Fundraising for operational expenditures in international humanitarian aid

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- Ph.D., AUTH, Greece
  - Specialization: Reverse Logistics in electrical and electronic equipment (e.g. Sony)
- Postdoctoral Research Fellow, INSEAD, France
  - Topics: Humanitarian Logistics, Reverse Logistics in different sectors, Risk management in commercial logistics
- Associate Professor of Humanitarian Logistics, KLU
Content

- Introduction in humanitarian logistics
- Fundraising for operational expenditures in international humanitarian aid
  - Context
  - Research questions
  - Methodology
  - Results
  - Conclusions

Introduction in humanitarian logistics
Humanitarian logistics: Definition

• “Humanitarian Logistics is defined as the process of planning, implementing and controlling the efficient, cost-effective flow and storage of goods and materials, as well as related information, from the point of origin to the point of consumption for the purpose of alleviating the suffering of vulnerable people.”

Thomas (2003)

Importance of humanitarian logistics

• Hundreds of millions are affected by disasters each year and the number is growing: the number of annual natural and man-made disasters has tripled since 1970
• 1974 – 2003: 6.637 natural disasters worldwide that affected more than 5 billion people and caused US$1.38 trillion in damage
• Approximately 80% of disaster relief efforts relate to logistics activities
Imagine organizing the Olympic Games but…

- Not knowing where they will take place
- When they will take place
- How many athletes will take place
- How many volunteers will be
- How many sponsors will be
- How large the audience will be
- Not always under the best conditions…
Fundraising for operational expenditures in international humanitarian aid: The case of the International Federation of Red Cross and Red Crescent Societies (IFRC)
Context

- International humanitarian organizations (IHOs) need funding both at the headquarters and the field levels (operational needs: preparedness, procurement, transportation, inventory, warehousing and distribution)
  - Development and relief programs
- Humanitarian logistics: auxiliary function, not properly included in budgetary efforts
- Operational expenditures linked directly to beneficiaries, e.g. procurement, are easier to justify to the donors and are overstated, while others, like transportation, are more difficult to justify


Funding cycle

Disaster strikes!

Operational Needs

+ Budgeted Operational Expenditures

- Operational Budget Fill (Actual/Budgeted)

+ Actual Operational Expenditures

Donations

+ Budgeted Fundraising Expenses (Fundraising Efforts)
Literature

- Operational implications of fundraising deserve more research (Starr and Van Wassenhove 2014).


Literature

- Demand for humanitarian help exceeds donations (Wakolbinger and Toyasaki 2011).
- Disaster response typically funded by both private and institutional donors.
- Drivers of donations for institutional donors include fundraising expenditures, IHOs performance, location and disaster magnitude (Fink and Redaelli 2011, Bennett and Kottasz 2000, Hyndman and McDonnel 2009).

Literature

- International humanitarian organizations (IHO) in their budget appeals need to prioritize (Starr and Van Wassenhove 2014)


IFRC data description

62 Disaster response operations:
All final reports published in the period Jan 2010 – April 2014

243 Development programs:
All programs running in 2010-2012

- Budget appeal
- Donations raised (cash + in-kind)
  1% from private, 99% from public donors
- Country of operation
- Donations of previous year
- Criticality:
  - Target beneficiaries
  - Type of disaster
  - Disaster magnitude (only relief) (EM-DAT)

1. EM-DAT is an online database maintained by the Centre for Research on the Epidemiology of Disasters (CRED) containing core data on the occurrence and effects of disasters from 1900 to present.
IFRC data description (2)

62 Disaster response operations:
All final reports published in the period Jan 2010 – April 2014

243 Development programs:
All programs running in 2010-2012

Budgeted and actual:
• Fundraising expenditures
• Logistics costs
• Inventory costs
• Asset costs
• Procurement costs
• Construction costs

Additional sources variables description

We integrate in our analysis some variables, that come from external datasets:

- **Development status:**
  - Health of economy: GDP per capita (C.I.A.¹)
  - Infrastructure: Paved roads (km) (C.I.A.)
  - Corruption Index (Transparency International²)
  - Accessibility: Landlocked (C.I.A.)
  - Population (C.I.A.)

