Mergers and collusion with asymmetric capacities

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Introduction

Ex-ante merger control :

- unilateral effects : evaluate the possibility to reduce output and raise price unilaterally after a merger
- coordinated effects : evaluate the collusive impact of a merger

Mergers and collusion :

- Merger might favour the creation of collusive outcomes ($\searrow$ number of independent firms)
- Symmetric markets are more prone to collusion than asymmetric markets : Compte et al. (2002) ...
- Vasconcelos (2005) : cost asymmetry and Cournot competition, stick and carrot structure : increasing the inequality between firms inhibits collusion.

Introduction

Leniency Programs : reduced fines for cartel members who report themselves to and assist the antitrust authority.

2 effects :

- >0 : $\nearrow$ incitations to deviate from the cartel agreement.
- <0 : $\searrow$ cost of anticompetitive behaviour because of reduced fines $\Longrightarrow$ ex-ante pro-collusive effect.

Motta and Polo (2003) : Leniency programs and cartel prosecution :

- When the Antitrust Authority has high resources, it is optimal to prevent collusion using full fines (no leniency programs).
- When the Antitrust Authority has limited resources, leniency programs may be optimal.

Introduction

Antitrust authority evaluates coordinated effects after a merger. AA compares 2 situations :

- merger accepted and risk of collusion
- benchmark situation : merger rejected and competition

Problem : merger rejected + collusion ? ?

- Litterature on mergers and collusion : estimation of : $\tilde{\delta}$.
- Here : equilibrium path of firms. Collusion actually takes place or not.

The model

Assumptions :

- Cournot competition
- Homogeneous product
- Linear demand function : $p = 1 - Q$
- n asymmetric firms
- k_i : fraction of the industry capital stock
  - $k_1 = k_2$
  - $k_i = k_j, \forall (i,j) \neq (1,2)$
- Cost function (Perry and Porter) : $C(q_i, k_i) = \frac{q_i^2}{2k_i} + q_i c, \forall i \in [1, n]$
- c identical and constant for each firm

The model

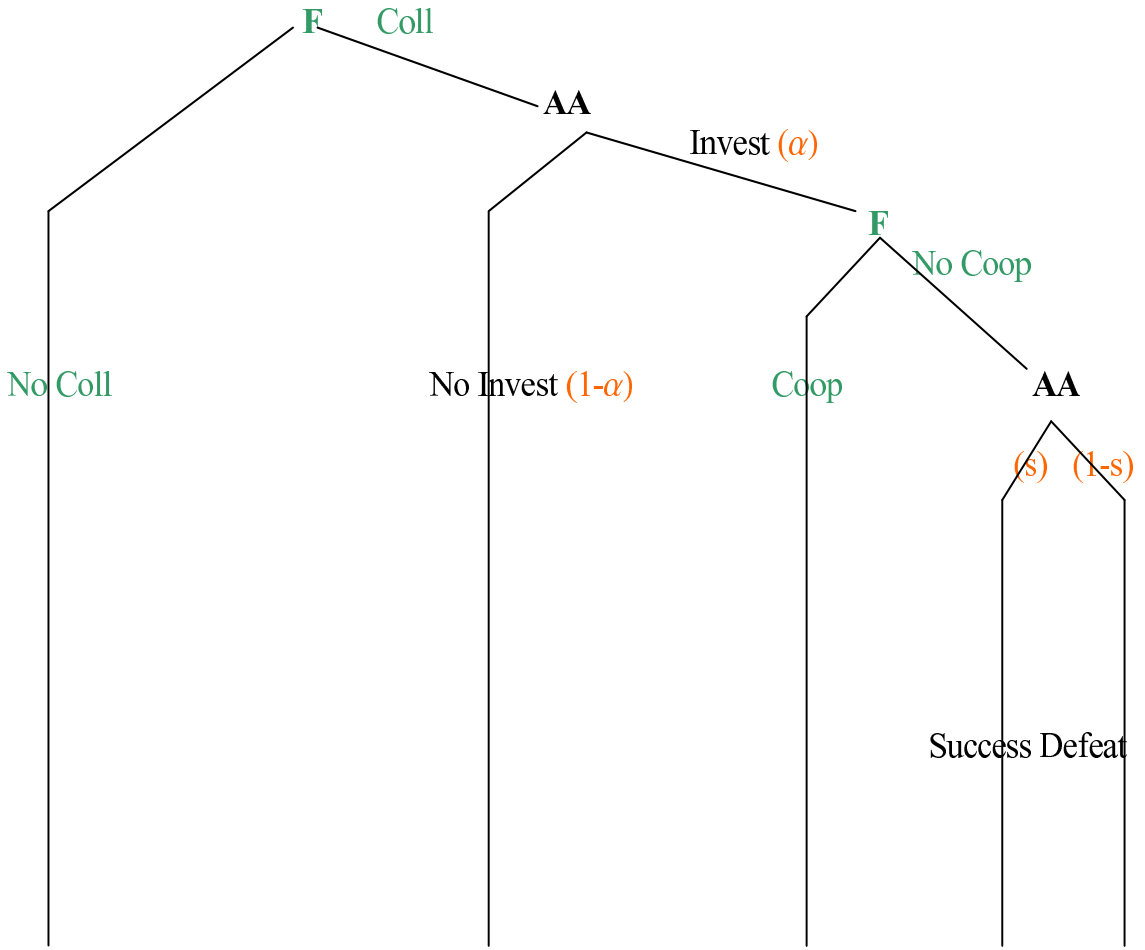
Competition policy :

