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EVERYTHING'S BIGGER IN TEXAS:
EXCEPT THE MEDMAL SETTLEMENTS

TOM BAKER, ERIC HELLAND, AND JONATHAN KLICK[1]

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Recent work using Texas closed claim data finds that physicians are rarely required to use personal assets in medical malpractice settlements even when plaintiffs secure judgments above the physician's insurance limits. In equilibrium, this should lead physicians to purchase less insurance. Qualitative research on the behavior of plaintiffs suggests that there is a norm under which plaintiffs agree not to pursue personal assets as long as defendants are not grossly underinsured. This norm operates as a soft constraint on physicians. All other things equal, while physicians want to lower their coverage, they do not want to violate the norm and trigger an attack on their personal assets. This constraint should be less effective when physicians have other ways to shield their assets, such as through large personal bankruptcy exemptions like those available in Texas. Settlement data from the National Practitioner Data Bank indicate that settlements in Texas are abnormally low, just as they are in other jurisdictions with unlimited homestead exemptions in bankruptcy. Consistent with theory, we find that more generous exemptions are also associated with lower insurance prices and lower levels of insurance coverage. These results suggest that the large "haircuts" and low insurance limits observed in the Texas data may be driven by Texas's generous bankruptcy provisions. At a minimum, Texas is not generally representative of other jurisdictions. This weakens the case for extrapolating conclusions from Texas data to other jurisdictions.

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I. INTRODUCTION

Academic theory, conventional wisdom, and empirical reality are orthogonal to one another when it comes to medical malpractice. In first year law classes, we teach that tort law induces doctors to conform to the prevailing standard of care.[2]   Political rhetoric focuses on medical

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[2] *See, e.g.,* Richard Epstein, CASES AND MATERIALS ON TORTS, 253-

malpractice criseses, doctor shortages, and the costs of defensive medicine.[3] The data suggest that while medical malpractice law does little to properly incentivize doctors[4] and is an expensive way to compensate victims[5] on the whole, it adds relatively little to the aggregate cost of healthcare.[6]

A series of papers using fairly comprehensive[7] data from the Texas Department of Insurance (TDI)[8] on closed medical malpractice claims in the state[9] adds another degree of separation between theory, public

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242 (9th ed. 2008).

[3] For a discussion of this rhetoric, *see* Tom Baker, *The Medical Malpractice Myth* (2005).

[4] For a recent review of the evidence, *see* Daniel P. Kessler, *Evaluating the Medical Malpractice System and Options for Reform*, 25 J. ECON. PERSP. 93, 95 - 100 (2011).

[5] *See* David M. Studdert, et al., *Claims, Errors, and Compensation Payments in Medical Malpractice Litigation*, 354 NEW ENG. J. MED. 2024, 2025 (2006) (reporting that in a random sample of 1,452 closed medical malpractice claims, payments to lawyers accounted for almost half of the expenditures); This number is in line with that reported by Patricia Danzon which compares it with an overhead figure for first party insurance closer to 10 percent. Patricia Danzon, *Liability for Medical Malpractice*, 1 HANDBOOK OF HEALTH ECON. 1339, 1369 (2000).

[6] Even studies with the largest estimates place medical malpractice costs at less than 3 percent of total healthcare spending in the U.S. *See e.g.*, Michelle M. Mello, et al., *National Costs of the Medical Liability System*, 29 HEALTH AFFAIRS 1569, 1569 (2010) (placing the share at 2.4 percent). *See also*, Darius Lakdawalla & Seth Seabury, *The Welfare Effects of Medical Malpractice Liability*, NAT'L BUREAU OF ECON. RES., Working Paper No. 15383 (2009) (using sophisticated techniques to account for the endogeneity between health care spending and medical malpractice and still finds that tort awards account for less than 5 percent of the growth in medical spending since 2000).

[7] The primary limitation in the TDI data is that there is limited or no information on small claims. Claims involving payments up to $10,000 (in nominal terms) are not individually reported, and claims involving payments between $10,001 and $24,999 do not require detailed information in the associated filing. For example, filings in the latter category contain no information on the underlying injury. For all observations, one significant problem with the TDI dataset is that it contains no information on physician specialty.

[8] For annual descriptive reports of these data, *see Texas Liability Insurance Closed   Claim   Annual   Reports*,   TEX.   DEP'T   OF   INS., http://www.tdi.texas.gov/reports/report4.html (last visited Sept. 24, 2015).

[9] For details on this dataset, *see* Bernard Black, et al., *Stability Not Crisis: Medical Malpractice Claim Outcomes in Texas, 1988- 2002*, 2 J. EMP. LEG. STUD.

perception, and reality in this context. Given the ubiquity of non-risk-rated medical malpractice insurance,[10] for liability to generate incentives for physician care, there must be a non-trivial possibility that liability can exceed insurance limits.[11] Physicians themselves appear to fear exposing their personal assets to medical malpractice liability.[12] Yet, if the Texas data are representative, physicians rarely pay anything above their insurance limits in settlements, even if a case generates a judgment that exceeds those limits.[13] That is, plaintiff awards above insurance limits generally receive a "haircut" bringing them down to a level where a defendant doctor does not have to use any personal assets to satisfy the judgment.[14]

The Texas data present a puzzle. If the risk of an above limit payment is really so small, why do physicians worry about liability at all? What's more, given that Texas has no regulation requiring a minimum level of medical malpractice insurance,[15] why do physicians buy as much insurance as they do? In equilibrium, the fact that plaintiffs do not pursue personal assets to satisfy above limit judgments should lead physicians to

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207 (2005).

[10] For a discussion of this peculiarity, *see* Frank A. Sloan, *Experience Rating: Does It Make Sense for Medical Malpractice Insurance?*, 80 AM. ECON. REV. 128 (1990).

[11] Physicians may be incentivized by reputational concerns that are affected by the litigation system even if they do not bear the direct costs of settlements and judgments. For some evidence of these reputational concerns, *see* Eric Helland & Gia Lee, *Bargaining in the Shadow of the Website: Disclosure's Impact on Medical Malpractice Litigation*, 12 AM LAW ECON REV 423 (2010).

[12] Internet searches yield numerous business entities advertising asset protection services aimed at physicians, invoking fears regarding medical malpractice claims. For example, *see* Capital Asset, Inc., http://www.bulletproofasset.com/physicians.htm (accessed October 11, 2013). Another telling indicator of the demand for asset protection services among physicians is the existence of the book, now in its second edition, Robert J. Mintz, ASSET PROTECTION FOR PHYSICIANS AND BUSINESS OWNERS (2nd ed. 2010).

[13] David A. Hyman, Bernard S. Black, & Charles Silver, *Settlement at Policy Limit and the Duty to Settle: Evidence from Texas*, 8 J. EMPIRICAL LEG. STUD. 48 (2011).

[14] David A. Hyman, Bernard Black, Kathryn Zeiler, Charles Silver, & William M. Sage, *Do Defendants Pay What Juries Award? Post-Verdict Haircuts in Texas Medical Malpractice Cases*, 1988–2003 4 J. EMPIRICAL LEG. STUD. 3, 7 (2007).

[15] While some states do have such regulations, Texas is not among them. See American Medical Association, STATE LAWS MANDATING MINIMUM LEVEL OF PROFESSIONAL LIABILITY INSURANCE (2012).

reduce their insurance coverage.

The Texas results, and the questions they raise, relate closely to earlier work done by Tom Baker on the topic of "blood money.[16]" In that work, attorneys suggested that plaintiffs are reluctant to pursue a defendant's personal assets (blood money) both because it is relatively difficult to get at personal assets and because of the view that it is unfair, except in certain circumstances, to go after those assets. One implication of these findings is that, all other things equal, the easier it is for a defendant to shield her assets, the less likely it is that a plaintiff will pursue blood money. Subsequent work on the blood money phenomenon claims that generous bankruptcy exemptions are among the most important impediments keeping plaintiffs from pursuing larger settlements.[17]

In this article, we pick up some of the open questions raised by the work on haircuts in the Texas medical malpractice data in light of the qualitative work on blood money. After reviewing both sets of literature in section 2, we provide a simple model of the equilibrium behavior of a physician in choosing her insurance level in light of these literatures in section 3. In section 4, we briefly describe the homestead exemptions that exist in each state. In section 5, we outline the empirical evidence that supports our model. In section 6, we show that settlements are systematically lower in states with more generous homestead exemptions using comprehensive data on medical malpractice payments from the National Practitioner Data Bank. To link this result to our model, we provide evidence from a nationally representative survey showing that medical malpractice insurance prices are systematically lower in states with more generous exemptions, consistent with a model where the demand for insurance declines when bankruptcy law provides an alternate vehicle for protecting assets. Lastly, we analyze insurance policies from a database of an insolvent insurer showing that doctors choose lower policy limits in states with more generous bankruptcy protections, further bolstering our basic claims. Section 7 discusses the robustness and limitations of our results, and section 8 concludes.

In addition to verifying the importance of bankruptcy protections to tort law in action, our results suggest that at least some of the findings of the papers using the Texas closed claim data may be specific to regimes with large bankruptcy exemptions like Texas. Given that, it may not be

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[16] Tom Baker, *Blood Money, New Money, and the Moral Economy of Tort Law in Action*, 35 LAW & SOC'Y REV. 275 (2001).

[17] Stephen G. Gilles, *The Judgment-Proof Society*, 63 WASH. & LEE L. REV. 603 (2006).

reasonable to expect that haircuts will be as common or as large in states where asset protection is more difficult given the propensity of doctors to buy more medical malpractice insurance coverage in such states. Even if doubts remain about causality in the relationship we study, it seems clear that something makes Texas peculiar,[18] limiting the value of using the TDI data to draw conclusions about the state of medical malpractice liability more generally. Concerns about unobserved heterogeneity of this type should lead researchers to focus on datasets that allow for better research designs that exploit natural experiments and more cross- jurisdiction comparisons.[19]

II. BLOOD MONEY AND BANKRUPTCY

The research on blood money grew out of a qualitative study of personal injury lawyers in Florida and Connecticut conducted in the mid-1990s. First focused on the relationship between tort claims and liability insurance,[20] the study went on to explore the circumstances in which plaintiffs seek more than just insurance money from individual defendants. That question touched such an emotional chord among the lawyers that it became a central focus of the interviews, with plaintiffs' and defense lawyers alike distancing themselves from "what we call blood money, instead of insurance company money."[21] The defense lawyers emphasized the extent to which they protected their clients from having to pay blood money. The plaintiffs' lawyers emphasized the extent to which they acculturated their clients to the strong norm that plaintiffs are supposed "to take it [money] from an insurance company as opposed to an individual."[22]

In explaining this norm, the lawyers identified moral and practical considerations. Except in three kinds of circumstances to be explained shortly, going after "blood money" is ethically and morally problematic for

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[18] Texas is peculiar for many reasons. *See*, e.g., Barney Smith's Toilet Seat Art Museum, Roadside America, http://www.roadsideamerica.com/story/6166. We focus solely on those related to medical malpractice in this article.

