

Research Statement

KEVIN E. PFLUM

I am an applied microeconomist interested in issues related to the regulation and industrial organization of health markets. More specifically, I examine problems related to the cost and quality of healthcare that originate from the unique market arrangements and strategies of health services and insurance firms. My research portfolio includes both theoretical and empirical contributions.

Regulation and Firm Conduct

My theoretical work explores various issues involving incentives and agency within health markets. For example, in my job market paper, entitled “Regulating a Monopolist with Unverifiable Quality,” I explore regulatory policies for firms that can manipulate demand through its choice of unverifiable quality. This research is generally applicable to regulated markets that exhibit demand adjusting quality and some dimension of asymmetric information between a firm and regulator including the markets for health services.

Traditionally the mechanism design literature on regulating firms with unverifiable quality assume demand is inelastic to quality (Chalkley and Malcomson, 1998; Jack, 2005), or has modeled quality as if it is a second good, often times with observable costs of production (Laffont and Tirole, 1986). However, when demand can be manipulated by the firm’s choice of quality, then the firm has only one choice variable: the quantity of the good that it wants to sell. Reflecting this inseparable relationship between quality and quantity, I transform the firm and regulator’s problem to make the relationship explicit; that is, despite the presence of quality, the firm has only one choice variable: the quantity of output it wants to produce. This approach more realistically captures the relationship between quantity and quality in many markets and produces outcomes that are in marked contrast with the previous literature. For example, when the firm’s informational advantage leads to an output distortion, the distortion can take the form of an under- or over-provision relative to first best depending on the relative elasticities of demand and cost to quality. Furthermore, the regulator can completely nullify the firm’s informational advantage under specific circumstances. This paper is currently under review for publication.

This paper’s findings generate important new insights into the regulator’s problem, but it takes only the first step in examining the problem of inducing socially optimal levels of quality in a market environment as complicated as the markets for health services. The firm in the model can be thought of as an Accountable Care Organization (ACO), and although there is little research examining the payment mechanisms necessary to induce ACOs to improve quality, there is almost no research examining the incentives for physicians and hospitals to arrange themselves into an ACO in the first place. How to incentivize the formation of ACOs, which must absorb the risk associated with volatile patient costs, and induce higher quality of care at lower cost is an open question that I plan on exploring over the next few years.

In current work having the working title “Procurement Contracting with Producer Cost Uncertainty,” I take the next step to advancing this research agenda. In this paper I start with a standard procurement framework and modify the firm’s cost so that the firm has uncertainty over what it will cost to treat a patient. The cost is realized ex post, but the provider receives an ex ante signal of what it will cost to treat the patient. The less the provider’s signal is correlated with the true ex post cost, the flatter the payment schedule will be; i.e., less correlated signals result in less risk adjusted payments and more capitation. Consequently, capitation can become very expensive when the regulator is unable to provide risk adjustments and there is sufficient variance in the cost of treating a patient. This research provides a suitable framework from which to analyze the issue of MCO formation and the effect on cost and quality.

Related to my focus on incentives and problems created by asymmetric information, in a paper entitled “Free Samples in Pharmaceutical Markets,” I examined the practice of providing free pharmaceutical samples by modeling a pharmaceutical firm’s decision to dispense free samples as a strategic game of incomplete information. A central thesis of this paper is that sampling is an example of the adaptation by firms to the uncertainty in treatment outcomes that plague health markets as firms use samples to overcome consumers’ uncertainty about the efficacy of a drug. I develop new insights into how sampling affects the prescription decision as well as the beliefs of consumers and/or physicians generating several testable hypothesis that are supported by observations in the medical literature. This

paper is currently under review for publication as well.

Market Structure and Competition

There are many issues in health markets that can be explored through theory, but some issues are best explored with the data. A good example is my paper, entitled “Diagnosing Hospital System Bargaining Power in Managed Care Networks” coauthored with Matthew Lewis. There is a growing body of literature that has documented a reimbursement differential from Managed Care Organizations (MCOs) for system hospitals compared to non-system hospitals (Cuellar and Gertler, 2003; Melnick and Keeler, 2007). These price differences, however, do little to inform us of the cause of the price differential and, hence, the policy implications of hospital system formation.