- $F \in [0, \bar{F}]$: fine.
- $f \in [0, F]$: reduced fine.
- $\alpha \in [0, 1]$: probability that firm is reviewed by the AA.
- $s \in [0, 1]$: probability that the AA successfully concludes the investigation when firms do not cooperate.

The model

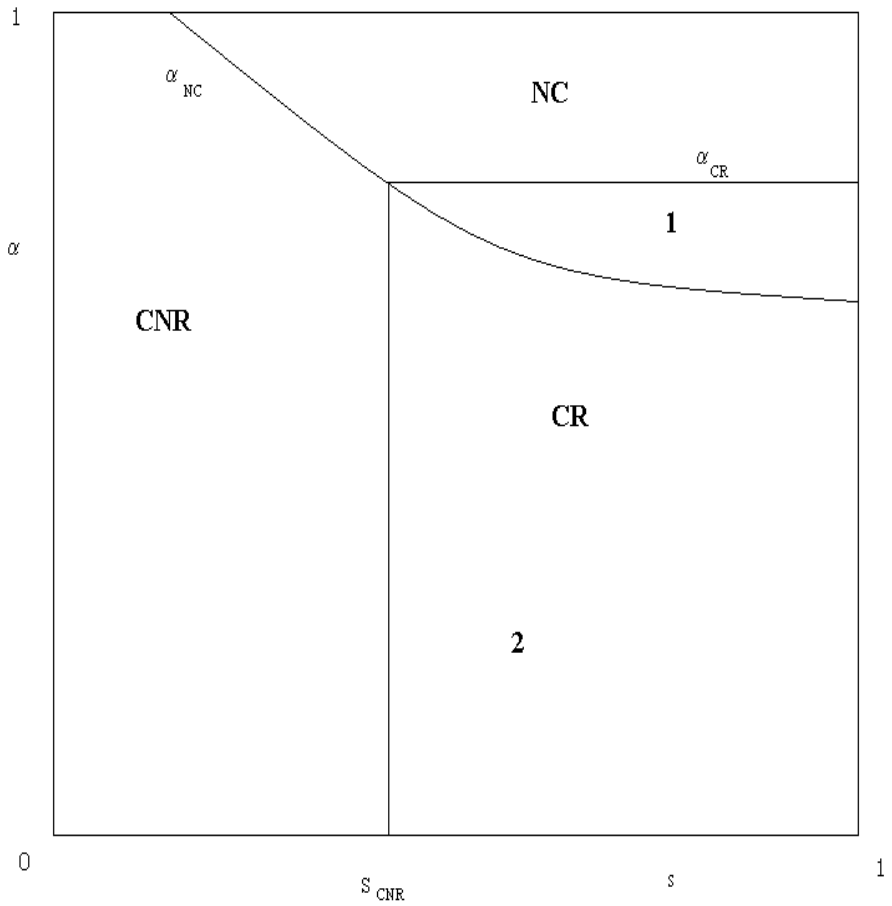
Timing of the game :

- t=0 : AA approves or rejects a merger between two firms : 1 and 2.
- t>0 : game repeated indefinetly
  - t=1 : firms decide to reach a collusive agreement or to deviate.
  - No deviation until a time $t \Rightarrow$ Collusion (π_M).
  - If investigation at t then two cases :
    - Cooperation **(C)** : firms denounce the cartel to the AA ; pay f and play non cooperatively during one period and restart collusion after an inquiry is concluded. If deviation from the collusive agreement, then non-cooperative game until the end of the game.
    - No cooperation **(NC)** : the investigation begins at $t+1$. If firms are not condemned ($(1-s)$) then they continue to play cooperatively ; if they are found guilty, then they pay F and they have to play non cooperatively during one period. If deviation from the collusive agreement, then non-cooperative game until the end of the game.


