

15. The Cold War: Burden-Sharing

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Burden Sharing in Alliances

Military spending should respond to the behaviour of the adversary.

- And to **the behaviour of allies**.

How do allies come into the picture?

- For a region, collective security is a public good.
- Just as national defence is a public good for the citizens of one country.
- Within a country, each citizen can choose to defend the community or just themselves.
- Within a regional alliance, each country can choose to defend the region or just the homeland.

Burden Sharing in Alliances

Neutralizing the threat to the region as a whole has a non-rival public benefit B .

The additional cost of defending the region is C .

		Country 2	
		Defend the region	Defend the homeland
Country 1	DR	$B - C/2, B - C/2$	$B - C, B$
	DH	$B, B - C$	$0, 0$

- Unless $B > C$, it's a **prisoner's dilemma**.

Intuition:

- in an alliance, member states may obtain benefits from allies' defence activities that they do not pay for.
- This creates an incentive to free-ride.
- As a result, collective security will be under-provided.

Burden Sharing in Alliances

Olson and Zeckhauser (1966) looked at the distribution of military spending within NATO as a problem of collective action.

This led them to formulate the **exploitation hypothesis**:

- In an alliance, the small will exploit the large.

Why?

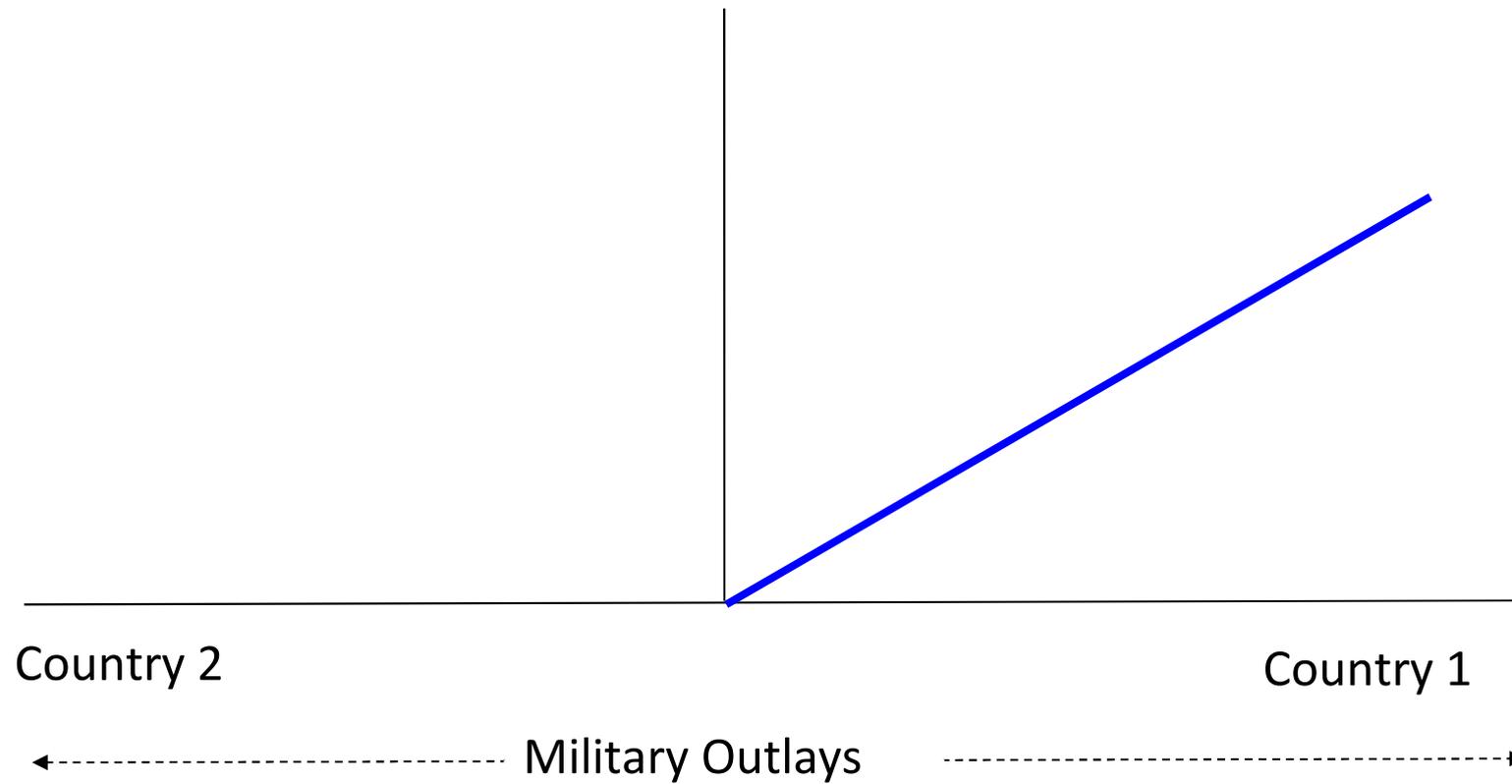
- The smaller the country, the larger the security **spill-in** from others' contributions.
- Where "spill-in" means an incoming positive spillover or externality created by the others.

