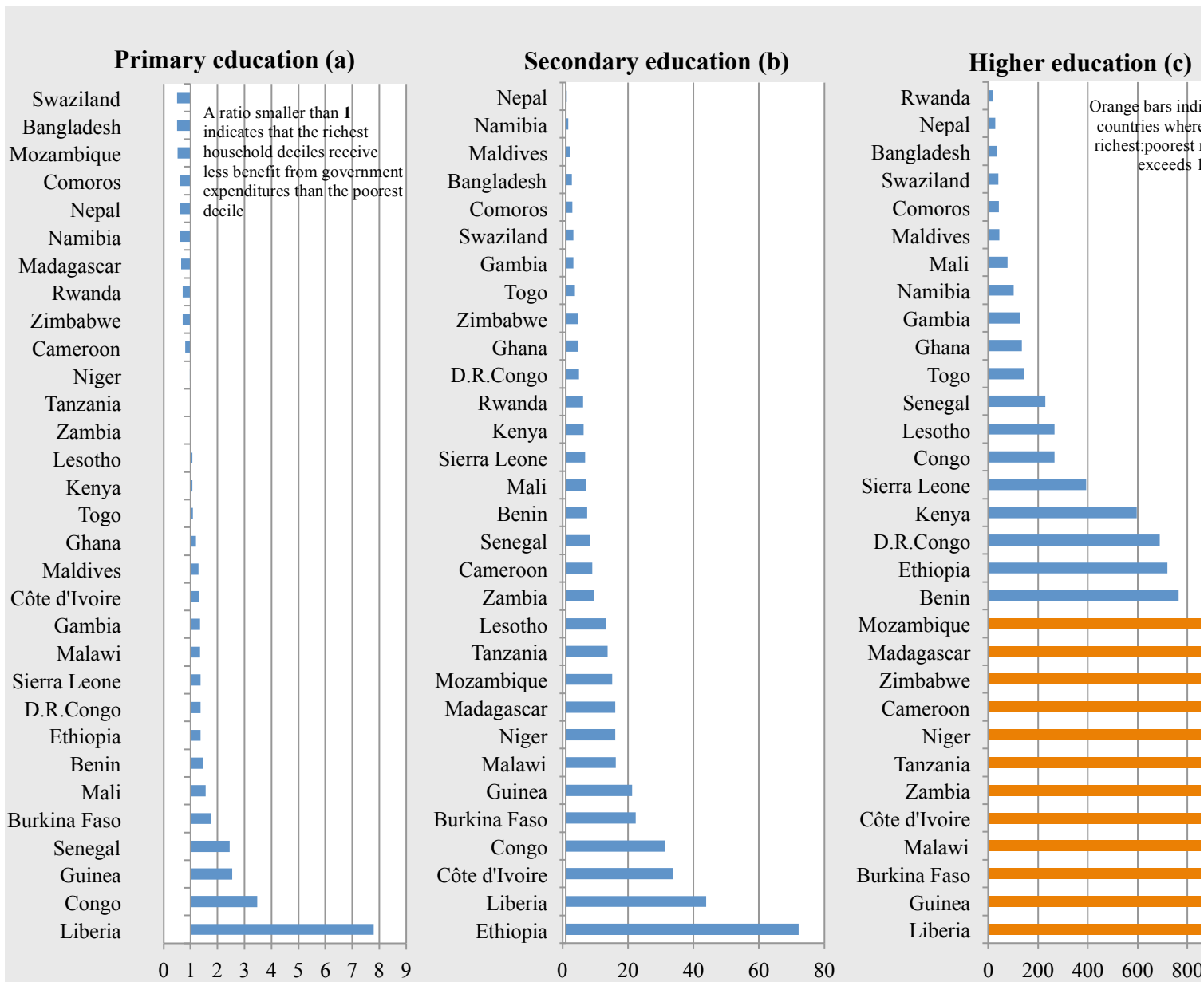
Primary education (a)

A ratio smaller than **1** indicates that the richest household deciles receive less benefit from government expenditures than the poorest decile

