Cost of post-disaster budget reallocations/

DRFI Workshop, FERDI, Clermont-Ferrand

4 - 5 June 2015

Agenda

1. Crown Agents
2. Data compilation
3. Base opportunity cost methodology
4. Background to the assignment

About Crown Agents

We were established

1833

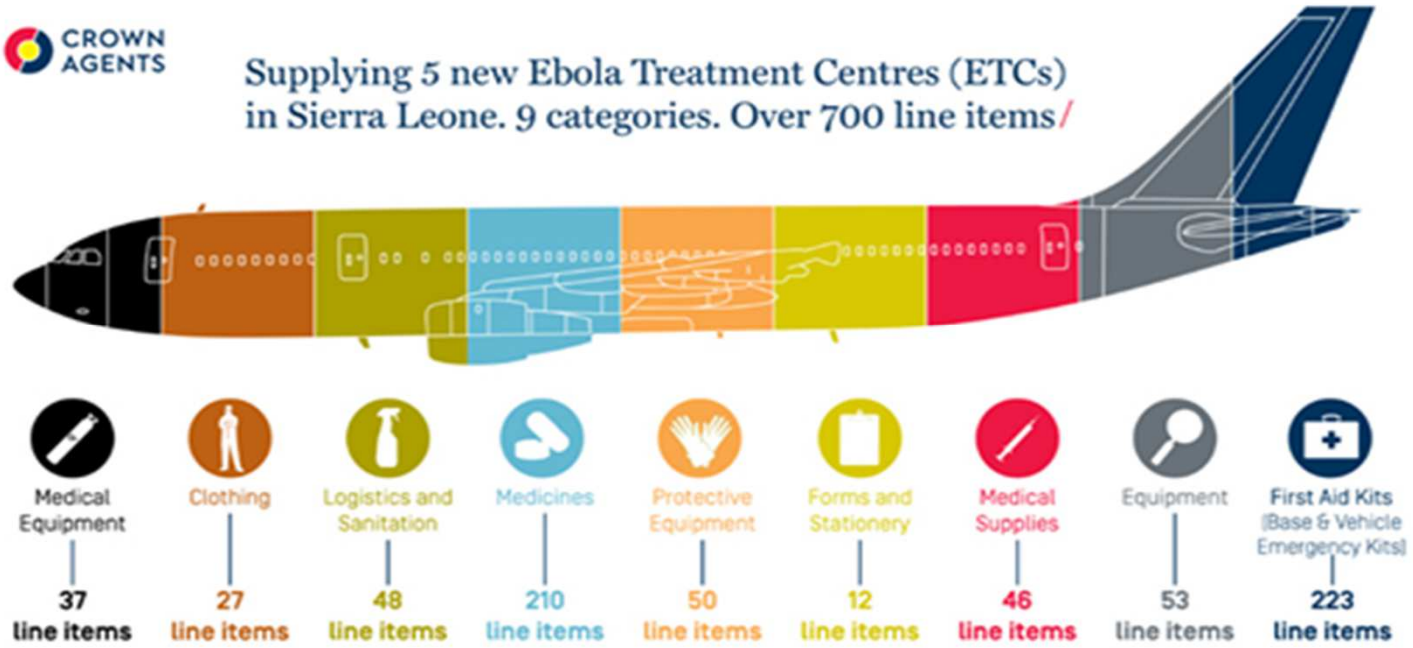
We were incorporated as a UK Public Corporation

1979

Became a private limited company

1997

- Public financial management
- Supply chain services
- Revenue & customs
- Banking
- Disaster relief & reconstruction
- Etc...