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¹ C.I.A. World Factbook provides information about economy, people, government, communication, transportation, geography, history and transnational issues for almost each country worldwide. [https://www.cia.gov/library/publications/the-world-factbook/](https://www.cia.gov/library/publications/the-world-factbook/)

² Transparency International has the mission to encourage transparency and fight corruption. It publishes yearly a “Corruption perceptions index”, where, through expert surveys, it measures the perceived corruption degree of the public sector worldwide. see [http://www.transparency.org](http://www.transparency.org)
Data description – disaster types

In case of relief, we further divide our dataset in the following categories:

<table>
<thead>
<tr>
<th>Type of disaster</th>
<th>Disaster response operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid-onset</td>
<td>41</td>
</tr>
<tr>
<td>Slow-onset</td>
<td>23</td>
</tr>
</tbody>
</table>

- Rapid-onset: flood, storm, volcano, etc.
- Slow-onset: drought, etc.

<table>
<thead>
<tr>
<th>Type of disaster</th>
<th>Disaster response operations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex</td>
<td>16</td>
</tr>
<tr>
<td>Non-complex</td>
<td>46</td>
</tr>
</tbody>
</table>

- Complex emergency: when more than one type of disaster occurs at the same time (e.g.: earthquake + tsunami)

Research questions: what do we investigate?

1. Which factors affect budgeted operational expenditures (logistics, inventory, procurement, asset and construction) in case of relief and development programs?

- Country profile?
  - Preparedness can reduce impact (Kovács and Spens 2009)
  - Infrastructure status impacts costs (Balcić et al. 2008)
- Criticality of program?
  - Number of affected people drives needs (Jahre and Navangul 2011)
Research questions: what do we investigate?

2. Which factors affect budgeted fundraising expenses?
   - Operational expenditures?
     - Beneficiary-oriented activities are easier funded (Van Wassenhove 2006)
   - Criticality?
     - Unpopular emergencies need more fundraising (Wakolbinger and Toyasaki 2011)
   - Country profile?

3. Which are the drivers of donations for institutional donors?
   - Operational expenditures?
   - Fundraising?
     - (Waters 2009, Okten and Weisbrod 2000)
   - Criticality?
     - Popularity and media attention (Wakolbinger and Toyasaki 2011, Walker and Pepper 2007, Balaisyte et al. 2011)
   - Country profile?
Research questions: what do we investigate?

4. Which factors drive operational budget fill (actual/budgeted)?
   - Fundraising?
   - Criticality?
   - Country profile?
Methodology

• Multiple regression analysis, with Ordinary Least Squares (OLS) and two-stages least square (2SLS)
• Log-Log model
• Use of robust standard errors when Heteroskedasticity$^1$ is identified
• Cook’s Ds for Outliers analysis (max D ≤ 1 for classic OLS)$^2$

Sources:

Models – RQ2 (Relief)$^3$

$log\text{FundraisingBDG} = \beta_0 + \beta_1 log\text{BudgetAppeal} + \beta_2 \text{LogisticsBDGratio} +$
$\quad + \beta_3 \text{InventoryBDGratio} + \beta_4 \text{ProcurementBDGratio} + \beta_5 \text{AssetBDGratio} +$
$\quad + \beta_6 \text{ConstructionBDGratio} + \beta_7 \log\text{TargetBeneficiaries} + \beta_8 \log\text{DisasterMagnitude} +$
$\quad + \beta_9 \text{RapidEmergency} + \beta_{10} \text{ComplexEmergency} + \beta_{11} \log\text{GDPpercapita} +$
$\quad + \beta_{12} \log\text{PavedRoadsKm} + \beta_{13} \text{Landlocked} + \beta_{14} \log\text{Population} +$
$\quad + \beta_{15} \log\text{CorruptionIndex} + \epsilon$

• LogisticsBDGratio – Budgeted logistics costs / Budget appeal
• …
• RapidEmergency – Dummy coded variable. Ref: slow-onset emergency
• ComplexEmergency – Dummy coded variable. Ref: non-complex emergency
• Landlocked – Dummy coded variable. Ref: non-landlocked
MARIA: I thought to show better this model (it is the only one that I am showing in my presentation) as you have the change to explain what LogisticsBDGratio and the other ratios are.
Laura Turrini; 27.10.2015
Results

