

## Highlights from the Kellogg School of Management's Second Annual Conference on Healthcare Markets

**Editor's Note:** On May 17, 2013, the Kellogg School of Management hosted the Second Annual Conference on Healthcare Markets. Over 60 economists from the United States and Europe heard presentations of eight working papers on how market forces are shaping provider, payer, and medical supplier markets. Kellogg doctoral and post-doctoral students selected four of their favorite papers and prepared the following research summaries:

### **Eric Budish, Benjamin Roin and Heidi Williams: "Do fixed patent terms distort innovation? Evidence from cancer clinical trials"**

Patent periods in the US are fixed at twenty years from the date of filing, yet commercialization lags vary widely across inventions, causing substantial differences in effective patent life. This variation has the potential to distort both the level and the composition of research and development. Budish, Roin and Williams are the first to formally model and empirically test for distortion in the composition of R&D. Their empirical tests focus on cancer drugs.

Budish, Roin and Williams' theoretical model predicts that under certain conditions, fixing patent lives will reduce the development of new products that have a long useful life and take a long time to commercialize. All of these conditions are met by the pharmaceutical industry.

Commercialization lags in the pharmaceutical industry can be substantial, largely due to clinical trials required for FDA approval.

However, FDA requirements are less onerous for disease-stages with lower life expectancies. Budish, Roin and Williams exploit this variation in FDA requirements and use survival rate as a proxy for commercialization lag in the context cancer drugs. Intuitively, clinical trials for late-stage disease with low life expectancy (e.g., metastatic cancer) can be conducted much more quickly than can clinical trials for early-stage disease with longer life expectancy (e.g., localized cancer), because it takes less time to observe the drug's effects on mortality. They find that the number of clinical trials for cancer-stages with high survival rates is substantially lower than the number of clinical trials for cancer-stages with low expected survival rates.

They provide several pieces of evidence that this reflects inefficiency not just differences in demand or costs. They make use of the fact that pharmaceutical companies are permitted to use surrogate end points (non-mortality based endpoints) in clinical trials for hematological cancer but not for most other cancer types. They find that there is no negative relationship between survival time and R&D for hematological cancers. Furthermore, they show that the relationship between R&D and survival rates is stronger for privately financed trials than for publicly financed trials.

## **Brigham Frantzen and James Rebitzer: “Structuring Incentives within Organizations: The Case of Accountable Care Organizations”**

Fragmentation in the health care sector has long been recognized as a source of inefficiency in health care delivery. Patients are often treated by numerous independent physicians with little incentives for coordinating care. Accountable Care Organizations (ACOs) are a new model of integrated health care delivery introduced through the Patient Protection and Affordable Care Act that allows hospitals and providers to contract jointly with Medicare. The key feature of these contracts is a shared-savings program combined with minimum quality thresholds.

In “Structuring Incentives within Organizations: The Case of Accountable Care Organizations”, Brigham Frandsen and James B. Rebitzer analyze the strength of the incentives for cost reduction given to individual physicians inside ACOs. In order to improve the extent to which quality improvements can be distinguished from random noise, Medicare requires ACOs to have at least 5000 enrollees. However, achieving this scale in patient care requires a large organization with many physicians. Rewards for quality improvements by an individual physician must, therefore, be shared, giving rise to a free-rider problem.

To study this tradeoff, the authors develop a multi-task principal-agent model. Physician effort can be allocated towards own quality improvement or cost reduction. Physicians face nonlinear incentives based on ACO-level performance measures – shared savings to encourage cost-efficient behavior with payouts conditional on achieving target levels of quality. They find that, in order to achieve any given level of cost reduction and quality level, Medicare must employ higher powered cost and quality incentives in larger ACOs; increasing the number of physicians in an ACO is strictly worse for providing incentives.

The authors then use confidential claims data on quality performance to calibrate the parameters of their model. They calculate the maximum ACO size consistent with a self-financing pay-for-performance contract that achieves a given cost and quality target. The socially optimal level of cost-reduction could be induced by making a risk neutral physician the residual claimant in a solo practice. Achieving even just 5 percent of the cost reductions achievable by first-best incentives cannot involve a group larger than 15 physicians.

The authors discuss other complementary strategies that ACOs can employ in order to augment the under-powered pay-for-performance incentives. These strategies, such as efficiency wages and performance bonds, can best be implemented in an employment relationship. Peer pressure and mutual monitoring can also serve a role in more integrated networks. This implies that ACOs constructed around open, loose networks might have a harder time achieving significant cost-cutting reductions.

