Defence Economics (WS 2019/20)

Synopsis

A Military Alliances, Arms Races and Security Issues

1. Defence Expenditure within Military Alliances
   1.1. Defence expenditure as a (pure) public good
   1.2. Private provision of public goods
   1.3. Income effects
   1.4. Sub-optimality of the Nash equilibrium
   1.5. Pareto optima and an application of Lindahl pricing

2. Arms Races
   2.1. The arms race as a prisoners' dilemma
   2.2. Disarmament treaties and verification
   2.3. Dealing with lunatics: A game-theoretic interpretation of the build-up to the 2003 Iraq war
   2.4. The INF Treaty and China's “Guam Killer”

B Defence Industrial Economics

3. The Defence Industrial Base
   3.1. Defence industries as natural monopolies
   3.2. Keeping competition alive: four-stage procurement and batching

4. Economies of learning
   4.1. Constant labour cost elasticity?
   4.2. Empirical findings
   4.3. Batching revisited
   4.4. Diseconomies of joint or licensed production: on the fallacies of European defence policies
   4.5. Brazil's long-term procurement strategy

5. Military procurement
   5.1. Fixed-price vs cost-plus contracts
   5.2. British military aircraft procurement during the inter-war period
   5.3. Prototype of paper plane: a game-theoretic explanation of manufacturers' strategies
   5.4. Devising optimal contract values

C Weapon Systems and Operational Issues

6. O-Ring Production Functions
   6.1. The Challenger disaster
   6.2. Cost minimization and reliability maximization
6.3. Examples: SAR; (vintage vs) modern fighter aircraft; aircraft carrier operations ... and railways ☺
6.4. Costs as a function of the number of subsystems or tasks

7. O-Ring-Type Military Planning

7.1. CSAR (combat search and rescue); pure (versus intuitively mixed) strategy equilibria
7.2. Skyraiders and Jolly Green Giants: the Vietnam two-platform CSAR doctrine

D Warfighting: Strategy and Tactics

8. An Introductory Example: Bismarck Sea

9. Military Conflict: The Clausewitzian Perspective

9.1. Clausewitz' “Fog of War” analogy
9.2. From “Picture-Centric Warfare” (red force tracking) ...
9.3. ... to “Network-Centric Warfare” (and blue force tracking, too!)
9.4. Two-by-two (quasi) zero-sum games: moving first or moving second, does it matter?

10. Examples from Military Textbooks

10.1. A non-quasi-zero-sum game: The Avranches Gap
10.2. (Unexpected) Mixed strategy equilibria in mine warfare

11. Aspects of Irregular Warfare

11.1. Definitions and different kinds of asymmetries
11.2. Irregular Warfare is not zero-sum
11.3. “Easy to find, hard to kill” versus “Hard to find, easy to kill”
11.4. “Winning the hearts and minds”
11.5. Leaving a footprint/body bags arriving home: “You have the watches, we have the time”
11.6. Building a host nation’s military capability: “toys for the boys” versus light attack aircraft

12. Operating in an Irregular Warfare Environment

12.1. Human shields (Operation Iraqi Freedom, Operation Enduring Freedom)
12.2. U.S. Army Cultural Support Teams (Operation Enduring Freedom)
12.3. “Operation Moshtarak” (Operation Enduring Freedom)
12.4. Counter-insurgency warfare: tactical operations and strategic moves

13. ISR: The Information Age Kill Chain, With a Special Reference to COIN and A2/AD

14. Contemplating Numbers

14.1. The minimum number is two: “If it’s not losable, it’s not usable!”
14.2. The cutting (and extremely expensive) edge of technology versus strength in numbers?

Standard References

Selected Topic-Specific References