[19] See generally, Joshua Angrist and Jörn-Steffen Pischke, *The Credibility Revolution in Empirical Economics: How Better Research Design is Taking the Con out of Econometrics*, 24 J. ECON. PERSP., no. 2, 2010 at 3.

[20] Tom Baker, *Transforming Punishment into Compensation: In the Shadow of Punitive Damages*, 1998 WIS. L. REV. 211, 214 (1998).

[21] Baker, *supra* note 16, at 281.

[22] *Id.* at 283.

both plaintiffs and their lawyers.[23] In addition, the lawyers reported that there are serious practical hurdles: "it is easier to collect from an insurance company than it is to go against the individual and try to garnish wages, foreclose on a home, as well as other things that most people aren't interested in doing, whereas the insurance companies, they're like a bank."[24]

As the lawyers reported, the legal rule regarding the liability insurer's "duty to settle" reinforces the practice of accepting the available insurance money in settlement of the claim.[25] This legal rule obligates an insurer to "to make reasonable settlement decisions that protect the insured from judgments in excess of the policy limits."[26] An insurer that breaches this duty must pay the full amount of any resulting judgment, notwithstanding the fact that liability insurance policies place limits on the amounts that insurers are contractually obligated to pay. This insurance law rule and the practical difficulties of collecting significant amounts of money from individuals combine to create a very strong incentive for plaintiffs' lawyers to settle even very serious liability claims for the insurance policy limits, sometimes with the hope that the insurance company will unreasonably refuse to accept the offer, thereby "setting up" the insurance company to pay much more money after trial.[27]

With or without this hope, the lawyers report that the moral and practical considerations against blood money create such a strong social practice of accepting the available insurance money as payment in full that it takes a great deal of effort for a plaintiff to persuade a defense lawyer that she or he is actually serious about demanding the payment of blood money in an ordinary negligence case.[28] For most plaintiffs in most cases against ordinary middle class defendants, the choice is clear, as explained

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[23] *Id.* at 284-85. Interesting, the few plaintiffs' lawyers who actively resisted the no blood money norm (while acknowledging that it existed) pointed out that lawyers who refuse to go after blood money may well be violating their ethical obligation to serve as zealous advocates for their clients. *Id.* at 287.

[24] *Id.* at 285. *See also Id.* at 289 (an explanation of how going after blood money can be harder and take longer than just collecting from insurance company).

[25] *Id.* at 291-92.

[26] Principles of Liability Insurance Project (AM. LAW INST., Draft No. 3, 2012).

[27] Baker, *supra* note 16, at 293-94. *See also* David A. Hyman, Bernard S. Black & Charles Silver, *Settlement at Policy Limit and the Duty to Settle: Evidence from Texas*, 8 J. EMPIRICAL LEG. STUD. 48 (2011).

[28] Baker, *supra* note 16, at 291.

in the following statement from a plaintiffs' lawyer who reported that he had never collected blood money:

> This woman is coming in tomorrow; she has to make the decision. Does she want to pursue this guy on a personal basis? It's not going to make any difference, because … the guy who caused all this happened to be a teacher, an elementary musical [sic] teacher. Makes about $45,000 a year; he's got three kids. He's got no equity in his house, and he's got an old car. If she pursues him, what's going to happen is, she'll get a judgment. It's going to be for a lot more than $100,000, and he's going to go into bankruptcy. And when he goes into bankruptcy, he's going to keep his house, he's going to keep his car, and he's going to keep under the statute, $15,000. You can't tap into his IRA, if he has one, his 401K if he's got one for school, for his group, his employment. So what advantage is there for the client to do that? Plus, she can get $100,000 now, or she can wait four years and get $100,000. So, for that reason I've never been in a situation where I've taken personal liability.[29]

The lawyers reported three circumstances in which pursuing blood money is not a breach of the norm: when the defendant clearly deserves punishment,[30] when the plaintiff died or suffered various serious injuries and the defendant's conduct was more than merely negligent,[31] and when

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[29] *Id.* at 289.

[30] *Id.* at 298 ("Parents and relatives of people who are killed by drunk[en] drivers want blood. They really want blood. I forgot what question of yours initiated this, but in those cases, the clients themselves have an interest in gouging, to make the point to the person and to have the word get out, usually to other youths that 'Holy shit! Jones's father lost his house.'").

[31] *Id.* at 299 ("Generally, ... tragic injuries. I'm thinking of one where a young kid was rendered a quadriplegic in a swimming pool accident, and the people were actually supervising a party, like a high school graduation party or such, and they were actually there and they were allowing drinking; kids got crazy as teenagers ..., and the poor youngster ended up in a wheelchair. And the homeowners coverage, I think, was $300,000, which obviously didn't even touch the value of the case, and we did attach property there because the people ... insisted on it, and we did get the payment because it was a fairly nice house and there was a good amount of money there; but we generally, and maybe it's just a personal preference, but we don't like doing it.").

the defendant failed to purchase enough insurance.[32] The latter circumstance is what we focus on in this quantitative research. It is an imprecise, presumably local, norm:

> How much is enough? My interviews do not provide a clear answer, but they do provide a way to think about it. The minimum is whatever it takes to claim, credibly, that you have satisfied your moral obligation to insure. Ordinary people have an obligation to purchase insurance in ordinary amounts. Wealthy people have an obligation to purchase insurance in larger amounts.[33]

In the years since this qualitative research was published, legal scholarship has advanced the understanding of the blood money story in two main ways. First, Steven Gilles took the main empirical insight of the blood money research, combined it with Lynn LoPucki's "death of liability" idea,[34] and advanced the thesis that, at least for ordinary middle class individuals, ours is a "Judgment-Proof Society."[35] A host of legal rules that protect middle class incomes and assets from execution combine to make liability insurance the only significant asset available to tort plaintiffs. Gilles' exhaustive march through these legal rules provided firmer ground for the earlier, admittedly impressionistic observation by Baker that "for claims against all but the wealthiest individuals and organizations, liability insurance is a *de facto* element of tort liability."[36]

Second, the team working with the Texas medical malpractice

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[32] *Id.* at 297 ("If a lawyer or doctor chooses to go bare, which is an economic decision to put more money in their own pockets and not pay their premiums, then I probably would go after them because that's wrong, because they are now not protecting– it's now not just being negligent, they're making a conscious decision that if they screw up, they're not going to protect their client or their patient. And they did that so that they could make more money.").

[33] *Id.* at 296-97.

[34] Lynn M. LoPucki, *The Death of Liability*, 106 YALE. L. J. 1 (1996).

[35] Gilles, *supra* note 17, at 607 ("This Article is about how our laws have made being judgment-proof the rule rather than the exception; about what this implies for the standard deterrence, corrective justice, and loss-spreading accounts of tort law; and about whether anything should be done to lower the legal barriers to enforcing and collecting tort judgments from individual tortfeasors").

[36] Tom Baker, *Liability Insurance as Tort Regulation: Six Ways that Liability Insurance Shapes Tort Law in Action, Tort Law and Liability Insurance* at 295 (Gerhard Wagner ed. 2005).

closed claim data has used those data to test the blood money hypothesis quantitatively. They analyzed whether doctors ever paid blood money in medical malpractice claims in Texas. Their answer – almost never, not even in cases with big jury verdicts – supported the qualitative research, with three interesting extensions.[37]

First, because doctors have incomes that are well above middle class, the explanation for this result cannot rest entirely on the practical bankruptcy protection explanations provided by the Connecticut lawyers. (Gilles would point to trust law.[38] The Connecticut lawyers would claim that morality also plays a role.) Second, the Texas data also include payments made in cases that went to trial, allowing the researchers to report that doctors rarely paid blood money even after losing a big case at trial.[39] Heretofore the blood money story had focused exclusively on pre-trial settlements. The finding that doctors did not have to pay blood money even when the jury verdict greatly exceeded the medical malpractice insurance policy limit significantly strengthened the thesis of the original qualitative research. If doctors regularly make post-verdict settlements that give the plaintiffs only the insurance money, plaintiffs have little hope of collecting blood money from a pre-trial settlement.

This dynamic explains the third, initially surprising extension of the Texas researchers: Texas doctors buy insurance policies with much lower limits than scholars had previously believed, and the amount of insurance that the doctors bought declined in real terms over the years the researchers studied. Taking the blood money story seriously, however, this result is not surprising. Why should physicians buy more insurance than they need? Once doctors buy enough insurance to satisfy the "no blood money" norm and the liability insurance requirements of their contracting partners (most significantly, hospitals), any additional insurance provides a benefit only to patients who sue them. Within the dominant world view of the medical profession, patients who sue are the enemy, not a group deserving of extra protection from physicians' voluntary purchase of

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[37] *See* Hyman, *supra* note 13, at 48.

[38] Gilles, *supra* note 17, at 635-42.

[39] Hyman et al., *supra* note 13, at 51. *See also*, Hyman et al., *supra* note 14 at 7 ("Post-verdict settlements were often at or below policy limits even when the adjusted verdict exceeded these limits. In the 214 "single-payer" cases for which we have data on policy limits, we estimate that policy limits explain at least 73 percent of the aggregate haircut ($71 million/$97 million). In single-payer cases with adjusted verdicts that exceeded the policy limits, 92 percent (71/77) received a haircut").

insurance in amounts that exceed the norm.[40]

We investigate these dynamics below, developing a model of insurance choice for a doctor rationally reacting to an environment where plaintiffs do not pursue blood money except in cases of egregious underinsuring.

III. SIMPLE MODEL

In choosing a medical malpractice insurance policy, price and the amount of coverage[41] will generally drive a physician's choice.[42] These two factors are not independent since an individual can always purchase a policy with higher limits if she is willing to pay a higher price. This decision process might be constrained, however. Some states regulate minimum coverage levels[43], and even more often, hospitals will set their own higher requirements as a pre-condition for being able to practice at the hospital.[44] For simplicity, we ignore these constraints in the theoretical model that follows[45], but we include the effect of state regulations in the empirical work presented below.

