

11. World War II: The Alliance

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Gains from Cooperation

Biggest potential payoff to Allies was gains from cooperation involving world's richest industrial power:

- Specialization in stages of **production** of military power.
- More efficient **allocation** of military power to best use.

The Axis powers coordinated with each other only opportunistically, and made little attempt at specialization.

Coordination and burden sharing augmented Allied economic superiority over the Axis.

Problem: Allied superiority was asymmetric.

- Least where stakes were highest: on the Eastern front.
- Unaided, the Soviet Union might have collapsed, making the Allies' task in the West and the Pacific immeasurably more difficult.

Lend-Lease

U.S. prewar Neutrality Acts prohibited trade with belligerents, except nonwar goods on a cash basis.

November 1939 Neutrality Act:

- “Cash and Carry” replaced the arms embargo.

March 1941 Lend-Lease Act

- Aim: “To promote the defense of the United States”;
- Empowered the President to give military and economic aid to any country “essential to defense of the United States.”
- Payment in cash or kind in any form or to any extent that the President deemed satisfactory.

Lend-Lease

Churchill in Parliament, November 10, 1941: “The Lease-Lend Bill must be regarded without question as the most unsordid act in the whole of recorded history.”

February 1942 first UK Master Agreement, then similar agreement with USSR:

Roosevelt determined to “eliminate the silly, foolish old dollar sign.”

Aid in return for what?

- Pooling of wartime information.
- Postwar cooperation to restore a liberalized global economic order.

Lend-Lease

Lend-Lease, 1941 to 1945

Billion dollars

To the British Empire	30.1
Munitions (esp. aircraft, ships, vehicles)	17.5
Other goods (food, raw materials, machinery)	9.1
Services (especially transport)	3.3
To the USSR	10.7
To other countries	2.9
Total	43.6

Source: Allen (1946).

Lend-Lease

Lend-Lease to the USSR, 1941 to 1945	Million dollars
Ordnance and ammunition	812
Aircraft and parts	1,597
Tanks and parts	473
Motor vehicles and parts	1,411
Watercraft	241
Petroleum products	80
Industrial products and materials	3,078
Agricultural products	1,686
Total	9,377

Source: Harrison (1996, p. 133).

- Which aspect mattered most: size or composition?

Lend-Lease

\$43.6 billion: how much was that?

Allied aid: Net exports/GDP in 1944:

USA +6.0%

UK -5.5%

USSR -10%

Sources: Broadberry and Howlett (1998), Rockoff (1998), Harrison (1996).

Routes to Britain:

- The Atlantic shipping convoys.

Routes to USSR:

- At first via Alaska (too far) and the Trans-Siberian railway.
- And the Arctic shipping convoys (too dangerous).
- Later via Iran and Central Asia.

Lend-Lease

Economic importance of aid to USSR:

- In 1942 the Soviet economy was on the **edge of collapse**.
- Through 1943 millions of citizens were undernourished and many were starving.
- The bulk of aid arrived in 1943/44 \approx 10% of Soviet GDP.
- But 1942 was so terrible economically that the much lower level of aid arriving \approx 5% of Soviet GDP.

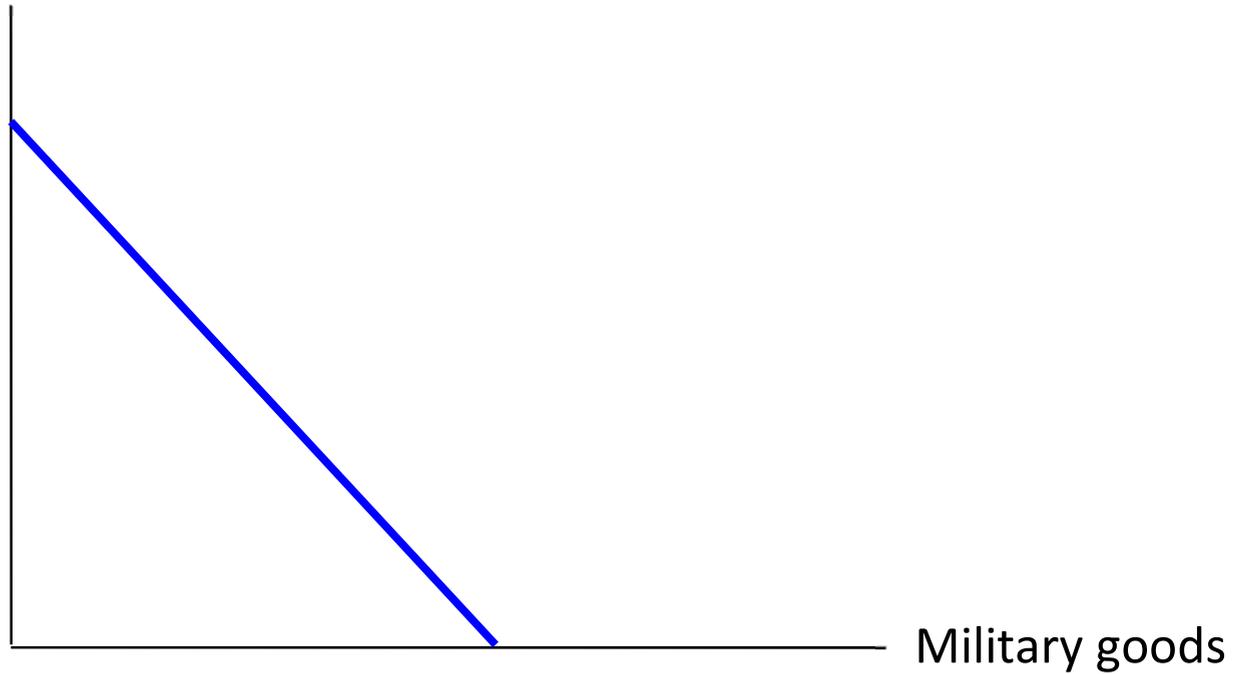
Military importance of aid to USSR:

- Most aid arrived after Stalingrad, when the tide turned.
- Most often cited are Spam and Studebaker trucks (e.g. Khrushchev 1971: 199).
- Soviet industry supplied firepower, the West supplied mobility.
- More important for speed of victory than avoidance of defeat?