Prediction: Across NATO, the defence share of country GNP should be increasing in the size of GNP.

- The U.S. economy, being the largest, and providing nuclear deterrence for the entire alliance, and benefiting less in proportion from the efforts of others, should carry the heaviest burden.
- Smaller countries should take a partly free ride; very small countries might spend nothing at all.

Coalitions and Free-Riding

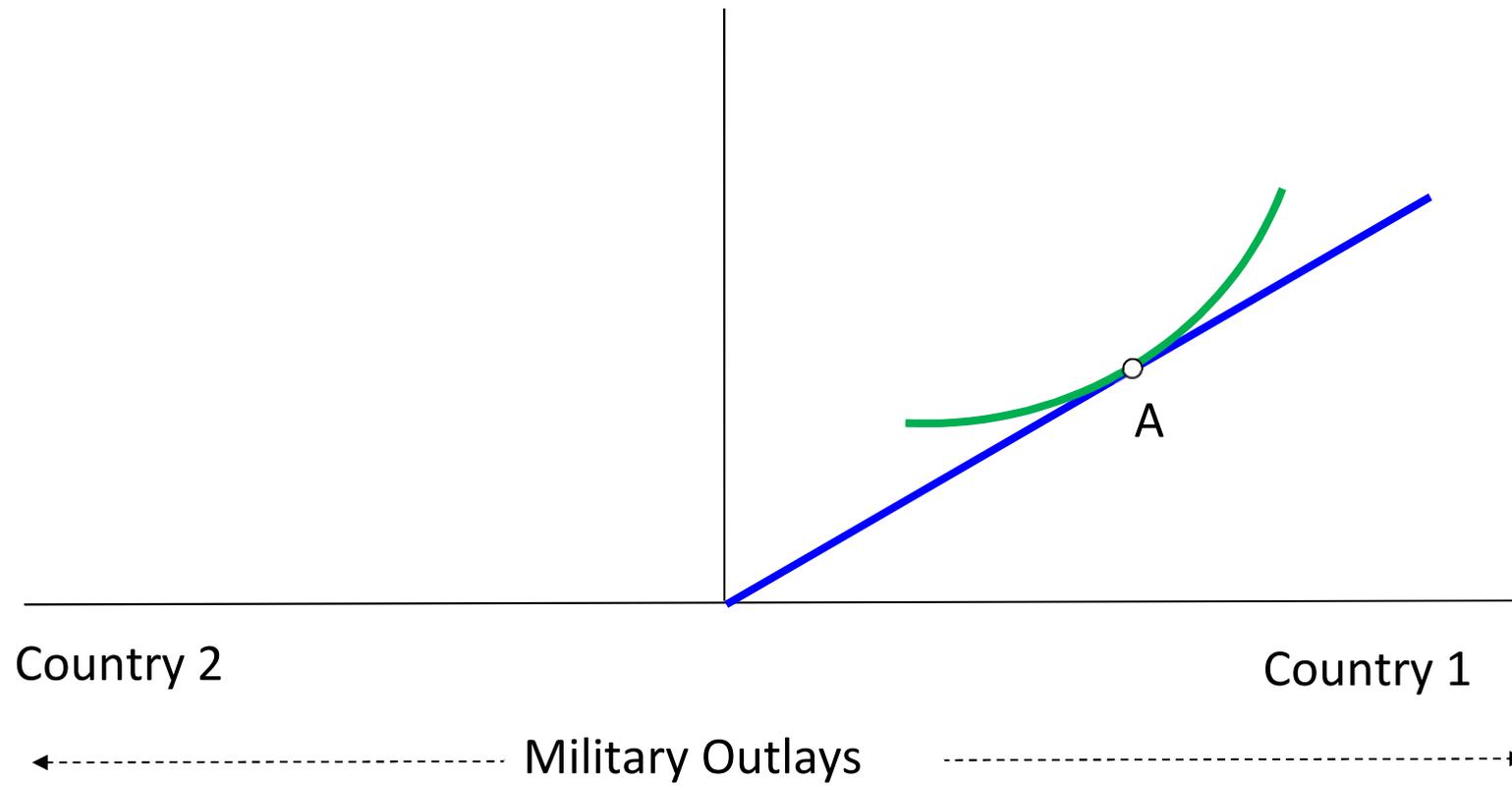
Military Security



- The production of **military security** by country 1.

