

## **Analysing cost-effectiveness of raising learning for marginalised girls through Camfed's programme: A methodological note**

Research for Equitable Access and Learning (REAL) Centre, University of Cambridge

### **Summary**

This note provides an overview of the methodological approach being taken to analyse cost-effectiveness of Camfed's programme in Tanzania and Zimbabwe.<sup>i</sup> It highlights the association between Value for Money and cost-effectiveness, and pays particular attention to the importance of measuring cost-effectiveness from an equity perspective. It further identifies the implications of calculating cost-effectiveness with consideration of sustainability, scalability and replicability of Camfed's programme.

### **What is Value for Money and cost-effectiveness analysis?**

Value for Money and cost-effectiveness have become popular terms in international development circles. With the concern of ensuring efficiency and effectiveness of taxpayers money, Value for Money aims to show how programmes are maximising the impact of each \$ spent to improve education outcomes. Cost-effectiveness analysis is an approach to assess this. Policymakers require this information to allow them to consider different options for achieving their intended policy objectives associated with raising learning outcomes equitably.

Value for Money seeks to understand what drives costs in order to get the best quality at the lowest cost (DFID 2011). As such, Value for Money does *not* necessarily mean the cheapest option, if this option does not achieve the best quality. Less attention has been given to the equity dimensions of Value for Money. It is, however, essential that Value for Money takes account of the fact that the differential costs of reaching the most marginalised populations with the aim of narrowing educational inequalities between advantaged and disadvantaged groups. This is important for programmes such as those supported by Camfed that target marginalised girls, the costs of reaching whom are likely to be higher.

Connecting Value for Money with cost-effectiveness analysis, cost-effectiveness is an approach to calculating how much impact on education outcomes and intervention such as Camfed's achieves relative to the inputs that they invest in it. Cost effectiveness analysis does not intend to provide information on whether an intervention should or should not take place. Rather, by providing a summary of a complex programme such as Camfed's in terms of a simple ratio of costs to outcomes, it allows a comparison:

- By different sub-groups of the population (for example, girls receiving financial support; for the poorest girls; for girls and boys with disabilities)
- Over time (identifying changing patterns once the costs of setting up a programme have been taken into account, for example)
- With other related programmes, aimed at achieving similar outcomes with respect to raising learning equitably, in similar contexts.

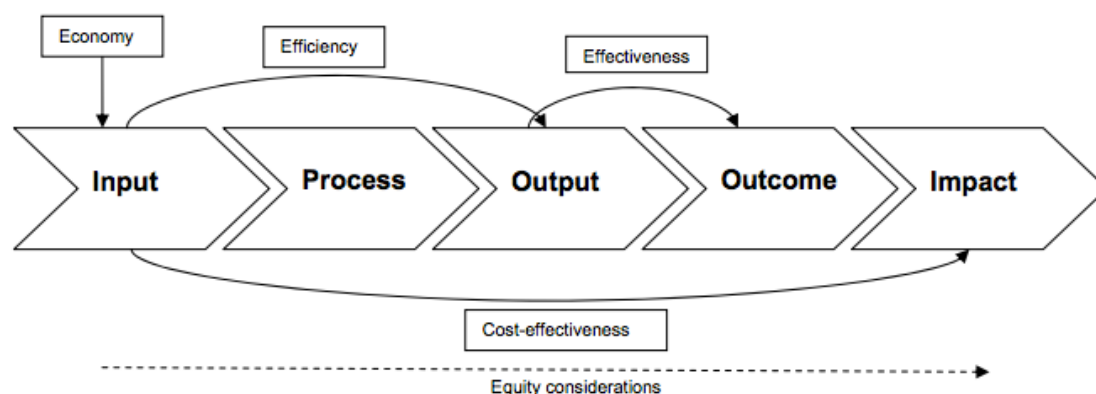
Common approaches to cost-effectiveness analysis calculate the average cost associated with the average improvement in learning. However, this ignores the additional resources that are likely to be needed to support marginalised groups who face multiple forms of disadvantage. Using an equity lens, cost-effectiveness analysis focuses on estimating the additional unit cost of reaching disadvantaged children relative to the increase in learning for these groups that is obtained as a result of the intervention, such that disparities in learning outcomes are narrowed.

