Mixed Oligopoly: Old and New

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The Pros and Cons of Competition in/by the Public Sector

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interaction of private and public agents

- Traditional goods markets
  cars
  steel manufacturers...

- several banks in several OECD countries
  short lived, but in the interim...

- welfare state
  education
  health
  pension provision...
competition authority

• assesses the fairness of certain behaviours

Ownership of a firm or an agency will affect its objective

Not all agents (firms, agencies, etc) are profit-maximisers

Is an agent’s behaviour compatible with its objective function?

• no  prima facie evidence of anti competitive intent

• assesses the fairness of subsidies

When are subsidies justified?
Traditional "mixed oligopoly" theory

Cremer – Marchand – Thisse 1989
De Fraja – Delbono 1989

Cournot duopoly – firms simultaneously choose output

demand \[ Q = 1 - p \]

cost

\[ 0 \quad cq_s \quad c > 0, \quad c < \frac{1}{2} \]

private firm  \rightarrow  public firm
output

\[ q_p \quad q_s \]

private firm \quad public firm

objective function

\[
\left(1 - q_p - q_s\right)q_p \quad \left(1 - q_s - q_p - c\right)q_p + \left(1 - q_s - q_p\right)q_s + \frac{(q_s + q_p)^2}{2}
\]

private firm: own profit

public firm: industry profit plus consumer welfare
solution: firms choose output

\[ q_p = c \quad q_s = 1 - 2c \]

private firm \quad public firm

equilibrium price \quad p = c

the public firm’s marginal cost equals the market price

just as in monopoly (Boiteux 1956)
why is the public firm less efficient?

political pressure (eg to increase employment)
soft budget constraint

on the other hand

(private) monopoly is quiet life: \( X \)-inefficiency
reputation for toughness
endogenise cost differences

(De Fraja – Delbono 1989)

demand \[ Q = 1 - p \]

cost \[ \frac{k}{2} cq^2 \]

\[ c = 1 \quad c \geq 1 \]

private firm \hspace{2cm} public firm
solution: 
maximise as before

\[ q_p = \frac{k}{1+k+2ck+ck^2} \leq \quad q_s = \frac{1+k}{1+k+2ck+ck^2} \]

private firm

public firm

equilibrium price

\[ p = ck \frac{1+k}{1+k+2ck+ck^2} \]

the public firm’s marginal cost equals the market price

the public firm’s marginal and average cost is higher than the private firm
Profits

\[
\pi_p = \frac{1}{2} c^2 k^2 \frac{2 + k}{1 + k + 2ck + ck^2} < \pi_s = \frac{1}{2} ck \frac{(1 + k)^2}{1 + k + 2ck + ck^2}
\]

private firm

public firm

if \( 1 \leq c < \frac{(1 + k)^2}{k(2 + k)} \)

the public firm makes more profit than the private firm
Intuition

public firm pushes output up, because it “likes consumers”

private firm finds a smaller “residual” market, and so it produces less

because it produces more the public firm has higher cost
if the difference in efficiency is small

data would suggest a less efficient public firm making more profit.

anticompetitive?
what is the objective function?
A very simple banking story

De Fraja – Iossa 2009

what do they say about the current crisis?
public banks should lend more

Is this true?
sequence of events

entrepreneur has a project/idea
entrepreneur chooses a bank
entrepreneur asks for a loan

• if loan given
  – build cable car

• if load not given
  – go to other bank
  • if loan given
    – build cable car

• if loan not given
  – end of story
project

project can be good or bad

\[ V_G \quad V_B \]

\[ V_G > 0 > V_B \]

probability good project \( g \)

project is worthwhile in expectations \( gV_G + (1 - g)V_B > 0 \)

**if nothing is known about the project it should be funded**
banks

- can be competent (informed) or incompetent
  - no information
  - knows whether project is good or bad
  - probability of competent bank $\gamma \in (0,1)$

- can be private or public
  - payoff: total (industry) expected profit
  - payoff: own expected profit
1. both banks are private

**Proposition:**
competent banks only funds a good project
incompetent bank funds the project if it is first
incompetent bank does not fund the project if it is second
it knows that a rejected project must be bad

expected payoff is positive

2. the first bank is private the second is public

A good project is always funded.
3. the first bank is public the second is private

Proposition: recession (low value of expected payoff):
competent banks only funds a good project
incompetent bank does not fund the project if it is first (public)
incompetent bank does not fund the project if it is second (private)

A rejected project can be good or bad
- it is good only if the first bank is incompetent
- low probability of a good project at the second stage

I do not know whether project is good or bad.
If it is good it will be accepted by the second bank if it is competent.
It may be a good idea to let the second bank choose
(in a recession, it is a good idea)

In recession the public bank is more conservative
Lends less than an otherwise identical private bank would
A good project is rejected with some probability.
Public-private interaction in the welfare state

separate conceptually provision and funding

- service supply to final consumers by a state monopoly

- private competitors supply a state agency buyer

- service supply to final consumers at the same price by a mixture of private and public suppliers

- service supply to final consumers by a mixture of private and public suppliers. price may be different

Police protection, national security, defence, crime prosecution, public procurement, PFI, Medical care (France, Italy...), school vouchers, Pension provision, housing, schools
Fundamental role of human capital

- cost of provision
- political acceptability
Fundamental role of human capital: Cost of provision

separate conceptually provision and funding

externality between workers
   my utility depends on the quality of my colleagues
      mix of skilled and unskilled workers

**public** funding and **private** provision
   profit maximisation implies a given mix (say 30%)

**public** funding and **public** provision
   welfare maximisation implies a different mix (say 20%)
Fundamental role of human capital
Cost of provision

**public** funding and **private** provision
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**incentive to acquire human capital**
is different with public and private provision
because of the different mix

and therefore so will be the amount of human capital
Fundamental role of human capital
Political acceptability

competition between **public** and **private** providers
must be “fair” (eg art.87)
“distort competition by favouring certain undertakings”

private schools do not complain about free state schools
private hospitals do not complain about NHS
Fundamental role of human capital
Political acceptability

consider four types of goods/services

• primary and secondary education, health, tertiary education;
• police protection, defence;
• pension provision and social housing;
• “traditional” state owned enterprises (car manufacturer/utility).
Fundamental role of human capital
Political acceptability

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competition between private and public agents
human capital important
provided in public institutions
career path of suppliers
Fundamental role of human capital
Political acceptability

consider four types of goods/services

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**NO** competition between private and public agents
human capital important
provided in public institutions
career path of suppliers
Fundamental role of human capital
Political acceptability

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private and public suppliers
little role of human capital
public supply has low quality

NO competition between private and public agents
Fundamental role of human capital
Political acceptability

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private and public suppliers
little role of human capital
competition between private and public agents
justification for subsidies

consider four types of goods/services

- primary and secondary education, health, tertiary education;
- police protection, defence;
- pension provision and social housing;
- “traditional” state owned enterprises (car manufacturer/utility).

training externality

training externality

redistribution

none

competition between private and public

quality not necessarily lower in public sector

empirical results are ambiguous

public agents produces two outputs
fine tune the subsidy

voucher
allows competition to operate
Conclusion
Markets with private and public agents
to assess the anti-competitive intent
need to know the objective function
counter-intuitive conclusions
  • traditional firms may have higher costs and make more profit if they are public
  • public banks may lend more conservatively in a recession
subsidies may be needed
  • internalise a human capital externality
  • pursue a redistributive objective