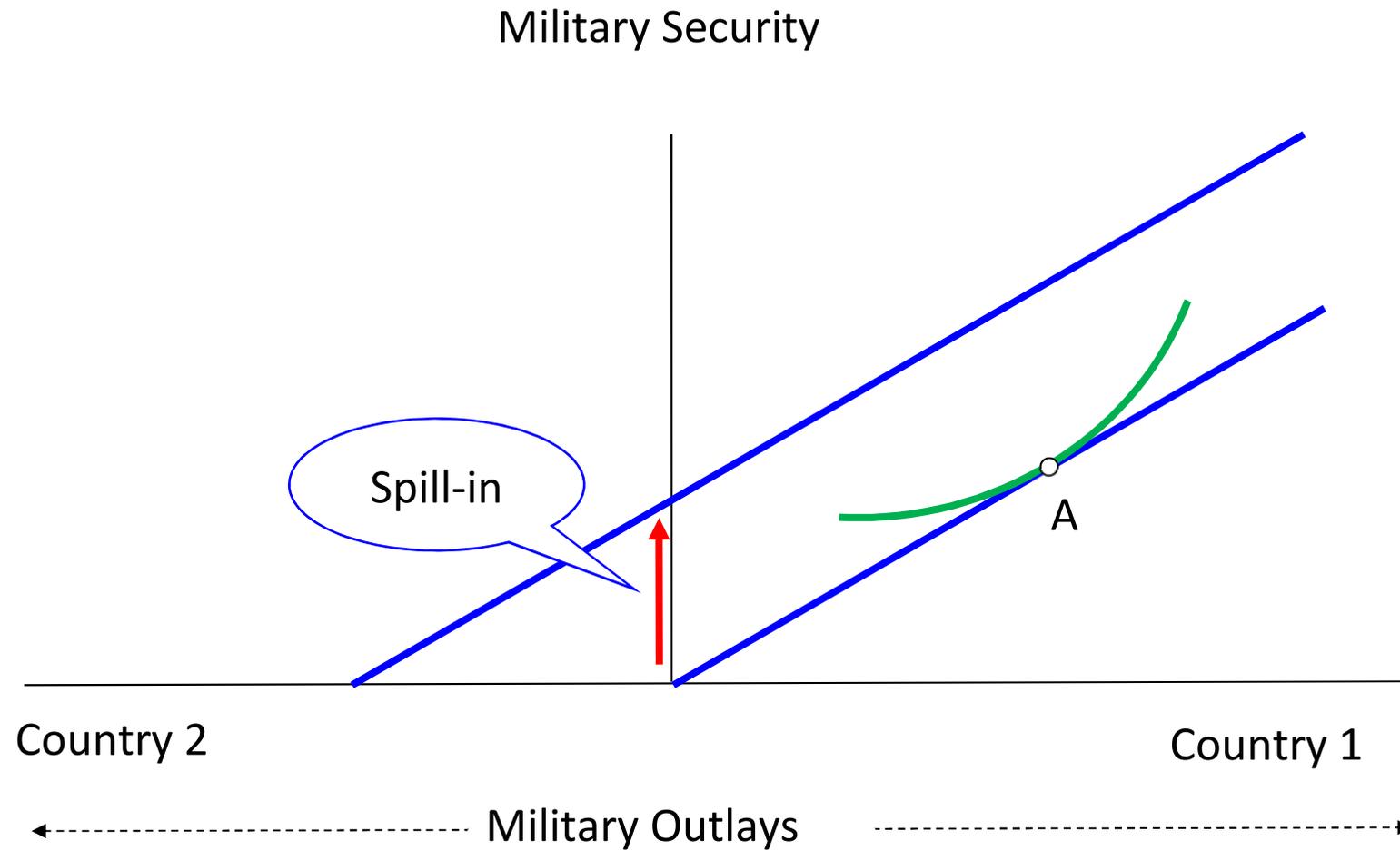
Coalitions and Free-Riding

Military Security



- The country 1 **equilibrium**.

