1 Personal Background and Long Term Goals in Legal Academia

My interest in pursuing a career in legal academia, and in particular in the field of health law and policy, began ten years ago when I accepted a lecturer on law position at a medical college in Taiwan. In addition to teaching an introductory survey course on the Taiwanese legal system, I also held administrative duties at the affiliated teaching hospital, and participated in formulating hospital plans of action in response to the changing legal and regulatory landscapes. To gain a deeper understanding of Taiwan’s health policy framework and institutions, I enrolled in an executive education program, where I studied health economics and health law, and was exposed to the economic analysis of law and policy. I was particularly intrigued by the work of economists such as Daniel Kessler, Mark McClellan, and David Cutler, who conducted rigorous empirical research on such questions as the impact of hospital ownership structure on patient health outcomes, and the effect of malpractice liability on physician practice patterns.

My exposure to empirical methods using quantitative data ultimately inspired me to pursue a doctoral degree that emphasizes applied econometric skills. I expect to complete my doctorate in business administration in 2009, and hope to enter legal academia as an empirical scholar. In particular, as a legal academic, I hope to conduct empirical analysis of assumptions used to justify legal doctrines and legislation, or the impact of legal changes. My ultimate goal is to produce rigorous empirical work, respected by economists and legal scholars alike, that informs important legal policy questions.

2 Research Agenda during Fellowship Period

During the fellowship period, I hope to undertake one or more of the following writing projects, all involving an empirical analysis of the law.

2.1 Medical Malpractice

2.1.1 Medical Malpractice and ERISA Preemption

Summary: This research proposal, as well as the following one in Section 2.1.2, investigates whether increasing medical malpractice liability affects physician practice patterns. In this section, I propose a comparison of physician behavior under state laws and their behavior under federal law (state laws are more generous to plaintiffs) to uncover whether physicians practice defensive medicine, and whether they reduce medical errors under a more stringent liability system.

Motivation and Background: Legal changes in the United States present potential avenues for research on the effect of changing malpractice liability on physician behavior. The federal Employee Retirement and Income Security Act of 1974 (ERISA) generally preempts (more generous) state tort law claims for enrollees in such plans, limiting plaintiffs’ recovery to actual damages. Beginning in the late 1990s, legislation in ten states attempted to enhance the ability of enrollees in employer-sponsored health plans to sue in state courts for medical malpractice, allowing plaintiffs to recover for pain and suffering, as well as punitive damages against negligent medical providers. In 2003, however, the Supreme Court reviewed two cases regarding the breadth of ERISA’s preemption clause, and in the consolidated case Aetna Health Inc v Juan Davila and CIGNA Healthcare of Texas, US Supreme Court, Nos. 02-1845 and
(03-83) ruled that ERISA preempted negligence-based claims against employer-sponsored health plans in state courts.

**Methodology and Data for Empirical Research:** The result of these two sets of events is that for physicians in these ten states, the passage of state health plan liability laws arguably increased the malpractice risks for physicians treating patients in employer-sponsored health plans, and the Supreme Court decision in 2004 lowered the risks when the less generous federal law was held to preempt the state laws. Using discharge data from the relevant State Inpatient Samples (from the Health Care Cost and Utilization Project) and constructing Patient Safety Indicators (PSI) according procedures proposed by the Agency for Health Care Research and Quality (AHRQ), I hope to investigate (1) whether increasing malpractice pressures led to a reduction in constructed indicators of medical errors, and (2) whether increasing malpractice pressures caused physicians to practice “defensive medicine,” which is defined as an increase in the intensity of services with no accompanying change in health outcomes. States that did not pass legislation to allow enrollees to sue their employer-sponsored health plans will be used as the control group. Different specifications will be used to capture the short-term and long-term effect of changing liability risks. Furthermore, I hope to cull the Westlaw Medical Malpractice database to analyze state and federal case law, including jury awards and number of suits, to discern the effects of the state health plan liability laws on the pattern of medical malpractice suits.

**Contribution and Significance of the Study:** Current literature offers mixed evidence and existing studies are subject to methodological criticisms because of study designs. This project, and the companion study described below in Section 2.1.2, will hopefully contribute to a better empirical understanding of the effect of changing tort liability on physician behavior using longitudinal rather than cross-sectional data.

### 2.1.2 Medical Malpractice Liability and Medical Error: Evidence from Taiwan

**Summary:** Despite legislative interest in reforming the tort system, there is unclear evidence on whether higher liability leads to safer medical practices. In this study, I intend to investigate the effect of imposing strict liability on medical injury on physician behavior. Does increasing medical malpractice liability lead to defensive medicine? Does it reduce medical error? Taiwan’s experience is particularly interesting because few, if any doctors, carry malpractice insurance, and must pay claims out of their own pockets. Answers to these questions can shed light on the desirability of tort reform.