Despite recognition of the importance of cost-effectiveness analysis for informing investment decisions on the best interventions to reach a given population group with a quality education, a recent systematic review of education reforms in international development settings concludes that few studies assessing the impact of interventions on learning outcomes collect data on costs. The review was, therefore, not able to report on the cost-effectiveness of interventions identified in the review as achieving an impact on raising learning outcomes. The review concludes that: ‘Collection of cost data as a part of evaluations needs to be a mandatory part of reporting on programme effectiveness’ (Snilstveit et al., 2016).

To the extent that cost-effectiveness analysis has been considered for education (see, for example, Dhaliwal et al., 2012; Evans et al., 2016; Levin and Belfield, 2015; McEwan, 2012; McEwan 2015), it rarely takes account of equity considerations. This gap is further reinforced by the extremely limited evidence on ‘what works’ in education interventions from an equity perspective (Snilstveit et al., 2016). Lessons in assessing cost-effectiveness taking account of equity perspective can be learnt from approaches used in the health sector (see, for example, Asaria et al., 2015; Cookson et al., 2017; Johri and Norheim, 2012).

The two considerations of, first, the need to understand the costs associated with interventions aimed at raising learning and, second, doing so in ways that takes account of equity, is a key motivation for the Research for Equitable Access and Learning (REAL) Centre’s partnership with Camfed. Camfed’s programmes in Tanzania and Zimbabwe are exemplary for this analysis as it has already proven impact in reaching marginalised girls (Box 1; Alcott et al, 2016). In addition, Camfed has maintained a detailed database on the costs of different components of the programme associated with inputs and processes for its delivery (Figure 1). This database has been set up in a way that allows for costs to be linked with the beneficiaries and their schools. Our methodological approach on cost-effectiveness analysis of Camfed’s programme further extends to consideration of cost-effectiveness analysis to considerations of sustainability, scalability and replicability of the programme.

Figure 1: Connecting value for Money and Cost-Effectiveness in Camfed’s programme



<u>Inputs</u>	<u>Process</u>	<u>Output</u>	<u>Outcome</u>	<u>Impact</u>
Financial support Study guides Life skills	Learner guides School-community engagement	Marginalised girls remain in school	Marginalised girls are learning	Learning outcomes associated with SDG 4 increased

Source: Modified from DFID 2011

**Box 1: Camfed’s programme**

The targeted support offered by Camfed through the DFID-funded Girls’ Education Challenge programme provides an innovative example of interventions tackling the multiple dimensions of disadvantage for adolescent girls who make it to secondary school in Tanzania and Zimbabwe.

Camfed’s support targets a range of barriers to girls’ secondary education at an age when girls are at great risk of dropping out due to factors such as poverty, early marriage and teenage pregnancy. Camfed provides further support to tackle the barriers that marginalised girls face within schools that potentially impedes their learning. For the purposes of this note, the following components of the Camfed support are identified for undertaking cost-effectiveness analysis:

Inputs:

- Providing *financial support* by covering direct and indirect costs of schooling for girls who are identified by communities as being most in need of such support.
- Providing *study guides* in the form of supplementary learning materials for core subjects and developing and administering an auxiliary English language programme.
- Developing and distributing *life skills* educational resources through Camfed’s My Better World curriculum.

Process:

- The delivery of the life skills programme is associated with young women school graduates (CAMA graduates) who provide mentoring support as *Learner Guides* in their local schools.
- Providing psycho-social and other support through *school-community* engagement, including training of teacher mentors, parent support groups and with local community authorities.

As part of DFID’s Girls’ Education Challenge programme, between 2013 and 2016, Camfed has provided financial support to 27,856 marginalised girls in secondary schools in Tanzania. In total, interventions in the 201 Camfed-supported secondary schools have reached 88,059 girls and 106,332 boys.

## Data needs for cost-effectiveness analysis

Cost-effectiveness analysis requires, firstly, information on the outcomes of the intervention (and components of this intervention) for different population groups together with, secondly, the costs associated with delivering the intervention. These two sets of data are used, thirdly, to calculate a cost-effectiveness ratio.

The first step is to identify the outcome of the intervention. For Camfed's programme, this information is available through analysis of data that are available from monitoring and evaluation requirements to demonstrate whether the programme has achieved the desired improvement in raising learning outcomes for marginalised girls. The information is obtained from an experimental design, comparing learning outcomes before and after the intervention between schools receiving Camfed's and those in schools which are not receiving Camfed's support. In order to compare the cost-effectiveness of different components of the intervention as well as for different sub-groups of the population, the experimental design allows for this disaggregation by components and sub-groups.

