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Pain and Suffering Damages in Personal Injury Cases: An Empirical Study

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Abstract

Many jurisdictions award pain and suffering damages, yet it is difficult for judges or juries to quantify pain. Several jurisdictions, such as California, cap pain and suffering damages or other noneconomic damages, and legal scholars have proposed ways to control such damages. Reforms and proposals, however, have been based on limited empirical evidence. It remains an open question whether components of economic damages explain pain and suffering damages. This study employs a unique data set of Taiwan district court cases and uses detailed information on the components of pecuniary damages. Pain and suffering damages highly correlate with the plaintiff's medical expenses, level of injury, and the amount requested by the plaintiff. The association with the amount requested by the plaintiff persists when one accounts for the likely quantifiable influences on pain and suffering damages, evidence of a possible anchoring effect. The strong correlation between economic damages and noneconomic damages persists in a large U.S. dataset of judge and jury trials, in which the noneconomic fraction of total damages is no greater than the pain and suffering fraction of total damages in Taiwan. Judges and juries consistently produce

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coherent patterns of noneconomic damages.

Keywords

Pain and suffering damages, medical expenses, anchoring effect, lost earning capacity, fault, age, pecuniary damages, non-medical expenses, judges, juries, Taiwan

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I. INTRODUCTION

Pain and suffering and other noneconomic damages awarded by courts have generated much normative and policy debate in the U.S. (see, e.g., Bovbjerg, Sloan, and Blumstein 1988; Croley and Hanson 1995; Geistfeld 1995; McCaffery, Kahneman, and Spitzer 1995; Viscusi 1996; Diamond, Saks, and Landsman 1998; Vidmar, Gross, and Rose 1998; Niemeyer 2004; Avraham 2005; Geistfeld 2005; Rabin 2005; Sharkey 2005; Avraham 2006; Sugarman 2006; Viscusi 2007: 120; Ubel and Loewenstein 2008). Concerns about the unpredictability of damages have led to controversial caps on noneconomic damages,[1] such as the California Medical Injury Compensation Reform Act (MICRA) of 1975,[2] and to caps on punitive damages in many states (Miceli and Stone 2013: 114–15). Statutes capping damages have generated much litigation under U.S. state constitutions (Love 2012). Whether pain and suffering damages and other noneconomic awards are too capricious is also an important question in European legal systems (Karapanou and Visscher 2010a; Flatscher-Thöni, Leiter, and Winner 2013; 2014). In Taiwan, doctors have long contended that the medical malpractice law, which can lead to millions of Taiwan dollars (NTD) in pain and suffering damages, has caused the younger generation of doctors to choose high-profit and low-risk specialties, such as plastic surgery and dentistry, rather than surgery. The highest judicial authority in Taiwan, the Judicial Yuan, has commissioned a leading tort scholar to develop a regression model to help judges determine the amount of pain and suffering damages. In short, the stakes of assessing whether pain and suffering damages are reasonable and predictable are high.

From the law-and-economics perspective, a prerequisite for the torts system to achieve optimal deterrence is setting damages at expected losses (if not the actual losses) of victims (Shavell 2004: 240–43). Nonetheless, even when willingness to pay/accept is taken as the benchmark for quantifying pain and suffering, it is still difficult for judges to set expected losses accurately (cf. generally Sunstein 2014: 85–136 for the difficulty of assessing the value of life). As Shavell (2004: 242) notes, in the case of nonpecuniary losses, the better approach is using simple tables or formulas to assess pain and suffering damages to save administrative costs. Indeed,

[1] For instance, thirty-one states have adopted caps on non-economic damages or total damages in medical malpractice lawsuits (Paik, Black, and Hyman 2014).

Pain and suffering damages also are an instance of unbounded damages, which generate positively skewed award distributions (Kahneman, Schkade, and Sunstein 1998; Guthrie, Rachlinski, and Wistrich 2000), which in turn lead to reform proposals (e.g., Kahneman, Schkade, and Sunstein 1998).

[2] Cal. Civ. Code § 3333.2 (West 1997 & Supp. 2013). MICRA limits damages for noneconomic losses in actions for professional negligence against health care providers to $250,000.