Our objective is to identify whether the price differential develops because system hospitals are more attractive to consumers, have higher costs of care, or possess more bargaining power vis-à-vis MCOs. We start by estimating the attractiveness of system hospitals in California and use that to estimate the incremental value of adding a hospital to an MCO’s network (Capps, Dranove and Satterthwaite, 2003). This value reflects the difference in quality derived from the various hospital characteristics including system membership. If system membership is correlated with higher quality hospitals, either because higher quality hospitals choose to form systems with one another, or because systems coordinate resources to improve in ways that attract patients, then this will be reflected in the demand estimate. The incremental value of adding a hospital to an MCO’s network, along with the hospital’s costs for treating the patients belonging to that network define the available surplus to be divided between the MCO and hospital. The division of the surplus is modeled as the outcome to a Nash bargaining game. Thus, the difference in bargaining power is identified by the difference in the proportion of the available surplus obtained by system hospitals in comparison to non-system hospitals.

Our approach represents a significant methodological improvement over the previous literature by identifying the differences in bargaining power between hospitals and not just the differences in price levels; however, there is much more work to be done. Data limitations allow us to only identify characteristics that are associated with bargaining power and not to say much about causation. My goal is to use data spanning a longer period to analyze the effects of system formation in a dynamic way. That is, using observations of a hospital’s cost, attractiveness, and bargaining power before and after joining a system, I can exploit the panel to control for unobserved heterogeneity and identify to what degree those characteristics are affected by system membership, and to what degree they lead to system membership.

One important finding of this project is that national hospital chains have significantly more bargaining power than both local systems and large regional chains within the state. Given the growth of national chains over the decade as well as the large amount of insurance consolidation it is important that we develop a better understanding of how the two affect the cost of healthcare. That is, it is well understood that higher concentrations of either insurance or hospitals at the local patient market level lead to higher prices; however, it is not clear how the multi-market contact between large hospital chains and insurers leads to higher prices. Classical theories of tying arrangements— where a system leverages a hospital which has strong market power in its local patient market to negotiate a higher price for another system hospital which does not have local market power— suggest that we should not observe a price differential. Whether national hospitals chains gain bargaining power by providing economies of scale to the negotiation process, or because they can threaten large network disruptions remains an open question that we plan on exploring.

Physician Agency

A final area of interest is physician agency. The classical expert services market assume consumers can visit one or more experts. The expert diagnoses the consumer’s problem and recommends a treatment. The consumer then decides whether to accept the recommendation or pursue a second opinion when available (See Dulleck and Kerschbamer (2006) for a thorough review of the literature). The model describes the market for automobile mechanics and computer technicians well, but there are two important differences with physician services that are not captured by this environment: insurance, and treatment uncertainty. These two differences tend to cause consumers to demand treatments that have the highest probability of success, even if they are not economically efficient. In order to prevent a physician from over treating a patient, an insurer may utilize supply-side management (i.e., managed care) to induce the physician to under treat relative to what a patient wants.

In a current research project, entitled “Physician Treatment Incentives: Insurance Versus Managed Care,” I take

a mechanism design approach to explore the countervailing incentives that physicians face. I limit the feasible set of insurance contracts to include only provider cost sharing to focus on the effectiveness of supply-side management. The physician is modeled as having a choice of two treatments, both of which generate some stochastic outcome based on the patient's type. The model's structure ensures that it is more efficient to choose one treatment over the other depending on the patient's type and the cost of treatments. Patients do not take into account the cost of treatment, though, resulting in a difference in treatment preference from the insurer. The difference in treatment preferences is the moral hazard created by insurance. The insurer's objective, thus, is to design a payment mechanism that brings the physician's incentives more inline with its own than with the patient's. This approach captures the incentive trade-offs that physicians face in a more plausible way than previous work and will generate new insights into physicians' treatment choices.

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