How much do our recommendations cost?

Alaka Holla
Yilin Pan
Why is this not my house?
We make a lot of recommendations.

We rarely estimate costs. When we do, we’re pretty sloppy about it.

These are mistakes.
Budget constraints are real!

How much will this cost?

Is this sustainable?

Can we do this in a cheaper way?

Is this worth the expense?

How should this be implemented?
Inaccurate cost data leads to problems

What if costs are underestimated?

Benefit to cost ratios will be off

We recommend something unsustainable or inefficient
How not to be a subprime mortgage lender
Rest of this talk

- Purposes of costing
- How to collect accurate cost data
- Case 1: Extra year of preschool in Bangladesh
- Case 2: Community-based education in Afghanistan
- Case 3: Costs of reopening schools safely
- Main takeaways
Purposes of costing

- Cost economy
  - How much did/will program cost?
  - How much will it cost at scale?
  - What are the largest drivers of cost?

- Cost efficiency
  - What is the cost per beneficiary?

- Benefit-cost ratio, rate of return
  - Do benefits outweigh costs?

- Cost-effectiveness
  - What is the least expensive way to achieve a certain impact?
Users of cost data

Governments
- Is the program worth it?
- How much will it cost at scale?

Donors
- Is this sustainable?

Financial team of implementer
- Is our annual revenue sufficient to implement the program?

Program management team of implementer
- How many frontline workers do I need to hire?
How do we get cost data?
Cost data

- Budgets and expenditures
- M&E
- Surveys
- Field visits
- Interviews
What is missing from program budgets?
## Little disaggregation

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>School personnel</td>
<td>1,526,545</td>
</tr>
<tr>
<td>Management labor costs</td>
<td>1,432,412</td>
</tr>
<tr>
<td>School maintenance</td>
<td>356,541</td>
</tr>
<tr>
<td>Pre-service training</td>
<td>532,557</td>
</tr>
<tr>
<td>In-service training</td>
<td>239,761</td>
</tr>
<tr>
<td>Materials</td>
<td>424,534</td>
</tr>
<tr>
<td>Equipment</td>
<td>283,449</td>
</tr>
<tr>
<td>Travel</td>
<td>43,211</td>
</tr>
</tbody>
</table>

### Prices

- **Pre-service training**: 532,557
- **In-service training**: 239,761
- **Materials**: 424,534
- **Equipment**: 283,449

**Travel**: 43,211
Little disaggregation

No intervention-specificity
How do we get data that is disaggregated and intervention-specific?
We get it in **real time** during implementation,
...from all contributors.

- Government
- World Bank
- Other donors
- NGOs
- Communities
- Households
CAPTURING COST DATA

This note provides process guidance on how to collect data to measure the cost of interventions.

Financial data that comes from budgets or spending reports can provide much of the data needed to cost interventions. However, this data must be disaggregated and intervention-specific.

Cost estimates must include the comprehensive set of inputs for program delivery, so non-financial information may also be part of cost data capture. This can come from monitoring and evaluation data, interviews with program implementers, and exercises like time- & effort-tracking.

Ideally, cost data is captured in real-time during program implementation. Collecting the data at project close may result in inaccurate or missing data.
Case study 1: Preschool in Bangladesh
Joint with Samuel Fishman, Center for Effective Global Action
What is the cost of adding an extra year of preschool?

Implemented well by Save the Children
High impacts
Piloted in government schools
Accompanying impact evaluation

But when we first ask for financial records....
we got an aggregate budget

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>Cost (Bangladeshi Taka)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EYPP Stipend for teachers</td>
<td>980,000</td>
</tr>
<tr>
<td>Materials</td>
<td>1,500</td>
</tr>
<tr>
<td>Refresher training</td>
<td>117,300</td>
</tr>
<tr>
<td>Festival incentive</td>
<td>286,0000</td>
</tr>
<tr>
<td>Monitoring Visit</td>
<td>2,100</td>
</tr>
<tr>
<td>Preprimary Teachers Salary</td>
<td>525,000</td>
</tr>
</tbody>
</table>