The second step is to identify the costs associated with the different components of the intervention. One of the key requirements is the ability to assign different components of the total cost to each beneficiary from the intervention. In the context of complex and holistic interventions, such as those associated with Camfed's programme, it is important to identify which costs belong to each of the components of the intervention (see Table 1). Assumptions may be needed to assign costs that cut across different components. For example, activities associated with meetings at the national level or with teacher training may support more than one component of the programme.

Table 1: Costs associated with different components and activities of Camfed's support

Activity	Description	Components				
		Financial support	Study guides	Life skills	Learner guides	School-community
1.1	Identify at-risk girls (out-of-school or at risk of dropping out)	x				
1.2	Administer support to meet girls' material needs	x				
1.3	Train teacher mentors to provide psycho-social care					x
1.4	Support school and community initiatives to tackle obstacles to girls' success					x
1.5	District led monitoring to track girls' progress	x				
2.1	Provide supplementary learning materials for core subjects, eg. revision guides		x			
2.2	Develop and administer an auxiliary English language programme (Tanzania)		x			
2.3	Develop an extended curriculum to advance 21st Century skills			x		
2.4	Develop and administer an assessment to test the acquisition of these skills			x		
3.1	Develop training programme and materials for para-educators				x	
3.2	Select and train a group of CAMA 'core' trainers to cascade training to para-educators				x	
3.3	Identify and train a network of para-educators operating through partner secondary schools				x	
3.4	Set up and administer the incentive scheme for para-educators				x	
3.5	Build the capacity of CAMA committees to coordinate para-educator outreach				x	
3.6	Develop CAMA district centres as a hub for the para-educator network				x	
4.1	Strengthen CDCs to ensure rigorous and accountable selection/verification and monitoring for bene	x				
4.2	Train SMCs and roll out a 'Whole School Approach' to school improvement					x
4.3	Train MSGs/PSGs in financial management					x
4.4	Train Resource Team as mentors and advisers to share best practice across districts					
4.5	Support to CDC governance to manage funds					x
5.1	Roll-out mobile technology in monitoring through partner schools and districts [to track 'short-term	x				
5.2	Introductory workshops with headteachers and district education authorities			x		
5.3	Roll-out of mobile phones to para-educators				x	
6.1	Establishment of national advisory groups					
6.2	Meetings with MOESAC, MOEVT, PLSG	x	x	x	x	x
6.3	Engagement with teacher training colleges and examining bodies (NUST, ZIMSEC)			x	x	
6.4	Forums with national education stakeholders to share lessons and key findings					
6.5	Regional exchange between Ministries in Zimbabwe and Tanzania				not included	

Costs associated with different components of the intervention need to be further categorised into:

- **Start-up costs:** One-off costs that are required to set up an intervention. In Camfed’s programme, this would include the development of a new life skills curriculum, for example.
- **Fixed costs:** For example, costs of facilities or equipment, which stays the same regardless the number of children being reached in a given year. An example in Camfed’s programme is the costs of running a district education centre, the costs of which are fixed regardless of the number of girls being supported.
- **Variable costs:** Costs differ depending on the number of beneficiaries. For example, the total cost of financial support in the form of bursaries will vary in a given year according to the number of girls being reached.

A combination of these costs are used to estimate the unit cost of the intervention, taking account of the number of beneficiaries, which may vary depending on the component of the intervention. For example, the unit cost for financial support only takes account of those girls who directly receive this aspect of the intervention. By contrast, Camfed’s study skills’ programme reaches all children in targeted classes in a school, including both boys and girls, so the calculation should also take account of all those who benefit.

With respect to Camfed’s programme, costs are at the level of students, schools, districts and centrally at the national level which are included in the calculation of the unit costs. Costs identified at the national level are assigned across the different components of the intervention. For costs at the district, and school levels, the unit cost per district and school is estimated. Finally, there are components of the intervention directly assigned to beneficiaries (notably direct financial support).