RQ1: Drivers of BDG expenditures (Relief)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>(intercept)</td>
<td>4.24 (0.17)</td>
<td>-4.48 (0.47)</td>
<td>3.12 (0.20)</td>
<td>-5.22 (0.28)</td>
<td>3.36 (0.12)</td>
<td></td>
</tr>
<tr>
<td>TargetBeneficiaries</td>
<td>0.52*** (0.001)</td>
<td>0.74*** (0.000)</td>
<td>0.44** (0.006)</td>
<td>0.53*** (0.001)</td>
<td>0.36 (0.20)</td>
<td></td>
</tr>
<tr>
<td>DisasterMagnitude</td>
<td>0.09 (0.39)</td>
<td>0.11 (0.39)</td>
<td>0.15 (0.02)</td>
<td>-0.12 (0.67)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RapidEmergency</td>
<td>0.38 (0.23)</td>
<td>0.31 (0.44)</td>
<td>1.08** (0.04)</td>
<td>-0.68 (0.74)</td>
<td>0.41 (0.79)</td>
<td></td>
</tr>
<tr>
<td>ComplexEmergency</td>
<td>-0.39 (0.34)</td>
<td>-0.07 (0.30)</td>
<td>0.13 (0.57)</td>
<td>-0.22 (0.99)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDPperCapita</td>
<td>-0.05 (0.80)</td>
<td>0.43 (0.01)</td>
<td>-0.04 (0.67)</td>
<td>0.72* (0.04)</td>
<td>0.64 (0.62)</td>
<td></td>
</tr>
<tr>
<td>PavedRoadsKm</td>
<td>0.11 (0.09)</td>
<td>0.16 (0.07)</td>
<td>0.03 (0.57)</td>
<td>-0.09 (0.79)</td>
<td>-0.22 (0.95)</td>
<td></td>
</tr>
<tr>
<td>Landlocked</td>
<td>0.67 (0.92)</td>
<td>1.04 (0.05)</td>
<td>0.17 (0.57)</td>
<td>-0.53 (0.17)</td>
<td>-1.68* (0.04)</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>-0.01 (0.38)</td>
<td>0.02 (0.56)</td>
<td>0.13 (0.24)</td>
<td>0.18 (0.35)</td>
<td>0.32 (0.56)</td>
<td></td>
</tr>
<tr>
<td>CorruptionIndex</td>
<td>0.01 (0.99)</td>
<td>-0.33 (0.43)</td>
<td>0.21 (0.81)</td>
<td>0.03 (0.98)</td>
<td>-0.81 (0.61)</td>
<td></td>
</tr>
</tbody>
</table>

N 61 48 62 49 28
F 3.31 3.64 6.78 6.29 2.34
Prob > F 0.003 0.002 0.0000 0.0000 0.08
R²(Adj) 0.41(30) 0.46(53) 0.49(41) 0.53(43) 0.27(-23)
RQ1: Drivers of BDG expenditures (Relief)

- Target beneficiaries $\uparrow$ BDG expenditures
- Disaster magnitude $\uparrow$ BDG procurement expenditures
- Rapid emergency $\uparrow$ BDG expenditures than slow emergency

Disaster profile: Higher needs, Congestion/Saturation, Stronger time constraint and saturation effect

RQ1: Drivers of BDG expenditures (Relief)

- GDP $\uparrow$ BDG asset expenditures
  GDP $\downarrow$ probability of needing asset expenditures
  Less needs, higher costs
- No other significant influence of country profile can be found

Criticality? (They are significant for development!)

Lack of data?
RQ1: Drivers of BDG expenditures (Development)

Country profile

- GDP per capita ↘ probability of needing BDG operational expenditures and: GDP per capita ↘ BDG operational expenditures.  
  More stable market

- Perceived corruption ↘ probability of having BDG expenditures and: Perceived corruption ↘ BDG operational expenditures.  
  Donors’ reluctance?
Logistic regression is at the end if you need it
Laura Turrini; 27.10.2015
RQ1: Drivers of BDG expenditures (Development)

- Appeal fill previous year ↑ (probability of needing) BDG procurement expenditures.

