

Research Statement

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My research interests include topics in Industrial Organization, Health Economics and Applied Econometrics. The current focus of my research concentrates on hospitals adoption of Health Information Technology (HIT), evaluating which IT systems hospitals use and the consequence of the application of HIT. In particular, the analysis looks into the pressing issues of relevant policies and seeks to provide valuable inputs into recent policy debates. In my dissertation “Two essays on the adoption decision of Electronic Medical Records (EMR) by U.S. hospitals”, I address the following questions: (1) Are there profit complementarities in adopting the market leading technology? (2) Do hospitals attempt to coordinate or differentiate from the local market? The study attempts to explore the dynamics in hospitals’ choice of EMR vendor and the results have some potentially important policy implications.

Current Research

Profit Complementarities in Adopting EMR by Stand-alone Hospitals

This paper tries to understand the adoption choice of EMR by stand-alone hospitals. Stand-alone hospitals refer to independent organizations that do not affiliate to any hospital chains. The study focuses on the value of choosing the market leading vendor. Hospitals benefit from using the market leading technology due to profit complementarities, but also worry about losing patients to competitors that share the same vendor. A dynamic oligopoly model of technology adoption is constructed to assess the value of selecting the leading vendor. Using a nationwide sample of U.S. hospitals from 2006 to 2010, I apply the methodology developed by Aguirregabiria and Mira (2007) to recover the model primitives. The primary finding is that on

average, using the leading technology increases the per-period profit by almost 51%. However, the impact is moderate when it is compared with the sunk cost of implementation. Explicit requirement about technology compatibility could have improved the market coordination.

In 2009, the Health Information Technology and Economic and Clinical Health (HITECH) Act, was passed as part of the American Recovery and Reinvestment Act (ARRA), providing \$35 billion to promote the adoption of Electronic Medical Records. The goal of this program is to establish a Nationwide Health Information Network (NwHIN) where patient information can be exchanged freely across diverse entities. Nearly four years after the enactment of the HITECH act, \$12.7 billion has been paid out, but seamless information transferred is still out of reach. In the current incentive program, a hospital gets subsidized as long as it meets the specified requirements of meaningful use. The program does not set up any standard for interoperability nor impose any restriction on the choice of vendors. On the one hand, hospitals are free to choose any vendor in the market. But on the other hand, since the products from different suppliers cannot talk with each other, the resulting information silos go against the original objective of the program and make the establishment of the NwHIN even more difficult. The government agency recently delayed the rulemaking for the last stage of the program and sought input on potential policy to accelerate information exchange across providers. At this moment when the policy makers reconsider the strategies needed to ensure interoperability, the information about the value of using the market leading technology becomes important. If profit complementarities are large enough, promoting such a technology can not only bring in cost efficiency but is also helpful to improve coordination at the regional level. The findings in my paper imply that the government could have done a better job if the requirement on interoperability was explicitly incorporated at the early stage of the incentive program.

Coordination vs. Differentiation: evidence from the Adoption of EMR by Affiliated Hospitals

This study is complementary to the previous one in the sense that it focuses on a different group—affiliated hospitals which belong to a hospital chain. Exclusion of this group in the previous study aims to provide a cleaner setting to address the issue since the decision process is rather complex for this type of hospitals. The paper seeks

to understand hospitals' incentive in choosing EMR vendors: adopting the market-leading product for coordination or otherwise to differentiate from the local market. In particular, the decision confronted by an affiliated hospital is characterized by the tradeoff between purchasing from the market leader and following the choice of the parent system when both differ. Using a nationwide sample of U.S. hospitals from 2006 to 2010, I find that on average the vendor chosen by the parent system has much greater advantage over the vendor leading the local market. Particularly for more integrated hospital systems, the local market structure almost has no impact on the choice of EMR vendors. It may imply that hospital systems are likely to create information silos with low propensity for external information exchange. The methodology applied in this paper only involves regular reduced-form regression instrumented with outside market approximation. Further estimation of the value of different factors requires a model with much richer structure, and it is part of the future study.

Research Agenda

In addition to studying the adoption decision of EMR, I am also interested in looking at the consequence of the application of the technology. Transition to digital records has been described as one of the prominent reasons contributing to the uptick of Medicare billing. This project aims to examine the impact of the adoption of EMR on Medicare billing in U.S. hospitals. There have been a few related studies, but the evidence is rather mixed. I will apply the 100% Medicare claims data to take a closer look at this correlation. Apart from the current issue involving HIT, I also plan to investigate the pricing strategy of health care entities such as providers and payors, the interaction between both, as well as the development and outcome of accountable care organizations (ACO).

References

- [1] Victor Aguirregabiria and Pedro Mira. Sequential estimation of dynamic discrete games. *Econometrica*, 75(1):1–53, 2007.