Aid with High Stakes

Assumption 1. Up to a point, military and civilian goods are **strict complements**.

Civilian goods

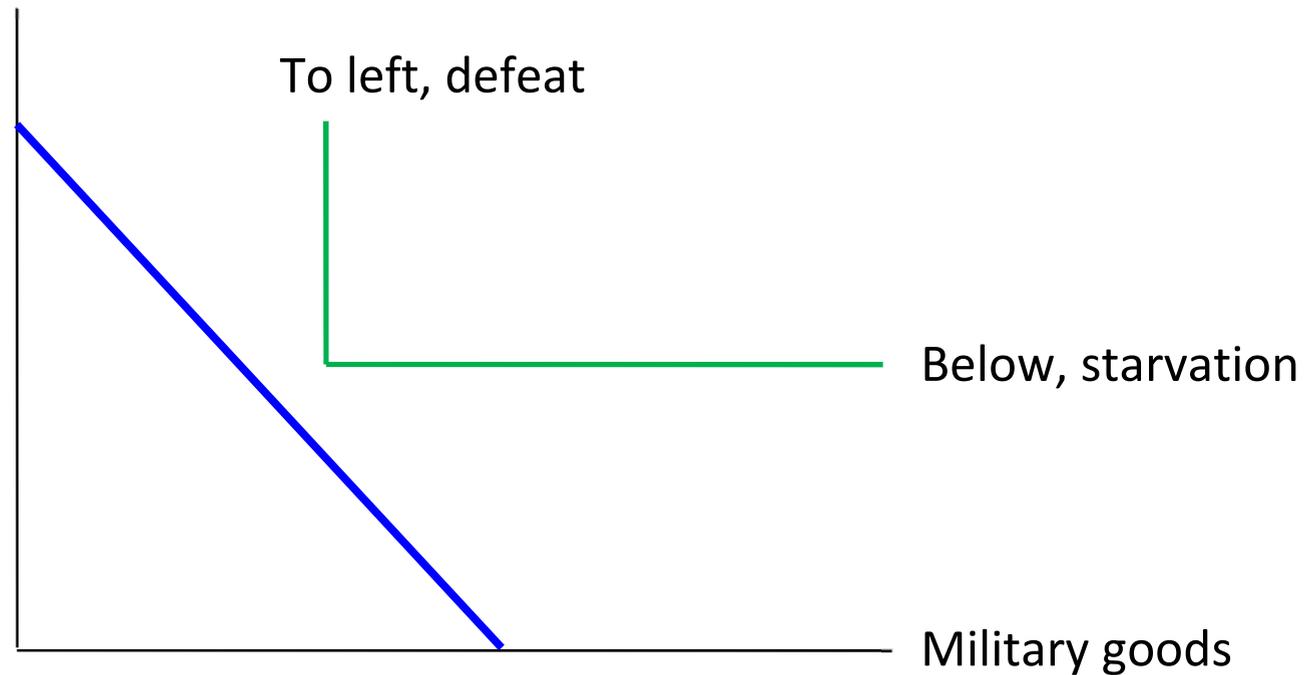


- Production possibilities.

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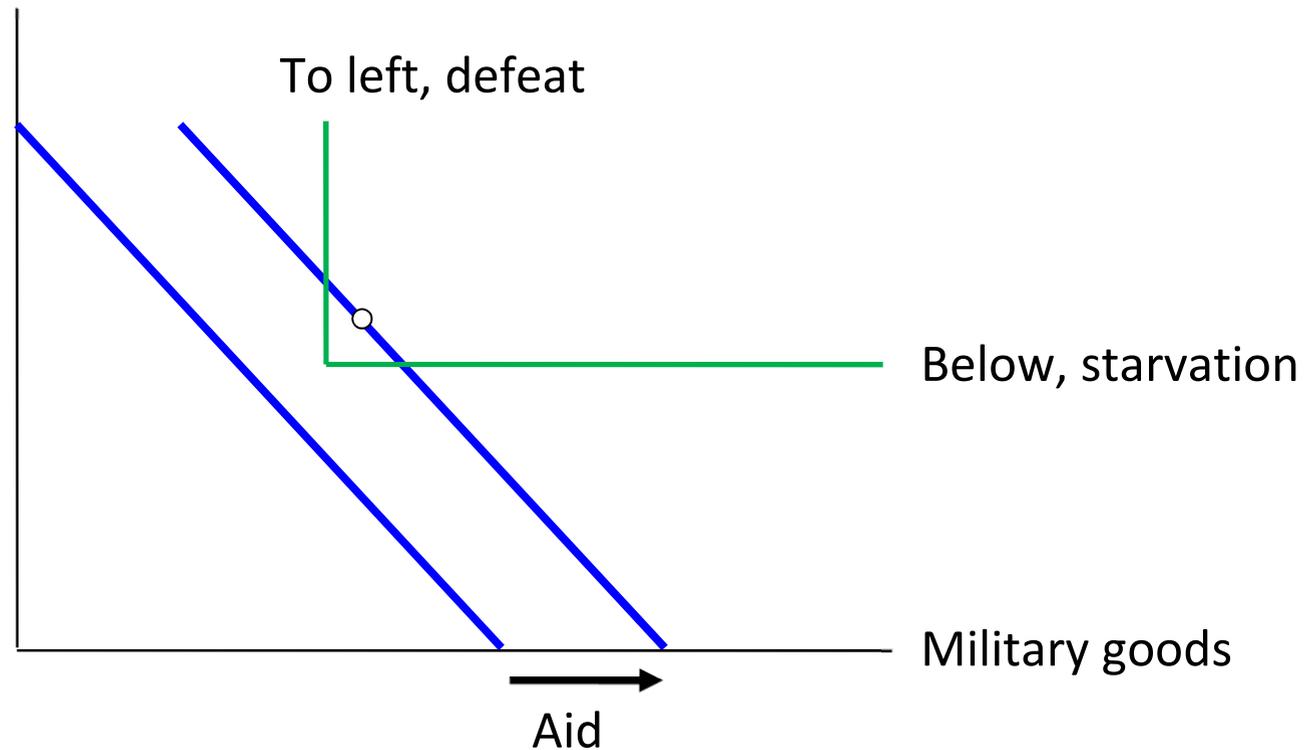


