Paying on the Margin for Medical Care: Evidence from Breast Cancer Treatments - Reading Notes II

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Medical expenditures and optimal health insurance policies are under great debate recently. Einav et al. [2016] purpose a straightforward graphical framework to illustrate the welfare gains from “top-up" insurance policy that allows patients to pay the additional cost of more expensive treatment options. This paper compares "top-up" with two alternatives that either require patients to pay full cost of more expensive treatment (“no top-up" in the United Kingdom) or no incremental payment for more expensive treatments (“full coverage" in the United States). This paper contextualizes the setting of breast cancer treatment, where usually people choose between two treatment choices — lumpectomy and mastectomy. They have no detectable differences in survival rates but lumpectomy incurs a higher monetary cost and more travel time. Moreover, the paper estimates the relative demand curve using variation in distance to the nearest radiation facility. The estimation suggests that “top-up” policy increases social welfare by $700–2,500 per patient relative to two common alternatives. Essentially, it shows that more efficient reimbursement policies for medical treatments can improve social welfare. The paper finishes by discussing the tradeoffs between top-up and "no-top-up" policies, both of which lead to more risk exposure before the policy is in place.

Einav et al. [2016] extend several strands of existing literature. First, this paper visualizes welfare consequences of other insurance designs of different treatment choices by deriving the relative demand curve for the more expensive treatment. Secondly, this paper also contributes to the estimation of this demand curve and quantifies the welfare gains of other insurance policies.

In terms of the conceptual framework, in the setting of breast cancer treatments, evidence has suggested no average differences in survival rate between lumpectomy and mastectomy. Thus, under comparative effective regulations, the goal is to cover the lowest monetary cost choice obtaining the best health outcome. With a top-up policy, if patient is diagnosed with breast cancer and chooses to receive lumpectomy with radiation, the patient will be paid out for the fixed cost of a mastectomy. This paper adopts revealed preference-based approach, which reflects the variation in relative valuation of lumpectomy across patients. Furthermore, it estimates the relative demand curve using variation in travel time to the nearest radiation facility.

The paper analyzes patient-level data from the California Cancer Registry (CCR), including

demographic covariates, diagnostic information and treatment information on the first course of treatment received by the patient. The paper supplements locations of radiation treatment facility data from private firm IMV. The primary sample contains over 300,000 patients initially diagnosed as breast cancer in California between 1997 and 2009.

This paper first explores the unconditional and conditional relationship between probability of receiving lumpectomy and travel time to nearest radiation facility, both suggesting a robust relationship that increasing travel time decreases the willingness of receiving lumpectomy treatment. Through different specifications of logit regressions, negative and significant relationship between preference towards lumpectomy and distance is confirmed. Moreover, based on the average marginal effect from heterogenous logit model, this paper proceeds with a series of policy counterfactuals to examine treatment choices and ex post welfare among three health insurance policies by varying potential charges for lumpectomy treatment (ranging from $5000 to infinity). The paper finishes by discussing the tradeoffs between top-up and "no-top-up" policies, both of which lead to more risk exposure before the policy is in place.

In terms of the results, the paper extrapolates the resulting demand curve out of sample and estimates the overall welfare gains from the “top-up” policy of between $700 and $1,800 per patient relative to a “no top-up” UK-style policy and between $700 and $2,500 per patient relative to a “full coverage” US-style policy.

To summarise, this paper contributes to the estimation of this demand curve and quantifies the welfare gains from “top-up" compared with "no top-up" and "full coverage" in the setting of breast cancer treatments. Moreover, this paper supplements with empirical evidence and exemplary welfare analysis to the existing comparative effectiveness literature. This study has several limitations. First, this paper only accounts for survival benefits as a benchmark while policy maker could also consider "body integrity" and other monetized benefits in the analysis. Second, it would be interesting to endogenize the decision-making of patients inside the model, rather than taking it as exogenous.

References

Einav, Liran, Amy Finkelstein, and Heidi Williams, “Paying on the Margin for Medical Care: Evidence from Breast Cancer Treatments,” *American Economic Journal: Economic Policy*, February 2016, *8* (1), 52–79.