## **Martin Hackmann, Jonathan Kolstad, and Amanda Kowalski: “Adverse Selection and an Individual Mandate: When Theory Meets Practice”**

Economic theory shows that an individual mandate penalizing people who fail to obtain health insurance may improve welfare by reducing adverse selection. Hackmann et al. theoretically derive a set of sufficient statistics that enable estimation of both the change in welfare due to a mandate as well as the size of the penalty that maximizes social welfare, and estimate these parameters for the mandate introduced by the Massachusetts health reform of 2006 using a difference-in-difference approach.

Einav, Finkelstein, and Cullen (2010) propose a framework to detect adverse selection by testing for a decrease in average costs associated with additional enrollment due to a decrease in price. Interpreting the tax penalty as a change in the effective price of insurance, this paper shows that additionally estimating the demand for insurance permits measuring the effect of the reform on total social welfare. Since the policy shock inherently provides only two data points (before and after), the authors’ analysis assumes linear demand and marginal costs. They further disentangle the welfare effects due to the mandate and other provisions of the reform that increased insurer competition by assuming that the mandate alone would not change the markup in premiums over average costs.

Using national data on health insurance, Difference-in-Difference regression analysis estimates that reform increased individual market enrollment by 17.0%, while reducing annual premiums and expenditures by \$1,137 and \$621, respectively, relative to other states. These imply a welfare increase of \$314 per person per year due to reduced adverse selection and a further increase in consumer welfare of \$103 per person due to lower post-reform markups, which are 5.9% and 2.0% of pre-reform annual insurer expenditures per person, respectively. Finally, the model predicts that an estimated optimal penalty of \$2,934 would bring coverage to near universal levels. Such a penalty is well above the size of the penalty imposed by the Massachusetts reform, but is similar to the penalty stipulated by the Affordable Care Act of 2010.

## **Kate Ho and Robin Lee: “Insurer Competition and Negotiated Hospital Prices”**

Ho and Lee study how increased competition among health insurers affects negotiated prices between hospitals and insurers. One of the central goals of the Patient Protection and Affordable Care Act (PPACA) is to increase competition among health insurers through the creation of Health Insurance Exchanges. Proponents of exchanges suggest that they will reduce consumer search frictions, strengthen competitive forces in the health insurance market and therefore lead to lower prices. Others have cautioned that stronger competition among insurers may decrease insurer bargaining power vis-à-vis health care providers and therefore lead to higher input costs.

Formalizing this intuition, Ho and Lee develop a model of countervailing market power, in which more competition in the health insurance market can make consumer demand for health insurance products more elastic to both changes in the price of health insurance and changes in the quality of an insurer’s hospital network. The model expresses negotiated hospital reimbursements as a function of changes in: “(i) the insurer's premiums, demand, and payments to other hospitals, and (ii) the hospital's costs and reimbursements from other insurers.”

Ho and Lee estimate a simplified version of this model using a unique dataset of negotiated prices between hospitals and commercial insurers in California in 2004. They proxy for insurance market competition with how much competition there is from Kaiser Permanente, the California’s largest and vertically integrated health insurer. Crucially, non-Kaiser enrollees do not access Kaiser’s hospitals, and Kaiser’s enrollees do not access non-Kaiser hospitals. Therefore, a Kaiser hospital affects the bargaining process between a non-Kaiser hospital and a non-Kaiser commercial insurer only through insurer competition for enrollees. Kaiser is a more attractive health insurer and therefore non-Kaiser insurers face stronger insurance market competition for those consumers located nearby one of Kaiser’s 27 hospitals.

Contrary to the countervailing market power hypothesis, strong competition from Kaiser reduces negotiated prices for most hospitals. The authors argue that this could be because stronger competition from Kaiser reduces health insurance premiums, shrinks the surplus that insurers and hospitals can negotiate over and therefore results in lower hospital reimbursements. The authors then focus on the effect of Kaiser hospitals on reimbursements to those hospitals which are the most attractive to patients. Less attractive hospital may be inframarginal for most consumers – dropping them from a network will not change whether the network is better or worse for the consumer than Kaiser is, even if the consumer lives near to a Kaiser hospital. By contrast, an insurer who is competing closely with Kaiser may lose a large share of patients if one of the best hospitals leaves its network. Consistent with this hypothesis, among the top quartile of non-Kaiser hospitals, a 10% increase in the proportion of patients nearby one of Kaiser’s hospitals results in a 2% increase in the negotiated price per admission.

These results suggest that regulators and policymakers should consider the effects of downstream competition on upstream negotiated prices when evaluating the welfare consequences of health insurance market reforms or consolidation.