- Production possibilities: **no solution?**

Aid with High Stakes

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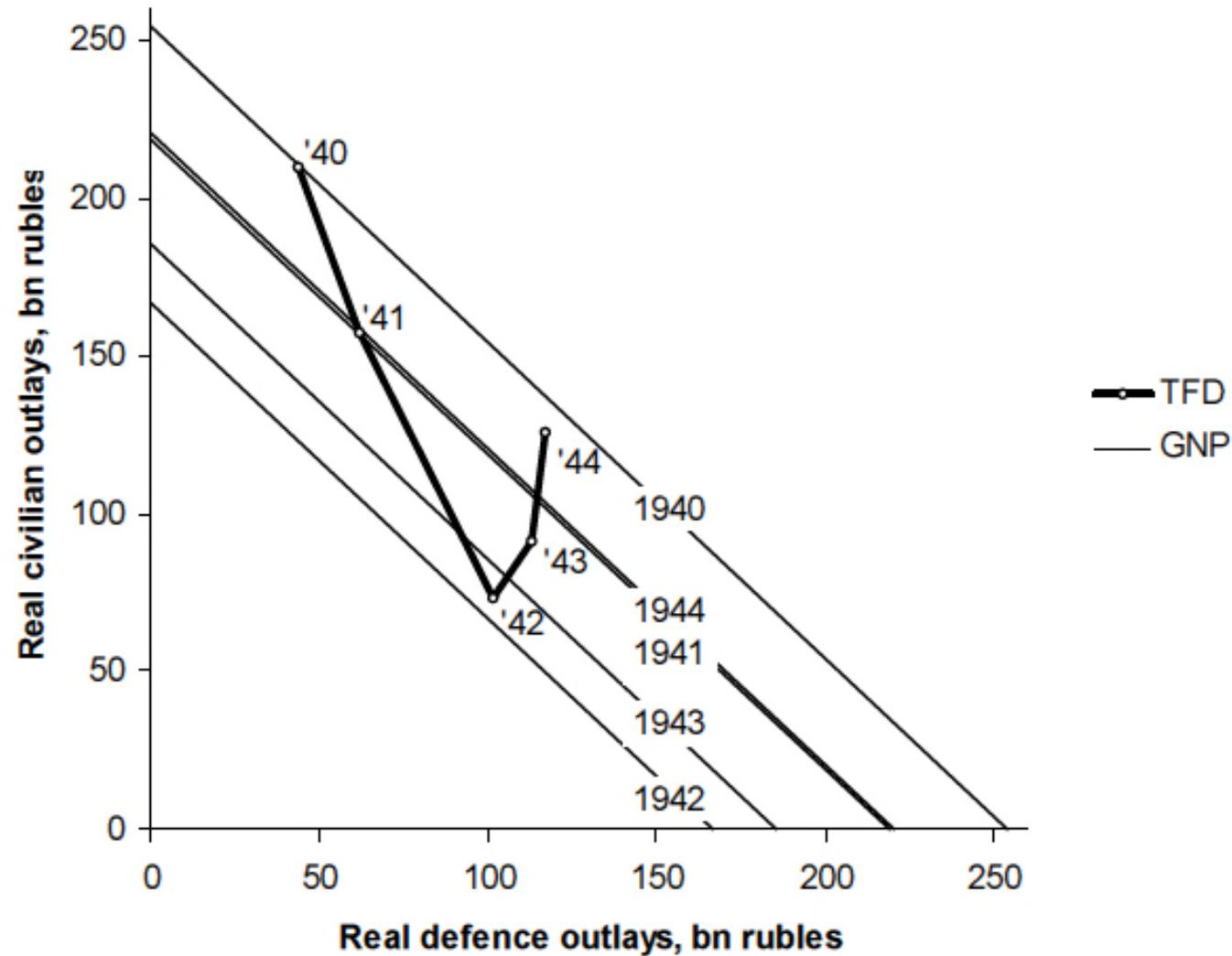
Civilian goods



- **Solution:** Aid enables total final demand ($C + I + G$) $>$ production

Aid with High Stakes

The Soviet Union, 1940 to 1944:



GDP is $C + I + G + \text{net exports}$.

