16. The Cold War: Market Power

Mark Harrison
mark.harrison@warwick.ac.uk

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Alternative Approaches

How big is military procurement?

- In 2018, U.S. military procurement budget (inc. RDTE) was $200 billion and UK £15 billion so 1% of GDP or less in both countries.
- Scale this sum by NHS procurement of prescription medicines £17.4 billion in 2016/17.
- In fact, the “military-industrial complex” is of comparable size to the “medical-industrial complex.”

The health and defence markets show a few other similarities.

	Health	Defence
Quality matters	✓	✓
Heavy regulation	✓	✓
Producer lobbies	✓	✓
Costs hard to control	✓	✓
Welfare-enhancing	?	??

Alternative Approaches

The literature on Cold War defence markets divides into two analytical streams.

Each predicts a bad bargain, but differently from the other:

	Market power	Corporate political action (lobbying)
Role of defence contractors	Rent extraction	Rent seeking
Role of government	Honest victim	Corrupt
Typical symptoms	Hold-up	Pork barrel
Typical outcomes	Overspending and underprovision	Overspending and overprovision

We will look at market power in this lecture and corporate political action in the next (final) lecture.

Market Power

Demand

Government is main if not sole purchaser.

- Quality is crucial
- But so is price because of budgetary constraints.

Problem of ministry of defence (MOD):

- To extract most efficient quantity/quality package from the producer for cash available.

Supply

Contractors are few (*ex post* if not *ex ante*).

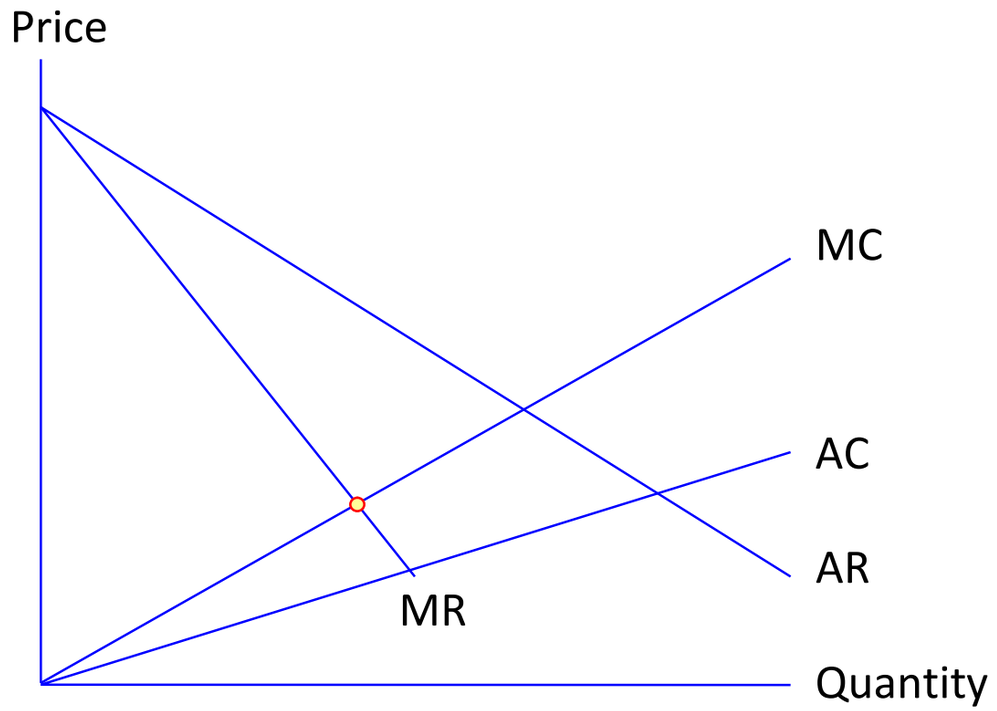
- Production technologies and facilities highly specialized with few alternative uses.
- Rapid technological change creates opportunities for competitors to enter.

Problem of contractor:

- To extract cash available for least effort.