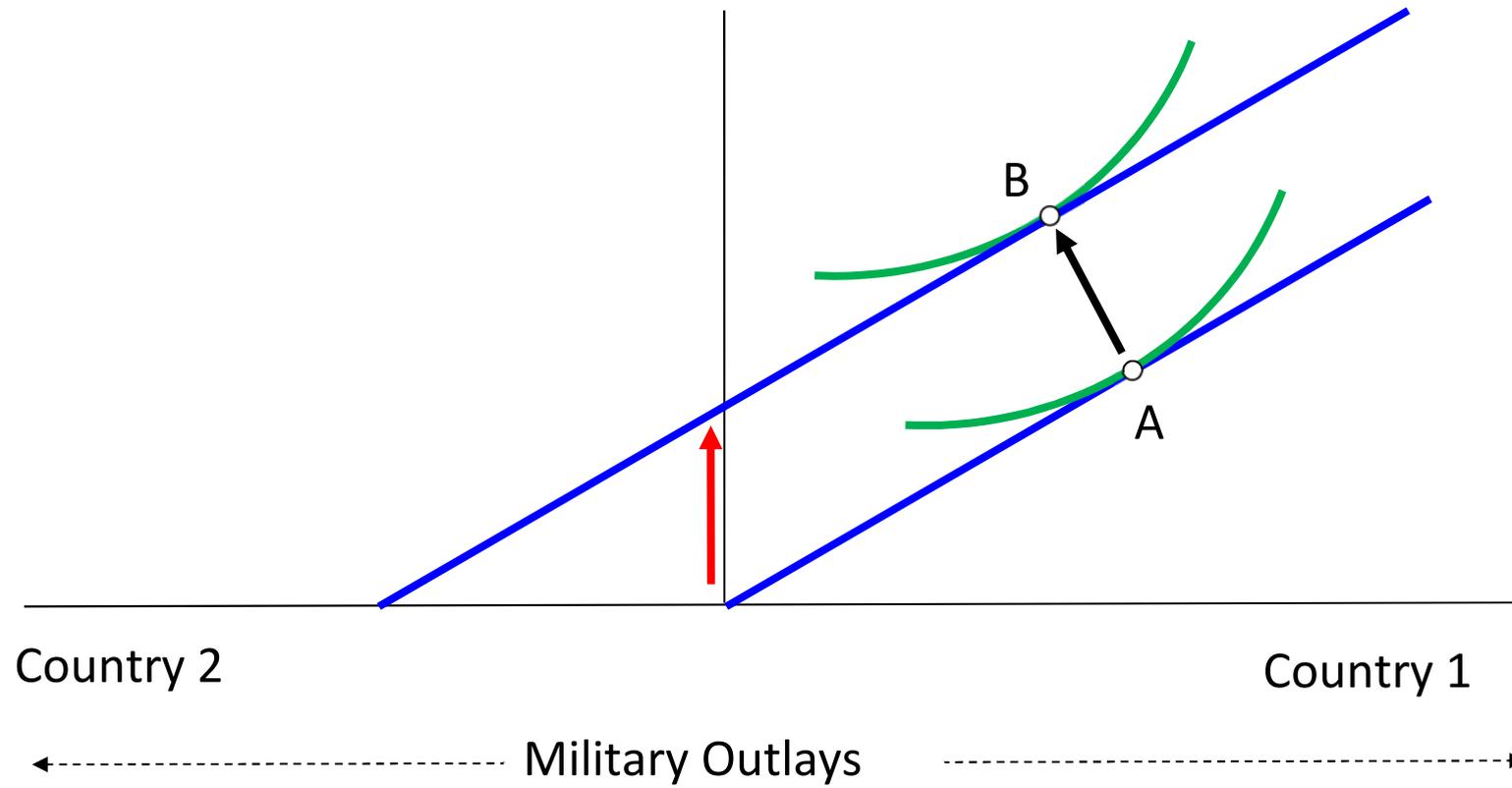
Coalitions and Free-Riding



- The **security spillover** (“spill-in”) from country 2.

Coalitions and Free-Riding

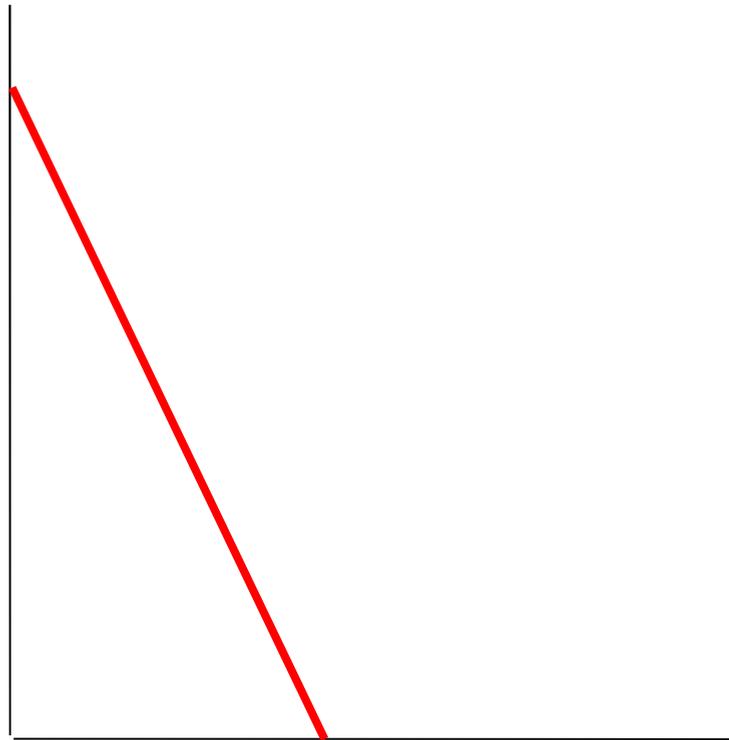
Military Security



- Country 1 **reoptimizes** by free-riding.