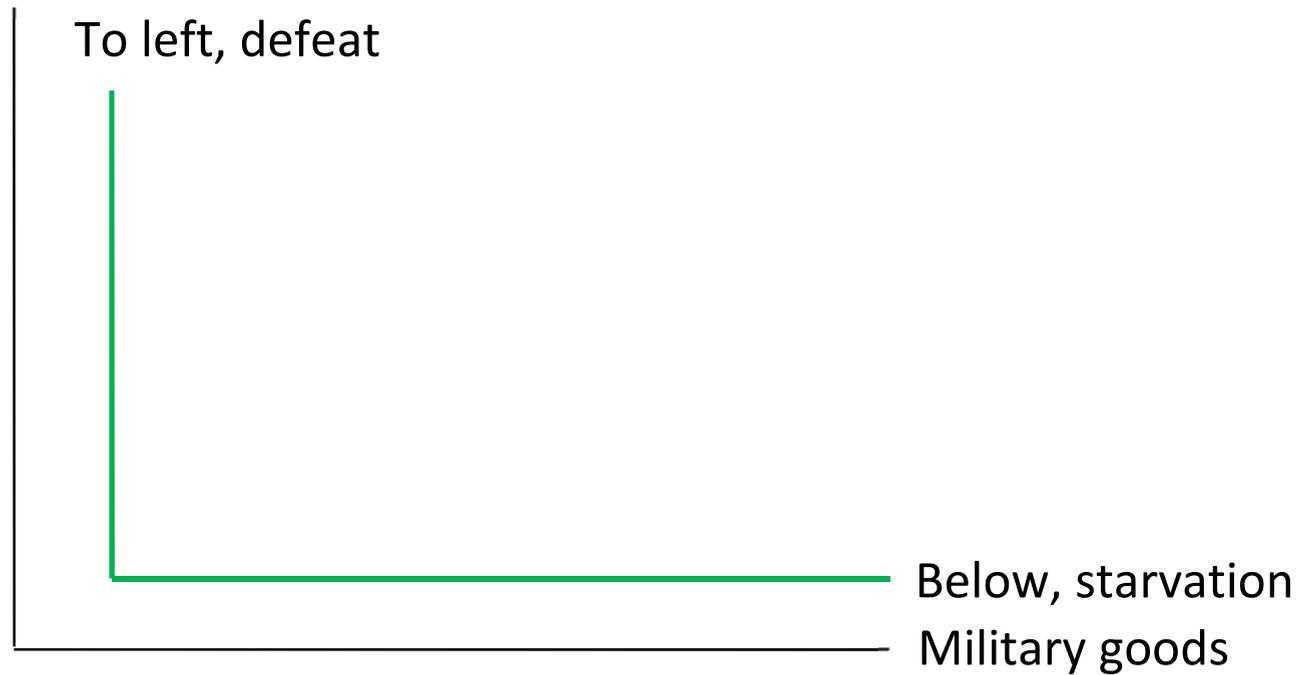
- TFD (total final demand) is $C + I + G$.
- Aid enabled $\text{TFD} > \text{GNP}$ from 1942 onward.
- High stakes in 1942: more guns, less butter.

Source: Harrison (2005).

Aid with Lower Stakes: Substitution

Assumption 2. Above a point, military and civilian goods become **partial substitutes**.