We do, however, consider another influence in a physician's policy choice. In documenting the blood money phenomenon, Baker found qualitative evidence that plaintiffs were more likely to go after personal assets if the defendant consciously chose to underinsure.[46] The interview subjects in that study suggested that the definition of adequate insurance is not precise, but is instead driven by potentially evolving norms that are determined contextually. Respondents also suggested that, all other things

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[40] Timothy Marjoribanks, Mary-Jo Delvecchio Good, Ann G. Lawthers & Lynn M. Peterson, *Physicians' Discourses on Malpractice and the Meaning of Medical Malpractice*, 37 J. HEALTH AND SOC. BEHAVIOR 163 (1996).

[41] We do not distinguish between per-occurrence limits and aggregate annual limits. The intuition captured in the model below follows for both kinds of limits.

[42] We ignore other terms of second order importance, such as consent to settle clauses and deductibles since they do not affect our analysis.

[43] *See generally* National Conference of State Legislatures, http://www.ncsl.org/issues-research/banking/medical-liability-malpractice-2010-legislation.aspx (last visited Sept. 11, 2015) (providing an overview of state regulations regarding medical malpractice limits).

[44] *See* Michelle M. Mello, *Understanding Medical Malpractice Insurance: A Primer*, 8 ROBERT WOOD JOHNSON FOUND. RES. SYNTHESIS REP. 1, 3 (2006).

[45] Including constraints of this type in the simple model presented below would not qualitatively change the conclusions.

[46] Baker, *Blood Money*, *supra* note 16, at 296-98.

equal, wealthier individuals were expected to maintain more insurance coverage than individuals with more limited means. This suggests that doctors will likely consider these norms when choosing their policy limits, although, given the inherent fuzziness of these norms, they will tend to operate as soft influences rather than hard constraints.

   To formalize the doctor's decision process, we assume that the individual chooses only the policy limit, which in turn affects the price paid for the policy. All other terms of the policy are fixed. Further, we assume there are no legal or professional regulations that set policy limits. Lastly, we assume that the terms of the physician's policy do not affect the level of harm suffered by a plaintiff[47], but we do allow the chosen limits to affect the cost borne by the physician after an adverse event for which the physician may be held liable. We allow for this both directly, with the physician automatically being indemnified for any cost below the limit, and indirectly with the probability that a plaintiff will seek blood money for losses above the limit being an inverse function of the policy limit itself. That is, all other things equal, the likelihood a plaintiff seeks blood money will be lower as the insurance limit is higher. This indirect effect captures the norm described above.

   For our model, the physician chooses L to minimize the sum of the cost of her policy $C(L)$ which is a function of the policy limit and the expected out of pocket costs she expects to pay to plaintiffs. The expected payment out of personal assets is a random variable, and so its expectation is expressed as the integral of the potential harm $H(x)$ multiplied by the associated probability distribution $f(x,L)$. As suggested above, while we do not allow the harm suffered by the plaintiff to vary as a function of the policy limit, we do allow the likelihood that the physician must bear those losses via a settlement to be a function of the policy limit. Specifically, we assume that as L increases, $f(x,L)$ declines.

   The physician then solves the following:

$$\min_{L} C(L) + \int_{L}^{\infty} H(x) f(x,L) dx$$

The range of the integral goes from the policy limit (L), since the policy covers any amount up to the limit, to infinity.[48] To solve this problem, the

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[47] We disallow, for example, the potential for moral hazard.

[48] More realistically, the upper bound is some measure of total available assets, perhaps including future income streams. The results that follow do not

individual takes the first derivative of the expression with respect to *L* and sets it equal to zero.[49] This leads to the following first order condition[50]:

$$\min_{L} C(L) + \int_{L}^{\infty} H(x) f(x, L) dx$$

Rearranged:

$$\frac{\partial C}{\partial L} = H(L^*) f(x, L^*) - \int_{L^*}^{\infty} H(x) \frac{\partial f(x, L^*)}{\partial L} dx$$

This provides the standard result that the individual increases her insurance limit up to the point where the marginal cost (i.e., how much it costs to increase the limit by one dollar) is exactly equal to the marginal benefit. In this case, the marginal benefit is equal to the likelihood of facing an incremental harm just equal to the chosen policy limit and the doctor being able to satisfy his obligation for that additional harm through his insurance policy as opposed to being required to pay out of pocket, minus the expected savings garnered from not having to pay for above limit harms (because the increase in the limit lowered the likelihood of violating the underinsurance norm).

We note an interesting implication of this model. If we were to take from the haircuts literature that individual doctors are very unlikely to ever pay out of pocket to settle a claim, this would imply that at least the first element of the marginal benefit is zero. That is, if plaintiffs virtually never seek to collect damages exceeding the insurance limits, there is no benefit to extending the limits to cover an incremental harm. This suggests that a doctor's decision regarding coverage limits, ignoring regulatory requirements, will depend on the degree to which plaintiffs are willing to seek blood money due to the doctor's decision to underinsure.

What constitutes an adequate level of insurance is unclear. Interviews with lawyers suggest that it depends on the defendant's wealth and a reasonable expectation of likely damages. Doctors, especially those engaging in risky practices, appear to be held to a high standard in this regard.[51]

There appears, however, to be a tension between these qualitative

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qualitatively depend on which upper bound is used.

[49] We assume that the relevant second order conditions are satisfied.

[50] *See* Akira Takayama, *Analytical Methods in Economics*, at 200 (1993) for an illustration of differentiation of a definite integral.

[51] Baker, Blood Money, *supra* note 16, at 296-298.

impressions and the findings of the haircuts literature. Specifically, in the Texas Department of Insurance database, doctors effectively never pay out of pocket to satisfy judgments or settlement amounts. In the period 1990–2003, in the 9,525 cases with a paid medical malpractice claim, Zeiler et al. find that 98.5 percent of claims settle at or below the policy limit.[52] Even among those few cases where payments to plaintiffs exceed the limit, physicians paid out of pocket less than half the time. In dollar terms, throughout the entire sample, physicians paid less than $12 million total.[53] In expectation, this amounts to about $30 per year for the average physician.[54]

These numbers could be consistent with the qualitative findings. Perhaps Texas doctors were particularly risk averse, leading them to insure at exceedingly high levels. Zeiler et al., however, found that, contrary to conventional wisdom, Texas doctors generally carried policies with limits below $1 million in nominal terms and did not increase the amount of coverage to keep pace with inflation.[55] Perhaps conventional wisdom overstates the real exposure faced by doctors, with Texas physicians doing a relatively good job calibrating their coverage to actual awards and settlements by holding policies with limits under the million dollar mark. This, too, is belied by the Texas data. Hyman et al. find that, on average, plaintiffs recover amounts well below what juries award. In a given case that proceeds to a judgment, the TDI data for the 1988–2003 period show haircuts of almost 30 percent. Because cases with larger verdicts are more likely to be subjected to a haircut and the haircuts themselves are generally larger when awards are bigger, more than 50 percent of money awarded is not collected by plaintiffs.[56] While some of the haircut arises due to statutory limits on damages and judicial reductions, Hyman et al. estimate that at least 73 percent of the total award reduction results from policy limits.[57] It would seem that physicians, at least those covered by the Texas data, systematically underinsure if jury verdicts are a reliable guide to what

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[52] Kathryn Zeiler, Charles Silver, Bernard Black, David A. Hyman, and William M. Sage, *Physicians' Insurance Limits and Malpractice Payments: Evidence from Texas Closed Claims*, 1990-2003, 36 J. LEG. STUD. S9, S10 (2007).

[53] *Id.* at S25.

[54] Zeiler et al find that in the period 1990-2003, physicians paid a total $11.8 million above policy limits out of pocket (s25). Table 2 suggests that in that period, there were, on average, 27,747 doctors in Texas, leading to an average per doctor annual exposure of $30.38.

[55] *Id*. at S41.

[56] Hyman, *supra* note 14, at 28.

[57] *Id*. at 7.

is considered adequate insurance, yet this does not appear to regularly trigger a plaintiff's willingness to seek blood money.

Work by Stephen Gilles offers a potential explanation for the large haircuts observed in the Texas data. Gilles suggests that asset protection mechanisms, especially generous bankruptcy exemptions, effectively make defendants judgment-proof.[58] That is, even for individuals like physicians who likely have non-trivial personal assets, it is often quite easy to make those assets non-collectible.[59] After making this insight, Gilles raises the question we flag above: namely why does anyone buy liability insurance if asset protection is available for a defendant to make herself judgment-proof?[60]

Gilles' answer is that, while available asset protection strategies can make an individual mostly judgment-proof, complete asset protection is not possible, leading Gilles to conclude that individuals buy less liability insurance than they would in the absence of asset protection measures, but they still buy some insurance above and beyond mandated minimums. Gilles suggests that the blood money norm – at least with respect to only pursuing a defendant's personal assets when the defendant is not adequately insured – has very little to do with fairness and much more to do with the relative difficulty of getting access to such assets.[61]

If Gilles is correct, we should observe that individuals systematically purchase less insurance when asset protection is easier, since they can deduce that strong asset protection measures will lead plaintiffs to settle for the amount of an insurance policy limit, even if it is inadequate. Homestead exemptions in state bankruptcy laws provide a major source of asset protection, according to Gilles.[62] These insights may provide a partial explanation for the large haircuts and low insurance limits observed in the work using the TDI data, given that Texas had an unlimited homestead exemption throughout the period analyzed in the relevant set of papers.

IV. HOMESTEAD EXEMPTIONS

Individuals seeking to remove their debt obligations have two separate and mutually exclusive personal bankruptcy procedures in the

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[58] Gilles, *supra* note 17, at 624.

[59] *Id*. at 606.

[60] *Id.* at 662-65.

[61] *Id*. at 666.

[62] *Id*. at 630.

United States: Chapter 7 and Chapter 13. The main difference between the two is that Chapter 7 requires payment from assets, but once assets are exhausted debtors have no claim on the bankrupt's future income. By contrast Chapter 13 bankruptcy requires repayment from future income, although debts are still reduced commensurate with the individual's income.[63] The key factor for our analysis is that bankruptcy, particularly chapter 7 bankruptcy, ends all efforts to collect debt related to personal injury torts such as medical malpractice.[64]

In a Chapter 7 bankruptcy many states exempt certain assets which are protected from creditors. Typically this includes clothing, household goods and perhaps a vehicle and, most importantly for our purposes, in several states, homestead exemptions that allow a party to keep all or part of the equity in a home. Although reforms in 2005 limited the protection available for recently acquired homestead equity, these reforms only apply to a small part of the data we examine and, nevertheless, in most circumstances individuals can still avail themselves of the exemption.[65] We provide details on state homestead exemptions during the period covered by our datasets, 1988-2008 in Table 1 below. We categorize states as having zero exemption, a partial exemption, and an unlimited exemption.

