Conflict, Aid and Poverty: Cause, Effect and Prediction

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Shahriar R Kibriya
Department of Agricultural Economics
Graduate Fellow, Texas A&M University
Shahriar@tamu.edu

David Bessler
Department of Agricultural Economics
Professor, Texas A&M University
D-Bessler@tamu.edu

Edwin Price
Department of Agricultural Economics
Professor, Texas A&M University
Ec-price@tamu.edu

Rajorshi Sen Gupta
Department of Agricultural Economics
Tom Slick Fellow, Texas A&M University
rajorshi@tamu.edu

ABSTRACT

Recent studies and reports suggest that foreign aid/intervention has been somewhat futile in eradicating conflict. In this study, we develop a simultaneous donor/recipient model of foreign aid and terrorism. Thereafter, we extend our theoretical propositions through a machine learning algorithm of inductive causation. We find that terrorism increases foreign aid, however foreign assistance is futile in mitigating terrorism. Additionally, socio-economic factors influence foreign aid given by the donors. But foreign assistance is unsuccessful in enhancing the livelihoods of the underprivileged. We conclude that foreign aid policies need to be more efficient.

OVERVIEW

- In the last seven years 638 billion dollars were devoted towards foreign development projects with an average increase of 8.7% every year.
- Yet 48% of the total population in the developing countries had to confront some kind of intra/international conflict in the year 2007.

PROBLEM STATEMENT

- Does foreign aid reduce terrorism and enhance socio economic conditions?
- How does terrorist activities influence foreign aid and other socio-economic indicators?

Research Approach

Theoretical Motivation

- We develop a simultaneous move, single period model where the donor disburses foreign aid and the recipient chooses level of effort to decrease terrorism.
- We establish a theoretical relationship between the donor's aid response to recipient's chosen level of terrorism.

Empirical Motivation

We use a inductive causation method to work around the endogeneity problem related to foreign aid and terrorism.

Data

- Yearly Data on country wise terrorist activities from 1970 were collected from University of Maryland's Global Terrorism Database.
- Yearly data on foreign aid were collected from OECD Database.
- Yearly data on development indicators were collected from World Bank's various databases.

Theoretical Model Structure and Assumptions

Donor: Developed nations like United states, United Kingdom, Japan, Australia, Germany etc. Multilateral and Unilateral agencies like World Bank, Asian development Bank, Gates Foundation.

Recipient: Conflict laden developing countries like: Afghanistan, Iraq, Pakistan, Ethiopia, Nigeria etc.

- *Donor and Receiver make their decision simultaneously.*
- *The level of foreign aid (A) is chosen by the donor.*
- *Recipient exerts effort to decrease terrorism (T).*
- *Donor's and Recipient's utilities increase as terrorism decrease.*
- *Donor's welfare (V) is a decreasing function of aid.*
- *Receiver's welfare (W) is an increasing function of aid.*
- *Donor's welfare is amount of aid disbursed less the level of terrorism.*
- *Receiver's welfare is a function of aid and terrorism less the cost of reducing terrorism.*

Objective

Discover the causes and effects of foreign aid and terrorism on each other and germane development indicators.

Theoretical Model

Donor's Objective Function: $\underset{\{A\}}{MAX}\ V(T)-A$ *where* $V'(T)<0,\ V''(T)<0$

where $T = T^*$ *is chosen by the Receiver*

Recipient's Objective Function: $\underset{\{T\}}{MAX}\ W(A,T)-C(T)$ *where* $W_A>0, W_{AA}>0, W_T<0, W_{TT}<0,$ $W_{AT}=\frac{\partial}{\partial A}\left(\frac{\partial W}{\partial T}\right)>0$

where $A = A^*$ *is chosen by the Donor*

First Order Conditions

$$\frac{\partial V(T^*)}{\partial T^*}\cdot\frac{\partial T^*}{\partial A}-1=0 \qquad (1)$$

$$\frac{\partial W(A^*,T^*)}{\partial T}+\frac{\partial W(A^*,T^*)}{\partial A^*}\cdot\frac{\partial A^*}{\partial T}-\frac{\partial C(T^*)}{\partial T}=0 \qquad (2)$$

We want to find $\left(\frac{\partial T}{\partial A}\right)$

Comparative Static Results

From Donor's First Order Condition

$$(1)\Rightarrow\frac{\partial T}{\partial A}=\frac{1}{\partial V/\partial T}\quad\Rightarrow\quad\frac{\partial A}{\partial T}=\frac{\partial V}{\partial T}<0\longrightarrow$$ *Slope of* ***Donor's Reaction Function***

Donor gives foreign assistance to decrease Terrorism.

As Terrorism decreases, the donor gives more Aid.