Coalitions and Free-Riding

U.S. Military Outlays

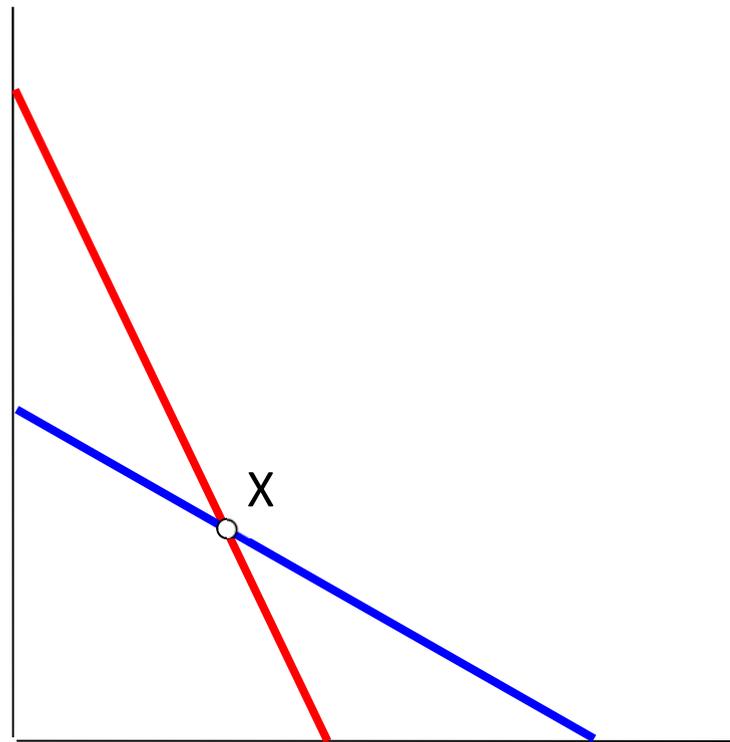


— Ally's reaction function

- Ally's **equilibrium outlays** for every level of U.S. outlays.

Coalitions and Free-Riding

U.S. Military Outlays

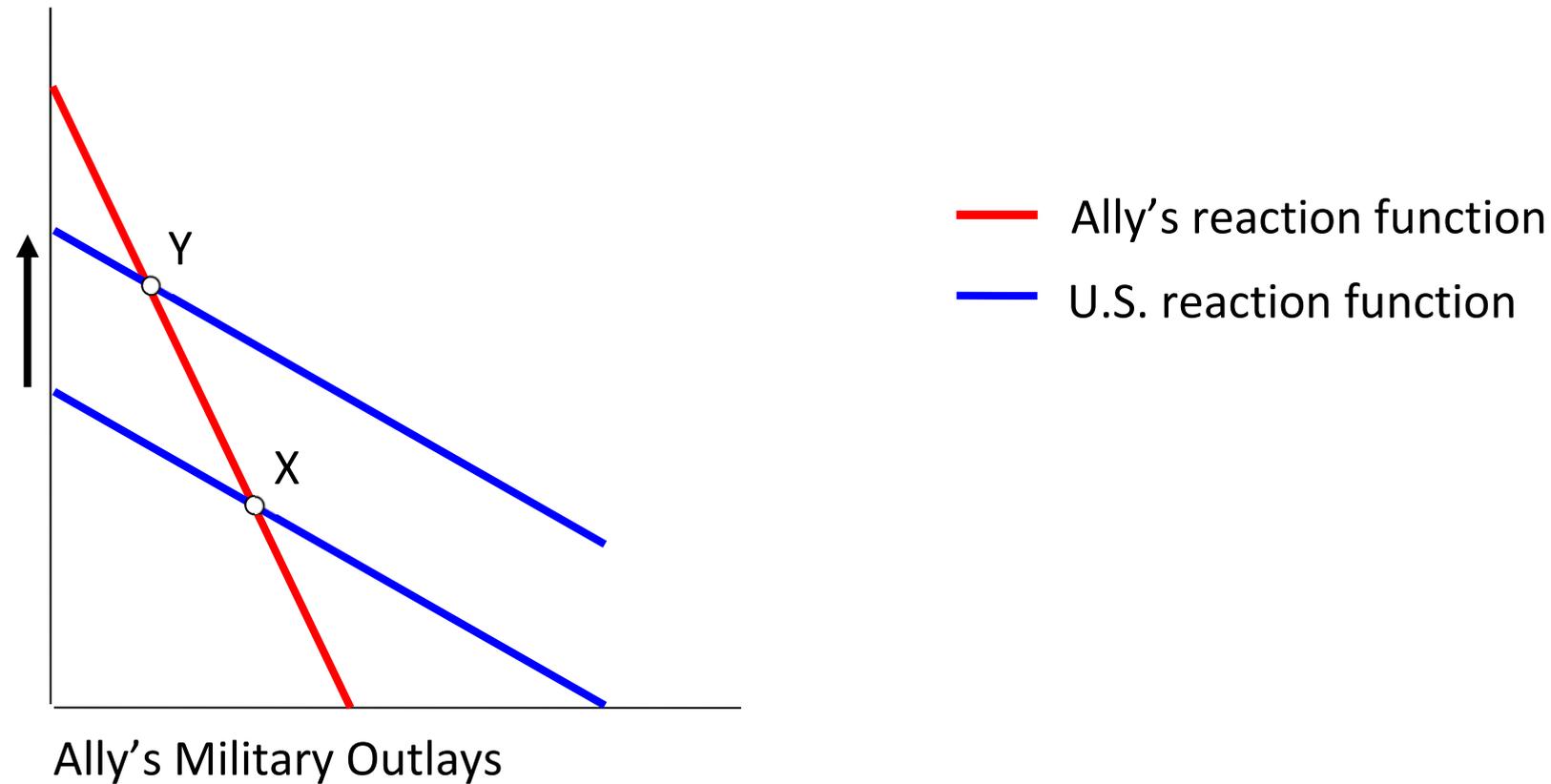


— Ally's reaction function
— U.S. reaction function

- Joint equilibrium.