F
Coll
AA
Invest (α)
F
No Coop
No Coll
No Invest (1-α)
Coop
AA
(s)
(1-s)
Success
Defeat

The model

- Summary of the modelisation of collusion :
  - Grim trigger strategy.
  - 2 types of deviation :
    - deviation from the collusive agreement.
    - reporting the information to the AA.
- 3 types of equilibria :
  - CR equilibrium : Collude and Reveal.
  - CNR equilibrium : Collude and No Reveal.
  - NC equilibrium : No Collusion.


1
α_{NC}
NC
α_{CR}
1
α
CNR
CR
2
0
S_{CNR}
s
1

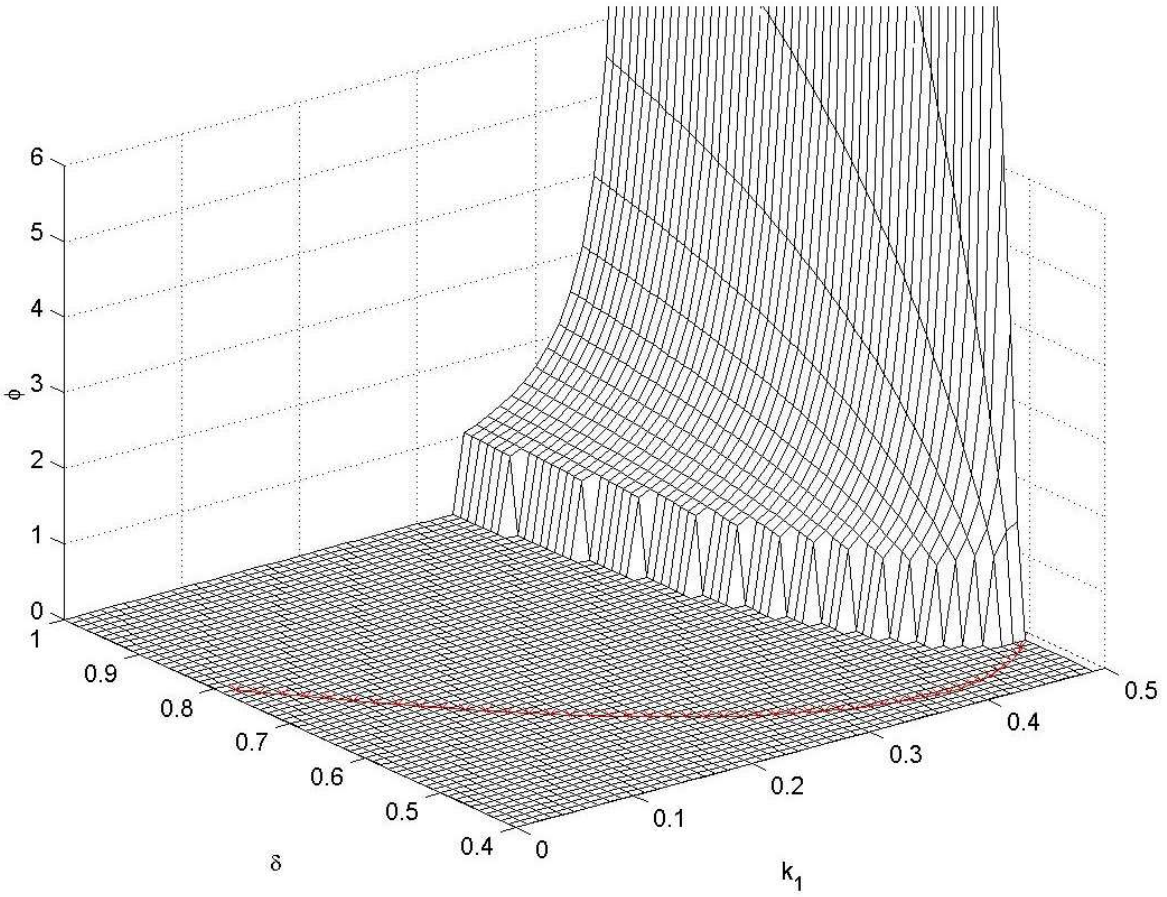
The model

- Comparative static on α_{CR}, α_{NC} and s_{CNR}
- Comparative static on α_{CR}.