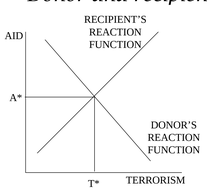
From Recipient's First Order Condition

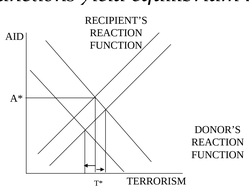
$$(2)\Rightarrow\frac{\partial A}{\partial T}=\frac{C'(T)}{W_A}-\frac{W_T}{W_A}>0\longrightarrow$$ *Slope of* ***Recipient's Reaction Function***

Recipient decreases effort to reduce Terrorism & therefore gets more Aid

Graphical Illustration

Donor and recipient's Reaction Functions yield equilibrium levels of {T*, A*}





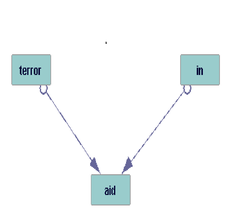
Implication: The impact of aid on terrorism is ambiguous!

Empirical Methodology

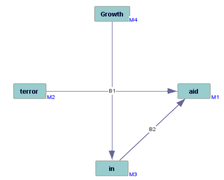
*A directed graph is an illustration using arrows and vertices to represent the causal flow among a set of variables. A graph is an ordered triple <**V,M,E**> where **V** is a non-empty set of vertices (variables), **M** is a non-empty set of marks (symbols attached to the end of undirected edges) and **E** is a set of ordered pairs. Each member of **E** is called an edge. Vertices connected by an edge are said to be adjacent. If we have a set of vertices {A,B,C,D} the undirected graph contains only undirected edges (e.g. A -B). A directed graph contains only directed edges (e.g. C -D). It is helpful and valid to use terms from genealogy when referring to variables and their position in a causal structure as, for example, parents, grandparents, children, grandchildren, ancestors or descendents, etc. So in the path A -> B -> C<-D, the variables A, B and D are ancestors of variable C. Variable C is a descendent of variables A, B and D. The independence structure of "causal forks" and "causal chains" follow inductive logic as well, as a middle variable in each given above (B and D) "screens off" association between the respective end variable (A).The screening-off phenomena associated with common effects, causal chains and common causes have been recognized in the literature for some fifty years now; for example, Orcutt (REStat. 1952), Simon (Studies in Econometric Method, New York,1953) and Reichenbach, (Direction of Time University of California Press, 1956).However, it is only recently that they have been formally introduced into the literature for assigning causal flows among three or more variables. Key to this modern re-birth is the technical work of Pearl and his associates (Pearl, Causality, Cambridge UK, 2000) and Spirtes, Glymour and Scheines (Causation, Prediction and Search Cambridge, MIT Press, 2000). Applications include Bessler and Akleman (AJAE 1998), Bessler and Lee (Empirical Economics 2003), Hoover (Ecmt Theory 2005) and Moneta (Empirical Economics 2008). Directed acyclic graphs are pictures (illustrations) for representing conditional independence. Directed acyclic graphs are pictures (illustrations) for representing conditional independence as given by the recursive decomposition:*

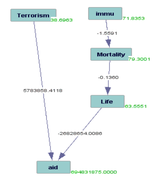
$$P(V_1,V_2,\ldots V_n)=\prod_{j=1}^{n}P(V_j|pa_j)$$

Directed Acyclic Graph Results

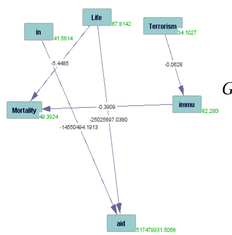


FCI algorithm, portrays inequality and terrorism is causing aid in the presence of latent variables.

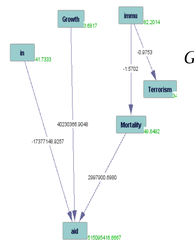




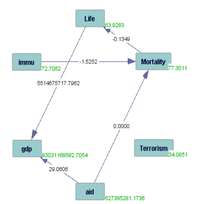
GES algorithm portrays aid is caused by development indicators



GES predicts Terrorism but not aid to be the root cause of development indicators



GES shows all the development indicators causing aid and terrorism



Aid is increasing infant mortality and GDP. Terrorism remains unaffected

Conclusions and Suggestions

- ✓ Terrorism causes aid to increase in the case of simultaneous moves by the donor and recipient.
- *Empirically, terrorism has positive effect on foreign aid in contemporaneous time, however an increase in aid does not decrease terrorism*
- ✓ Decline in development indicators increases the level of foreign aid.
- *Increase in foreign aid does not enhance the socio-economic conditions of recipient country*
- ✓ Aid is provided to the nations that need it the most.
- *Due to short sighted forecast, slow reaction times and implementation, foreign aid fails to achieve its required goals.*
- *Donors must react quicker, improve aid monitoring system and make efficient use of their resources to assist the impoverished people of the conflict laden nations.*