Not intervention costs
We collected data in real-time, from multiple data sources, and from all contributors so that it is disaggregated and intervention specific.....
ESTIMATE 1: $26,834.00
Only based on Meherpur district office budget and financial data (March/April 2018)

ESTIMATE 2: $16,988.00
Non-EYPP line-items identified and excluded

ESTIMATE 3: $130,836.00
Pre-intervention analysis + disaggregation of management time and effort

ESTIMATE 4: $141,947.00
Second pre-intervention analysis after additional data collection and analysis (June 2018)

FINAL ESTIMATE: $157,155.00
Updated with real time data and actual expenditure data (January 2019)
### Different users, different costs

<table>
<thead>
<tr>
<th>Type of cost metric</th>
<th>Total costs</th>
<th>Change from midpoint economic cost</th>
<th>Cost per child per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full economic cost of the EYPP program</td>
<td>$157,155.38</td>
<td>NA</td>
<td>$144.98</td>
</tr>
<tr>
<td>Cost-effectiveness</td>
<td>&quot;&quot;</td>
<td>&quot;&quot;</td>
<td>$144.98 / .26 SD improvement in test scores</td>
</tr>
<tr>
<td>Full economic cost with sensitivity analysis range</td>
<td>$109,778 – $202,617</td>
<td>-30% - 29%</td>
<td>$101.27 - $249.22</td>
</tr>
<tr>
<td>Programmatic costs only (only frontline direct program inputs)</td>
<td>$87,773.39</td>
<td>-44%</td>
<td>$80.97</td>
</tr>
<tr>
<td>SAVE financial costs only (including overhead /management)</td>
<td>$119,157.64</td>
<td>-24%</td>
<td>$109.92</td>
</tr>
<tr>
<td>SAVE financial programmatic costs only</td>
<td>$46,504.75</td>
<td>-70%</td>
<td>$42.90</td>
</tr>
</tbody>
</table>
Case study 2: Cost of Community-Based Education (CBE) in Afghanistan

A chapter of the report “Typology Analysis Of Community-based Education In Afghanistan” led by Tsuyoshi Fukao and Ghazala Mehmood Syed
Community-based Education (CBE) in Afghanistan

- CBE is an alternative pathway to provide access to education for children, especially in remote and rural villages.
- Depending on the funders and the managing agencies, the implementation of the CBE programs could differ drastically.
Community-based Education (CBE) in Afghanistan

Number of Out-of-school Children in Afghanistan

One square == 100,000 children aged 7-17 years old

CBE minimum package defined in *Policy Guidelines*

*Policy Guidelines for Community-Based Education*
- Published by MoE in 2012 and updated in 2018.
- The purpose is to guide program design of CBE programs.

*CBE Minimum Standards Costing Framework*
- Specified the components of the CBE minimum standard package;
- Proposed a minimum and maximum cost for each component.
Components of the CBE minimum standard package

- Teacher salary
- Teacher training
- Classroom kits
- Student kits
- Teacher kits
- Textbooks
- Heating/cooling system
- Shura/community mobilization training
- Rent of building
- Repairs cost
- Maintenance cost (classes)
- Potable water, sanitation and hygiene facilities
- Project implementation staff
- Project monitoring staffing and activities
- Overhead cost
Minimum & maximum cost of the CBE minimum standard package

Example: Cost of teacher salary per child per year (12 months)

<table>
<thead>
<tr>
<th>Grade level</th>
<th>Minimum unit cost ($)</th>
<th>Average unit cost ($)</th>
<th>Maximum unit cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CBE Grade 1-3</td>
<td>36</td>
<td>42</td>
<td>48</td>
</tr>
<tr>
<td>CBE Grade 4-6</td>
<td>45</td>
<td>52.5</td>
<td>60</td>
</tr>
<tr>
<td>CBE Grade 7-9</td>
<td>54</td>
<td>63</td>
<td>72</td>
</tr>
</tbody>
</table>
Policy Questions

- Are the maximum and minimum costs reasonable?