Objectives of the assignment

The assignment forms part of the agenda for Phase 2 of the Appraisal Project and aims to

- Understand the extent to which budget reallocation is used for post-disaster financing
- Provide some indication of the opportunity cost of this reallocation
    - The opportunity cost of the budget reallocation includes the benefits forgone as the result of a disruption to government programmes

Delivering the objectives requires:

- Compilations of available country data on disaster impacts and post-disaster budget reallocations
- Develop an approach and methodology for estimating the opportunity cost that *is flexible to adapt to country specific conditions yet with some degree of consistency for comparison across countries*

Expected principal outputs of the assignment

- **Compilation of data on the post disaster fiscal experiences** of selected countries, subject to availability of data - country selection should prioritise low or lower-middle income countries

- **Development of a methodology** to establish the opportunity cost of post-disaster budget reallocation - this methodology should be robust and suitable for sensitivity analysis

- Produce **2-3 case studies** based on the data collected, and develop the anecdotal evidence base

- Provide a summary report of the major findings from the case studies

Data compilation

- Preliminary data availability assessment
  - to assess suitability of country for further work
- Suitability will also depends on the absence of other constraints on the research
  - e.g. as lack of official permissions
  - data access difficulties
  - insurmountable data quality issues
- Substantive country data compilation will focus on gathering data on
  - disasters
  - budget allocations
- Candidate countries include: Philippines; Nepal; Samoa; Haiti; Sierra Leone; and Malawi

Data compilation – data sources

- Country budget reports (from international and country sources)
- Public expenditure and financial accountability (PEFA) assessments
- IMF article IV and staff reports
- Local debt bulletins
- Country audit reports
- Country disaster authority websites
- UNISDR Hyogo Framework for Action (HFA) country reports
- GFDRR PDNAs and other relevant reports
- Sovereign DRFI instruments & strategies

Data compilation – data sources

- Data collected from these sources related to both pre- and post-disaster conditions
- Pre-disaster budget data will cover a period of three years to enable a reliable picture to be built of “normal” budget practices
- Remote and face-to-face interviews of relevant officials and other stakeholders on budget preparation and execution
- Information from PEFA assessments
  - to support other evidence gathered
  - to help form an opinion on reliability of the data gathered from other sources
- Relational database to store, analyse and report on data collected
  - provide a repository and means for cross-referencing and validation of data, and identification of gaps and inconsistencies

Methodology for computing the opportunity cost

- Formal commencement of the research project was 1 May 2015
- The methodology presented is currently the 'first cut'
  - will be refined during the course of the work

The methodology addresses the following three areas

- An assessment of the extent to which budget reallocation is used as a financing mechanism in post disaster situations
- Nature of the reallocations (circumstances in which they come about)
- How the impact can be assessed through computation of the opportunity cost of budget reallocation

Outline of the methodology

Broad outline of the methodology

1. Conceptual framework
2. Extent to which budget reallocations are used as a post disaster financing mechanism
   - will be determined during the data research and selected country case studies
3. Public financial management (PFM) Issues to be taken into account when examining budget reallocations
4. Factors to be taken into account in assessing the opportunity cost of budget reallocations
5. Valuation: estimating the cost-benefit of reallocations
6. Validation of results: undertaking a 'reality check' in relation to other measures (e.g. econometric analysis)
7. Appendices of backup information and documentation
   - Including comprehensive audit trails

Disasters result in

- Immediate impacts (direct loss): loss wealth (assets) and lives
- Secondary impacts (indirect loss) which result in a decrease of outputs (income) and changes in relative prices

The opportunity cost of budget reallocations are determined by the difference between

  - costs of non-disaster budget allocations and
  - costs of the post-disaster budget allocations

- The non disaster budget allocation is an average of the three-year pre-disaster budget
- Opportunity cost of the reallocations are measured using Costs - Benefit analysis of indirect losses in sectors where budget transfers have taken place

Conceptual framework

OC = (Net Output losses from the sectors that have suffered budget transfers(Z))

$$OC = B(X) = \sum_{t=0}^{n} \frac{b_{xi}(t) - cx_i(t)}{(1+r)^t} - K_{xi}$$

Where

B(X)	= the net benefit received by spending £x on sector X
$bx_i(t)$	= the consumption benefits received from goods and services from sector X in year
$cx_i(t)$	= the cost of the production in sector X in year t
Kx_i	= the initial capital outlay (cost) of the programme
r	= discount rate
$1/(1+r)^t$	= the discount factor
i	= no 1 – j of outputs per sector

The scope of the Cost – Benefit analysis includes net gains/losses from all affected sectors

- Net Benefits (net losses/ gains) generated by the investment in the areas where the funds were transferred to (Net Flow (X)); less
- Net losses (net losses/gains) of the disinvestment in those sectors where funds were transferred from(Net Flows from Z), plus

