STRATEGIC LEARNING AND CORPORATE INVESTMENT

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WHY I LIKE THIS PAPER

- Great setting to answer an interesting question — can a "wait and see" effect delay investments *purely due to anticipation of information spillover?*
  - Great data: can observe the timing of the start/availability of a *real option* and also all the unexercised real options
  - Smart source of exogenous variation in number of peers using land allocation from a century ago

- **Main finding:** Each additional real option held by a firm's peers significantly delays firm's own investment decisions, as the firm looks to reduce uncertainty by first observing its peers' decision
  - Greater effect when peers are more skilled
  - This anticipation of information dampens investment and production at the aggregate level

COMMENT 1: THE THEORETICAL FRAMEWORK

- Chamley and Gale (1994)
  - Peers have private information about the payoff
  - Their decision to exercise (or not) is informative of their private information
  - Incentive to "wait and see" what others do
- In many settings revelation of own private information to peers hurts you but not in this setting
  - No common pool problem, no disadvantage in product markets
- So why would a peer here not reveal her private information either for free, for a small fee, or just to gain goodwill?
- Also, a market for information or mechanisms for sharing/pooling could develop and reduce/eliminate this "wait and see" incentive if it is inefficient

COMMENT 2: INFORMATION GAINED FROM WAITING

- Exercise decision: whether the peer decided to drill or not

Adjacent exercise activity by peer firms could also be a reflection of some private information about rock quality a firm has which is not yet publicly known, so that observing a peer firm exercise could cause a firm to update positively on the rock quality of a project.

- Action: The kind of drilling done

Adjacent exercise activity could inform a firm on ***how to better extract reserves*** *from its own project. Specifically, adjacent exercised projects reveal detailed information on the* ***"target" depths*** *at which the formation was drilled, which helps firms target their own drilling prospects better. Further, public disclosures require information to be disclosed on the* ***mix of fracking chemicals*** *and* ***techniques applied to drill*** *and complete a well; this information can then be used by peer firms to determine which approach will allow them to extract natural gas most efficiently from their own reservoir. — Décaire, Gilje, and Taillard (2020)*

- Outcome: how much oil/gas is the well producing

COMMENT 2: INFORMATION GAINED FROM WAITING

- Observables from peer's infill drilling that are informative
  - Exercise decision
  - Action
  - Outcome
- Is Chamley and Gale (1994) the right framework for this?
  - Captures only the first of the three
  - A model in which the action taken on option exercise is also informative (a la Zhang, RAND 1997) might also be more useful
    - Also makes sense in the context of waiting only for high-skilled peers
  - The paper does mention the third one motivated by Acemoglu (2011)
    - **Suggestion:** Point out that the incentive to wait would exists even if the pre-exercise information of the peer is known publicly (addressing Comment 1); many of the other predictions would hold too

COMMENT 3: PROVIDE EVIDENCE OF USEFUL INFORMATION

- The authors assume that information about a neighbouring unit must be relevant
- Over what distances? What aspects?
- Are production and market values of wells spatially correlated? To what extent and over what distances?
- Are well depths, fracking chemicals used, etc. spatially correlated (evidence of similar conditions)?

COMMENT 4: SAY MORE ABOUT OWN OPTIONS

- Unlike the theory models, in this setting the same firm, not just peers, can own other options in the vicinity
- If a firm has multiple options, I think they would have the incentive to exercise the *first option* quickly to benefit from information spillover (which they internalise)
  - Own options and peer options seem to have same effects with similar magnitudes; not sure how to think about that
- Interaction of own options with peer options
  - Should we expect the same effect of peer options if the firm has a number of options and therefore the choice if whether to exercise the first option to generate information rather than wait for others?

OTHER COMMENTS

- Larger number of peer options also implies a larger number of first wells by peers whose production is observable. This would provide information ***reducing*** the need for waiting. Suggestion: Discuss why does the other effect dominate?

- Why is average of market value of the peer wells a proxy for *uncertainty*?
  - It signals that the *"underlying asset quality for the firm's wells is also likely high"*
  - That should imply higher *expected value* or *signal value*
  - The *standard deviation* of market values would capture *uncertainty* or *signal quality*

CONCLUDING THOUGHTS

- Neat setting to answer an interesting question — can a "wait and see" effect in investments exist *purely due to anticipation of information spillover*?
  - Smart source of exogenous variation

- The authors could benefit from writing their own model
  - Would be great to have a calibrated model estimating parameters related to the value of information from peer exercise
  - Include the effect of information spillover from own options
  - Interactions with oil and gas prices and volatility

- I recommend you read the paper

THANK YOU!