**Motivation and Controversy:** In 2001, the Supreme Court of Taiwan affirmed a lower court’s decision to apply the Consumer Protection Law to impose strict liability on a medical injury case in the absence of any finding of negligence by the physician. This decision sent shock waves through the Taiwanese medical and legal communities, generating countless op-ed pieces questioning the wisdom of applying no-fault liability to the “inexact art” of medical care. Supporters of the Supreme Court’s ruling argued that hospitals and medical providers are better able to bear and spread the cost of medical injuries. Furthermore, unlike U.S. doctors, most Taiwanese doctors do not carry malpractice liability insurance, so they arguably have a greater incentive to be more careful when they must pay claims for malpractice out of their own pockets. Detractors pointed to the possibility that physicians, in fear of liability, may practice defensive medicine or even refuse to treat patients with serious medical conditions.
Methodology and Data for Empirical Study: Because Taiwan’s legal system is based on the Roman civil law system, judges at lower courts are not bound by the decisions of higher courts. All decisions of higher courts serve as mere references, although in practice many lower courts do follow precedents established by the higher courts. In other words, in May, 2001, Taiwan entered an era in which the likelihood of liability for malpractice increased. I intend to exploit this increase in the probability of malpractice liability as a natural experiment to analyze whether obstetricians increased either testing procedures during pregnancy or caesarian sections over natural births. Moreover, I will investigate whether there are any changes in the patterns of the ICD-9-CM (International Classification of Diseases, 9th Revision, Clinical Modification) codes relating to pregnancy or child delivery. Data will be drawn from the claims data (1997-2004) from Taiwan’s National Health Research Institute.

Contribution and Significance of the Study: Understanding whether increasing tort liability will cause physicians to engage in purely defensive medicine without deterring medical errors may help us shape our tort reform policies. If tort liability does not lead to safer practices, there may be better ways to compensate victims of iatrogenic harm for their injuries than the tort system.

2.2 Law and Innovation in Health Care

Summary: The primary rationale of the patent system is to grant a temporary monopoly in exchange for incentives to innovate. However, the theoretical economic literature is ambiguous as to the effect of patent protection on innovative activity, and convincing empirical evidence is scarce. In this study, I intend to evaluate the impact of restricting intellectual property protection for a particular type of patents – medical process patents – on the level of innovative activity in the field.

Motivation: Economists have long considered the patent system to be a necessary evil, a tradeoff between a short-term limit on competition in exchange for securing an incentive for inventors to innovate. However, economic theory does not unambiguously predict whether the patent system leads to greater innovative activity, and convincing empirical evidence is scarce because of the lack of real experiments. I propose to contribute to the empirical literature on the relationship between patent protection and innovation by focusing on legislation affecting a controversial type of patents – medical process patents.

Background and Prior State of Patent Law: Until 1952, medical and surgical methods, as well as processes for diagnosing medical conditions were not considered patentable. In 1952, Congress amended the Patent Act to extend patentability to “new and useful processes,” and the U.S. Patent and Trademark Office has since routinely issued patents to pure “business methods” (such as Amazon.com’s “one-click ordering process”) and “surgical methods” (such as a 1992 patent for a method of performing cataract surgery without stitches). Many medical professional associations, including the American Medical Association and the American Association of Orthopedic Surgeons, have frowned upon medical process patents, condemning them as a violation of physicians’ ethical responsibility to share their discoveries with their peers.

Change in Patent Law and Opportunity for Empirical Research: In the aftermath of the controversy surrounding medical process patents, Congress acted in 1996, and passed legislation to prevent courts from fining “medical practitioners” for infringing a medical process patent in the course of a “medical activity,” or enjoining them from continuing to use the process. The amendment, Section 287(c) to the Patent Act, applies only to pure process patents, and the exclusion against damages and
enjoinment applies only to “medical practitioners” in the course of a “medical activity.” The patents remain enforceable against, for example, a researcher using the process in the course of scientific experimentation. In other words, the passage of section 287(c) reduced the potential financial gain for inventors of pure process innovations, representing a natural experiment to investigate empirically whether a reduction in the incentive to innovate actually results in a decrease in innovative activity.