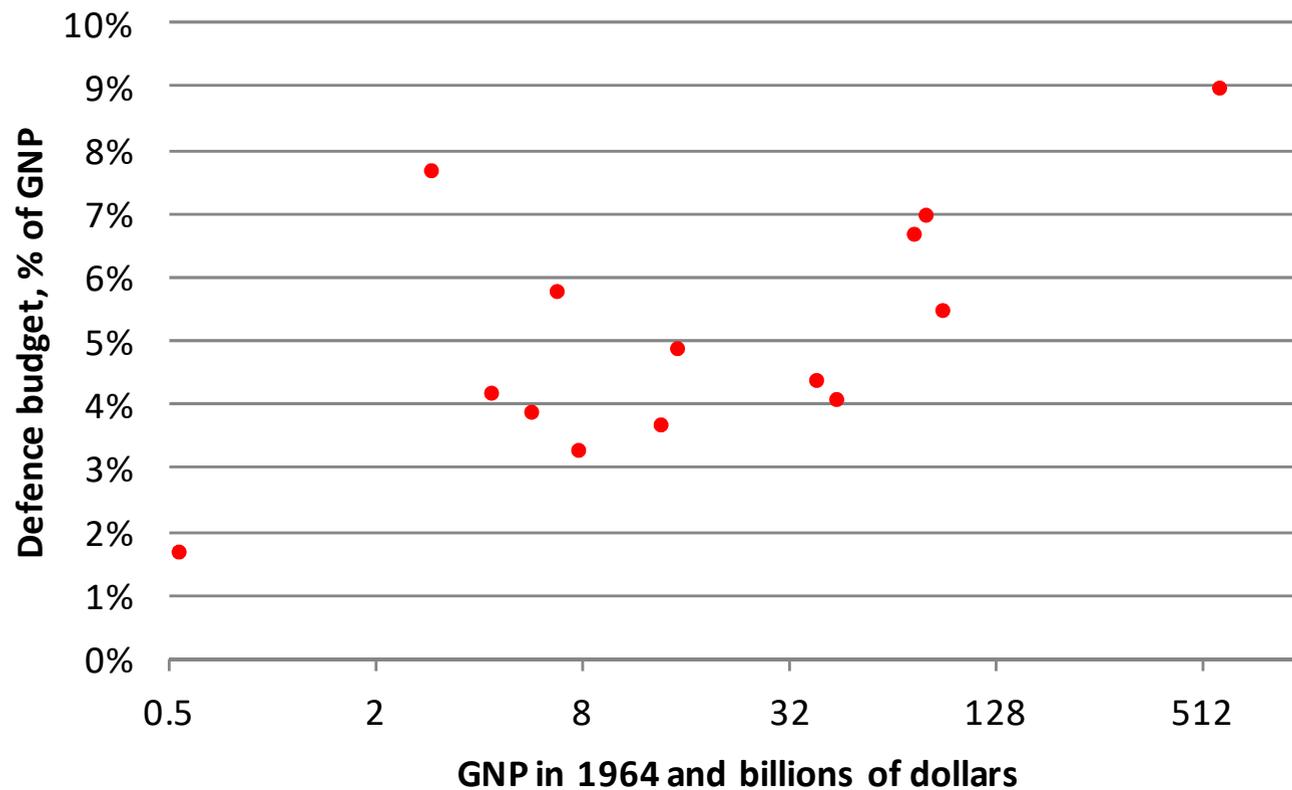
Coalitions and Free-Riding

U.S. Military Outlays



- The larger the spill-in you receive, the less you should spend yourself.
- Cross-section test: when allies are of varying size, which receive the larger spill-in?

Coalitions and Free-Riding



Smaller allies receive more spill-ins than larger allies—and also **spend less** in proportion.

- Except Portugal, engaged in its own colonial wars—an exception that “proves the rule.”*

Source: Olson and Zeckhauser (1966).

* To “prove the rule” has the meaning that the finding of an exception demonstrates that a rule exists.

Coalitions and Free-Riding

BUT Olson and Zeckhauser (1966) analyzed defence spending on the basis that defence is a **pure public good** to the alliance.

- In the 1960s, NATO provided a public good, **collective security**, through the threat of massive retaliation.

This requires that armed force of one ally is perfectly substitutable for armed force of another.

- But armed force may provide a mix of goods: **joint products**.
- Some public and substitutable (across the alliance), and some private (to the country supplying the force) and so **not substitutable**.