Swaziland, Bangladesh, Mozambique, Comoros, Nepal, Namibia, Madagascar, Rwanda, Zimbabwe, Cameroon, Niger, Tanzania, Zambia, Lesotho, Kenya, Togo, Ghana, Maldives, Côte d'Ivoire, Gambia, Malawi, Sierra Leone, D.R.Congo, Ethiopia, Benin, Mali, Burkina Faso, Senegal, Guinea, Congo, Liberia

(x-axis: 0 1 2 3 4 5 6 7 8 9)

Secondary education (b)

Nepal, Namibia, Maldives, Bangladesh, Comoros, Swaziland, Gambia, Togo, Zimbabwe, Ghana, D.R.Congo, Rwanda, Kenya, Sierra Leone, Mali, Benin, Senegal, Cameroon, Zambia, Lesotho, Tanzania, Mozambique, Madagascar, Niger, Malawi, Guinea, Burkina Faso, Congo, Côte d'Ivoire, Liberia, Ethiopia

(x-axis: 0 20 40 60 80)

Higher education (c)

Orange bars indi[...] countries where[...] richest:poorest [...] exceeds 1[...]

Rwanda, Nepal, Bangladesh, Swaziland, Comoros, Maldives, Mali, Namibia, Gambia, Ghana, Togo, Senegal, Lesotho, Congo, Sierra Leone, Kenya, D.R.Congo, Ethiopia, Benin, Mozambique, Madagascar, Zimbabwe, Cameroon, Niger, Tanzania, Zambia, Côte d'Ivoire, Malawi, Burkina Faso, Guinea, Liberia

(x-axis: 0 200 400 600 800)

Figure 3. Public education spending on the richest decile relative to spending on the poorest decile, by level of education.

Source: Author calculations based on UIS and DHS data

Our analysis disaggregated by education level shows that those countries identified in Figure 1 as having particularly strong pro-rich spending patterns (group 3 in Figure 1) generally show consistent patterns of pro-rich expenditure allocations at each education level. The same consistency is found for countries in groups 1 and 2.

Within group 1 (those closest to parity), Nepal stands out as exhibiting amongst the least pro-rich bias at each level of education: at primary education its spending is pro-poor; at the secondary level, it is the closest to parity with the richest benefiting from just 30% more resources than the poorest; and for higher education, public spending wealth gaps are amongst

the smallest on all countries in our analysis, although still sizeable (with the richest receiving 27 times more funds than the poorest). Even the countries in group 1 that exhibit slightly less consistent patterns of expenditure inequalities across levels of education, such as Namibia, still perform better than most other countries in our analysis, at each of the three levels of education.

The second group of countries, with moderate levels of expenditure inequalities, also largely retains this pattern when the data are disaggregated according to education level. Ghana, for instance, displays pro-rich expenditure patterns at all three levels, although the pro-rich bias at the primary level is small. The richest benefit from 20 percent more resources than the poorest at the primary level, widening to almost five times more at the secondary level, and 135 times more for higher education.

Our third group of countries, which displays the most extreme pro-rich pattern overall, shows the same pattern at each education level. In Malawi, for example, while the pro-rich bias is moderate at primary level (with the rich benefiting from 35% more resources than the poor), it is still higher than many other countries in our analysis. Pro-rich bias becomes more pronounced at secondary level, with the rich benefiting from 16 times the amount of resources. By higher education, the rich benefit by a huge margin largely because in Malawi, as some other countries in our analysis, very few of the poorest make it to higher education. As such, almost all of public spending on higher education is spent on those from rich households. Liberia presents a particularly extreme case, with the richest receiving around eight times the amount of public resources at primary level, increasing to 44 times for secondary education. Like Malawi, the poor hardly benefit at all from spending on higher education in Liberia.

What drives public spending patterns?

Our findings so far point to large pro-rich patterns in expenditure for higher education across all countries in our analysis. This raises a question of the mechanisms by which the differences in spending patterns across education levels emerge. In this section we identify one possible mechanism, namely the share of expenditure allocated at each education level relative to the total size of enrolment at each of these levels. As we will show, this results in an extremely wide variation in unit costs across levels of education for most countries. In particular, higher education unit costs appear disproportionately high, even accounting for the fact that provision of higher levels of education are likely to be more costly (due to smaller class size, need for specialised learning materials, higher staff salaries, costs of research activities, etc).