Before the Contract

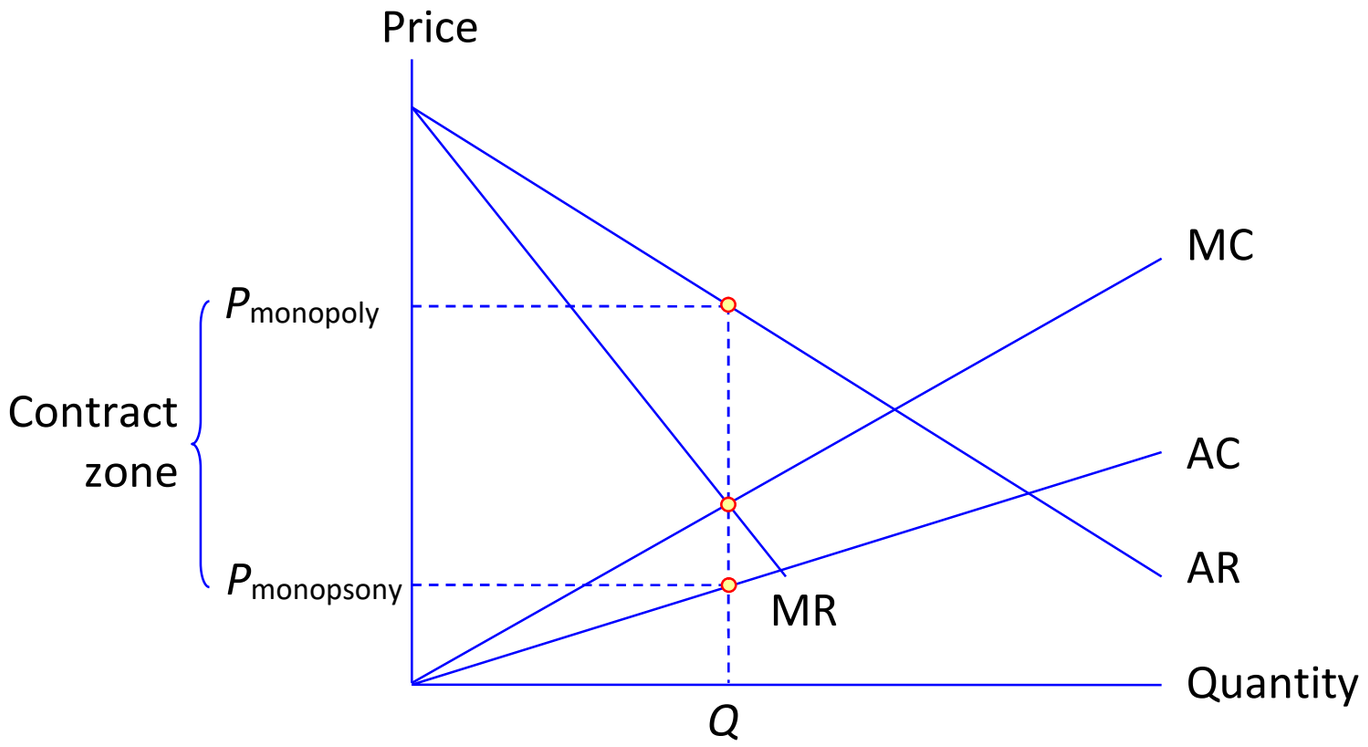
Contracting under bilateral monopoly:



- Both sides restrict the market, looking for a one-sided gain at MR = MC.

Before the Contract

Contracting under bilateral monopoly:



- The outcome is decided by bargaining power.
- We will look at the factors that decide the bargaining power of the two sides.

Before the Contract

The MOD's problem starts here:

- Military equipment is often an experience good.
- It's hard to know if you are getting a good bargain before purchase.

Experience goods: When we consume goods, we also evaluate them.

Compare the cost of evaluation before and after purchase (Nelson 1970).

If cost of prior evaluation is low:

- Quality is visible, sampling is cheap, conditions of use easily replicated (examples: clothing, ammunition).
- Timeline is search → evaluate → select → buy → search again.

If cost of prior evaluation is high:

- Quality (durability, maintenance intervals, adaptation to unanticipated conditions) hard to ascertain, sampling expensive (examples: social clubs, complex machinery).
- Timeline is search → select → buy → evaluate → { good experience → buy again; bad experience → search again }

Before the Contract

Problem: markets for experience goods work well only when good suppliers can be rewarded by repeat business and bad suppliers punished by not buying from them again.

- Timeline is search → select → buy → evaluate → { good experience → buy again; bad experience → search again }
- Buy again (repeat business) rewards high quality.
- Search again penalizes low quality.

But at the cutting edge of technology, products change rapidly.

In military procurement, the values of experience and of repeat business are often low.

For the buyer:

- When every contract is for a radically new product, experience is a poor guide to the next purchase.