Examples:

- Territorial defence and damage limitation, as opposed to deterrence.
- Countering specific threats that the alliance doesn't cover: Portugal's colonial wars.
- Intra-alliance disputes, e.g. Greece vs Turkey within NATO.

Now security becomes an **impure public good**.

- Olson and Zeckhauser's pure public-good model is then a special case.

NATO and Collective Security

Why does this matter? Two phases in the development of NATO's nuclear doctrine:

Phase 1. **Massive retaliation.**

U.S. secretary of state John Foster Dulles (1954):

“We need allies and collective security. Our purpose is to make these relations more effective, less costly. This can be done by placing more reliance on deterrent power and less dependence on local defensive power... Local defense will always be important. But there is no local defense which alone will contain the mighty landpower of the Communist world. Local defenses must be reinforced by the further deterrent of **massive retaliatory power**. A potential aggressor must know that he cannot always prescribe battle conditions that suit him.

Interpretation: American nuclear weapons provide NATO with collective security, a pure public good.

NATO and Collective Security

Why does this matter? Two phases in the development of NATO's nuclear doctrine:

The doctrine of massive retaliation gave rise to new problems.

- In a crisis, only one option.
- Would the American commitment to that one option always be credible?

Henry Kissinger (1970):

“Should a President, in the event of a nuclear attack, be left with the single option of ordering the mass destruction of enemy civilians, in the face of the certainty that it would be followed by the mass slaughter of Americans?”

Richard Nixon (1970):

“No President should be left with only one strategic course of action, particularly that of ordering the mass destruction of enemy civilians and facilities. Given the range of possible political military situations which could conceivably confront us ... we must be able to respond at levels appropriate to the situation.”

NATO and Collective Security

Why does this matter? Two phases in the development of NATO's nuclear doctrine:

Phase 2. **Flexible response.**

U.S. defense secretary James Schlesinger (1974) announced a shift from massive retaliation to flexible response:

“Deterrence is not a substitute for defense; defense capabilities, representing the potential for effective counteraction, are the essential condition of deterrence.”

Main principles:

- Many choices over weapons, always keeping an option to escalate.
- Many choices of target; withhold some targets and target classes initially in order to maintain the adversary's incentive to step back.
- First targets should be the adversary's forces: “tailored counterforce.”

Made possible by cruise missiles and miniaturized nuclear weapons.

Interpretation for America's allies: own conventional forces were being endowed with greater private value.

- If attacked, at first **defend yourself!**

NATO and Collective Security

The percentage of GDP devoted to military expenditures.^a

Nation	1960	1970	1979
United States	8.9	7.9	5.2
France	6.3	4.2	3.9
United Kingdom	6.5	4.8	4.8
Belgium	3.4	2.9	3.4
Netherlands	4.0	3.5	3.3
Denmark	2.7	2.3	2.3
Norway	3.2	3.5	3.3
Germany	4.0	3.3	3.2
Italy	3.3	2.7	2.2

^aAll data were expressed in 1975 U.S. dollars using 1975 exchange rates.

Source: Murdoch and Sandler (1984).

- There was a general downward trend.
- Spending shares of powers providing nuclear deterrence declined more than others'.
- Military spending by the non-nuclear powers tended to rise as the nuclear powers' spending rose.
- After 1974 the spending of countries other than the United States showed increased complementarity, treating each other more as rivals than allies.

NATO and Collective Security

U.S. Share in NATO

	1975	1980	1985
Benefits	32.0%	31.1%	34.1%
Costs	59.6%	55.1%	72.0%
Benefit share <i>minus</i> cost share	-27.6%	-24.0%	-37.9%

Source: Sandler and Hartley (1999). Benefits are average of population, GDP, and exposed border shares with the alliance. Costs are shares of military outlays.

- America consistently carried a share of costs that was disproportionate to benefits.
- But the degree of disproportion changed over time.
- It was more extreme in the 1960s.
- And it became more marked again in the 1980s.
- Conclusion: The Carter-Reagan U.S. rearmament of the 1980s seemingly took NATO back towards the public-good sharing alliance of the 1960s.

Widening the Sample

Generalization: consider any pair of countries.

How do you know whether they are true allies or adversaries?

- By what their leaders **say** in public?
- Or by what they **do**?

The extent to which their military outlays co-vary can signal their true relationship.