Ramseyer (2015: 10–34)'s study on Japanese torts system shows that because the Japanese Supreme Court uses publicly available tables to assess pain and suffering damages and court-published handbooks to determine comparative negligence, most parties involved in traffic accidents settled. To strike a balance between optimal deterrence and saving administrative costs, making pain and suffering damages predictable and reasonable is arguably second-best, as Ramseyer (2015) suggests.

While most people would agree that 1 dollar or 1 trillion dollars for pain and suffering damages are unreasonable, in most real-world cases, it is hard to make persuasive arguments that the court-adjudicated awards are reasonable or not. Unless a barometer can be developed to measure and compare pain and suffering and a reliable formula can be used to inform decision-makers how much money is sufficient to ease pains, assessing reasonable pain and suffering damages is an impossible mission.

Consequently, policymakers should focus on the predictability of pain and suffering damages. Predictability does not ensure optimal deterrence, but unpredictability dooms optimal deterrence. Predictability also facilitates settlements. Unpredictability increases health insurance premiums that further make certain efficient actions unsustainable (Bovbjerg, Sloan, and Blumstein 1988: 908; Geistfeld 1995: 786; Avraham 2006: 95–97). Damages based on tables or formulas are generally predictable, but not all jurisdictions have followed this scheme—for countries such as Taiwan and the U.S., it is worth exploring whether discretionary pain and suffering awards connect to measurable factors.

There are two types of predictability: statistical and legal. Statistical significance of key variables and high goodness-of-fit make pain and suffering damages predictable in a statistical sense. Yet to be predictable in a legally relevant way, the key variables have to be easily measured by parties before litigation and closely related to the legal issue. For instance, medical expenses and levels of injury are arguably good proxies for pain and suffering, and they are easily ascertainable by the two parties without judicial adjudication. Below we demonstrate that pain and suffering damages in Taiwan are to a large extent statistically and legally predictable. Granted, the R-squares of our OLS models are not close to 1, and a few variables such as plaintiffs' comparative negligence have counter-intuitive signs and statistical significances. These types of variables make pain and suffering damages statistically predictable but perhaps less legally predictable, as comparative negligence is difficult to ascertain by the two parties and its effect would surprise them.

Connections between pain and suffering damages and objective factors have been infrequently studied, probably because detailed data rarely are available.[3] That is, whether pain and suffering damages are statistically predictable is under-studied. Prior empirical investigations of pain and suffering damages utilize datasets from insurance companies (Viscusi 1988), insurance regulators (Kritzer, Liu, and Vidmar 2014), U.S. state court data sets (Hans and Reyna 2011), court cases (Cohen and Miller 2003; Leiter, Thöni, and Winner 2012; Flatscher-Thöni, Leiter, and Winner 2013; 2014), or combinations of sources (Kritzer, Liu, and Vidmar 2014). With the exception of some sources used in Kritzer, Liu, and Vidmar (2014) and Cohen and Miller (2003), the prior studies lack detailed information about pain-and-suffering and pecuniary damages. The major determinants of pain and suffering damages thus remain unclear.

Using randomly sampled cases from Taiwan, we provide two innovative analyses of pain and suffering damages. First, we obtained detailed break-downs of damages categories and assessed their influences on pain and suffering damages. This unique data set enables us to test empirical conjectures made by torts scholars that have not been able to be put to tests before. The observational research design does not allow us to make causal inferences. Yet showing correlation (or lack of) among certain important variables is an important step in further understanding the determinants of torts damages and a stepping stone for future scholars to design their researches to make causal inferences. We find that proxies of pain and suffering—medical expenses and the level of injury (minor versus serious injury)—are associated with pain and suffering damages. The strength of the medical expenses correlation is important for two reasons. Medical expenses are inherently related to pain and suffering, and their association suggests a coherence to the damages system. In addition, medical expenses outperform other pecuniary components of damages in explaining pain and suffering. This is evidence of judges' filtering out components of pecuniary damages that are less likely to be associated with pain and suffering. We also find that the victim's annual incomes, among other factors, were not influential. The absence of association with income is important because it avoids providing higher paid workers with greater pain and suffering damages than lower paid workers. Victims in medical malpractice cases tended to receive more pain and suffering damages than those in car accident cases, consistent with scholarly conjecture. Victims' ages are negatively correlated with pain and suffering damages in medical malpractice cases.