We focus primarily on states with unlimited homestead exemptions because an unlimited exemption is the same everywhere and it is

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[63] Although most of our discussion in this paper focuses on Chapter 7 bankruptcy prior to the 2005 bankruptcy reform anecdotal evidence suggests that doctors seeking to reduce a judgment in excess of insurance, if any, could still reduce their expected losses under Chapter 13 since the payments were based on ability to pay. In one example a hypothetical 6 million dollar judgment against a bare doctor cited by Foodman & Associates in 2005 could result in 5 years of payments of $10,000 a year for a physician earning $200,000 a year.

Moreover there are other methods for using the bankruptcy system to reduce or eliminate judgments. One of the more extreme is intentional divorce in which the doctor divorces their partner and generously gives up all the family assets in the divorce only to remarry at a later date. This may seem extreme and the stuff of situation comedy; at least on the last score it is. See for example the 2003 comedic play, "Going Bare" by Mary Jane Taegel in which an obstetrician who has dropped his liability coverage receives a $4.2 million judgment, and conspires with his wife to get a divorce to protect their assets. Hilarity ensues.

[64] Gilles, *supra* note 17, at 648-50 (discussing the relationship between bankruptcy and tort judgments during the time period that matches most closely to the data used here and in the set of papers using the TDI data).

[65] *Id.* at 655 (discussing how most individuals can still take advantage of the homestead exemption).

qualitatively different from partial exemption or no exemption. An unlimited exemption protects all equity in a home from creditors. By contrast, states with partial exemptions vary widely in their levels.[66] For example the $10,000 exemption in North Carolina provides much less protection than the $100,000 exemption in Idaho, and even that relatively generous $100,000 exemption does not provide a doctor the means to shield significant wealth provided by the unlimited exemption granted in nine states (see Table 1). Moreover, because of the clarity of the unlimited homestead exemption, bankruptcy proceedings in those nine states are often very quick, typically taking around 90 days.[67]

Table 1: State Homestead Exemptions

State	Homestead Exemption	Years in Effect
AK	Partial	1988-2008
AL	Partial	1988-2008
AR	Unlimited	1988-2008
AZ	Partial	1988-2008
CA	Partial	1988-2008
CO	Partial	1988-2008
CT	0	1988-1994
CT	Partial	1994-2008
DC	0	1988-2001
DC	Unlimited	2001-2008
DE	0	1988-2001
DE	Partial	2001-2008
FL	Unlimited	1988-2008
Federal	Partial	1988-2008
GA	Partial	1988-2008
HI	Partial	1988-2008

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[66] *See* Jeffrey Traczynski, *Divorce Rates and Bankruptcy Exemption Levels in the United States*, 54 J. L. & ECON. 751, 762-63 (2011) (showing tables with specific amounts of the exemptions in 1989, 1995, and 2005).

[67] Maureen Glabman, *New Bankruptcy Law: Blip or Blow for Florida Physicians?* FLORIDA MEDICAL BUSINESS, *reprinted in* SINGERXENOS, http://www.singerxenos.com/pages/newsprint/fmbbankruptcy.html (last visited Aug 18, 2016).

IA	Unlimited	1988-2008
ID	Partial	1988-2008
IL	Partial	1988-2008
IN	Partial	1988-2008
KS	Unlimited	1988-2008
KY	Partial	1988-2008
LA	Partial	1988-2008
MA	Partial	1988-2008
MD	0	1988-2008
ME	Partial	1988-2008
MI	Partial	1988-2008
MN	Unlimited	1988-1993
MN	Partial	1997-2001
MO	Partial	1988-2008
MS	Partial	1988-2008
MT	Partial	1988-2008
NC	Partial	1988-2008
ND	Partial	1988-2008
NE	Partial	1988-2008
NH	Partial	1988-2008
NJ	0	1988-2008
NM	Partial	1988-2008
NV	Partial	1988-2008
NY	Partial	1988-2008
OH	Partial	1988-2008
OK	Unlimited	1988-2008
OR	Partial	1988-2008
PA	0	1988-2008
RI	0	198-2001
RI	Partial	2002-2008
SC	Partial	1988-2008
SD	Unlimited	1988-2008
TN	Partial	1988-2008
TX	Unlimited	1988-2008
UT	Partial	1988-2008

VA	Partial	1988-2008
VT	Partial	1988-2008
WA	Partial	1988-2008
WI	Partial	1988-2008
WV	Partial	1988-2008
WY	Partial	1988-2008

Source: Elias, S., Renuauer, A., and Leonard, R. *How to File for Bankruptcy,* various editions Berkeley, Calif.: Nolo Press 1988-2008

Prior to the Bankruptcy Abuse Prevention and Consumer Protection Act of 2005 Act, there was no income test for Chapter 7, so an individual could discharge debts without a claim on future income, regardless of how high that income is. In effect, this allowed bankrupt individuals to protect almost all of their other assets in states with unlimited homestead exemptions, by simply taking non-exempt assets and using them to pay down a mortgage or buy a larger house.[68]

In fact the threat of bankruptcy is also rumored to play an important role in settlement negotiations in states with unlimited exemptions. For example, the Florida Medical Business letter reported that, in Florida, which has an unlimited exemption:

> "Bankruptcy [is] a hammer for bare doctors,: according to Marc Singer, a Coral Gables. "We've used the threat of bankruptcy in about 100 cases to help achieve reasonable settlements with plaintiff attorneys."[69]

Indeed, the Florida legislature allowed doctors to go without insurance

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[68] There are limits on the timing of such asset reclassification but these are typically fairly short and for medical malpractice cases which can take considerable time to resolve allow doctors who suspect they are facing a large liability judgment plenty of time to reclassify assets before the judgment is recorded. *See* Glabman, *supra* note 67, (discussing the implications for the 2005 Act on physicians' ability to protect assets). Case law in a number of states has also found that debts expunged by bankruptcy are still the legal obligation of the insurance company so that even if debt was discharged by bankruptcy the insurance company still had to pay. *See Matter of Edgeworth*, 993 F.2d 51, 56 (5th Cir. 1993) in which a Florida doctor's judgment was expunged. The Court found that the despite the bankruptcy the doctor insurer still had a legal obligation to pay the judgment up to the policy limit.

[69] *See* Glabman, *supra* note 67.

starting in 1987 (allowing them to post a bond instead).

Following the 2005 Act, debtors can no longer simply choose the type of bankruptcy they wish to pursue, because access to chapter 7 is now means tested. For this reason, we confine ourselves to cases prior to the date in 2005 when the Act's provisions took effect.[70]

How important are homestead exemptions in determining the size of the haircuts on the amounts that physicians would otherwise have to pay? The large haircuts identified in the TDI dataset are striking, both because of their frequency and their size. Given the norm identified in the blood money literature, these findings are especially surprising in light of the low level of insurance coverage purchased by Texas physicians on average.[71]

Gillie's insight about asset protection and homestead exemptions in state bankruptcy laws provides a potential explanation. If this explanation is correct, it significantly limits the generalizability of the Texas findings, because only a few other states have the same generous exemptions as Texas.[72]

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[70] The Act was signed into law by President Bush on April 20, 2005 with the provisions applying to cases filed on or after October 17, 2005. See *Bankruptcy Abuse Prevention and Consumer Protection Act of 2005*, PUB. L. NO. 109-8, 119 Stat. 23. *See also* Michelle J. White, *Bankruptcy Reform and Credit Cards*, 21 J. ECON. PERSP. 175–99 (2007).

[71] *See* Baker, *supra* note 16, at 297-98 quoting a plaintiff's lawyer as follows: "We have a case now where a doctor testified at his deposition that his group got together and they consciously made a decision to have million dollar policies despite the fact that they are obstetricians and they know that their exposure is greater, because they understood that if they only carried a million dollars, the case would settle for a million dollars and they would be better off. And under those circumstances, where someone has made that kind of a conscious decision to be underinsured, I would feel less compunction about going after them, and the client probably would also."

Note the hypothetical nature of the claim. On close analysis, very few of the Connecticut lawyers' statements are inconsistent with a more straightforward rational actor explanation, as Gilles has previously noted. See Gilles, *supra* note 17, at 666 ("whatever their moral beliefs may be, the self-interest of plaintiffs' attorneys appears sufficient to explain the professional norm to which most of them subscribe").

[72] Interestingly, Florida is the only other state with similarly public medical malpractice claim payment literature though the data have not been as fully mined as the Texas data. *See generally* Neil Vidmara, Kara MacKillop & Paul Lee, *Million Dollar Medical Malpractice Cases in Florida: Post-Verdict and Pre-Suit Settlements*, 59 VAND. L. REV. 1343 (2006) (finding substantial post-judgement

A conclusion that bankruptcy exemptions drive the Texas haircut results, however, is premature. Such a conclusion requires a more rigorous statistical analysis than is possible with data from a single jurisdiction. To examine this hypothesis, we require data from multiple jurisdictions to be able to compare insurance limits in states with generous exemptions to the insurance limits observed in states with more modest bankruptcy protections. That is the primary contribution of this Article.

V. EMPIRICAL EVIDENCE

We examine three data sources each of which contains slightly different information relevant to our hypothesis. Our theory relies on the claim from the quantitative TDI research and the qualitative claims of the blood money literature that doctors generally will not be forced to pay out of pocket to satisfy settlements and judgments even if the latter exceed the doctor's insurance policy limit unless the doctor is perceived as having under-insured. The desire to avoid the risk of paying out of pocket due to a violation of the adequate insurance norm is likely to be decreasing in the ability of doctors to protect their assets through other mechanisms, such as bankruptcy law. If these assumptions are correct, we should find that, all other things equal, settlements (pre or post judgment) should be lower in states that have more generous bankruptcy exemptions. We test this implication using data from the National Practitioner Data Bank, finding support.

Second, given the validation of those assumptions, our model predicts that demand for insurance should be lower in jurisdictions with more generous bankruptcy exemptions. This implies that prices for medical malpractice policies should be lower in these jurisdictions for a given coverage level.[73] Using data from the Medical Liability Monitor, we find

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haircuts). Because both Texas and Florida have such unusually generous bankruptcy exemptions, the results from both data sets may not generalize nationally.