- Is there a heterogeneity in cost based on implementation variation across different CBE programs?
## Modalities of CBE

<table>
<thead>
<tr>
<th>Modality</th>
<th>Implementing agency</th>
<th>Financing agency</th>
<th># of CBE programs we costed out</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MoE model</strong></td>
<td>Ministry of Education in Afghanistan (MoE)</td>
<td>The Global Partnership for Education (GPE)</td>
<td>1 (Closed)</td>
</tr>
<tr>
<td><strong>UN model</strong></td>
<td>UNICEF</td>
<td>USAID</td>
<td>1 (Closed)</td>
</tr>
<tr>
<td><strong>International NGO model (INGO)</strong></td>
<td>International NGOs</td>
<td>International NGOs</td>
<td>3 (All ongoing)</td>
</tr>
<tr>
<td><strong>Local NGO model (LNGO)</strong></td>
<td>Local NGOs</td>
<td>Local NGOs</td>
<td>2 (Both ongoing)</td>
</tr>
</tbody>
</table>
Data sources

- Budgets & financial reports
- Class-level records of teacher and student characteristics
- Memoranda with MoE
- Follow-up interviews and email exchanges with staff who oversee CBE programs in these organizations
Validation example 1: Cost per CBE class reported by Program X

<table>
<thead>
<tr>
<th>No</th>
<th>Details</th>
<th>QTY</th>
<th>Unit Cost (USD)</th>
<th>Frequency</th>
<th>Unit of Frequency</th>
<th>Total (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>School mapping for class establishment</td>
<td>1</td>
<td>80</td>
<td>1</td>
<td>Times</td>
<td>80</td>
</tr>
<tr>
<td>2</td>
<td>Teacher Training</td>
<td>1</td>
<td>170</td>
<td>1</td>
<td>Times</td>
<td>170</td>
</tr>
<tr>
<td>3</td>
<td>Teacher Salary</td>
<td>1</td>
<td>150</td>
<td>1</td>
<td>Months</td>
<td>150</td>
</tr>
<tr>
<td>4</td>
<td>Teacher, Student and Class kits</td>
<td>1</td>
<td>15</td>
<td>1</td>
<td>Times</td>
<td>15</td>
</tr>
</tbody>
</table>

Total cost per year: 415

The costs of the four ingredients cover different periods of time, and therefore cannot be summed up directly without any adjustments.
Validation example 2: Cost per CBE class reported by Program Y

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit of Quantity</th>
<th>Frequency</th>
<th>Unit of Frequency</th>
<th>Unit Cost</th>
<th>Total Cost</th>
<th>Cost per child</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher salary</td>
<td>2</td>
<td>Person</td>
<td>12</td>
<td>Month</td>
<td>$90.00</td>
<td>$2,160.00</td>
<td>$72.00</td>
</tr>
<tr>
<td>Teacher Training</td>
<td>2</td>
<td>Person</td>
<td>1</td>
<td>Once</td>
<td>$150.00</td>
<td>$300.00</td>
<td>$10.00</td>
</tr>
<tr>
<td>Student kit</td>
<td>30</td>
<td>Kits</td>
<td>1</td>
<td>Once</td>
<td>$2.83</td>
<td>$84.90</td>
<td>$2.83</td>
</tr>
<tr>
<td>Teachers kit</td>
<td>1</td>
<td>Kits</td>
<td>1</td>
<td>Once</td>
<td>$2.00</td>
<td>$2.00</td>
<td>$0.07</td>
</tr>
<tr>
<td>Textbooks</td>
<td>30</td>
<td>Packages</td>
<td>1</td>
<td>Once</td>
<td>$4.00</td>
<td>$120.00</td>
<td>$4.00</td>
</tr>
<tr>
<td>Monitoring</td>
<td>1</td>
<td>Team</td>
<td>4</td>
<td>Frequency</td>
<td>$100.00</td>
<td>$400.00</td>
<td>$13.33</td>
</tr>
<tr>
<td>Sum</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$3066.90</td>
<td>$102.23</td>
</tr>
</tbody>
</table>