The distribution of spending on each level of education is not proportional to the size of enrolment

One possible driver of different public spending patterns across levels of education relates to the relationship of the distribution of educational expenditure with the share of enrolments at each level. Recent efforts to expand primary education have resulted in enrolment reaching

unprecedented levels. It is possible that public spending on primary schooling has not kept pace. Meanwhile, higher education enrolment has not increased at the same pace and so remains very low for some countries, while spending at this level might not have changed. This could potentially be reflected in a divergence in unit costs that are disproportionate to the share of total educational expenditure commanded by this level.

To explore this, we look at the distribution of educational spending at each level as a proportion of the total government spending on education (Figure 4a), and compare this with the distribution of access to the different levels of education (Figure 4b). Across all countries in our analysis, the average proportion of total educational expenditure dedicated to higher education is around 20 percent (ranging from around 4% in Ethiopia to 40% in Lesotho). By contrast higher education students as a proportion of total enrolments at all levels of education is much lower: on average just 2.6 percent (ranging from less than one percent in Niger and Tanzania to 13% in Nepal). Enrolment in higher education is more than five percent of the total in just three countries (Bangladesh, Namibia and Nepal) while spending is more than 10% of the total in all but three countries (Gambia, Liberia and Ethiopia). We therefore find that higher education, on average, receives a much larger share of the total expenditure on education compared with its share of enrolments.

In general, countries with narrower inequalities in public spending overall (group 1 in Figure 1) display lower allocations of spending on higher education, and are also closer in terms of the proportion spent on higher education relative to the share of enrolment at this level. Nepal, for instance, allocates approximately 12 percent of its education spending to higher education, and this accounts for 13 percent of total enrolments. Bangladesh shows a very similar trend, with 11 percent of expenditure and 12 percent of enrolments in higher education.

Conversely, countries displaying large overall expenditure gaps between the richest and the poorest (group 3 in Figure 1) show large discrepancies between expenditure and enrolment shares. In Malawi, for instance, 34 percent of total educational spending is allocated to higher education, while less than one percent of total enrolment is at this level. The trend is slightly different in Liberia, where the share of public spending on higher education is much smaller (at five percent) than in the other countries in this wide-inequality group; however, even this share is large compared with the share of enrolments, which is just 1.7 percent for higher education.

It is important to note that we are not suggesting that enrolment and expenditure shares should be the same across all levels of education, as we recognise the larger cost of provision at higher levels of education. As a point of comparison, in OECD countries, higher education also commands a substantial proportion of total public expenditure on education: our calculations using available OECD (2016) data put this at around 27 percent, compared to around 30 percent on primary schooling, and 43 percent on secondary education (which includes post-secondary non-tertiary provision), a fairly even split. This is on a backdrop of essentially universal enrolment in primary schooling, (and in most cases also in secondary schooling) and a rate of higher education access that varies by country between 20 and over

60 percent respectively. This would suggest that higher education attracts a higher proportion of expenditure accounting for the share of enrolments, but one that is far more balanced than a wide majority of the target countries here.

In these target countries, current observed enrolment trends suggest that resources are disproportionately benefiting the rich who are primarily accessing higher education, especially for those in the group of countries we have identified as having wide gaps in public spending by level of education.