For the seller:

- There is little incentive in the prospect of repeat business.

The Contract: Contingency

The MOD's problem and the contractor's problem interact:

The contractor's problem:

- Extract cash available for least effort.

Given:

- Cannot ascertain all costs before production (rapid technological change).
- The contractor is risk averse (MOD, backed by government, can spread risks more widely and so insure more cheaply than private seller).

Result: to incentivize the seller, equipment contracts are often made contingent.

Contingent contracts spell out what happens if costs of implementation are higher than expected.

- To allow for unanticipated costs.
- And, at a price, for cancellation.

Moral hazard: What's to stop the contractor from putting in a low price, claiming that high costs were unforeseen, and claiming the gap from the government?

- The contingent contract must specify that unexpected costs are shared.
- The contractor must bear some pain from failure to foresee costs.

The Contract: Incompleteness

The MOD's problem continues: the equipment contract is often incomplete (Hart 1995).

A contract is incomplete when the quality of implementation is crucial and cannot be written down beforehand.

Examples: employment, marriage, military procurement.

MOD's problem:

- Extract most efficient quantity/quality package from producer for cash.

Given:

- Cannot assure all aspects of quality on delivery (experience-good problem).
- Cannot even write down all dimensions of quality beforehand (contract is incomplete).

Result:

- Opportunity for seller to economize on effort by shading on quality.*

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* Shirking = effort is under-supplied in quantity. Shading = effort is under-supplied in skill and care.

After the Contract: the Hold-Up

Whatever the contract says, there can be post-contract renegotiation.

To carry out a contract, both sides must make investments in the specific relationship (Williamson 1975).

These investments are only of value if the specific relationship survives.

Example: In marriage, search → selection → matching investments, e.g. getting to know each other; children.

In business:

- Search costs: buyer must invest in search and match with particular sellers.
- Specialization: seller must invest in specialized technology and facilities.
- Timeline:
  specific investments → incomplete/contingent contract → HOLD-UP → renegotiation.

Basis of the hold-up:

- MOD invests *S* in search and due diligence.
- Contractor invests *F* in specialized facilities.
- Contract will allow for total profit ≥ *F* + *S*.

How will the profit be shared?

The Hold-Up Problem

How will the profit be shared?

After both sides have sunk their costs, each party can threaten to walk away for a larger share of the profit.

- Threat: If the contract fails, each side must pay *F* or *S* AGAIN or go out of business.
- The hold-up: "Pay me – or I will hurt you more than you can hurt me."

Contractor	MOD
To keep MOD in the contract (i.e. not have to build specialized capacity again), contractor will pay MOD ≤ *F* (say, in uncompensated costs).	To keep contractor in the contract (i.e. not have to search again), MOD will pay contractor ≤ *S* (say, in quality shortfall).

Then, each will walk away only if the other tries to extract too much.

Implications:

- Short run: actual distribution of profit depends on bargaining power.
- Long run: hold-up is predictable, so rational fear of hold-up → underinvestment by both sides.

The Hold-Up Problem

Short run: What decides bargaining power?

Relative bargaining power is fixed by value of outside options.

For MOD:

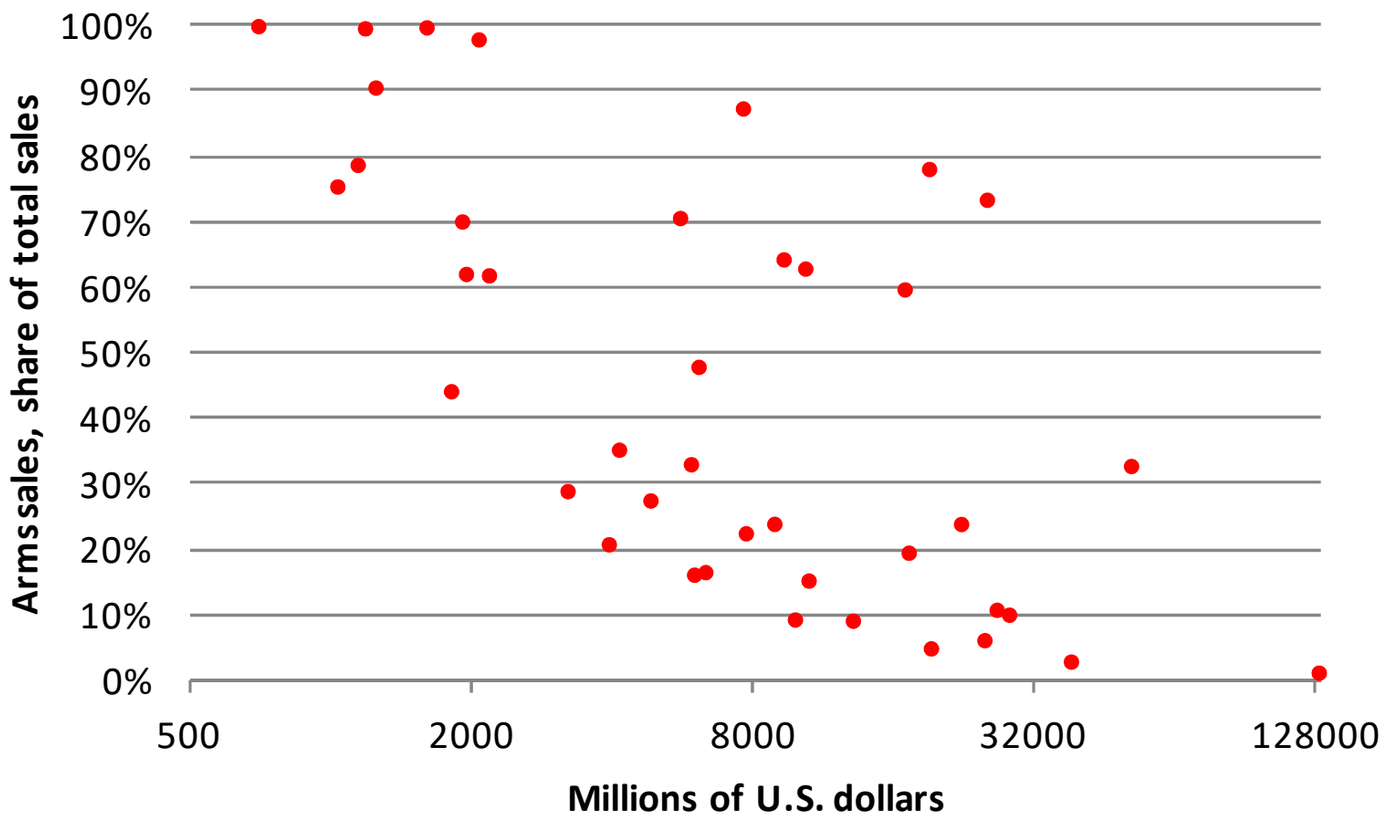
- Outside option is to walk away from contractor.
- Cost is having to search again.
- Profit outside the relationship improved by existence of competing suppliers.
- Weakened by multiple objectives, e.g. Buy British, save existing jobs.

For contractor:

- Outside option is to walk away from buyer.
- Cost is having to switch specialization.
- Profits outside the relationship improved by diversification.

Fear of Hold-Up

Long run: the standard form of hold-up problem in defence procurement (Rogerson 1994) is that the contractor will not invest in specialized (relationship-specific) production facilities and R&D *ex ante* for fear the government will expropriate profits *ex post*.



- Successful defence contractors in terms of size (past growth) are diversified.

Source: Data from Poast (2006, p. 112), based on 40 largest arms-producing companies in OECD and developing countries in 2000.

Fear of Hold-Up

Long run: the standard form of hold-up problem in defence procurement (Rogerson 1994) is that the contractor will not invest in specialized (relationship-specific) production facilities and R&D *ex ante* for fear the government will expropriate profits *ex post*.

German iron ore consumption, share from domestic sources:

- 1913: 66% (much from Lorraine and Silesia).
- 1936: 26%.

December 1936: Göring demanded private investment in facilities to exploit domestic low grade iron ore deposits.

- The contractor's problem: Guaranteed access to home market created by rearmament, versus loss of competitive advantage in export markets.
- The contractor's risk: Higher steel costs → loss of access to overseas markets → excessive dependence on government contracts.

Fearing hold-up, German steel firms refused.

Result: the Reichswerke Hermann Göring.

Fear of Hold-Up

Long run: the standard form of hold-up problem in defence procurement (Rogerson 1994) is that the contractor will not invest in specialized (relationship-specific) production facilities and R&D *ex ante* for fear the government will expropriate profits *ex post*.