But the class-level record shows that the average number of teachers per classroom is 1.1, rather than 2.
Validation example 3: Teacher annual salary reported in a multi-year budget

<table>
<thead>
<tr>
<th></th>
<th>Quantity (The number of teachers)</th>
<th>Unit cost($) (Teacher annual salary)</th>
<th>Total cost ($) (Quantity * unit cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>301</td>
<td>710</td>
<td>213,687</td>
</tr>
<tr>
<td>Year 2</td>
<td>341</td>
<td>1,308</td>
<td>446,033</td>
</tr>
<tr>
<td>Year 3</td>
<td>401</td>
<td>1,023</td>
<td>410,255</td>
</tr>
<tr>
<td>Year 4</td>
<td>100</td>
<td>663</td>
<td>66,341</td>
</tr>
</tbody>
</table>

Interview: $1,380 per year

It is very unlikely that teacher salary fluctuates from year to year.
Standardizing the categories

Cost data is unreported:
Missing or non-existent

Cost data is reported
Interpretation of the total cost needs to be cautious because of the missing information.
After cleaning and validating the data, the final cost estimates have smaller variation.
Question 1

Are the maximum and minimum costs reasonable?
Benchmarking the actual cost against proposed cost

Teacher salaries

<table>
<thead>
<tr>
<th>Grade 1-3</th>
<th>Grade 4-6</th>
<th>Grade 7-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>MoE</td>
<td>$91</td>
<td>$91</td>
</tr>
<tr>
<td>UN</td>
<td>$48</td>
<td>$48</td>
</tr>
<tr>
<td>INGO1</td>
<td>$86</td>
<td>$86</td>
</tr>
<tr>
<td>INGO2</td>
<td>$64</td>
<td></td>
</tr>
<tr>
<td>LNOG1</td>
<td>$44</td>
<td></td>
</tr>
<tr>
<td>LNOG2</td>
<td>$35</td>
<td></td>
</tr>
</tbody>
</table>

Average cost per student per year

Source: Authors' calculation
The maximum cost is underestimated for....
The minimum cost is overestimated for....
The cost range is underestimated for...
<table>
<thead>
<tr>
<th></th>
<th>Overestimating</th>
<th>Underestimating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum cost</strong></td>
<td>Not good</td>
<td>Very bad</td>
</tr>
<tr>
<td></td>
<td>Too high to be informative</td>
<td>Not allocating enough resources</td>
</tr>
<tr>
<td><strong>Minimum cost</strong></td>
<td>Bad</td>
<td>Not good</td>
</tr>
<tr>
<td></td>
<td>Potential waste of resources</td>
<td>Too low to be informative</td>
</tr>
</tbody>
</table>

Does it make sense to have one target to all implementers?
Question 2

Is there a heterogeneity in cost based on implementation variation?
Program cost + admin + overhead (cost per student per year)

Teacher salary and the admin cost are the main drivers for the cost heterogeneity.
Number of teachers per CBE is the main factor that affects teacher salary per student per year.

\[
\text{Teacher salary per child per year} = \frac{\text{Teacher annual salary} \times \# \text{ of teachers per class}}{\text{Class size}}
\]

Source: Authors' calculation
Case 3: Cost of Reopening Schools Safely

How much does it cost to implement a school reopening plan?
Joint work with Samer Al-Samarrai and Nobuyuki Tanaka
Financial challenges to operate schools during COVID-19

- **Substantial resources** are needed to reorganize school operations.
- In many countries, economic recession has caused **budget cuts** in education.
Products, purposes and audience

• **Products**: A costing framework and an Excel-based interactive tool

• **Audience**: Government officials who are involved in the planning, budgeting, and financing of school reopening during the pandemic

• **Purposes**:  
  • Identify the additional resources (e.g., personnel, equipment, materials, etc.) and their intensity of use needed to implement a school reopening plan,
  • Estimate the incremental cost of these resources, and
  • Assess whether a funding gap exists.
The costing tool is built upon and supplements the Framework for Reopening Schools.

