

GV103: Introduction to International Relations

Dr. Philip Arena

Arms Races

Introduction

- Two goals for this lecture
 - Discuss arms races as **trust problems**
 - **Apply** to Cold War

A Model of Arms Races

	don't	build
don't	0, 0	$e_1, \tau_2 - c_2$
build	$\tau_1 - c_1, e_2$	$-c_1, -c_2$

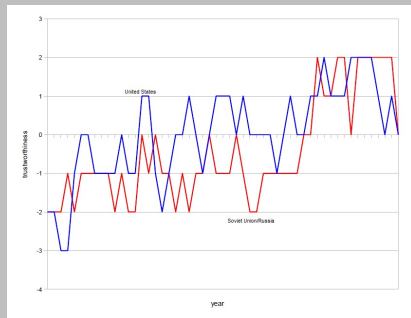
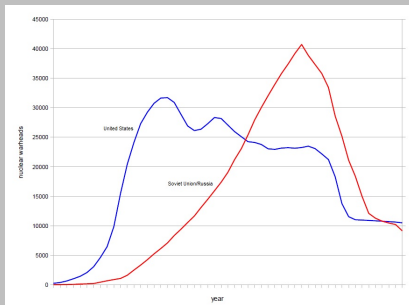
Analysis

- For **blue** type
 - Build iff $\phi_j(0) + (1 - \phi_j)(e_i) < \phi_j(\underline{\tau}_i - c_i) + (1 - \phi_j)(-c_i)$
 - True iff $\phi_j < \hat{\phi}_j$
 - Where $\hat{\phi}_j \equiv \frac{e_i + c_i}{e_i + \underline{\tau}_i}$
- For **red** type
 - Build iff $\phi_j(0) + (1 - \phi_j)(e_i) < \phi_j(\bar{\tau}_i - c_i) + (1 - \phi_j)(-c_i)$
 - Must be true

Data

- Observations: USA, USSR/RUS from 1950 to 2001
- Dependent variable: nuclear warheads
- Independent variable: trustworthiness of other side (ϕ_j)
 - +1 if: ↓ nuclear arsenal; ↓ milex; end long war
 - -1 if: 10%+ ↑ nuclear arsenal; 10%+ ↑ milex; war
- Independent variable: potential harm from exploitation (e_i)
 - Current share of nukes – share if other side ↑ 10%

Nuclear Arsenals, Trustworthiness Over Time



Results

	USA	USSR/RUS
Trustworthiness $_{t-1}$	-*	-*
Harm from exploitation $_t$	+*	+*