Primary education ▪ Secondary education ▪ Higher education
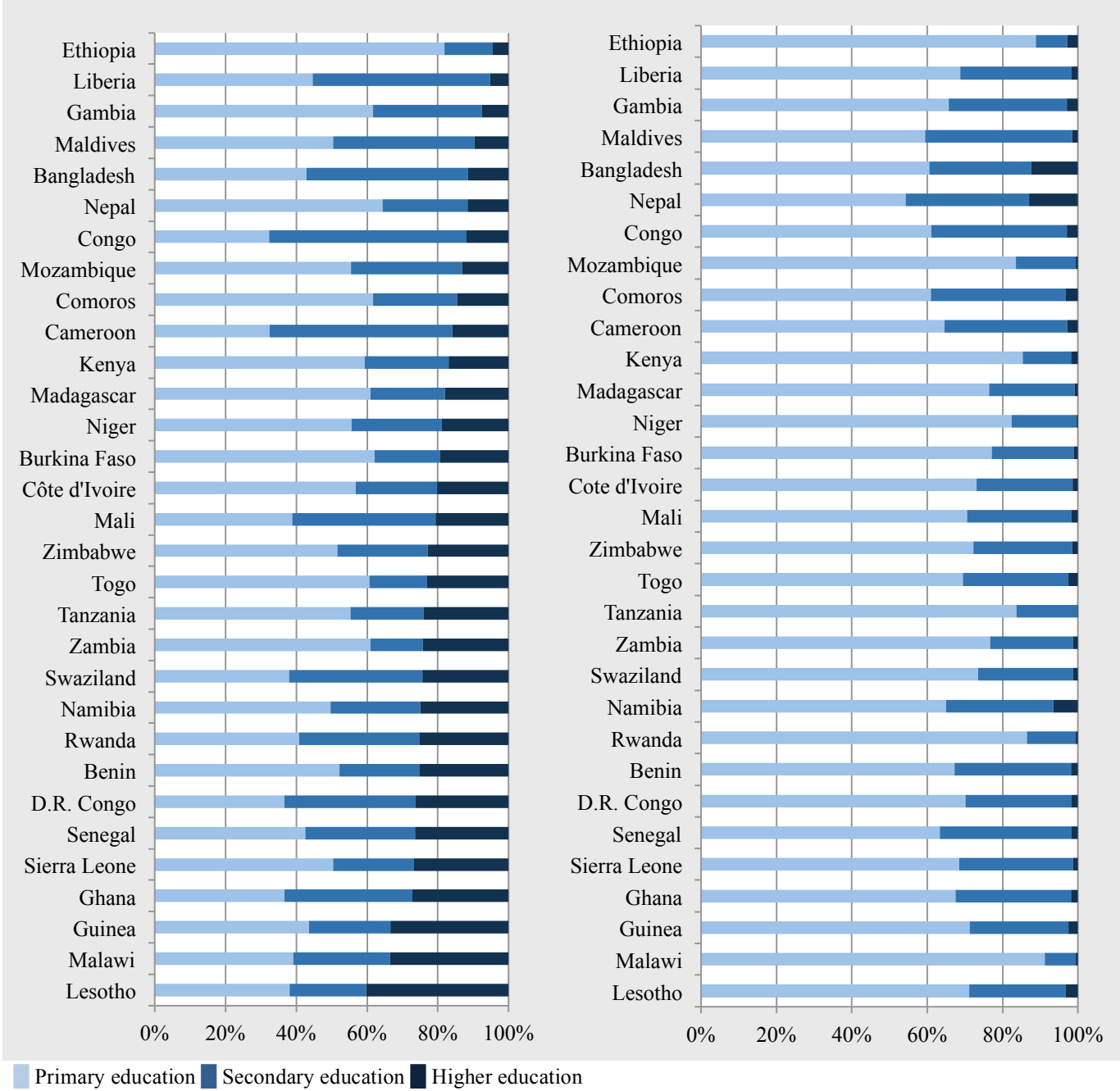
Figure 4(a). Education expenditure by level, as a proportion of total educational expenditure. Source: UIS database

Figure 4(b). Education enrolment by level, as a proportion of total enrolment in education Source: DHS data

Unit-costs vary dramatically between primary, secondary and higher education

Our evidence has shown that many of the countries in our analysis have very small enrolment in higher education relative to total enrolment. Despite the fact that higher education budgets are often disproportionately large compared to the sector size, the fact remains that small numbers are likely to render economies of scale in higher education difficult to achieve. This means that cost per higher education student is likely to be very high.

To investigate this, we compare the cost per student in higher education compared with the cost per student in primary and secondary education. We draw on data reported by countries to UIS: 23 countries of the 31 in our analysis provide these data. We illustrate the difference in unit costs by showing the amount spent on a student in secondary and higher education compared with one in primary school (Figure 5). As such, the bars show how many primary school children could be funded with the same spending as one secondary school student, or one student in higher education. We find that, in narrower inequality group countries such as Nepal and Bangladesh, the difference in unit costs between primary and higher education is small. For example public spending on one student in higher education is equivalent to 1.5 primary school students in Nepal and Bangladesh. By contrast, in Malawi public spending on higher education is equivalent to 148 primary school students.

