Discussion on:

"A Structural Analysis of Detailing, Publicity and Correlated Learning: The Case of Statins" by Hyunwoo Lim and Andrew Ching

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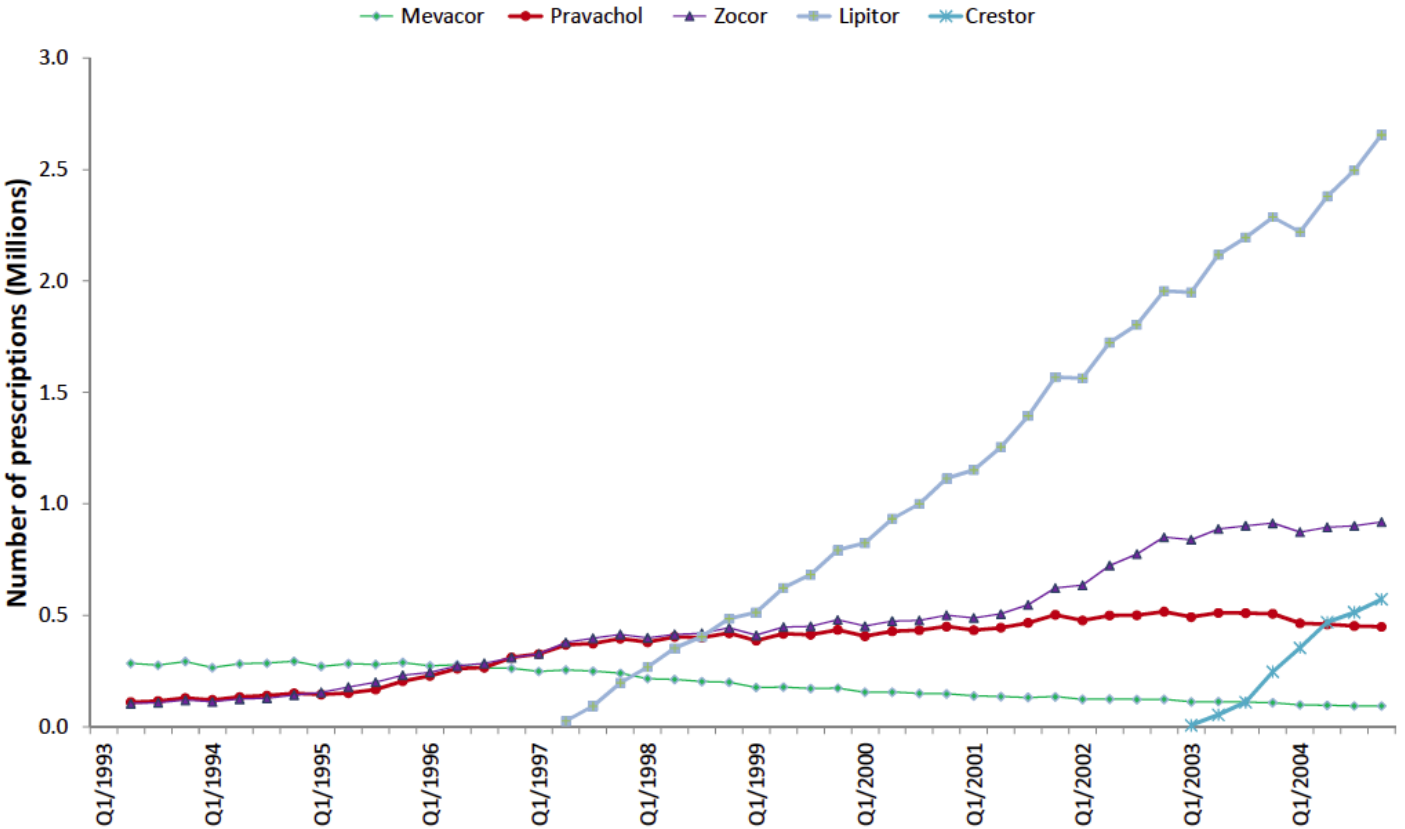
Motivation