[73] Take the standard result that a monopolistic competitor sets marginal revenue equal to marginal cost when maximizing profit (*see* Andreu Mas-Colell, Michael Winston, and Jerry Green, *Microeconomic Theory*, at 386 (1995)). If we express marginal revenue in terms of the elasticity of demand, we have

$$MR_i = P_i\left(1 + \frac{1}{e_i}\right)$$ (*see* Alph Chiang, *Fundamental Methods of Mathematical Economics*, 3rd ed., 357 (1984)), where e_i is the elasticity for demand for good i,

results supporting this hypothesis. Last, to validate the model's implication that doctors will choose lower coverage levels when bankruptcy protections are stronger, we examine data from an insolvent medical malpractice insurer that offered policies in many different states. The results from this dataset are consistent with the prediction of the model.

In several of the specifications discussed below we also include controls for differences in state tort law. We use Ronen Avraham's Database of State Tort Law Reforms (DSTLR 4th) which is a comprehensive reference of changes in state tort law from 1980 to the present.[74] The DSTLR 4th edition contains information about state caps on punitive damages, caps on total damages, and caps on non-economic damages if those caps apply to medical malpractice cases. We also include information on which states limited joint and several liability and a control for those states that enacted periodic payment statutes forcing plaintiffs to receive certain settlements intermittently rather than as a lump sum. We include controls for states that have changed the standard necessary to receive punitive damages and states that divide punitive damages between the plaintiff and the state. We include an indicator variable if the state has modified the collateral sources rule in order to prevent plaintiffs from collecting from both a defendant and insurance. We include an indicator variable if the state has capped contingent fees. Finally we include an indicator variable if the state has created a patients' compensation fund to pay damages in support of plaintiff verdicts above a certain threshold amount.

These reforms are typically enacted in clusters making it impossible to determine the independent effect of each reform. Since we are interested in the impact of homestead exemptions, which to our knowledge have never been part of a tort reform package, we do not attempt to disentangle the individual effects of the tort reform laws in the Avraham database.

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we can solve for the price of good i as $P_i = \dfrac{MC_i}{1 + \dfrac{1}{e_i}}$. Thus, for a fixed marginal cost, it is easy to see that a larger (in magnitude) elasticity of demand will lead to a lower price (since elasticities are negative).

[74] Ronen Avraham, *Database of State Tort Law Reforms (DSTLR 5th)*, UNIV. OF TEX. SCH. OF LAW, LAW & ECON. RESEARCH PAPER NO. E555, May 2014, *available at* http://dx.doi.org/10.2139/ssrn.902711.

VI. MEDICAL MALPRACTICE DATASETS

A. NATIONAL PRACTITIONER DATA BASE

The National Practitioner Data Bank (NPDB) includes information on all payments made to settle a claim or a judgment against a physician in the medical malpractice context. Reporting is mandatory under the Health Care Quality Improvement Act of 1986.[75] Given the nationwide scope of this mandate, the NPDB is a comprehensive dataset.

The database contains information on over 200,000 medical malpractice payments made on behalf of practitioners in all 50 states and the District of Columbia.[76] This national dataset helps us evaluate whether the low payments observed in the TDI data are common in states with generous bankruptcy protections. We use the data between 1990 (the start of the database) and 2005 to avoid the national bankruptcy law change. We also drop the handful of trials in the sample though this does not affect our results. In Figure 1 we present the distribution of NPDB claims across states.

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[75] 42 U.S.C. 11101.

[76] The NPDB has several well-known limitations. See Eric Helland, Jonathan Klick & Alexander Tabarrok, *Data Watch: Tort-Uring the Data*, 19 J. ECON. PERSP. 207 (2005) (discussing the NPDB).

Figure 1: Distribution of Settlements in National Practitioners'
Database.
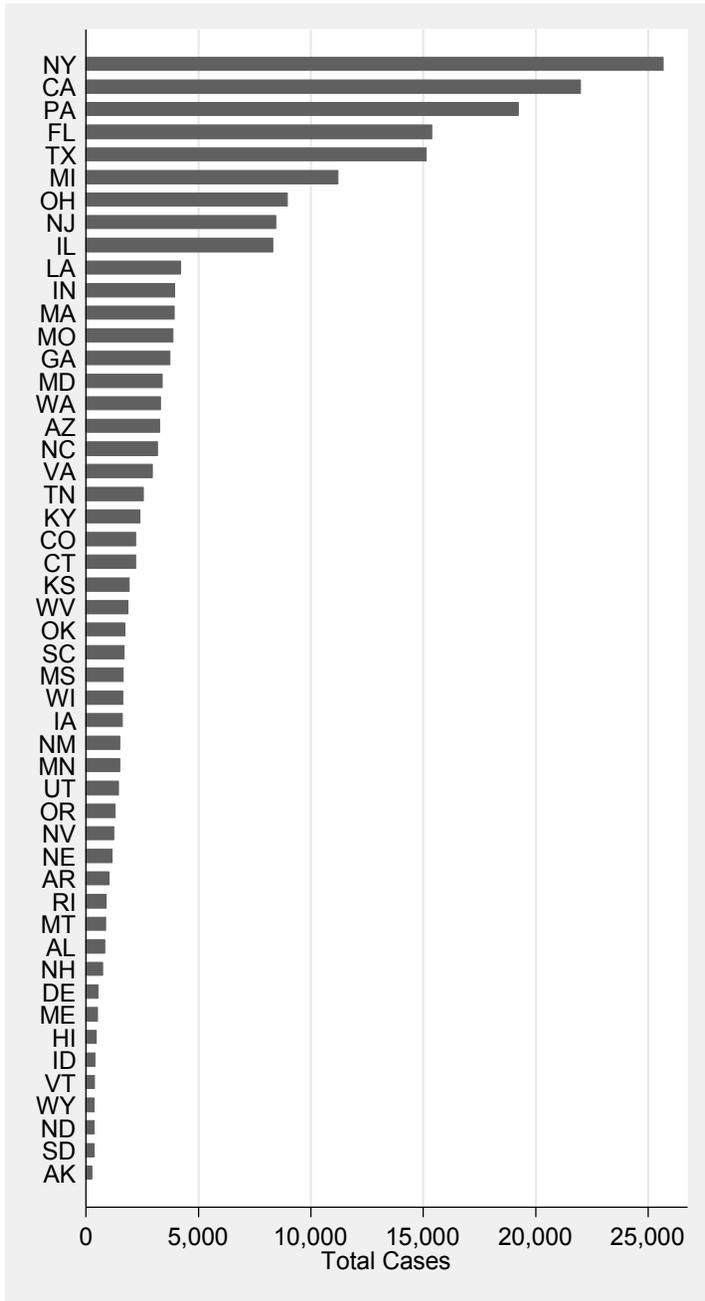
The summary statistics for the NPDB are given below. The data also contain information on the type of medical error, the doctor's age and the year in which the doctor received his or her medical degree.

Table 2: Summary Statistics for the NPDB

	Mean	Standard Deviation
Payment amount	213,555	351,814
Unlimited Homestead Exemption (1=yes)	0.18	0.39
Physician age	47.99	10.48
Graduation Year		
Pre 1940	0.00	0.06
1940-49	0.03	0.16
1950-59	0.11	0.31
1960-69	0.24	0.43
1970-79	0.31	0.46
1980-89	0.25	0.43
1990-99	0.05	0.22
Post 1999	0.00	0.02
Medical Error		
Diagnosis	0.34	0.47
Anesthesia	0.03	0.17
Surgery	0.28	0.45
Medication	0.06	0.23
IV/blood	0.00	0.06
Obstetrics	0.08	0.26
Treatment	0.18	0.38
Monitoring	0.01	0.12
Equipment	0.00	0.06
Behavior	0.00	0.02
State minimum policy limit per occurrence	92,178	230,135
Observations	197,695	

The estimated model is:

$$\begin{aligned} settlement\ amount_{it} \\ = \alpha + \beta unlimited\ homestead\ exemption_i + \tau_t + \theta X_i \\ + \varepsilon_{it} \end{aligned}$$

where the homestead exemption variable is an indicator taking the value of 1 if a state has an unlimited exemption and zero otherwise. X includes the doctor specific controls mentioned above, state tort law controls and the alleged injury. The model also includes individual year dummies to account for any nationwide trends in settlement amounts.

The results are presented in Table 3. We find that an unlimited homestead exemption is associated with lower settlement payments. We find that the settlement payments are $34,000 lower in the NPBD, and the percentage impact is about 14 percent. When estimated in logs rather than levels, in column 3 we find that point estimate declines slightly to a 9 percent drop but continues to be negative and significant.

Table 3: NPDB Settlement Results

Variables	Payment	ln(Payment)
Unlimited Homestead Exemption	-33,752*** (6,983)	-0.10*** (0.03)
Percentage Change in Settlement Amount	-14%	-9%
Observations	189,814	189,814

Control variables included in regressions: Physician age, graduation year cohort, alleged injury, year dummies, state tort reforms
Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Our estimates from the NPDB confirm that Texas and the other states with unlimited bankruptcy exemptions exhibit systematically lower settlements. The magnitude of this reduction is statistically significant and quantitatively large.

While the regression results presented in Table 3 above may suffer from omitted variable bias, it does suggest that this set of states, including Texas, is systematically different for some reason. The characteristic that

these states have an unlimited homestead exemption may be correlated with some other unaccounted for factor that drives settlement amounts down. In some sense, this alone is enough to draw into question the extent to which the Texas settlement and haircut results can be generalized. Texas, and the other states in this group, are systematically different from the majority of states in the U.S.

It is not generally possible to guarantee that the unlimited homestead exemption is driving this result, short of running some kind of randomized policy experiment where homestead exemptions are randomly assigned to states. Given the limited in-state variation in the exemption amounts within this set of states, it is not even possible to examine a so-called natural experiment that proceeds as if the policy change is conditionally exogenous to other things affecting settlement amounts in the states. However, we can provide some confidence by examining the other predictions generated by our model above; namely, if the homestead exemption provides an additional avenue by which doctors protect their income, the elasticity of demand for the insurance should increase, lowering the equilibrium price for coverage in this set of states. Also, if the presence of these exemptions is driving the lower settlement amounts, we should observe systematically lower insurance limits in this set of states.

B. MEDICAL LIABILITY MONITOR SURVEY

Our model, given the assumption, that bankruptcy protections lead to lower settlements, suggests that demand for medical malpractice insurance should be lower in jurisdictions with large protections, which should lead to lower prices in those jurisdictions. To examine the impact of homestead exemptions on premiums, we turn to an annual survey conducted by Medical Liability Monitor.