We also find that the pattern of relative per-capita spending across levels of education supports our previous findings with respect to the extent of expenditure inequalities across the system more generally. Countries such as Nepal and Bangladesh display a consistent pattern of small differences between the per-unit spending at each of the three education levels. Most countries in our second group identified in Figure 1 as having moderate to large inequalities in spending also perform as expected, although Ghana appears to spend more equal amounts on the three levels than others in the group. At the high inequality-spending end, Malawi represents the most extreme case of all countries in our sample.
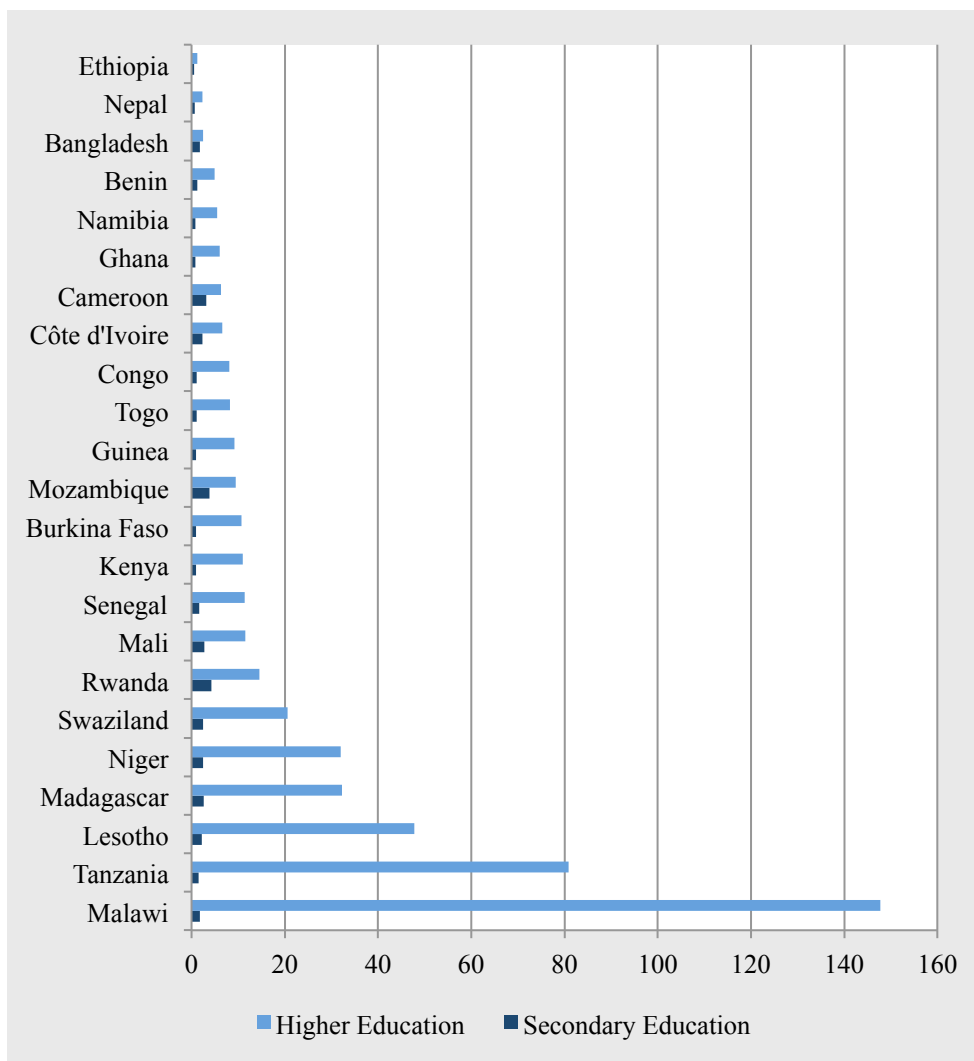
Figure 5. Ratio of per-student educational expenditure in secondary and higher education compared to primary education.

