Military Aid, Direct Intervention and Counterterrorism

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- In our context, the second party is a country B where a terrorist group is settled. The terrorist group constitutes a threat to both these country’s interests.
- Our purpose is to identify the elements that may trigger direct intervention. Our focus is the interaction between country A and country B’s effort to reduce the base from which the terrorists build up their resources, these are not necessarily just military actions.
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Our modelling follows Bandyopadhyay et al (2011): our main contribution is the introduction of direct intervention and the calibration method which allows us to determine the likelihood of internal solutions.
Model assumptions

Timing

- **Stage 1**: Country H decides how much to subdize counterterrorism efforts of country F, \( \alpha \), how much to invest on defending themselves against a possible terrorist attack \( e^H \), how much to directly intervene in country F directly in counterterrorism effort \( e^{HF} \).
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- **Stage 2**: Country F decides how much to invest in counterterrorist effort \( e^F \).
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- **Stage 2**: Country F decides how much to invest in counterterrorist effort \( e^F \).

- **Stage 3**: Terrorist group (the base in country F) decides how much to invest in terrorist attacks in country H or country F: \( a^H \) and \( a^F \).
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The game is solved backwards in order to find the Subgame Perfect Equilibrium.
Main features

- There is a risk that direct intervention by country H will actually generate a "regime change" in country F which will increase the chances of success of terrorist attacks everywhere:
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The counterterrorist efforts of countries H and F interact to diminish the resources available to the terrorists. We allow for different degrees of substitutability: \( a^H + a^F = M(e^F, e^{HF}) ; \quad M_1, M_2 < 0 \).
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- Probability of a successful attack on country H’s territory:
  \[ \sigma^H = \sigma^H(e^H, a^H) ; \quad \sigma_1^H < 0, \sigma_2^H > 0. \]
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- A terrorist attack on country F’s territory can also damage country H’s interests.
Objective functions

- For country H, expected national income:

\[ Y^H = \bar{Y}^H - \left(1 + p^F \eta\right) \left[T^H \sigma^H + T^{HF} \sigma^F\right] - (e^H + e^{HF} + \alpha e^F) \]

where \( T^H \) and \( T^{HF} \) are terrorist attack costs inflicted on the H country through their interests in their own territory and in the other country’s territory.
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- For country F, expected national income:
  \[ Y^F = \bar{Y}^F - \left(1 + p^F \eta\right) \sigma^F T^F - e^F (1 - \alpha) \]
  
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- For the terrorists expected damage on the H and F countries with weights \( \phi^H \) and \( \phi^F = 1 - \phi^H \) respectively:
  \[ U^T = (1 + p^F \eta) \left[ \phi^H \left( T^H \sigma^H + T^{HF} \sigma^F \right) + \phi^F T^F \sigma^F \right] \]
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Analytical results

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as we proceed to the second stage we find that the whereas the military subsidy to the foreign government has a clear positive impact on foreign effort, the impact of both defensive and direct intervention efforts are ambiguous.
Simulation results

- our calibration shows a positive impact of the military subsidy on foreign effort and identifies a negative impact of direct intervention on foreign effort for both imperfect and perfect substitution in the two efforts in the reduction of terrorist resources.
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- the calibration of the model also shows that direct intervention is only likely to be part of the equilibrium result if the foreign and home effort are not good substitutes in the technology used to reduce the resources of the terrorist group.
Figure: 1: stage 2 response to $\alpha$ for home country. $e^H = 0.38$, $e^{HF} = 0$. 
Figure: 2: stage 2 response to $\alpha$ for Foreign Country. $e^H = 0.38$, $e^{HF} = 0$. 
Figure: 3: stage 2 response to $e^H$ for home country, $\alpha = 0.21$, $e^{HF} = 0$. 
Figure: 4: stage 2 response to $e^H$ for foreign country, $\alpha = 0.21$, $e^{HF} = 0$. 
Figure: 5: stage 2 response to $e^{HF}$ for home country, $\alpha = 0.21$, $e^H = 0.38$, efforts perfect substitutes.
Figure: 6: stage 2 response to $e^{HF}$ for foreign country, $\alpha = 0.21$, $e^H = 0.38$, efforts perfect substitutes.
Figure: 7: stage 2 response to $e^{HF}$ for home country, $\alpha = 0.21$, $e^H = 0.38$, efforts imperfect substitutes. (CES $\epsilon = 0.5$)
Figure: 8: stage 2 response to $e^{HF}$ for foreign country, $\alpha = 0.21$, $e^H = 0.38$, efforts imperfect substitutes. (CES $\epsilon = 0.5$)
Figure: 9: stage 1 optimal choice of $e^H$ and $\alpha$ with $e^{HF} = 0$ (efforts perfect substitutes)
Figure: 10: stage 1 optimal choice of $e^H$ and $e^{HF}$ with $\alpha = 0.2$ (efforts perfect substitutes)