Comments on Hauswald and Marquez, 2004

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The HM paper analyzes:

• banks' incentive for innovation in credit risk management
• the (ambiguous) influence of regulators on innovation incentives
Two basic components

- **Innovation Game**: Bank 1 – Regulator
- **Credit Market Game**: Bank 1 – Bank 2
The innovation game

innovate

Bank

Regulator

not innovate

diffusion

protect
The innovation game

innovate

not innovate

diffusion

protect
The innovation game

innovate

not innovate

diffusion

protect

equilibrium 1
The innovation game

- Innovate
- Not innovate

Diffusion:
- Protect

Equilibrium 1
The innovation game

innovate

not innovate

diffusion

protect

equilibrium 1

equilibrium 2
The innovation game

innovate

not innovate

diffusion

protect

ranking

social

bank

1

3

equilibrium 1

2

1

equilibrium 2

3

2
The credit market game
The credit market game

- banks offer credit contracts
  - bank 1: contingent on debtor quality signal
  - bank 2: non-contingent
- semi-common value auction (Klemperer)
  - information differential
  - winner's curse for bank 2
  - profits of bank 1 increase in $\Phi_1 - \Phi_2$
  - profits of bank 2 increase in $\Phi_2$
The credit market game

Profit of Bank 1 (Innovator)

no diffusion

full diffusion

$\Phi_1$

$\Phi_2$

1

1/2

1/2

1
The credit market game

Profit of Bank 1 (Innovator)

No diffusion

Increase

Increase

Full diffusion

Increase

>0
The credit market game

Profit of Bank 1 (Innovator)

\[ \phi_1 \]

- no diffusion
- full diffusion

\[ \phi_2 \]
The credit market game

The regulator's dilemma

Hirshleifer & Riley 1991
underutilization
underproduction
Proposal 1: show profits for all \((\Phi_1, \Phi_2)\)
Proposal 2: generalize diffusion

- paper: $\Phi_2$ is either 0 or $\Phi_1$ (prob=$\lambda$)
- better: $\Phi_2 = \Phi_2(\Phi_1)$ (von Thadden, 2001)
  or: $\Phi_2 = \Phi_2(\Phi_1,\lambda)$

allows partial (not only stochastic) diffusion

"it would ... be desirable to introduce various degrees of effectiveness of the patent system" (Tirole 1988, 400)
Proposal 3: drop innovation cost

- paper: $\Phi$ has direct cost $c = (\Phi^2 - 0.5)$
- better: $c(\Phi) = 0$
- model is driven by indirect cost of innovation (diffusion plus competition)
- direct cost distract from the essentials
Proposal 4: be more explicit about limitations of a simultaneous game

- game is *simultaneous* in two dimensions
  - all creditors must get simultaneous (private) offers.
  - both banks decide simultaneously

- reality is *sequential*
  - sequential offers: learning effects (Tirole, 1988, 215)
    (mixed strategy Bertrand equilibria fragile)
Proposal 5: let bank 2 innovate

- HM: R&D race would not change results!
- however:
  - their focus: public good nature of innovation
    (imperfect right in fish caught)
  - alternative: commons effect
    (right to fish) (Hirshleifer & Riley, 1991, 260)
  - diffusion may lead to too little innovation, but:
    patent protection may lead to too much innovation
    (business stealing effect; patent races)
  - does HM claim really hold if both banks can innovate??
  - test question:
    how much would bank 2 pay for right to innovate?
Proposal 6: specify innovation

- academic risk management research: public
  - CAPM, VaR, etc.
- private research partially public:
  - e.g., RiskMetrics (J.P. Morgan) was made quasi-public in 1994
- internal implementation know-how: private but non-portable
- data used for PD, LGD estimation
  - private knowledge of banks; no diffusion
  - averages: some diffusion, but:
    little information for *individual* creditor rating
Practical comments

- need for "overlapping innovations" model
- diffusion of *systems* not a concern for banks
- diffusion of *standards* is a concern
  - but: complaint that standards *reduce* competition!
  - examples: IRB-approach, money laundering
- how to stimulate innovation?
  - BC: lower capital requirements for IRB banks
  - HM: less supervision for innovators
  - alternative: government sponsored public innovation
Conclusion

- interesting paper with nice model
- HM may not address a problem in „BC top 10“
- but:
  HM highlight importance of interaction of regulatory policy and innovation incentives