Unit costs also vary according to whether the intervention has initially started (and so includes start-up costs); is being sustained (excluding start up costs); is being scaled-up (for which the fixed costs will be spread across a larger number of beneficiaries); or, once established, is passed on to other organisations, including the government (by which time, it is assumed start-up costs and fixed costs have been covered) (Figure 2). It is not enough just to consider the financial implications for whether aspects of the programme can be sustained, scaled up and replicated. Importantly, political economy considerations need to be taken into account.<sup>ii</sup>

Figure 2: Components of cost-effectiveness analysis of Camfed’s programme

Type of:	Girls financially-supported by Camfed	Girls in supported schools	Girls and boys in Camfed-supported schools
<b>Initial</b> What it cost Camfed the first time	Startup Fixed Variable	Startup Fixed Variable	Startup Fixed Variable
<b>Sustainability</b> What it will cost Camfed next time	Startup Fixed Variable	Startup Fixed Variable	Startup Fixed Variable
<b>Scalability</b> What it would cost Camfed to scale up x 10	Startup Fixed ÷ 10 Variable	Startup Fixed ÷ 10 Variable	Startup Fixed ÷ 10 Variable
<b>Replicability</b> What it would cost if passed on to another organisation	Startup Fixed Variable	Startup Fixed Variable	Startup Fixed Variable
<b>Support</b>	Financial support Study guides Life skills Learner guides School-community engagement	Financial support Study guides Life skills Learner guides School-community engagement	Financial support Study guides Life skills Learner guides School-community engagement

Once the information from the first two steps (on the outcome of the different components of the intervention for different sub-groups, and unit costs associated with these) has been obtained, the third step is to calculate the cost-effectiveness ratio. This is calculated by dividing the unit cost by the estimated change in learning outcomes. From an equity perspective, the cost-effectiveness ratio is estimated for different subgroups of the population.

In order to calculate the cost-effectiveness ratio, it is important to match the cost data to the data on learning outcomes. Such matching of datasets needs to be planned in advance in order to establish direct identifiers between the datasets. In most interventions, data on costs comes from financial transactions which are developed for accounting purposes. Unless there is consideration of undertaking cost-effectiveness analysis in advance, these data on financial transactions may not be directly linked to individual components of the intervention or contain common identifiers for each of the beneficiaries from the programme. These identifiers are required both for individual beneficiaries as well as at different levels of support provided by the programme, for instance to link specific costs to school or community levels. Camfed's data provide a good example of planning in advance in ways that allow for the analysis laid out in this note to be undertaken.

## References

- Alcott, B., Rose P., and Sabates, R. (2016) Targeted, Multidimensional Approaches to Overcome Inequalities in Secondary Education: Case Study of Camfed in Tanzania. Background paper for the International Commission on Financing Global Education Opportunity.
- Asaria, M, et al. (2015) "Distributional Cost-Effectiveness Analysis of Health Care Programmes—A Methodological Case Study of the UK Bowel Cancer Screening Programme." *Health economics* 24(6), 742-754.
- Cookson, R., et al. (2017) "Using cost-effectiveness analysis to address health equity concerns." *Value in Health* 20(2), 206-212.
- Dhaliwal, I., Duflo, E., Glennerster, R. and Tulloch, C. (2013) "Comparative Cost-Effectiveness Analysis To Inform Policy in Developing Countries: A General Framework with Applications for Education", in *Education Policy in Developing Countries*, published by University of Chicago Press.
- DFID (2011) DFID's approach to Value for Money. DFID: London.
- Evans, David K., and Anna Popova. (2016). "Cost-Effectiveness Analysis in Development: Accounting for Local Costs and Noisy Impacts". *World Development* 77, 262-276.
- Kremer, M., Miguel, E., & Thornton, R. (2009). "Incentives to learn". *Review of Economics and Statistics*, 91, 437–456.
- Levin, H. and Belfield, C. (2015) "Guiding the Development and Use of Cost-Effectiveness Analysis in Education", *Journal of Research on Educational Effectiveness*, 8(3), 400-418.
- McEwan, P. (2012). "Cost-effectiveness analysis of education and health interventions in developing countries". *Journal of Development Effectiveness*, 4, 189–213.
- McEwan, P. (2015). "Improving learning in primary schools of developing countries: A meta-analysis of randomized experiments." *Review of Educational Research* 85(3), 353-394.
- Snilstveit, B. et al. (2016) The impact of education programmes on learning and school participation in low- and middle-income countries: a systematic review summary report, *3ie Systematic Review Summary 7*. London: International Initiative for Impact Evaluation (3ie).

---

<sup>i</sup> This work is being generously supported by Echnida Giving. The note has been prepared by Marcos Delprato, Ben Alcott, Pauline Rose and Ricardo Sabates, who are responsible for its content. For further information or feedback, please contact: Professor Pauline Rose at [pmr43@cam.ac.uk](mailto:pmr43@cam.ac.uk).

<sup>ii</sup> The political economy considerations are being addressed in the qualitative component of this study which will accompany the quantitative analysis.