RQ2: Drivers of BDG fundraising

- (Relief) Proportion of procurement costs ↓ BDG fundraising expenditures.
- (Relief) Proportion of construction costs ↑ BDG fundraising expenditures.
- (Development) Proportion of logistics costs ↑ BDG fundraising expenditures.
- (Relief) No other effect is found.
Logistic regression is at the end if you need it
Laura Turrini; 27.10.2015
RQ3: Drivers of donations

- Fundraising \( \uparrow \) Donations Awareness
- Procurement ratio \( \uparrow \) Donations (relief) Visibility / Beneficiaries-oriented
- Target beneficiaries \( \uparrow \) Donations (relief)

More output?

RQ3: Drivers of donations (Relief) - Comparisons

Rapid vs. slow-onset emergencies:
- Fundraising’s impact \( \downarrow \) Rapid emergencies.
- Disaster magnitude \( \uparrow \) Donations for slow-onset emergencies.
  
  Stronger time constraint \( \Rightarrow \) Decisions depend on less factors

Complex vs. non-complex emergencies:
- Disaster magnitude \( \uparrow \) Donations for complex emergencies.
  
  Complex emergencies \( \Rightarrow \) Decisions depend on more factors

No differences in fundraising policies!
RQ4: Drivers of operational budget fill (Relief)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-4.04</td>
<td>-11.77</td>
<td>-3.63</td>
<td>-20.47*</td>
<td>-2.25</td>
<td></td>
</tr>
<tr>
<td>CostBDG</td>
<td>-0.31*</td>
<td>-0.50***</td>
<td>-0.04</td>
<td>-0.66***</td>
<td>-0.46***</td>
<td></td>
</tr>
<tr>
<td>FundraisingACT</td>
<td>0.42**</td>
<td>0.66***</td>
<td>0.47</td>
<td>0.61**</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>AppealFill</td>
<td>2.07**</td>
<td>3.47*</td>
<td>2.81</td>
<td>4.48**</td>
<td>-0.05</td>
<td></td>
</tr>
<tr>
<td>TargetBeneficiary</td>
<td>-0.25</td>
<td>0.47</td>
<td>-0.37</td>
<td>0.76*</td>
<td>-0.01</td>
<td></td>
</tr>
<tr>
<td>DisasterMagnitude</td>
<td>-0.04</td>
<td>-0.29</td>
<td>0.11</td>
<td>-0.18</td>
<td>-0.001</td>
<td></td>
</tr>
<tr>
<td>RapidEmergency</td>
<td>-0.42</td>
<td>1.25</td>
<td>0.45</td>
<td>0.34</td>
<td>2.56</td>
<td></td>
</tr>
<tr>
<td>ComplexityEmergency</td>
<td>-0.56</td>
<td>-0.17</td>
<td>-0.02</td>
<td>-0.31</td>
<td>0.84</td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td>0.19</td>
<td>0.81</td>
<td>0.24</td>
<td>0.08</td>
<td>-0.47</td>
<td></td>
</tr>
<tr>
<td>Paved RoadsKm</td>
<td>-0.05</td>
<td>-0.02</td>
<td>-0.05</td>
<td>-0.16</td>
<td>-0.31</td>
<td></td>
</tr>
<tr>
<td>Landlocked</td>
<td>0.94</td>
<td>-0.02</td>
<td>0.11</td>
<td>0.18</td>
<td>-0.13</td>
<td></td>
</tr>
<tr>
<td>Population</td>
<td>0.06</td>
<td>0.11</td>
<td>0.23</td>
<td>0.14</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>CorruptionIndex</td>
<td>0.17</td>
<td>-1.29</td>
<td>0.22</td>
<td>2.69</td>
<td>1.70</td>
<td></td>
</tr>
</tbody>
</table>

Conclusions

- Criticality of the program plays an important role! Very little effect of country conditions (GDP, etc.) on budget for relief programs

- Fundraising effort increases for budgeted expenses with low visibility [logistics (development) and construction (relief)] and decreases for expenses with high visibility [procurement (relief)], but is not tailored on other kind of donors’ preferences

- Donors awareness increases the budgeted cost fill for operational costs

- Fundraising expenditures ➤ Fill of Logistics, Inventory and Asset expenditures

- Appeal fill ➤ Fill of Logistics, Inventory and Asset expenditures

- Other effects

- Over/under estimations

- Similar results in the case of development
Future research

- Organizations depending on private donors
- Decision optimization model
- Impact of donor proximity
- Integration of political aspects

Thank you!