

**Top-up design and Health Care Expenditure: Evidence from Cardiac Stents
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How to keep health spending under control is an important problem for publicly funded health care in many countries. The US and countries in Europe apply “Full coverage” programs and “no top-up coverage” programs commonly. Since December of 2006, the National Health Insurance(NHI) has employed “top-up design” which patients must pay for the incremental costs if they choose more expensive treatments(drug-eluting stents, DES), rather than baseline treatment(bare-metal stents, BMS). Also, to reduce the financial burden, the National Health Insurance cut the reimbursement rate of BMS in 2009. The authors take this chance to evaluate how hospitals respond to the reimbursement rate cut. Moreover, the NHI cut the reimbursement rate within a top-up design; therefore, they also investigate the relationship between hospital moral hazard and mitigating the health cost.

The studied data are constructed from three components containing hospital claim records, the doctor, and the hospital in each inpatient admission record, and the NHI enrollment file. From the data, they collect “stent patients” sample containing patients undergoing PTCA and receiving at least once stent treatment from 2007 to 2010. Since the NHI implemented the reimbursement rate cut in every hospital, DID and RD are not appropriate to analyze. Thus, they apply the differential-treatment model. In addition, they assume that when facing the rate cut, hospitals possibly adjust the margin related to PTCA patients to make up the revenue loss. The ratio of stent patients over PTCA patients in each hospital in 2008 as a proxy variable to hospitals’ sensitivity to the rate cut. The top-up design may cause that hospitals encourage patients to take stent treatments and the reimbursement rate cut may lead to increase in price of DES to recoup the loss of revenue. Therefore, they use both indicators as independent variables.

There are several key findings. First, reimbursement rate cut reduces the rising medical spending by encouraging patients to choose BMS but DES, since the estimated result show that BMS usage significantly increases on BMS, but DES does not. Second, the increase in BMS usage is concentrated in minor teaching hospitals. Besides, the increase in numbers of vessels is related to the urgency of patient’s health status, and the rate cut motivates minor teaching hospitals to persuade patients to receive PTCA treatment on more vessels when their statuses are urgent. Additionally, from the result, it is difficult to demonstrate whether the rate cut leads hospitals to hike the price of DES. The possible reason could be that the NHI requires hospitals to report DES prices in public. Finally, the increased BMS use recoups up to 30% of hospitals’ loss revenue in 2009 after the reimbursement rate cut. These results imply that the rate cut is an effective way to mitigate medical spending on cardiac stents, even though the effect was canceled off by hospital moral hazard.

How to maintain the NHI’s finance is a critical issue in Taiwan. There have been

many policies implemented to try to extend the use period of NHI. Making perfect policies is almost impossible. The usual conditions which are patients worried about low-quality healthcare and price hike, and physicians and hospitals concerned whether their revenue will be affected negatively. Besides, policymakers must consider whether it is possible to waste medical resources for patients and physicians or not. There has been rarely related literature and rare opportunity to examine the trade-off between hospital moral hazard and mitigating the health cost. Although this study exists some limitations, the study is an important reference for policy-making. Also, this question is valuable to explore in the future.