The survey began in 1991 and our data ends in 2002. The survey collects data on the premium for a hypothetical policy offering $1 million in coverage for a claim and $3 million per year. The data provides information at the company level for different regions within a state (i.e. major cities) and for three specialties: internal medicine, general surgery and obstetrics- gynecology. Thus the unit of observation for our analysis is the state- region-company-year for each of the three specialties. For example the data would provide us with the premium for an OBGYN in Los Angeles in 1999 offered by the Doctors Company. Since medical professional liability is not experience rated, the premiums reflect the price faced by all doctors of a particular specialty that the insurer is willing to

insure.[77]

We examine the data at the company level for two reasons. First, companies enter and exit the survey in various years and for various reasons. We cannot determine if the company exited the market completely or simply did not report data for some region or specialty. Though we have no reason to suspect that reporting is correlated with homestead exemptions, to control for any composition bias that might result from differential reporting, we include company-region-state fixed effects. Second, the state-region fixed effects allow us to control for sizeable differences in litigation rates across different regions in states, something that none of our datasets allow us to control for directly.

Because the data is at the company-region level, we have a different number of observations across states, with California having the largest number of company-regions. We provide the breakdown of the sample by state in Figure 2.

[77] See Katherine Baicker and Amitabh Chandra, Defensive Medicine and Disappearing Doctors? 28 Regulation 24 (2005) for more details on MLM data.

Figure 2: Distribution of Policies Observed in Medical Liability Monitor Data
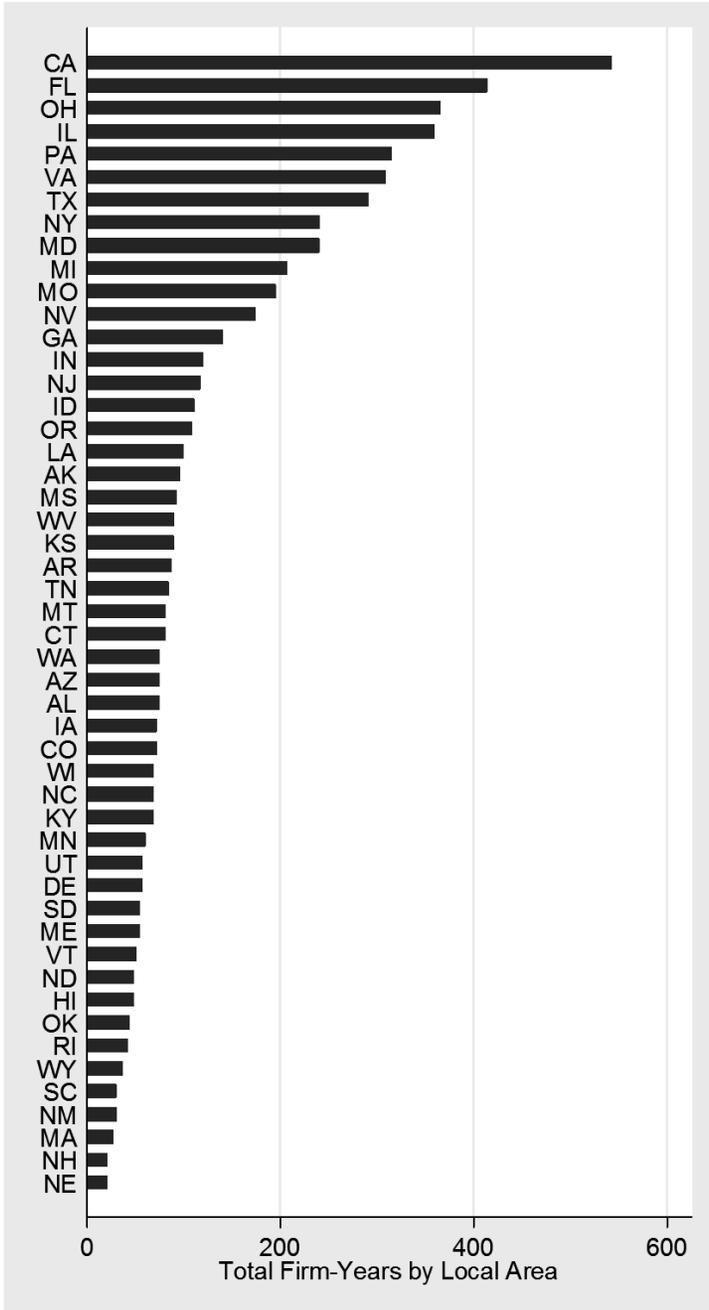
In Table 4 we present the summary statistics from the MLM survey. There is very wide variation in premiums faced by doctors, with the lowest being a $14 per year premium offered in 1992 to general surgeons in rural Tennessee, while the highest premium was offered to OBGYNs in 1991 in Detroit ($214,301).

Table 4: Summary Statistics for the
Medical Liability Monitor data (1991-2002)

	Mean	Standard Deviation
Real Annual Premium	28,978	26,020
Unlimited Homestead Exemption	0.17	0.38
Minimum Policy Limit Per Occurrence	61,304	163,905
Observations	6,303	

The model is estimated using ordinary least squares and is specified as

$$premium_{ist} = \alpha + \beta unlimited\ homestead\ exemption_i + \tau_t + \varphi_i + \theta X_s + \varepsilon_{its}$$

where premium is the annual premium identified in the data, unlimited homestead exemption retains its meaning, r are the year indicators, □ are state-region fixed effects, X includes indicators for the three specialties.

The results are presented in Table 5. We again estimate the model in logs and levels. We find that premiums are on average about $3,300 lower, for the same amount of coverage, in states with unlimited homestead exemptions than states without an unlimited exemption. This represents about a 9.7% reduction in premiums. In column three we estimate the model using the log of premiums and again find a reduction in the premiums in states with unlimited homestead exemptions. In this case the estimated effect is smaller, about 3.6%.

Table 5: Medical Liability Monitor Premium Regressions

Variables	Premium	ln(Premium)
Unlimited Homestead Exemption	-3,372*** (1,081)	-0.04* (0.02)

Percentage Change in Premium	-9.7%	-3.6%
Observations	6,285	6,285

Control variables included in regressions: Area fixed effects, year dummies, doctor specialty dummies
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We find that physicians in states with unlimited homestead exemptions systematically have lower premiums, suggesting a reduction in demand for insurance by doctors in those states.

C. INSOLVENT INSURER

To further investigate the validity of our theoretical claims, the last dataset we use includes all closed claims from a large medical malpractice insurer that provided policies throughout much of the United States until it went insolvent in the mid-2000s. These data include information on the payments made, the (per occurrence and annual aggregate) policy limits, the physician specialty, and details about the injury. We provide summary statistics in Table 6

That insolvent insurer's data has several advantages over publicly available medical malpractice data such as the TDI data, as well as the comparable datasets for Florida. For our purposes, the most important is that the insurer has claim data from multiple states, including several without homestead exemptions. Unlike the National Practitioner Database (NPDB), the insolvent insurer's data also contains information on claims that were closed without payment (either because they were unilaterally dropped by the plaintiff or there was a defense verdict at trial), as well as information on policy limits. The insolvent insurer data also contains information on the specialty of the doctor involved and the type of injury.

Table 6: Insolvent Medical Malpractice Insurer Data Summary

	Mean	Standard Deviation
Settlement Amount	45,701	174,760
Aggregate Policy Limit	2,274,695	2,147,062
Per Occurrence Policy Limit	548,477	485,886
Observations	38,324	

While the insurer sold policies throughout much of the country, its policies were not evenly distributed across states. Figure 3 provides the distribution of policies by state observed in this dataset. For our purposes, the value of this data is somewhat limited in that the only states with unlimited bankruptcy exemptions for which we observe any settlements are Texas and Florida, with the latter providing relatively few observations. At a minimum, these data can show if Texas and Florida are systematically different from the rest of the states in the dataset in terms of insuring practices and settlement behavior. Some of this heterogeneity is likely associated with the bankruptcy provisions in those states given our NPDB results; however, confidence in this claim is necessarily limited given the data availability.

Figure 3: Distribution of Policies Observed in Insolvent Medical Malpractice Insurer Data
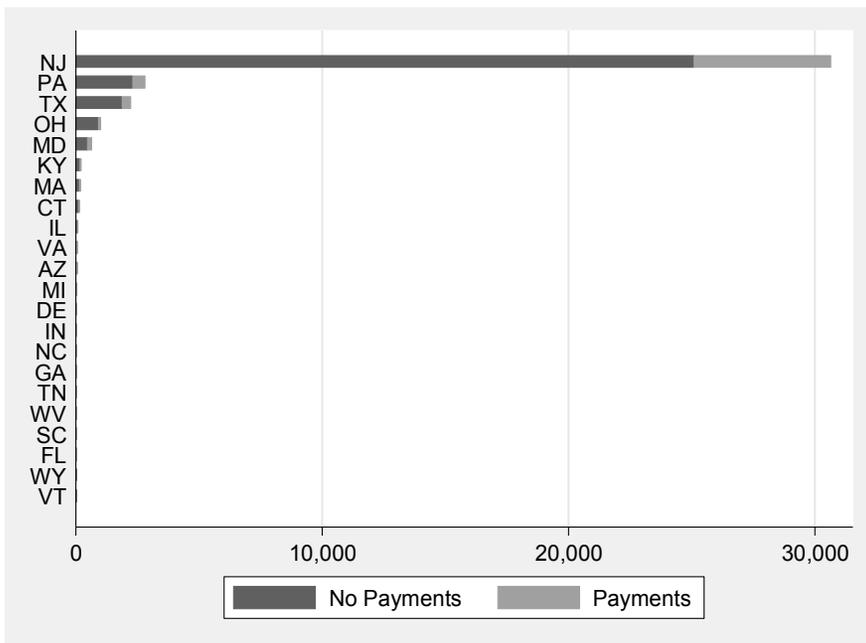
We begin by estimating the impact of unlimited homestead exemptions on the total policy limit[78] chosen by doctors using the following

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[78] The results are qualitatively similar if we instead use the per

specification,

$$policy\ limit_{it} = \alpha + \beta unlimited\ homestead\ exemption_i + \theta X_i + \tau_t + \varepsilon_{it}$$

where policy limit is the per occurrence policy limit in 2005 dollars, unlimited homestead exemption equals one if the state in question has an unlimited homestead exemption, r are year indicator variables, X is the set of control variables include state tort laws and indicator variables for the different specialty of the doctor involved in the lawsuit.