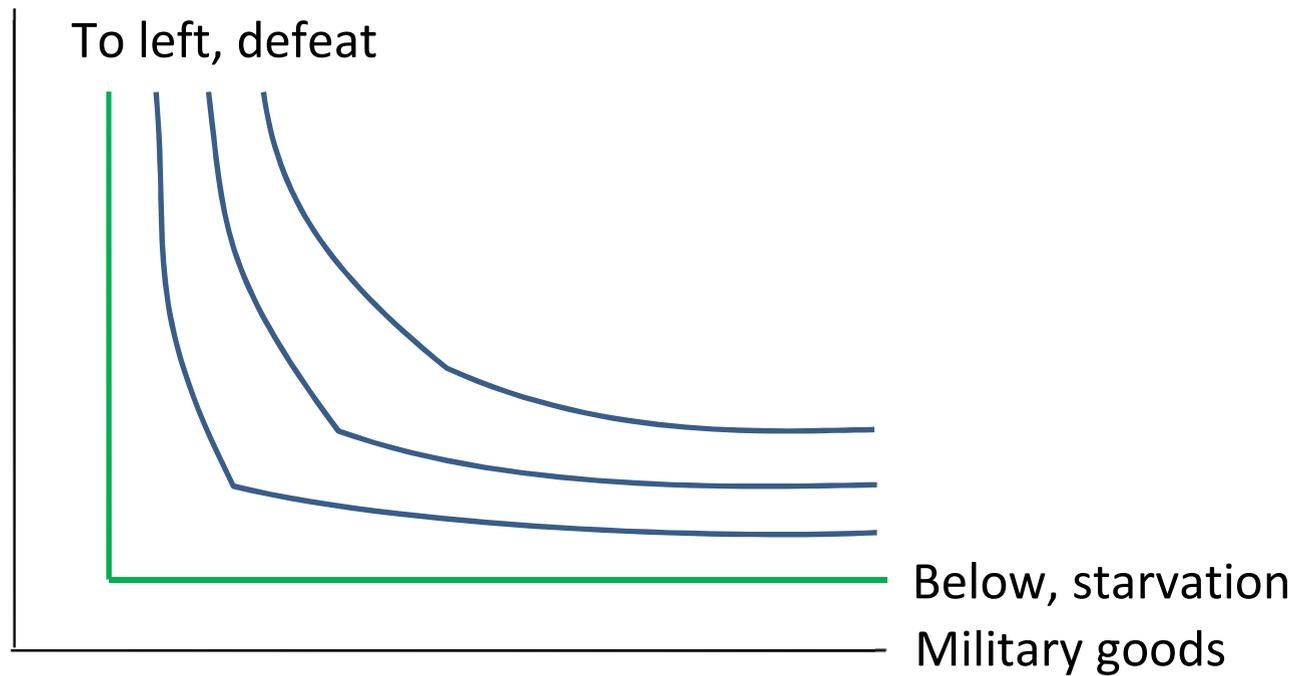
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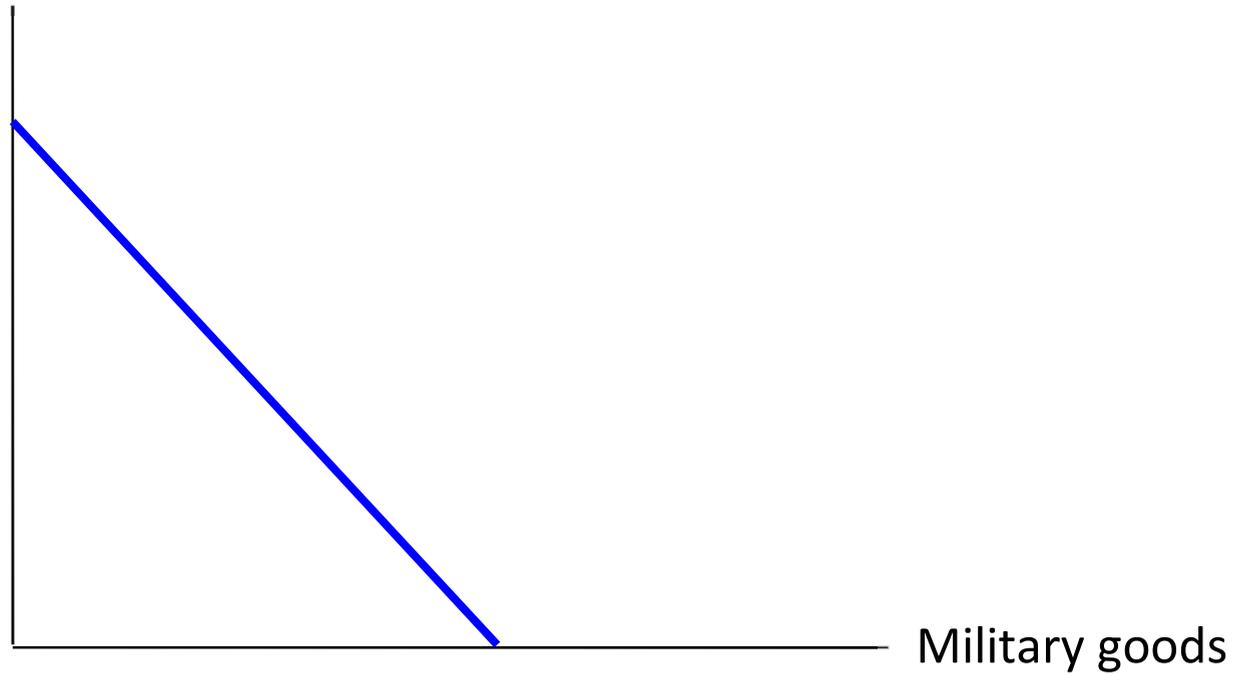
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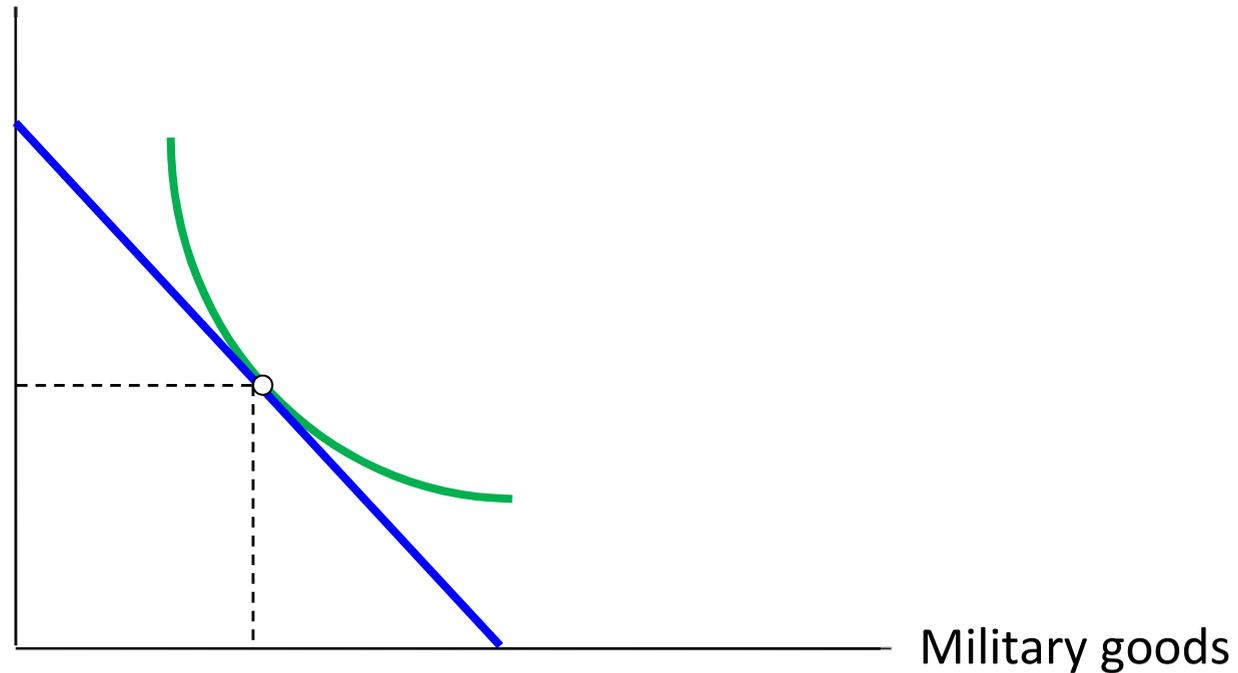


- Production possibilities.