  Value of $\phi = \frac{\alpha_{CR}^{bm}}{\alpha_{CR}^{am}}$ (bm = before merger, am = after merger).

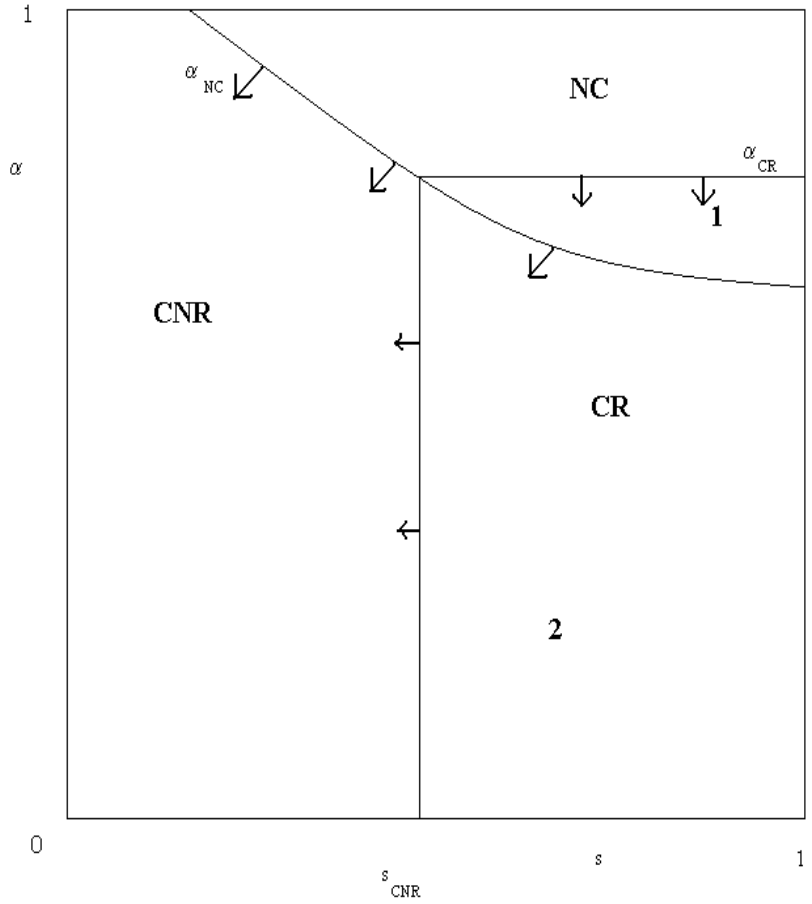
  - If $\phi > 1$, $\alpha_{CR}^{bm} > \alpha_{CR}^{am} \Longrightarrow \alpha_{CR} \Downarrow$.
  - If $\phi < 1$, $\alpha_{CR}^{bm} < \alpha_{CR}^{am} \Longrightarrow \alpha_{CR} \Uparrow$.