The results are presented in Table 7. The model is estimated in both levels and logs. The results indicate that the physicians sued in states with an unlimited homestead exemption have a 65% lower policy limit than those sued in states without the unlimited homestead exemption. There are two possible effects that could be driving this result. First, physicians may be systematically choosing lower policy limits in the states in which they can protect their assets from a judgment. Second, the selection of cases may be different in states with unlimited exemptions. This second effect would tend to bias the result toward zero, however, as plaintiffs' attorneys would be more likely to pursue cases in which the doctor had, for whatever reason, selected a higher policy limit. Thus, this possible selection effect likely makes our conclusion about the impact of bankruptcy exemptions even stronger.

Table 7: Policy Limit Regressions Insolvent Insurer Data

Variables	Policy Limit	ln(Policy Limit)
Unlimited Homestead Exemption	-1,781,226*** (142,506)	-1.19*** (0.04)
Percentage Change in Policy Limit	65.3%	-70%
Observations	36,441	36,441

Control variables included in regressions: Year dummies, state tort reforms, physician specialty dummies
Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

occurrence policy limit as the dependent variable.

In Table 8 we estimate the impact of unlimited homestead exemptions on settlements using a Tobit regression. A Tobit regression corrects for situations in which the dependent variable is truncated in some way.[79] This is important in our insolvent insurer data because there are 327 cases (about .08%) in which the payment exceeds the policy limit. For some of those cases, the excess amount paid, if any, is not identified. It is unclear why the excess is reported in some cases but not in others, so we err on the side of caution and treat the observations as truncated at the policy limit if the excess is not reported. The results are robust to excluding the missing observations and estimating the model using ordinary least squares. The model is specified as,

$$settlement\ amount_{it} = \alpha + \beta unlimited\ homestead\ exemption_i + \tau_t + \theta X_i + \varepsilon_{it}$$

where settlement amount is the payment by the insurer, unlimited homestead exemption retains its meaning from above, r are year indicator variables, X includes controls for specialty, the severity of the injury as determined by the insurer (classified as minor, major, death emotional injuries, or no injury), and whether the injured party is a child.

The results are presented in Table 8. In column two we estimate the model with all of the available cases prior to 2005 and find that the presence of an unlimited homestead exemption reduces settlement amounts by over $19,000. As would be expected, the results are larger when we confine ourselves to those cases which settle for a positive value rather than being closed without payment.[80] The impact rises to $70,000 per case, which represents a 26% drop in payment amounts as compared to settlements in states without an unlimited homestead exemption. By contrast when the model is estimated including the $0 payment cases, we find a 44% reduction in payments suggesting a significant number of cases are dropped in the face of an unlimited homestead exemption. In column 3 we estimate the model using the log of the settlement amount which also

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[79] See the entry on Tobit Regressions, StataCorp. 2009. Stata 11 Base Reference Manual. College Station, TX: Stata Press and Wooldridge, J. M. 2009. Introductory Econometrics: A Modern Approach. 4th ed. Cincinnati, OH: South-Western.

[80] One reason for estimating the model using only the cases closed with a positive payment is to allow for better comparison of the results using the insolvent insurer data with results using the Texas and NPDB data, because both of those datasets do not include cases closed with zero payment.

eliminates   the cases settling for no payment. We find that the homestead exemption is associated with about a 20% decline in payments to plaintiffs.

Table 8: Settlement Amounts Insolvent Insurer Data

Variables	Settlement Amount	Settlement Amount > 0	ln(Settlement Amount)
Unlimited Homestead Exemption	-19,983*** (4,143)	-70,882*** (20,911)	-0.21** (0.08)
Percentage Change in Settlement Amount	-44%	-26%	-19%
Observations	36,442	6,402	6,402

Control variables included in regressions: Year dummies, physician specialty dummies, injury severity dummies, dummy for whether victim was child
Robust standard errors in parentheses
***p<0.01, **p<0.05, *p<0.10

The results from our insolvent insurer data indicate that doctors in states with an unlimited homestead exemption systematically pay out less in settlements and select lower policy limits. This is consistent with our hypothesis that doctors in these states have greater bargaining power in settlement negotiations and, hence, decide to insure less, because their assets are at less risk.   Note that these settlement reductions line up nicely with the proportional size of the haircuts identified in the TDI data, supporting our concern about the generalizability of the findings from the Texas research. While the results are consistent with the bankruptcy exemption hypothesis, they could also be driven by other peculiar aspects of Texas and Florida.

Thus, again, at a minimum, our results suggest that Texas and Florida are peculiar relative to the other states covered in the dataset. This draws into question any attempt to extrapolate from these states to predict what occurs in other markets with respect to medical malpractice insurance policies and settlements. Further, the results are at least consistent with our hypothesis that the existence of an unlimited homestead exemption is important in understanding the dynamics of the Texas insurance market and the settlement environment in that jurisdiction.

VII. ROBUSTNESS CHECKS AND CAVEATS

In this section we explore two robustness checks on our results. The first is to include state minimum policy requirements in the regression. During the sample period several states required doctors to have a specified minimum insurance policy. Clearly this will affect the policy limits chosen by the doctor and may impact settlement negotiations. The concern that led us to first analyze the data without considering these minimum insurance requirements is that plaintiffs' attorneys may lobby to have minimum policy limits in those states with unlimited homestead exemptions, thus leading to an endogenously-driven correlation between the requirements and the unlimited exemption. We have no anecdotal evidence of this, and states with unlimited homestead exemptions do not appear to be systematically overrepresented among the states with minimum policy requirements. Nevertheless, we treat the results including the minimum requirements as a robustness check, rather than including the limits in our primary specifications.

A. MINIMUM COVERAGE REGULATIONS

Between 1988 and 2008 13 states had some sort of minimum liability coverage for doctors. The limits are summarized in Table 9. The amounts are typically small relative to the policy limits found in the insolvent insurer data; although one state, Pennsylvania, does require one million dollars of per incident coverage.

Table 9: Summary of State Rules Covering Minimum Liability Insurance

State	Rule	Years
AK	none	1988-2008
AL	none	1988-2009
AR	none	1988-2010
AZ	none	1988-2011
CA	none	1988-2012
CO	none	1988-2013
CT	none	1988-1994
CT	$500,000	1995-2008
DE	none	1988-2008

FL	$100,000	1988-2008
GA	none	1988-2008
HI	none	1988-2008
IA	none	1988-2008
ID	none	1988-2008
IL	none	1988-2008
IN	$250,000	1988-2008
KS	none	1988-2008
KY	none	1988-2008
LA	none	1988-2008
MA	$100,000	1988-2008
MD	none	1988-2008
ME	none	1988-2008
MI	none	1988-2008
MN	none	1988-2008
MO	$500,000	1988-2008
MS	none	1988-2008
MT	none	1988-2008
NC	none	1988-2008
ND	none	1988-2008
NE	none	1988-2008
NH	none	1988-2008
NJ	none	1988-1994, 1998-2001
NJ	$1,000,000	1995-1997, 2002-2008
NM	none	1988-2008
NV	none	1988-2008
NY	none	1988-2008
OH	none	1988-2008
OK	none	1988-2008
OR	none	1988-2008
PA	none	1988-2008
PA	$100,000	1988-1996
PA	$300,000	1997-1998
PA	$400,000	1999-2000

PA	$500,000	2001-2002
PA	$1,000,000	2003-2008
RI	none	1988-2008
SC	$100,000	1988-2008
SD	none	1988-2008
TN	none	1988-2008
TX	none	1988-2008
UT	none	1988-2008
VA	none	1988-2008
VT	none	1988-2008
WA	none	1988-2008
WI	none	1988-2008
WV	none	1988-2008
WY	$50,000	1988-2008

For each of the regressions presented in section 6 above, we now include the minimum policy limit (which is either zero for states without the limit or the limit itself) for the relevant years.

In Table 10 we estimate the NPDB regressions including minimum policy requirements.

Table 10: NPDB Settlement Regressions with Minimum Policy Limits

Variables	Payment	ln(Payment)
Unlimited Homestead Exemption	-22,312***	-0.02
	(8,181)	(0.04)
Minimum Policy Limit Per Occurrence	0.05***	0.000***
	(0.01)	(0.00)
Percentage Change in Settlement Amount	-10%	-2%
Observations	189,814	189,814

Control variables included in regressions: Physician age, graduation year cohort, alleged injury, year dummies, state tort reforms
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

While the magnitudes of our homestead exemption effects decline somewhat, they are still negative and the results in the regressions using the level of the settlement is still statistically significant at the 1 percent level. The minimum policy limit amounts are positively correlated with settlement amounts. Despite the decline in coefficient magnitude, these results are generally consistent with those presented above.

In table 11 we estimate our premium regressions using the MLM data, taking into account the minimum policy requirements. We again find that states with unlimited homestead exemptions have lower annual premiums. The impact is very similar to the results obtained when we do not include the minimum policy requirements.

Table 11: Medical Liability Monitor Premium Regressions with Minimum Policy Limits

Variables	Premium	ln(Premium)
Unlimited Homestead Exemption	-3,377***	-0.04*
	(1,082)	(0.02)
Minimum Policy Limit Per Occurrence	0.001	0.000
	(0.003)	(0.000)
Percentage Change in Premium	-10%	-3.6%
Observations	6,285	6,285

Control variables included in regressions: Area fixed effects, year dummies, doctor specialty dummies
Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The results of our policy limit specification using the insolvent insurer are presented in Table 12. Even when we include controls for minimum policy requirements, which do cause a statistically significant increase in the level of coverage chosen by doctors, we still find that unlimited homestead exemptions reduce the amount of coverage selected by doctors. Moreover this effect is quite large, with doctors in states with unlimited homestead exemption states selecting 61% less coverage than in states in which less asset protection is available. These results are virtually identical to those discussed above.

Table 12: Policy Limit Regression with Minimum Coverage Control

Variables	Policy Limit	ln(Policy Limit)
Unlimited Homestead Exemption	-1,666,266***	-1.11***
	(149,933)	(0.04)
Minimum Policy Limit	0.22**	0.00***
	(0.09)	(0.00)
Percentage Change in Policy Limit	-61.1%	-67%
Observations	36,441	36,441

Control variables included in regressions: Year dummies, state tort reforms, physician specialty dummies
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

In Table 13 we estimate the settlement amount specifications using the insolvent insurer data. As predicted, minimum policy requirements increase the amount of settlement in all specifications. We continue to find that unlimited homestead exemptions reduce the amount of settlement when we include zero payment cases. When we drop cases with zero payments from the data, the impact of unlimited exemptions is negative but not significant. Finally when we use the log of settlement amounts the coefficient on unlimited homestead exemptions is not significant and flips sign. As explained below the instability of these results may be the result of the reduction in sample size when the zero payment cases are excluded.