Source: UIS database

These findings suggest that, while higher education systems are relatively small in the countries in our analysis, and may not necessarily receive large proportions of the overall public expenditure on education (as identified in Figure 4), the high unit costs imply large government transfers to the few who are able access it. Given that those accessing higher education are disproportionately rich, the allocation of resources is highly regressive.

As education sub-sectors expand, the unit cost could potentially decrease (for example if the numbers of students per teacher increases at higher levels), but this does not provide a guarantee that the relative shares of spending will change substantially. This suggests that more systematic planning is needed in countries to identify the shares that different levels of education should receive, given resources available and who is able to access each of the levels.

Linking overall benefit incidence to spending on higher education

The results above suggest that the interplay between the size of the higher education sector, the share of expenditures allocated to it, and the underlying inequalities in access to education all represent factors that must be considered when identifying who benefits from public spending on education. The results also raise the question of whether any of these characteristics are systematically related to each other. In particular, we ask how the funding allocations to higher education are linked to inequalities in access and funding within the wider education system. To answer this question, we compare two of the measures we have discussed above: namely the ratio of total educational expenditure on the richest and the poorest decile (the result of our benefit incidence analysis); and the share of total education expenditure allocated to higher education (Figure 6).
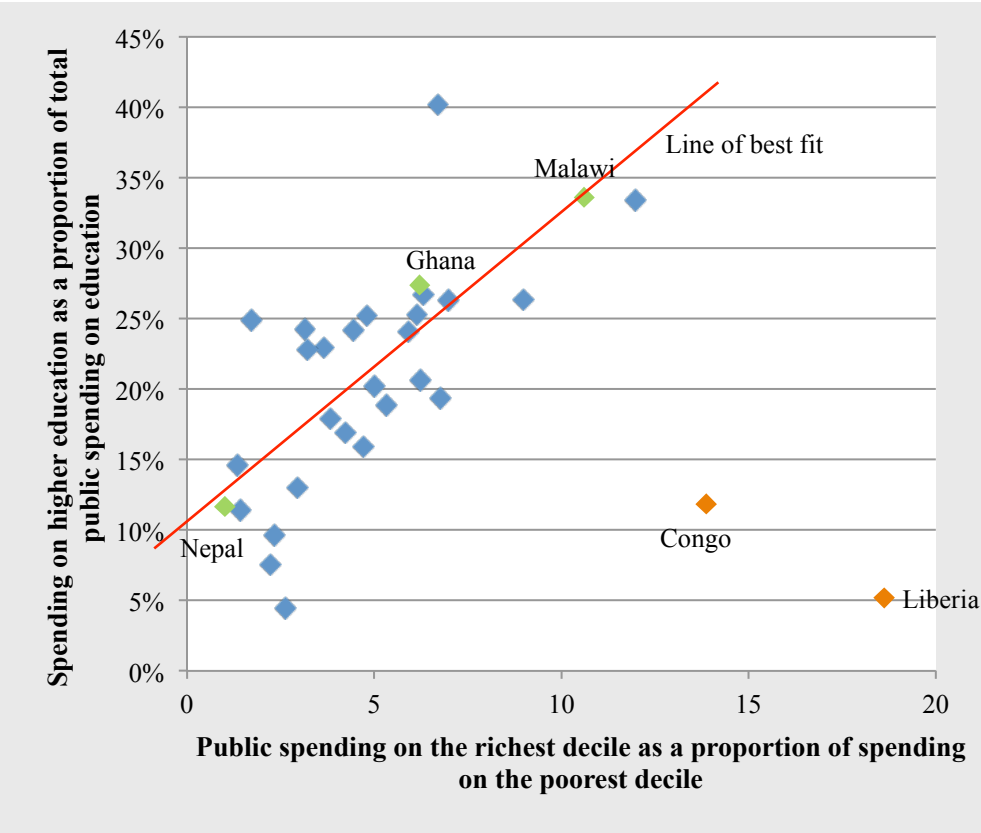

Figure 6. Association between public spending on higher education and overall public spending inequalities