Their military outlays co-vary:	Positively	Negatively
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Their military outlays are:	Complements	Substitutes
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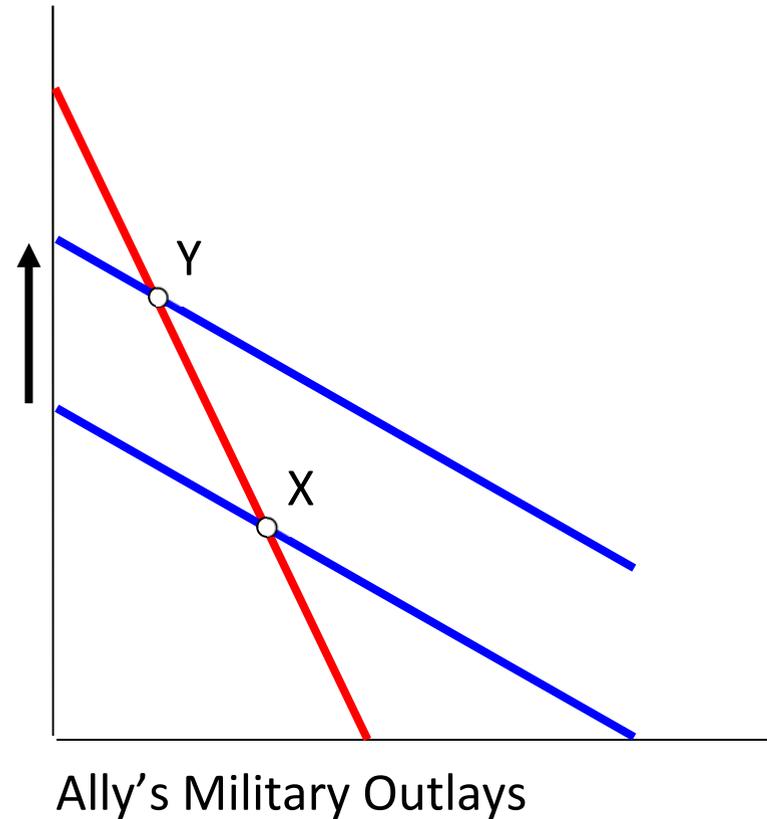
The two countries are:	Rivals	Allies
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Regardless of **public claims** to friendship or enmity.

Widening the Sample

Reminder:

U.S. Military Outlays



— Ally's reaction function

— U.S. reaction function

When one country exogenously increases defence effort:

- If the other country's effort **declines**, that other country is an **ally**.
- If the other country's effort **increases**, that other country is an **adversary**.

Widening the Sample

A wider sample of alliances tends to show that the conditions for alliance security to be a true public good are historically rare: NATO has been exceptional.

- Pairs of countries often cooperate in some dimensions while competing in others.
- Countries that are formally allied may have “private” interests that diverge.
- Countries may become formally allied for many reasons, not always to share public goods.

The Triple Entente and Triple Alliance before 1914 (Conybeare and Sandler 1990):

- Most great powers treated most formal allies as **rivals**.
- **Evidence of free riding** limited to France and Russia.

Consider Austria:

- **Austria and Germany** were formal allies, but Germany could do little to help Austria where it mattered, in the Balkans, so Austria could not free-ride on Germany.
- **Austria and Italy** were formal allies, but treated each other as rivals; in 1915 they became enemies.

Widening the Sample

In five out of seven pre-1945 alliance pairs (Thies 1994), defence was more important than deterrence.

There was **low substitutability of national efforts** because of lack of joint access to territory.

- Triple Entente; Triple Alliance; Britain-Japan; Britain-France; France-Poland: countries that were smaller and poorer than allies tended to carry **heavier** burdens.

In two alliances the smaller country could free-ride, enabled by geographical proximity:

- France-Belgium, France-Czechoslovakia (only Germany between, so Czechoslovakia could benefit directly from France pressure on Rhineland).

If free-riding was so prevalent in NATO, why did Britain and France pay to develop their own nuclear weapons (Goldstein 1995)?

- Even in the age of massive retaliation, the American nuclear guarantee was not fully credible.
- In other words, **nuclear weapons brought private benefits** as well as collective ones.

What We Have Learned

Economic theory tells us that cartels should be unstable because of the gains from cheating.

Alliances can be unstable for the same reason.

Differences of interest among allies are often real, not just problems of biased communication or perception.

Not surprisingly, fairness within NATO is a long running issue.

- In Iraq, Syria, and the Baltic, not all NATO members feel they have the same interests at stake.
- There is an incentive to defend the homeland, rather than defend the region.
- Because allies cannot compel each other to pay up, security will tend to be underprovided.

But **many alliances are not like NATO**; each has to be considered in its own context.

References

- Conybeare, John A. C., and Todd Sandler. 1990. The Triple Entente and the Triple Alliance, 1880-1914: a Collective Goods Approach. *American Political Science Review* 84/4, pp. 1197-1206.
- Goldstein, Avery. 1995. Discounting the Free Ride: Alliances and Security in the Postwar World. *International Organization* 49/1, pp 39-71.
- Murdoch, James C., and Todd Sandler. 1984. Complementarity, Free Riding, and the Military Expenditures of NATO Allies. *Journal of Public Economics* 25:1-2, pp. 83-101.
- Olson, Mancur, and Richard Zeckhauser. 1966. An Economic Theory of Alliances. *Review of Economics and Statistics* 48:3, pp. 266-279.
- Sandler, Todd, and Keith Hartley. 1999. *The Political Economy of NATO: Past, Present and into the 21st Century*. Cambridge: Cambridge University Press.
- Thies, Wallace J. 1987. Alliances and Collective Goods: A Reappraisal. *Journal of Conflict Resolution* 31/2, pp. 298-332.