Table 13: Settlement Amounts Insurer Database with Minimum Policy Limit

Variables	Settlement Amount	Settlement Amount>0	Ln(settlement Amount)
Unlimited Homestead Exemption	-10,649**	-27,324	0.07
	(4,939)	(24,652)	(0.10)
Minimum Policy Limit Per Occurrence	0.01***	0.06***	0.00***
	(0.00)	(0.017)	(0.00)
Percentage Change in Settlement Amount	-21%	-10%	7.7%
Observations	36,442	6,402	6,402

Control variables included in regressions: Year dummies, physician specialty dummies, injury severity dummies, dummy for whether victim was child
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of this robustness check are not as comforting. While we continue to find a negative effect of unlimited homestead exemptions on settlement amounts in the level regressions, the log specification generates a coefficient that is essentially zero. Further, even in the level specifications, the magnitude of the coefficients declines substantially.

The results of our first robustness check indicate that, while minimum policy limits do increase coverage amounts and settlement payments, the impact of unlimited homestead exemptions retains its significance in most specifications. We now turn to a second inquiry: Do partial homestead exemptions generate similar, though smaller in magnitude, effects?

B. IMPACT OF PARTIAL HOMESTEAD EXEMPTIONS

In this section we examine the impact of partial homestead exemptions that allow some sheltering of assets. The classification is far less clear cut that the unlimited homestead exemption, because unlimited states have very few restrictions on the nature and the amount of home equity that can be protected. By contrast, states with partial exemptions often have specific qualifications. For example, Connecticut allows the exemption only for certain hospital debts and Maine requires dependents to qualify. We have no systematic way to capture these specific qualifications, and so we treat the partial homestead exemption as a dummy variable, recognizing that it will be estimated with more noise than our unlimited homestead exception variable.

We estimate the NPBD regressions including indicator variables for both unlimited and partial homestead exemptions. The results are presented in Table 14. Consistent with our original findings, we estimate that both kinds of exemptions are associated with lower settlements, whether the payment is estimated in levels or logs. Interestingly, the effect of partial exemptions is smaller than the effect of unlimited exemptions, at least in the level specification, and this difference is statistically significant.

Table 14: Settlement Amount Regressions NPDB with Both Unlimited and Partial Homestead Exemption Controls

Variables	Payment	ln(Payment)
Unlimited Homestead Exemption	-46,803*** (7,417)	-0.24*** (0.03)
Partial Homestead Exemption	-21,650*** (7,017)	-0.25*** (0.03)
Percentage Change in Settlement Amount	-19%	-22%
Observations	189,814	189,814

Control variables included in regressions: Physician age, graduation year cohort, alleged injury, year dummies, state tort reforms
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We find similar effects in the Medical Liability Monitor regressions, with the unlimited homestead exemption generating a negative effect that is larger in magnitude than the effect associated with a partial homestead exemption at least in the level specifications. Given that a partial exemption has much less utility as an asset protection mechanism, this is what our model predicts. The coefficients in the log specifications are essentially equal. The results are generally not very precise though, so while the point estimates are largely consistent with theory, we cannot conclude with confidence that the results could not be the result of random associations in the data.

Table 15: Medical Liability Monitor Premium Regressions with Both Unlimited and Partial Homestead Exemption Controls

Variables	Premium	ln(Premium)
Unlimited Homestead Exemption	-3,378 (3,216)	-0.01 (0.10)
Partial Homestead Exemption	-6.00 (2,987)	0.03 (0.09)
Percentage Change in Premium	-10%	-0%
Observations	6,285	6,285

Control variables included in regressions: Area fixed effects, year

dummies, doctor specialty dummies
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

      The results of our policy limit regressions are shown in Table 16. Using the insolvent insurer data, we find similar impacts from the unlimited exemptions, but we find positive and significant impacts of partial exemptions on policy limits. This is surprising since the omitted category is no limit. Thus, the results suggest that the highest policy limits chosen are chosen in states with partial homestead exemptions.

Table 16: Policy Limit Regressions with Both Unlimited and Limited Homestead Exemption Controls

Variables	Policy Limit	ln(Policy Limit)
Unlimited Homestead Exemption	-1,715,926*** (143,053)	-1.18*** (0.04)
Partial Homestead Exemption	678,991*** (135,485)	0.11*** (0.04)
Percentage Change in Limit	-75%	-60%
Observations	36,441	36,441

Control variables included in regressions: Year dummies, state tort reforms, physician specialty dummies
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

      The results of our settlement regressions are shown in Table 17. The first column reports the results using all of the cases in the insolvent insurer data. The second column reports the results when we eliminate the zero payment cases. The third column reports the results using the log of the settlement amount. In all three specifications both the unlimited and the partial exemptions are associated with lower settlement amounts than states without any exemption, although the impact of the partial exemptions is not significant when we eliminate the zero payment cases. These results are consistent with our hypothesis that defendants are advantaged in settlement negotiations when they have the ability to shield assets from a judgment.

Table 17: Settlement Amount Regressions with Both Unlimited and Partial Homestead Exemption Controls

Variables	Settlement Amount	Settlement Amount>0	Ln(settlement Amount)
Unlimited Homestead Exemption	-22,671*** (4,178)	-72,921*** (21,038)	-0.26*** (0.08)
Partial Homestead Exemption	-21,392*** (4,347)	-18,068 (20,627)	-0.40*** (0.08)
Percentage Change in Settlement	-45%	-27%	-23%
Observations	36,442	6,402	6,402

Control variables included in regressions: Year dummies, physician specialty dummies, injury severity dummies, dummy for whether victim was child
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Although somewhat less precise, our estimates including both unlimited and partial homestead exemptions are consistent with the general hypothesis that the ability to shield assets increases defendant doctors bargaining power in settlement negotiation and thus leads doctors to choose lower policy limits, at least in unlimited exemption states.

Clearly, the weakest of our empirical results are those estimated using the insolvent insurer dataset. The limited variation in the unlimited homestead exemption is a concern, as is the relatively large effects we find. Establishing the link between homestead exemptions and policy limits, however, is crucial to validating our theoretical hypothesis. There is only one other dataset, of which we are aware, that includes policy limit information: the 1988 Physicians Practice Costs and Income Survey (1988 PPCIS).

The PPCIS is a cross-sectional survey of physicians conducted for the Health Care Financing Administration. The survey includes responses from 3.505 physicians (a 61% response rate) drawn from a stratified random sample of physicians from the American Medical Association's 1988Physician Master File. The survey was conducted between July 1989 and March 1990. In addition to its broader sample, a benefit of this dataset is that it is not conditioned on physicians who have been sued. Instead, it is a sample of all physicians.

For our purposes the key questions concern the physician's per occurrence policy limit, the total limit on all events in a year, the premium paid by the physician, and whether the physician had dropped his or her insurance (i.e., whether she has "gone bare"). Table 18 provides summary statistics for the PPCIS.

Table 18: PPCIS Descriptive Statistics

	Mean	Standard Deviation
Per Occurrence Limit	1,060,940	1,109,691
Total Limit	2,638,857	2,298,499
Premium	17,839	28,074
No Coverage	0.01	0.07

If we regress each of these outcomes on our unlimited bankruptcy homestead exemption indicator, we get the results contained in Table 19.

Table 19: PPCIS Regression Results

Variable	Occurrence Policy Limit	Total Policy Limit	Premium	No Coverage
Unlimited Homestead Exemption	-109,075** (42,982)	- 465,826*** (81,841)	1,396 (1,457)	0.013** (0.006)
Percentage Change in Outcome	-10%	-18%	8%	130%
Observations	3,335	3,231	3,400	3,489

Control Variables Include: Physician age, sex dummies, and specialty dummies
***$p<0.01$, **$p<0.05$, *$p<0.10$

This set of results supports our earlier results on the effects of unlimited homestead exemptions on policy limits, and provides a new result that is consistent with the theoretical idea, namely, physicians are more willing to go without medical malpractice insurance when they have the protection of unlimited homestead exemptions. In this dataset, however, we do not find a price effect consistent with our theory. Specifically, we find no statistically significant relationship between the

existence of an unlimited homestead exemption and the price paid for insurance. On net, the results on policy specific outcomes in the insolvent insurer dataset and in the PPCIS data are largely consistent with our theory but some inconsistencies and problems with each dataset provide some room for skepticism. The results on premiums from the Medical Liability Monitor improve confidence somewhat, but more research on this phenomenon is clearly needed.

These results on settlements are in line with those found in the Texas dataset. This suggests that the large size of the haircuts identified in that dataset may result from Texas's unlimited homestead exemption. At a minimum, these results suggest caution is necessary when generalizing from the results found in the TDI data about the medical malpractice insurance market and settlement dynamics in medical malpractice cases.

Although our results are broadly consistent with the substitution theory we put forth above, causal inference in this context is limited given the limited within jurisdiction variation we observe in bankruptcy exemptions. It is possible that the true driving variables in these relationships are merely correlated with the bankruptcy exemptions, but these exemptions themselves do not cause the behavior we observe. While we have advanced a plausible theory consistent with these findings, other as yet unarticulated hypotheses may be even more plausible.

VIII. CONCLUSION

It is a puzzle as to why plaintiffs do not go after defendants' personal assets beyond insurance limits. While for a typical personal injury case, it may be plausible to assume that defendants have few assets, medical malpractice cases are different, given the affluence of physicians. However, the Texas closed claims research suggests that plaintiffs settle for policy limits in those cases too. If that is true, in equilibrium, we should find physicians reducing the amount of insurance that they buy. The degree to which this is a viable strategy, however, is limited by the possibility that plaintiffs will pursue personal assets if limits are too low.

While it has been suggested that the determination of adequate insurance coverage is a question of fairness or morality, an alternate explanation is that plaintiffs are simply being pragmatic. When it is difficult to get at assets, the plaintiffs settle for the insurance policy limits, leading physicians to purchase lower limits in the future. Instead, when it is more difficult to protect assets, plaintiffs are more willing to go after those assets, leading physicians to purchase more insurance coverage.

Using variation in state homestead exemptions in bankruptcy, we

test this hypothesis and find support for it in three separate datasets. In addition to adding some insight into the blood money phenomenon, these results suggest that earlier research focusing on haircuts in Texas medical malpractice cases may not be representative. That is, it is plausible that the large haircuts and low insurance limits found in that work are the result of Texas homestead protection laws, which are qualitatively different than those in most other states. At a minimum, our results suggest that there is something different about Texas when it comes to medical malpractice insurance practices and settlement dynamics. This implies that any extrapolation from work using the TDI data to general conclusions about medical malpractice is problematic. This highlights the importance of using multi-jurisdictional datasets when doing empirical work on medical malpractice.