Reading Notes

Paying on the Margin for Medical Care: Evidence from Breast Cancer Treatment

Econ613

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It is known that medical expenditures are high and increasing in the US. Economists want to study the long-existing problem. One of the solutions for the problem is the "top-up" health insurance policy, which requires patients to pay the incremental cost for more expensive treatments. This paper is to analyze the potential welfare gains from a "top-up" health insurance policy qualitatively. Focusing on breast cancer treatments, firstly, the authors use a graphical framework to measure the welfare from different insurance designs. Next, the authors estimate the demand curve for lumpectomy quantitatively. Finally, the authors find that compared with "full coverage" and "no top-up" policy, the "top-up" policy can increase ex post social welfare. As for ex ante efficiency, the "top-up" policy gains more welfare than the "no top-up" policy, but when risk aversion increases, the "full coverage" dominates.

Since this paper is based on breast cancer treatments, one of the critical facts for the analysis is that survival outcomes of the lumpectomy and mastectomy are the same, however, lumpectomy cost more money and time. The authors use a patient-level cancer registry dataset and a radiation treatment facility location dataset to conduct empirical analysis. First, the authors construct a conceptual framework, where the relative valuation v_i and its distribution $F(v_i)$ are the key input in the analysis. The relative valuation (or willingness to pay) v_i is given by difference between lumpectomy and mastectomy, and the distribution $F(v_i)$ is measured by cumulative distribution function. Thus, the demand curve for lumpectomy is shown by $F^{-1}(\cdot)$, and the authors use graphical framework to measure the welfare gains from three different insurance designs.

Second, the authors estimate the relationship between the possibility of lumpectomy and distance to the nearest radiation facility. They use a logit model with controls and without controls to estimate and find that having the nearest radiation facility ten minutes further from the patients' residence makes her likely to choose lumpectomy reduced by about 0.7 to 1.1 percentage points.

Furthermore, this paper estimates the demand curve quantitatively. Estimation of demand curve requires variation in the relative price of lumpectomy, for which they use variation across patients in the distance to the nearest radiation facility. With the observed distance to the nearest radiation facility d_i, the given opportunity cost of time θ_i, and parameters α and β, the willingness to pay for lumpectomy is given by $v_i = \alpha_i/\beta_i - \theta_i d_i$, and the estimated demand is given by F(v_i). Then the authors want to estimate the ex post welfare. Setting the incremental cost and the total cost of lumpectomy, they find that the "full coverage" policy and "no top-up" policy are not at the efficient level, and both have social welfare costs. The "top-up" policy can increase ex post social welfare.

Finally, after estimating the ex post efficiency, the authors analyze the ex ante welfare consequences of the three insurance designs. They find that the "top-up" policy has higher social welfare than the "no top-up" policy, but the relative ranking of "full coverage" and "top-up" policy is unclear. When risk aversion increases, social efficiency can be higher for the "full coverage" policy than the "top-up" policy since the gains from reduction in risk exposure can outweigh the loss from ex post inefficient treatment choices.

In conclusion, this paper analyzes the potential welfare gains from a "top-up" health insurance policy. They estimate the demand curve using variation in distance to the nearest radiation facility and find that the "top-up" health insurance policy gains more ex post social welfare than the "no top-up" policy and "full coverage" policy. When ex ante utility is considered, the "top-up" policy is better than the "no top-up" policy. However, when risk aversion is huge, the "full coverage" has higher welfare efficiency compared to the "top-up" policy.

This paper also has limitations. As mentioned in the last paragraph of this paper, this analysis neglect the "body integrity" effect and mental health of women, which is also an important factor to be considered. Besides, different hospitals specialize in lumpectomy or mastectomy, which may lead to patients being more inclined to choose some type of surgery.