Reason	Percent with reservations who indicated this reason
Belief that the present administration in Washington is strongly antibusiness and a consequent discouragement over the practicability of cooperation with this administration on rearmament	77.3
Government's delay over letting them charge off the cost of their new plants for rearmament within five years for tax purposes	64.6
Fear that acceptance of rearmament orders will subject their plants to added interference with their labor policies	45.2
Belief that profits allowed on rearmament contracts are too small to justify the investment of the risks involved	38.4
Fear that an excess-profits tax will wipe out most of their profits on the rearmament orders	36.6
Feeling that the emergency is not so acute as the president should have them feel	35.0
Public sentiment against war profits, as a result of which businessmen would rather not handle war orders	20.1

- In the interwar period, United States businessmen were even more against rearmament than the general public.
- As late as October 1940, proportion of United States businessmen surveyed in October 1940 by *Fortune* magazine reporting reluctance to engage with rearmament contracts was 59%.

Source: Higgs (1993).

Second-Best Remedies

Market economy: First-best remedies do not exist.

What about the second-best?

Remedy	Example	Responsibility for costs
Vertical integration under public ownership	German steel and RHG; Admiralty shipyards and Royal Ordnance Factories; the Manhattan project and atomic energy research	Unaccountable officials with low-powered incentives
Public-private partnerships: sharing or subsidy of fixed costs	The Hindenburg programme (Germany in WW1); UK shadow factories (pre-WW2), U.S. GOCO (government-owned, contractor-operated capital, WW2); government funded fixed investment and R&D (most western economies during and after Cold War).	Unaccountable officials with low-powered incentives; corporate officials with perverse incentives.
Public accountability: name and shame.	Type 45 destroyer (NAO 2009): contracted to cost £5 billion for delivery in 2010; entered service in 2013 at £6.5 billion.	Politicization: military procurement becomes a political football.

Procurement in a Command Economy

Could a command economy do better?

The entire Soviet economy looked like a western national defence market—but better:

- One buyer, few producers.
- The state taxed profits.
- The state subsidized losses.
- The state paid for investment.
- State plans and contracts were compulsory.

No incentive for suppliers to hold up the buyer?

Could a command economy do better?

Not when quality mattered.

Procurement in a Command Economy

When quality mattered, the problems of the Soviet buyer and Soviet seller were the same as in a market economy:

Problem of ministry of defence (MOD):

- To extract most efficient quantity/quality package from the producer for cash available.

Problem of contractor:

- To extract cash available for least effort.

Before contract:

- When quality mattered, the government could not allocate by decree, but had to search and negotiate.
- Producers knew more than government officials about production possibilities and costs.
- The government knew it.

Power shifted to the side of the contractor (Harrison and Markevich 2008).

- The MOD often struggled to place contracts and could not dictate terms.
- The producer could refuse a contract or demand one based on high costs.

Procurement in a Command Economy

When quality mattered, the problems of the Soviet buyer and Soviet seller were the same as in a market economy:

Problem of ministry of defence (MOD):

- To extract most efficient quantity/quality package from the producer for cash available.

Problem of contractor:

- To extract cash available for least effort.

After contract:

- When quality mattered, contracts were incomplete and contingent, just like in a market economy.
- Seller could hold up the buyer by shading on quality.
- Result: quality shortfalls and hidden inflation (Markevich and Harrison 2006, 2015; Harrison and Markevich 2008).

Second-Best Remedies

Could a command economy do better?

Remedy	Responsibility for costs
Vertical integration under public ownership	Yes: But Stalin worried continuously about allowing a powerful military-industrial complex to emerge that could threaten his authority.
Public-private partnerships: sharing or subsidy of fixed costs	Unthinkable: The private sector was prohibited.
Public accountability: name and shame	Unthinkable: The public was excluded from government business
Secret accountability	Military officers were seconded to every defence factory to check production and reject substandard deliveries. The incentive this created for contractors was low-powered and inefficient; enforcement relied on scrapping long runs of weapons.

Implication: totalitarian power could not change the fundamental problem of defence procurement.

What We Have Learned

Defence markets are about as far as you can get from perfect competition.

Whether ownership is private or collective, and whether rulers are democratic or authoritarian.

- One buyer dealing with a charmed circle of big defence contractors.
- Cost overruns, delayed deliveries, quality shortfalls, subsidies, and kickbacks.

We have looked at approaches based on:

- Market power and bargaining.
- The hold-up problem.
- None of these involves explicit collusion, lobbying, or corruption.

It's a wonder that anything worked!

In the final lecture we will look at political action by corporate defence interests.

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