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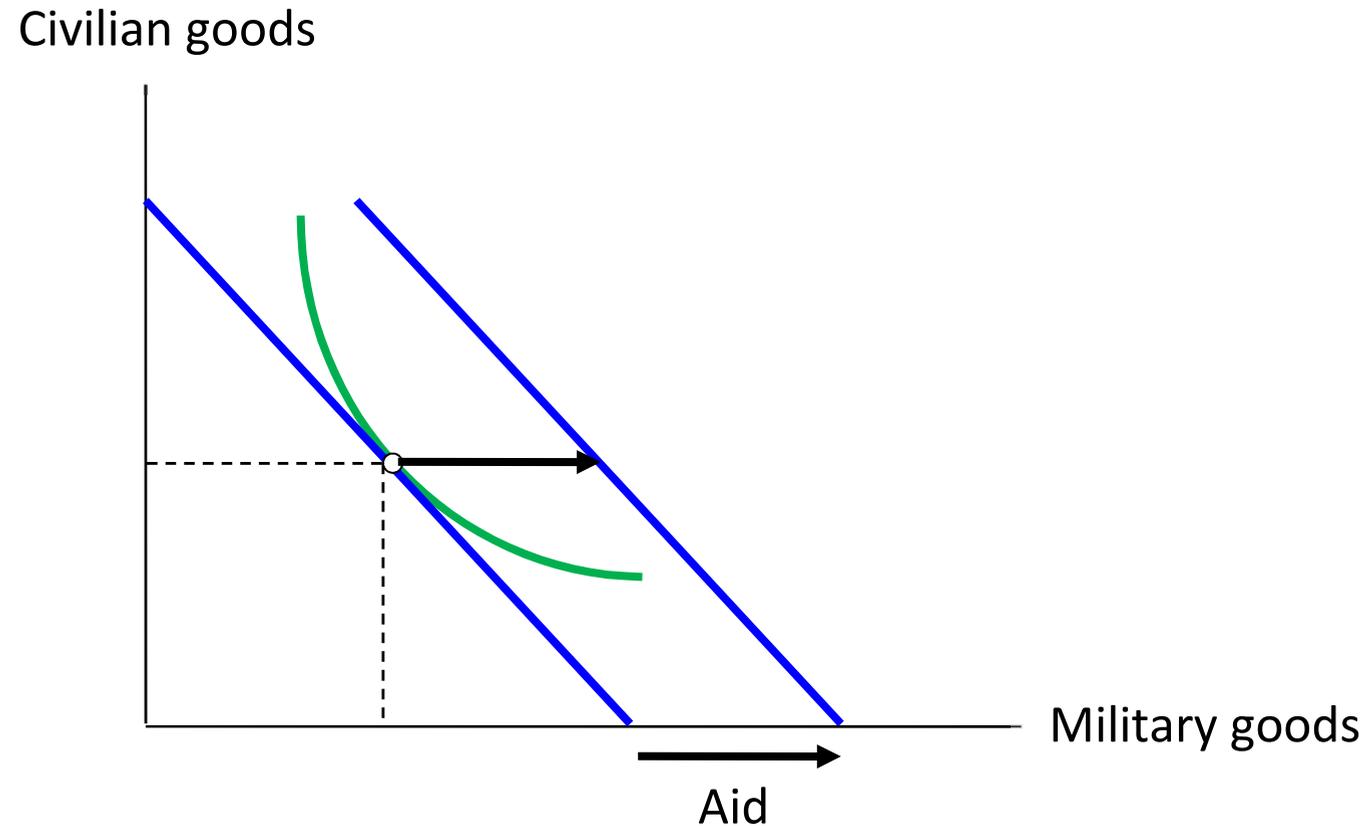
Civilian goods



- Above the level of starvation and defeat, we have partial substitutes and **optimization**.

Aid with Lower Stakes: Substitution

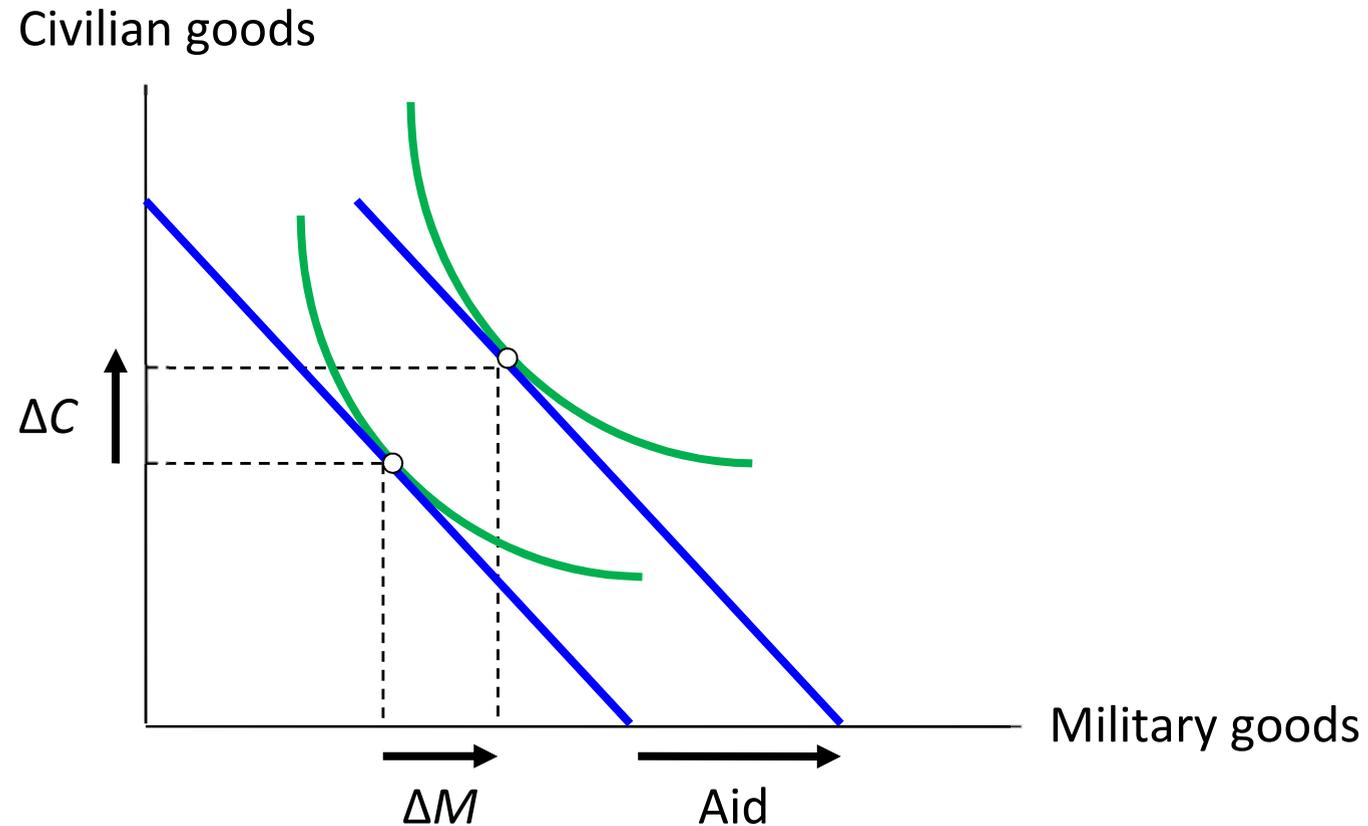
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- Aid shifts the frontier, but the result is not an **optimum**.