**Data and Methodology for Empirical Study:** I intend first to analyze U.S. patent data (available from the National Bureau of Economic Research), and expand the analysis to announcements of new surgical techniques in relevant forums such as medical journals. The basic idea is to compare pre-287(c) activity in medical processes versus post-287(c) activity with a control group such as medical patents that are not “pure” processes. Concurrently, I will also look at whether the passage of 287(c) led to “lower quality” medical process patents because of reduced incentives. The result of such a comparison will inform us whether relaxing patent protection leads to lower innovative activity.

**Contribution and Significance of the Study:** The results of this research will add to the empirical literature on the relationship between patents and innovation, and help guide legal policy by shedding light on whether certain fields require patent protection in order to innovate and create “new and useful processes.”

### 2.3 Antitrust Law in the Health Care Sector

**Summary:** Courts in hospital merger cases often focus on the corporate form of the hospitals, permitting mergers of not-for-profit hospitals under the impression that such mergers lead to lower prices for consumers. Economists and legal scholars find fault with such an analysis, and in this study I propose to empirically examine whether mergers between nonprofit hospitals lead to welfare-reducing behavior, not as compared to mergers between for-profit hospitals, but as compared to the pre-merger behavior of nonprofit hospitals.

**Motivation and Background:** Since the 1990s, the Federal Trade Commission and the Justice Department have lost a string of cases to prevent hospital mergers. Legal scholars and economists alike have criticized the analysis that the courts have used to justify permitting the mergers. The former faults the courts’ abandonment of traditional antitrust analysis by putting too much weight on one issue – whether merged not-for-profit hospitals exhibit different pricing behavior from merged for-profit hospitals. Economists have rejected the courts’ analysis of the relevant geographic markets of the hospitals involved in the mergers, as well as raised suspicion regarding the validity of a key empirical study that the courts cited. The study, conducted by Lynk, concludes that “[for nonprofit hospitals,] market concentration appears to be positively correlated not with higher prices, but with lower prices.” (Lynk, 1995).

**Economists’ Critique of the Lynk Study:** Subsequent economic research raised doubts about Lynk's methodology. David Dranove pointed out that Lynk's choice of using the coefficient on market share to compute the effect of a merger on price introduces “simultaneity bias,” an econometric term that indicates that the direction of the causation is unclear (Dranove and Ludwick, 1999). In other words, the empirical method that Lynk used cannot demonstrate conclusively that mergers among nonprofit hospitals lead to lower prices. Without further justification, Lynk's results are also consistent with the hypothesis that lower prices lead to mergers among nonprofit hospitals. Dranove also highlighted other potential...
methodological shortcomings in Lynk’s paper. In other words, one of the key studies that the Butterworth court relied upon to permit the merger of nonprofit hospitals has subsequently been challenged by fellow economists.

**Legal Scholars’ Critique of the Courts’ Hospital Antitrust Decisions:** Moreover, recent legal scholarship has proposed a different criticism of the Carilion -Freeman -Butterworth legacy of permitting the hospitals’ nonprofit status to carve out an “exemption” in antitrust law that is absent in the merger analysis of non-health care cases. Barak Richman contends that instead of focusing on the pricing behavior of nonprofit hospitals with market power relative to that of for-profit hospitals with market power, courts should instead focus on the proposed merger's effect on prices, output, and efficiency (Richman, 2007).

**Data and Methodology for Empirical Study:** Instead of focusing on the effect of corporate form on post-merger pricing behavior, I propose to conduct an empirical examination of the effect of merger on the post-merger behavior of not-for-profit hospitals relative to their pre-merger behavior. In other words, the comparison should be between the behavior of not-for-profit hospitals without market power, and the behavior of not-for-profit hospitals with market power. Using longitudinal data from the American Hospital Association, hospital-level annual financial statements collected by state health agencies (in states such as California, Arizona, Wisconsin, and Florida), and patient-level annual discharge data, I will be able to compare pricing behavior, output, and quality indicators of nonprofit hospitals before and after acquiring market power (through hospital mergers) relative to nonprofit hospitals that did not undergo any merger activity. The econometric specification will follow Cuellar and Gertler (2005) and control for whether a competitor has merged, local wages, managed care penetration, patient case-mix, and overall state trends. In particular, I will use average expenditures per patient-day as an indicator of efficiency, and (1) rates of inpatient mortality and (2) patient safety indicators as proxies for quality of care.

**Contribution and Significance of Study:** With this study, I hope to examine the effect of market power on the pricing behavior and output of not-for-profit hospitals relative to their pre-merger behavior and output. The results of this empirical study will hopefully help redirect attention to the traditional principles of antitrust horizontal merger analysis – an examination of the potential anticompetitive effect of the proposed merger – rather than focusing on whether nonprofit hospitals exhibit different behavior from for-profit hospitals in merger cases.