Note: Congo and Liberia are omitted from the line of best fit

We find a relatively strong, positive association between inequalities in spending overall and the share spending allocated to higher education. We note that two countries in the group identified as having high inequality in resource distribution in Figure 1 (Congo and Liberia) represent outliers in terms of their very high gaps between the richest and the poorest, despite spending relatively small proportions of total resources on higher education. Including these two outliers, the correlation between the two metrics using the country as the unit of analysis

is r=.15, p=.39 for all thirty-one countries in the analysis - a non-significant, small correlation. When we exclude the two outliers, the result is a statistically significant strong correlation - r=.72, p<.05 for the set of twenty-nine countries. Thus, when the two outliers are excluded, the correlation implies that as the proportion of public spending allocated to higher education increases so does the overall level of inequality in the system. For example, Nepal displays both low inequalities and relatively low expenditures on higher education; Ghana, one of the countries in the middle-inequalities group, distributes a larger share of education expenditure to higher education, and also exhibits higher overall inequalities; while Malawi is both highly unequal in the total distribution of educational expenditures and spends a large proportion of this on higher education.

We do not, however, observe any association between the proportion of total expenditure allocated to higher education (illustrated in Figure 5) and the degree of inequalities between the richest and the poorest at higher education only (shown in Figure 3(c)). For instance, countries with the highest level of inequalities in higher education spending allocate between around 5% (Liberia) and 35% (Malawi) of their budget to higher education.

A crucial implication emerges from these findings. The strong relationship between overall inequality in public spending across levels of education and higher education's share of that spending points to a need to re-balance spending on higher education, so that the spending on higher education does not come at the cost of perpetuating, or indeed widening, the gaps already present at lower education levels. Only if inequalities at lower levels are addressed will it be possible also to address inequalities in higher education.

Conclusion

In this paper we have presented the results of our benefit incidence analysis with the aim of providing an overview of the patterns of distribution of public education spending on different wealth groups across countries furthest from achieving the sustainable development goal of equal access to higher education. The main results of this analysis point to widening inequalities in public spending on education as the level of education increases. This is in part because those gaining access to higher education are predominantly from rich households in most countries in our analysis. Coupled with disproportionately large allocations of government expenditures to higher education, this leads us to conclude that in many of the countries in this analysis, public expenditure on higher education is currently regressive, with the poorest consistently at a substantial disadvantage compared to the richest.

In addition, we find evidence of a relatively strong relationship between the levels of overall expenditure benefit inequalities in the system and the shares of expenditure that are directed towards higher education. This suggests that current spending patterns are such that relatively large amounts are spent on higher education at the expense of the primary and secondary sectors resulting in regressive spending allocations. Given this analysis is based on cross-sectional data, it would be worth identifying whether patterns will hold in the future as higher education enrolment continues to grow.

In the light of calls to place more emphasis on higher education, its share of total spending on education could increase in the absence of an overall increase in education budgets. We would argue that such proportionate increases may not be desirable in all situations, particularly in those where large wealth-driven inequalities in access to lower levels of education persist. Of particular concern, if additional expenditure on higher education occurs in the absence of any significant expansion of the education system (if recent trends are to continue in many countries included in our analysis were to continue), inequalities already present in the system are likely to be further reinforced, whereby the richest and the most privileged gain access to higher education and benefit disproportionately from additional spending, pulling funds further away from disadvantaged population groups.

Our analysis highlights the importance of disaggregating public education spending to understand the patterns at each level, and indicates the need to consider the most appropriate financing modalities for each level. We do not suggest that higher education does not need additional financing. Indeed, there is an urgent need both to increase access in response to growing demand and, importantly, improve quality, of this sub-sector. But, in countries where higher education spending is currently disproportionately benefiting the rich, this raises questions about whether those who can afford to pay could be sharing more of the financing burden at this level. Consideration of this question would need to be tackled taking account of specific country contexts. Countries around the world are experimenting with different approaches to higher education financing, such as student loans, graduate taxes, vouchers and private provision. The appropriateness of these strategies in poorer countries would need careful consideration including with respect to how this affects the quality of higher education, and who gains access to what type of provision. But our analysis highlights a need to consider new approaches from the status quo where the poor are in effect subsidising the rich to attend higher education. Only then will inequalities throughout the education system be tackled, ultimately leading to the achievement of the sustainable development target of equal access to higher education.

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