Research Statement
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Current Research

My current research focuses on the impact of health care regulation on physician behavior. In particular, using medical claims data from Taiwan, I investigate (1) whether physician self-referrals to an entity in which they have a financial interest lead to an overtreatment of patients, and (2) whether vertical integration between medical providers (as opposed to physicians' referral of patients to a non-integrated outside facility) also leads to the overtreatment of patients. The first question speaks to the need of legislation such as Stark Law, which prohibits physicians’ referral of Medicare/Medicaid patients to an entity with which they have a financial relationship. An affirmative answer to the second question casts doubt on the assumption that vertically integrated providers are less likely to pose a threat of overtreatment, an assumption embedded in the "bona fide employee" safe harbor exception in Stark Law that allows physicians to refer patients to an employee of a vertically integrated provider.

For the theoretical framework of my analysis, I draw primarily from the economic literature on physician induced demand and on the market for “credence goods.” In this market, consumers (patients) know only that they have a medical problem, and must rely on experts (physicians) to diagnose the nature of the problem and recommend a course of treatment. The significant difference in knowledge between patients and physicians creates an incentive for the physicians to recommend more profitable and more intensive treatments than what the patients’ actual medical conditions require, leading to what is known as the “fraudulent expert problem.” My dissertation is composed of the following three chapters, which examine whether regulatory changes alleviate or exacerbate the fraudulent expert problem in the manner predicted by a game-theoretic credence goods model or the physician induced demand model.

(1) Empirical validation of overtreatment caused by physician self-referrals: One of the key theoretical underpinnings of the physician induced demand literature is that physicians may overtreat patients with a relatively small welfare loss to the patient, yet with potentially a significant financial gain to themselves. The overtreatment may be sufficiently close to the medical ideal point, and insurance may cover most of the cost of overtreatment so the welfare loss to the patient is de minimis. While this prediction seems unsurprising, existing empirical research (suffering from data limitations) has yet to prove conclusively that physicians “overtreat” patients that they refer to an entity in which they have a financial interest. The essential difficulty is that there is no way for an econometrician to establish the medically optimal level of treatment for each individual patient in order to measure overtreatment. My research, however, provides strong indirect evidence that overtreatment exists: I find that when physicians no longer profit from the sale of drugs because they are prohibited from referring patients to their own pharmacies, they not only reduced various measures of drug-prescribing volume, they also increased laboratory test expenditures by 11.5%. This combination of results – a reduction in
drug prescriptions and an increase in laboratory test expenditures – provides strong indirect evidence of overtreatment when physicians make self-referrals to physician-owned pharmacies.

(2) Empirical validation of the effects of vertical integration between physicians and pharmacists on overtreatment: In Taiwan, where physicians in private practices can legally hire pharmacists to dispense drugs, vertical integration between physician and pharmacist allows physicians to appropriate the profits from the sale of drugs. Because vertical integration here amounts to a regulated fee increase, the theoretical framework predicts that overtreatment should rise. Again, the prediction is hardly surprising, but existing empirical research suffers not only from an inability to measure “overtreatment,” but also from methodological challenges. In summary, current research generally compares the test-ordering behavior of physicians who have a financial interest in an imaging facility with the behavior of physicians who do not own an imaging facility. This comparison, however, is only valid if the behavior of the physicians without an imaging facility is a good measure of how the physicians with an imaging facility would have behaved if they did not have the financial interest in the facility. These studies do not prove physicians invest in imaging facilities in order to profit from the overtreatment of patients. To circumvent this methodological problem, I instead compare the behavior of physicians before and after they hire a pharmacist, and find that physicians indeed increase all measures of drug-prescribing volume after they hire a pharmacist. This result further demonstrates that vertically integrated providers, not just physicians who make self-referrals to an outside entity, may also overtreat patients.

(3) Empirical validation of the effects of patient cost-sharing on physician prescribing behavior: A third prediction of the credence goods model is that increasing cost-sharing can lead to a reduction in overtreatment as patients begin to reject some of the physicians’ medical advice. This is a work in progress, and very preliminary analysis supports this hypothesis, showing that the greater the copayment, the greater the reduction in drug prescription. Moreover, I will investigate whether higher copayments cause patients with chronic illnesses to reduce the frequency of their office visits to take advantage of a cap on copayment: Because copayments are levied on a per-visit basis, it is more economical for the patients to fill a large prescription infrequently than to separate the prescriptions and pay a copayment during each separate visit.

Future Research Agenda

As a legal scholar, I intend to continue a research agenda that combines the insights of microeconomic theory and game theory with solid empirical methodology to analyze whether laws and regulation achieve their desired effect.

(1) In the health care law arena, building on the theoretical framework of my dissertation, I would like to investigate whether physicians’ ownership interest in specialty hospitals affects their patient-referral and treatment patterns. Specifically, do physicians who refer patients to specialty hospitals in which they have a financial interest perform more surgical procedures? Or, instead of performing more procedures, do physicians refer healthier patients to their own specialty hospitals because healthier patients are less costly to treat than more seriously ill
patients? Conversely, do patients at specialty hospitals achieve better health outcomes relative to patients at general hospitals because the former receives superior care from the efficiency gains of the specialty hospitals’ “focused factory” approach to medical care? The GAO (General Accounting Office) commissioned several studies on these very questions, but I would like to reinvestigate this issue using superior econometric techniques and a larger sample to determine the desirability of allowing physicians to own specialty hospitals.

(2) Does the imposition of the Diagnostic Related Group prospective remuneration system, which changes a cost-plus payment system to a fixed-cost system, alter the way physicians treat their patients? Do physicians begin to “cherry pick” patients by choosing healthier patients, because healthier patients are less costly to treat than sicker patients and therefore generate greater profits from the fixed payment? As health care costs continue to skyrocket, we will certainly see increasing measures, both by Medicare and private insurers, to contain costs. The impact of these measures on physician behavior and patient health outcomes will require thorough and rigorous empirical investigation.

(3) With the introduction of the Medicare Part D prescription drug coverage and the looming budgetary crisis, Congress will doubtless be interested in effective cost-containment for the third largest component of our nation’s health care expenditures. One question of interest to insurers and regulators is whether new drugs are worth their higher costs. Using claims data and controlling for all observable differences in baseline health status, I hope to examine whether patients who take newer, more expensive drugs experience better observable health outcomes (such as reduced visits to the emergency room or hospitalization). In a related question, I would also like to study physicians’ and patients’ decision to choose between higher-cost branded drugs and lower-cost generics. The answers to these questions have significant policy implications for regulations regarding prescription drug coverage and patient cost-sharing.

(4) My interest in the economic analysis of the law, however, extends beyond health care. Securities, contract, banking, bankruptcy and mortgage laws all offer a wealth of research opportunities. While not yet enacted into law, H.R. 3609, “The Emergency Home Ownership and Mortgage Protection Act” has already stirred controversy. Proponents applaud the proposal for attacking the root of the current subprime mortgage crisis, while opponents lament the incursion into the freedom of contract and predict increased lending costs due to uncertainty surrounding mortgage contracts. Were this Act to be enacted, it would be the perfect example of a type of regulation whose effects I would like to study. Likewise, in securities regulation, the enactment of the Gramm-Leach-Bliley Act of 1999 offers fertile ground for empirical research: Did it lead to greater conflicts of interest between the financial services industry’s dual role in lending and credit functions? Or did it lead to greater efficiencies because of the streamlined combination of banking and investment activities? These are questions that await further empirical investigation.

In summary, my ultimate goal as a researcher would be to produce rigorous empirical work, respected by legal scholars and economists alike, that informs important policy questions.