OC = (Net Output gains from the disaster affected sectors (X))- (Net Output losses from the sectors that have suffered budget transfers(Z))

$$OC = B(X) - B(Z) = \sum_{t=0}^{n} \left[\frac{b_i(t) - c_i(t)}{(1+r)^t} - K_i \right] - \sum_{t=0}^{n} \left[\frac{bz_j(t) - cz_j(t)}{(1+r)^t} - K_{zj} \right]$$

Conceptual framework

- The opportunity cost is computed from bottom-up at the sector level and would incorporate all relative price changes including interest rates
- Incorporating additional factors for macro- economic impact would therefore result in double counting
- The assessment of the overall impact on the disaster on the economy could also be done through econometric modelling using sector aggregates
- The sector based approach, however, provides more useful insights into the contribution of government budget behaviour to the impact of disaster

PFM issues to be taken into account

Whether the non-disaster budget is designed to ensure efficiency

- It is assumed that the non-disaster budget is designed to ensure allocative efficiency
  - This is a relevant consideration in estimating the opportunity cost of the indirect losses

Whether public investments projects Cost – Benefit evaluations are undertaken against internal rate of return benchmarks using interest rates and a social discount rate

- The methodology applies discounted cash-flow analysis to indirect costs / benefits
- Two types of indirect costs arise ('technological' and 'pecuniary')
  - The methodology includes technological indirect costs while excluding pecuniary indirect costs because they impact through changes in the relative prices
  - In practice, however, distinguishing between the two may require a fair amount of professional judgement

PFM issues to be taken into account

Whether the budget classifications used generates the required data to support analysis

- How the government budget is presented will affect what data is available
- The methodology is consistent with the Post Disaster Needs Assessment (PDNA) Damage and Loss Assessment (DALA)
  - The DALA framework provides four broad sectors together with their relevant sub-sectors
- The methodology could be adapted for situations where other budget classifications are used
  - for example, the object of analysis could be functional (sectors as in the DALA), economic, programmes, or agency based

Valuing the losses

How are the indirect losses to be valued?

- Valuation of benefits and costs to be at “accounting prices” derived from market prices
- In the absence of markets prices (for most public goods) the methodology suggests the use of shadow prices
  - The shadow prices would be determined by professional judgement

At what rate are they to be discounted?

- The choice of rates would also require professional judgement

Performing the valuation – computing the opportunity cost

Spreadsheet template to be used to capture the following budget information

- Select a disaster and assess the extent to which budget re-allocation is used as a financing mechanism
  - Post disaster situation in the country
- Establish the degree of optimality of the non-disaster budget allocation
  - via use of proxy of the difference between budget bids against approvals
- Establish the estimated cost of post disaster needs
  - via PDNA or from authorities
- Establish the extent of income effect on sectors affected
  - A proxy for the income effect is an unbiased estimate of the budget shortfall as result of the disaster
- Establish the degree of transfers from the non-affected sectors

Performing the valuation – computing the opportunity cost

- Establish the time horizon set by the government for the recovery / reconstruction process
- Establish how the reallocation of the budget was done
  - to determine the nature of budget reallocation
- Establish the prices and quantities of public sector outputs in non-disaster situation
- Establish the prices and quantities of public sector outputs in the post-disaster situation
- Establish shadow prices for public outputs with no market prices
  - Non-market outputs
  - Foreign currency
  - Manpower
  - Social discount rate

Validating the results

- Econometric analyses provide an alternative measure of outputs lost
- Have been used to estimate output losses from disasters
- Based on these models simple rule of thumb relationships have been developed for the size of the disaster and their impacts on GDP growth of these orders
- Provide a means of validating the results of the opportunity cost methodology

Potential difficulties

- Disaster data issues
  - Lack of adequate data (missing DALA / PDNA)
  - Data access difficulties
  - Incomplete disaster databases
- Political issues
  - Lack of permissions or lack of co-operation
- Lack of capacity
  - Absence of country sector experts
- Inadequate PFM systems
  - E.g. inability of budget systems to provide the right budget classifications
  - Inaccurate budget data

Thank you /