- $\delta \geq \tilde{\delta} = \frac{\pi_D - \pi_M}{\pi_D - \pi_N}$


6
5
4
3
2
1
0
φ
1
0.9
0.8
0.7
0.6
0.5
0.4
δ
0
0.1
0.2
0.3
0.4
0.5
k1

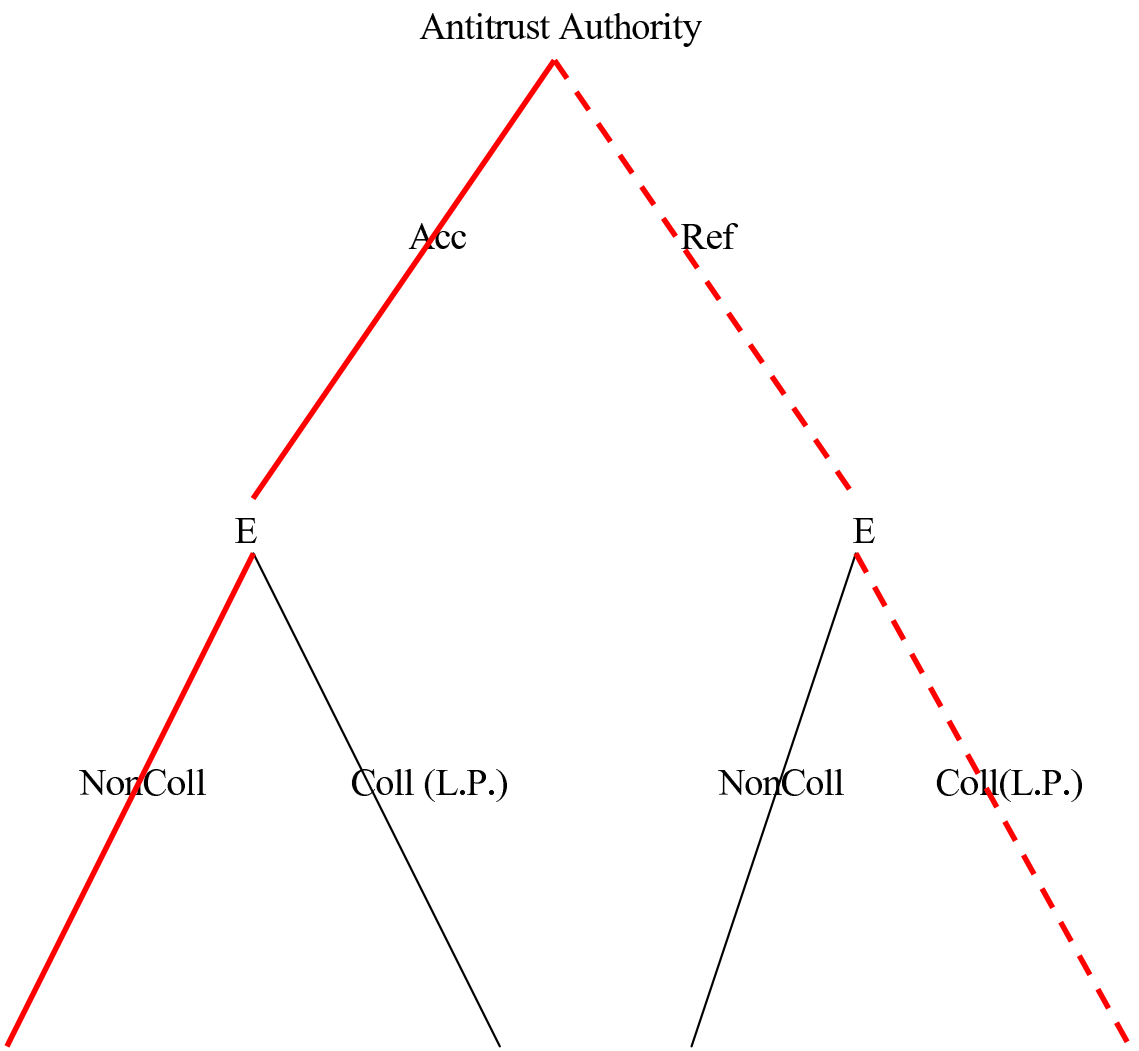
The model

- For k_1 high enough and for δ sufficiently high then $\phi > 1$.
- For k_1 low enough then $\phi < 1$.
- With high (resp. low) production capacity of the merging firms, a merger will cause the border line α_{CR} to move down (resp.up).
- For α_{NC} and s_{CNR} :
  - With high (resp. low) production capacity of the merging firms, a merger will cause the border line α_{CR} to move to the southwest (resp.northwest).
  - With high (resp. low) production capacity of the merging firms, a merger will cause the border line s_{CNR} to move to the left (resp.right).


1
α
0
α_{NC}
NC
α_{CR}
1
CNR
CR
2
s_{CNR}
s
1

Implications for merger control

- With high production capacity of the merging firms, a merger will reduce the space of parameters under which firms tend to collude.
- With high production capacity of the merging firms, a merger will increase the space of parameters under which firms tend to collude with revealation in comparison with the space of parameters under which firms tend to collude without revealation.
- $\Rightarrow$ Mergers reinforcing market asymmetry should be considered by AA as pro-competitive
- $\neq$ from the analysis of unilateral effects (dominance increased)


Antitrust Authority
Acc
Ref
E
E
NonColl
Coll (L.P.)
NonColl
Coll(L.P.)

Conclusion

- AA must compare 2 situations :
  - merger accepted and risk of collusion
  - merger rejected and risk of collusion
- Collusion actually takes place or not
- Mergers reinforcing market asymmetry should be considered by AA as pro-competitive because they reduce the space of parameters under which firms tend to collude