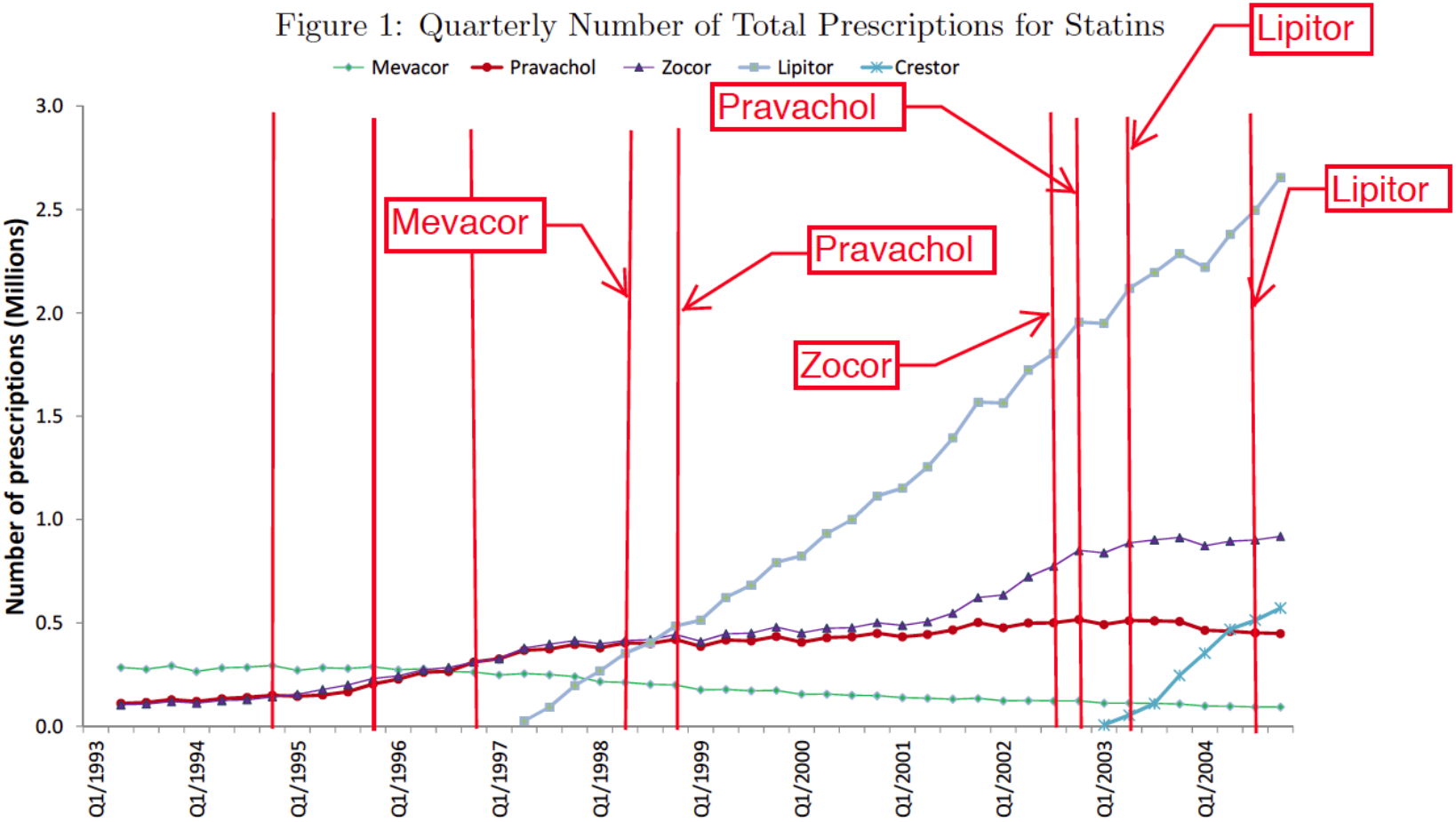
- This paper estimates the degree of information spillover in physicians' learning about drug efficacies.
- In particular, the paper asks whether and how much physicians learn about the efficacy of one drug from its competing drugs' clinical trials, i.e., correlated learning.
- When Lipitor was first introduced in 1997, its producer only proved that it was more effective in lowering bad cholesterol levels over existing statins but did not show that it was effective in reducing heart disease risks.
- However, Lipitor became the best selling statin well before the first scientific evidence on reducing heart disease risks was provided.

Quarterly Number of Total Prescription

Figure 1: Quarterly Number of Total Prescriptions for Statins



Landmark Clinical Trials



Model

- The paper uses a Bayesian learning model where
  - Physicians update their belief about each statin's heart-disease-risk efficacy through landmark clinical trial outcomes
  - Information about clinical trials comes from detailing.
- The model allows physicians to be heterogenous with respect to their information set.
  - They are heterogenous because not all of them are informed of clinical trial each period and some of informed physicians forget what they learned.

Estimation

- This is not an easy model to estimate, especially only with the statin-level data.
- So the paper uses extra data.
  - The portion of patients who switch to other statins in each period and the portion of patients who quit using statins.
  - Each statin's mean efficacy in lowering cholesterol levels. This is treated as public information and there is no learning about this.
  - Each statin's mean efficacy in reducing heart disease risks (instead of estimating the mean of physicians' belief about this efficacy)

Findings

- Physicians learn from clinical trial outcomes and more interestingly learn from other statins' clinical trials.
- Lipitor's demand would have been 4 percent lower if there had been no clinical trial on Lipitor.
- Lipitor's demand would have been 4 to 7 percent lower per period without correlated learning.
- This difference is not huge but big enough to justify the cost of clinical trials.

Any Implications?

- In the current version the paper stops at showing the degree of learning.
- How about strategic and policy-related implications of their findings?
  - For example, they can ask if firms are "under-investing" because of this information spillover.
  - This a very important question in the R&D literature.

More can be said about how key parameters are identified

- For example, there was no clinical trial between 1998 and 2002 by any companies. And the results show (in Figure 8) that even the most updated physician learned nothing during this period.
- But the sales of Lipitor steadily grew during this period.
- As a result, the model attributes the success of Lipitor to its superior efficacy in lowering cholesterol levels
- This suggests that physicians infer that a statin that is effective in lowering cholesterol levels is also effective in reducing heart disease risks.
- Also, estimates on the detailing carryover rate are very high because of the growth of sales in the absence of clinical trials. The carryover rate is 0.972.

Are they exogenous?

- I agree that switching and discontinuing patient data help make the model tractable and estimable but it comes with costs.
  - When they turn off clinical trial parameters or learning parameters in the counterfactual exercises, the number of switching and discontinuing patients is fixed.
- Detailing expenditures are treated exogenous but they should be affected by the release of clinical trial results.
  - Lipitor's first landmark clinical trial in the second quarter of 2003 must have been a big news to Pfizer.
  - This must have increased publicity, and Pfizer must have sent out their reps to spread this news, which must have increased their detailing efforts.

Conclusions

- Despite a few complaints, I found this paper innovative and interesting.
- I hope my comments help them make the paper stronger.