Aid with Lower Stakes: Substitution

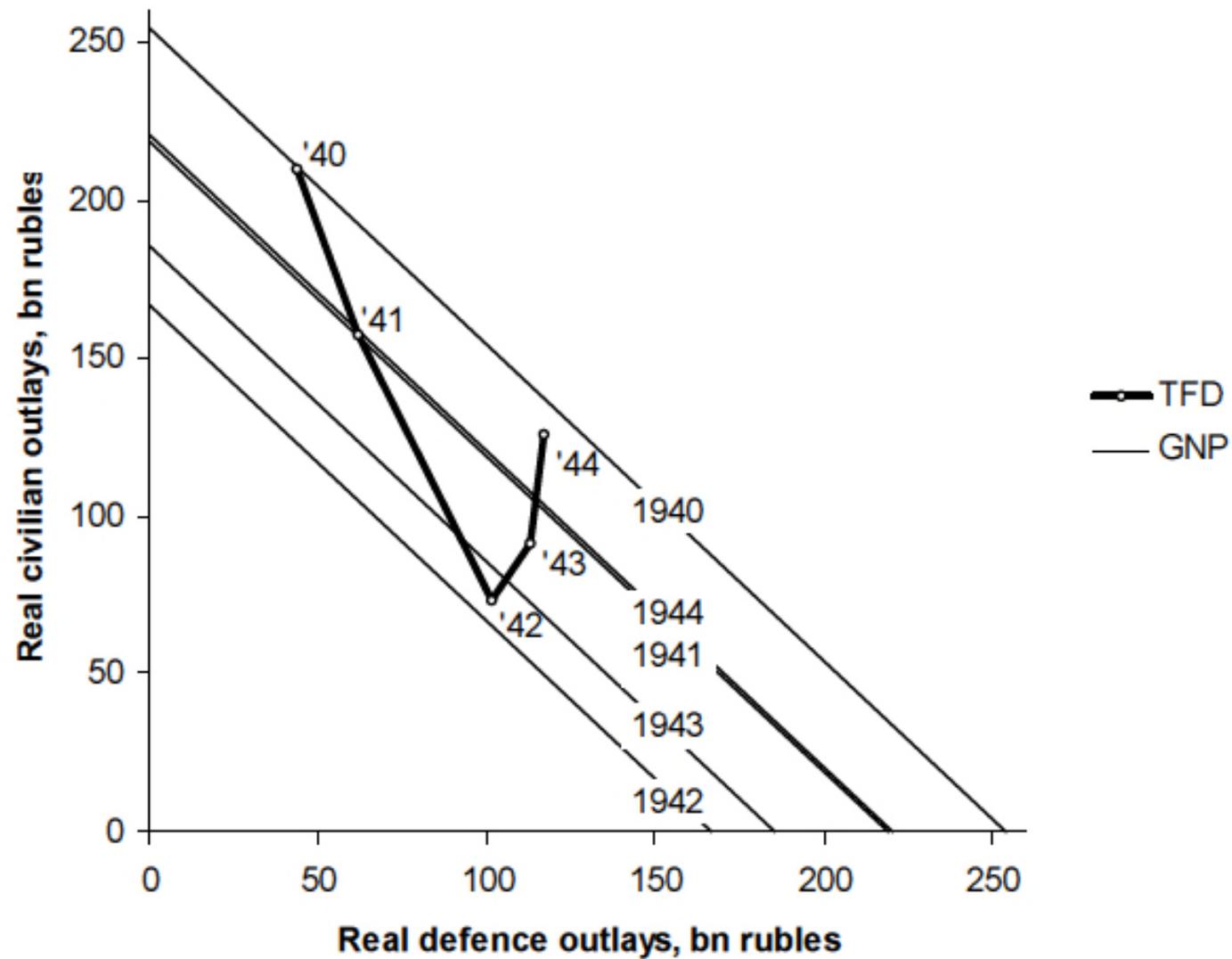
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- The recipient **reoptimizes**: there is substitution away from the war effort.