Framework for reopening schools

June, 2020
## Cost analysis for financial planning

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Economic evaluation</th>
<th>Financial planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of cost</td>
<td>Economic cost</td>
<td>Financial cost for the government/school</td>
</tr>
<tr>
<td>Data collection</td>
<td>Retrospective</td>
<td>Predictive</td>
</tr>
<tr>
<td>Use of results</td>
<td>Descriptive analysis</td>
<td>Prescriptive analysis</td>
</tr>
</tbody>
</table>

- **Cost of adding an extra year of preschool in Bangladesh**
- **Cost of community-based education in Afghanistan**
- **Cost of school reopening**
<table>
<thead>
<tr>
<th>Economic cost</th>
<th>Financial cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Donated resources &amp; volunteers</strong></td>
<td><strong>Market value</strong></td>
</tr>
<tr>
<td><strong>Laptops</strong> (Purchased for COVID-19 response and can be used afterwards)</td>
<td><strong>Amortized cost</strong></td>
</tr>
</tbody>
</table>
What we have learned so far

Four tips to facilitate the utilization of micro-costing to guide the financial planning of school reopening

Context (e.g., location, education level, time period)

Implementation

Total cost vs. additional cost

Uncertainty
Are you interested in estimating the cost of reopening schools for the whole country, a specific region/province/district, or a specific school?
Tip 1: Specify a context (location + education level)

Which education level(s) do you want to cost out? Please specify the grade level(s) of the education level(s).
Which time period does the cost estimate apply to?

Tip 1: Specify a context (location + education level + time period)
Tip 1: Specify a context (location + education level + time period)

The cost of reopening primary, lower secondary and upper secondary education in the whole country in Spring 2021
## Tip 2. Align to a concrete school reopening plan

<table>
<thead>
<tr>
<th></th>
<th>Concrete</th>
<th>Not concrete</th>
</tr>
</thead>
</table>
| **Thermometer**        | “One thermometer will be delivered for every 150 students, with a minimum of 2 per school and a maximum of 10.” | “Materials, activities, and personnel needed for implementation:  
- Thermometer (preferably a no-contact thermometer).  
- .......” |
| **Social-emotional learning** | “Three sessions are proposed which are expected to be worked during the first two hours in the morning with the head teacher. Continuous training should be provided if needed.” | “We will ensure the guidelines and curriculum include appropriate social-emotional learning and mental health supports.” |
Tip 3. Identify the additional resources

Pre-COVID-19

- Resources available in “business as usual” in education

COVID-19

- Unchanged (e.g., teachers’ salary)
- Reallocated (e.g., funding for events → online-learning)
- Additional

The resources to cost out refer to the additional personnel time, facilities, equipment and materials needed over and above the resources available in the business-as-usual situation.
Tip 4. Address the ongoing uncertainty through setting up scenarios

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of schools that provide in-person classes</td>
<td>30%</td>
<td>90%</td>
</tr>
<tr>
<td>% of students who attend in-person classes</td>
<td>20%</td>
<td>60%</td>
</tr>
</tbody>
</table>
Main takeaways
Without accurate cost data, we may be recommending policies countries cannot afford.
Accurate cost data is disaggregated, intervention-specific, collected in real time, from multiple sources.
Make sure you’re looking at the right cost estimate for your purpose.
Cost data helps us learn about implementation
There is a systematic way to incorporate uncertainty, even in data scarce environments
How to get started?
Step-by-step written guidance

Workshops and training resources

Published cost data
We also need staff with costing experience

- Learning by doing
- Hiring staff/consultants with requisite skills
Selected references


• USAID (2020). Cost analysis guidance for USAID-funded education activities.

• World Bank (2019). Capturing cost data.

• ……..
Thank you!

SIEF
Strategic Impact Evaluation Fund

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ypan@worldbank.org