Aid with Lower Stakes: Substitution

The Soviet Union, 1940 to 1944:



- After 1942 the ΔTFD (total final demand) from aid was split between ΔC and ΔM .
- $\Delta C/\Delta M$ was greater than 1 in 1943, and greater still in 1944.

Source: Harrison (2005).

Aid with Lower Stakes: Substitution

Summary: To a large extent, analysis of aid reverses that of economic warfare.

- Economic warfare is negative-sum; aid is **positive-sum**.
- Economic warfare subtracts resources, but final effect is not specific resources that are lost; depends on **substitution** (and counter-measures).

Aid adds to resources, but final effect also depends on **substitution**.

- Receiving aid permits a ripple of substitution away from specific resources added.
- The recipient's economic mobilization can be **reduced**.
- But the donor must **increase** mobilization.

The Soviet Union's civilian economy was given a breathing space.

- The Red Army could fight using imported trucks and canned food.
- Soviet agriculture could keep more workers.
- From 1943 the Soviet economy was no longer on the verge of collapse.

Burden Sharing

Wartime mutual aid was a positive sum game.

As with trade based on **comparative advantage**:

- The Soviet Union imported fighting equipment.
- And “exported” fighting services to the Alliance.

Under autarky, on the Eastern front:

- The Red Army would have had to fight using own equipment.
- More Soviet soldiers would have been killed.
- At best, the war on the Eastern front would have taken longer.
- At worst, the Soviet economy would have collapsed and Red Army defeated.

And on the Western front:

- The British and Americans would have had to fight using own manpower.
- More British and American soldiers would have been killed.
- The war on the Western front would have taken longer.
- Germany would still have been fighting when the **atomic bomb** was ready ...

Burden Sharing

Because burdens were shared, everyone gained (even Germany!).

If the aid relationship between America and the Allies was so good, why was it so bad?

- Each side feared exposure to exploitation by the other.

Tensions with UK: see Skidelsky (2000), DeLong (2002), and Cappella Zielinski (2016: chapter 4).

More serious **tensions with USSR:** US expected compensation for Lend Lease to be military cooperation and information sharing.

- The Soviet Union spied massively on the US government and rarely shared information.
- Usually refused cooperation when asked.
- Berated the Allies for not invading France sooner.
- Believed the Americans were deliberately prolonging the war to substitute Russian for American blood.

The Americans regarded the Russians as ungrateful and believed they were using military aid so as to position the Soviet Union advantageously for postwar rivalry.

- The aid relationship disintegrated as the war ended.

Two related approaches to **moral hazard** in alliances: Kay (1993) on joint venture games; Olson (1966) and Olson and Zeckhauser (1966) on free-riding (Lecture 15).

Mutual Aid as a Joint Venture

The wartime alliance can be analyzed in the language of industrial organization, as a joint venture, based on either common objective or mutually beneficial exchange (inspired by Kay 1993, pp. 151-153):

- Each country has an input that costs 1.
- Each country's input yields 1 in isolation and 3 when combined with the other country's input.
- All benefits from cooperation are shared equally.

Common objective:

		Country 2	
		Cooperate	Defect
Country 1	Cooperate	$(3 - 1, 3 - 1)$	$(3/2 - 1, 3/2)$
	Defect	$(3/2, 3/2 - 1)$	$(1 - 1, 1 - 1)$

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- All benefits from cooperation are shared equally.

Common objective:

		Country 2	
		Cooperate	Defect
Country 1	Cooperate	(2, 2)	($\frac{1}{2}$, $1\frac{1}{2}$)
	Defect	($1\frac{1}{2}$, $\frac{1}{2}$)	(0, 0)

- Success and failure are **common to both partners**.
- Dominant strategy is **Cooperate**.

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- Benefits from two-sided cooperation are shared equally.
- Benefits from one-sided cooperation can be stolen.

Mutually beneficial exchange:

		Country 2	
		Cooperate	Defect
Country 1	Cooperate	$(3 - 1, 3 - 1)$	$(-1, 3)$
	Defect	$(3, -1)$	$(1 - 1, 1 - 1)$

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Mutually beneficial exchange:

		Country 2	
		Cooperate	Defect
Country 1	Cooperate	(2, 2)	(-1, 3)
	Defect	(3, -1)	(0, 0)

- Dominant strategy becomes **Defect**.

Implication: probability of switching from Cooperate to Defect increases with scope for stealing benefits.

Mutual Aid as a Joint Venture

The wartime alliance can be analyzed in the language of industrial organization, as a joint venture, based on either common objective or mutually beneficial exchange (inspired by Kay 1993, pp. 151-153):

- Each country had a capability that was more productive when combined with others’.
- The appropriability of benefits from sharing changed as the war progressed.

In 1942 and 1943:

- The Allies shared a common interest in survival of the Soviet Union.
- Returns to cooperation went to everyone.
- The joint venture had a **common objective** → **Cooperate**.

From mid-1944 victory was no longer in doubt:

- Postwar division of Europe and Asia was zero-sum.
- There was a race to see who would get first to Berlin.
- Potential benefits were increasingly appropriable by one side.
- The game swung from cooperation to **mutually beneficial exchange** → **Defect**.

What We Have Learned

The economic theory of alliances is about collective (two-sided) **benefits**.

And the scope for individual (one-sided) **exploitation**.

In the Grand Alliance of World War II, Lend-Lease expressed the potential for both.

Lend-Lease:

- Was financed by American mobilization.
- Stabilized the Soviet economy.
- Allowed British and Soviet substitution towards civilian outlays.
- Enabled intra-coalition specialization.
- Won the war at **lowest joint cost**.

And:

- Created scope for one-sided gains as the war ended.
- Left everyone feeling **cheated**.

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