[3] Sharkey (2005: 448–49) notes that although the National Center for State Court project has tried to code the components of economic and noneconomic damages, the data were so incomplete that the Center would rather not publish them.

Second, our data include the amount of pain and suffering damages requested by plaintiffs. Using structural equation models that can control for the endogeneity problem, we find that as the plaintiffs' requests for pain and suffering damages increased, the judges awarded more.

Our Taiwan data set is rare in being a non-U.S. source of pain and suffering damages information. We exploit these novel data by comparing the Taiwan results with analogous data from U.S. trial outcomes. We find little evidence that noneconomic damages form a higher percentage of total damages in the U.S. than in Taiwan. We do, however, present evidence that noneconomic awards, by both U.S. juries and judges, are higher per unit of economic damages than those in Taiwan, all by judges (as there is no jury system in Taiwan as of 2015). This research thus extends the prior pain and suffering literature to the study of career judges in a civil-law country.

The predictability of pain and suffering damages in a certain jurisdiction is not readily generalizable. A study on judicial behaviors, however, reveals patterns that other jurisdictions might share. We posit that judges endeavor to give rational awards but at the same time may be influenced by biases and heuristics. (A fuller explanation of our theoretical account of judges' behaviors will come in Part III.) The contribution of this article is to demonstrate the predictability of pain and suffering damages in a country where such damages are subject to judges' discretion. The judicial decision-making patterns revealed by our study could inform researchers in other countries with comparable torts damage system.

Part II of this article describes Taiwan's law relating to pain and suffering damages. Part III addresses our hypotheses and methodology. Part IV reports and discusses our results. Part V addresses the results' relation to U.S. data, and Part VI concludes.

II. TAIWAN'S PAIN AND SUFFERING DAMAGES LAW

Pursuant to Articles 193 and 195 of the Taiwan Civil Code, victims of a tortious act can request the tortfeasor to pay pecuniary damages and pain and suffering damages.[4] For example, medical doctors can be liable to compensate a

[4] Taiwan Civil Code art. 193I promulgates: "If a person has wrongfully injured another and caused the injured person to lose or decrease his laboring capacity or to increase the necessary living expenses, the tortfeasors shall compensate the injured person." Taiwan Civil Code art. 195I prescribes: "If a person has wrongfully infringed the body, health, reputation, liberty, credit, privacy or chastity of

patient for both types of damages if they failed to diagnose the patient with cancer or other major diseases. Courts in Taiwan[5] break down damages in such cases into ten sub-categories, as shown in Table 1. We will occasionally use the labels in Table 1 to refer to damages types.

Table 1: Types of Awarded Damages

Label	Expense type	Expense item
A1	Already incurred	medical treatment and operation
A2	Already incurred*	nursing care, medical devices, and nutritious food
E1	Estimated future	medical treatment and operation
E2	Estimated future*	nursing care, medical devices, and nutritious food
A3	Already incurred	victim's lost salary during hospitalization and recovery
E3	Estimated future	victim's future lost salary (discounted to present value or paid as annuities), if the tortious act decreases the victim's capability to work and earn
A4	Already incurred	increased travelling expenses (e.g., taxi fares to and from hospitals)
A5	Already incurred	property damages (e.g., repair fee for damaged cars)
E4	Estimated future	other expenses (including, among others, increased travelling expenses)
PS		pain and suffering damages

NOTES: * A2 and E2 can each be further divided into nursing care, medical devices and nutritious food, but during the coding process, we pool these three items together. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

No table or formula exists for courts to determine the amount of pain and suffering damages. The civil code provides no guidance. A few leading cases rendered by the Supreme Court of Taiwan in the 1950s and 1960s declared that the following factors should be considered: the socio-economic status, total asset, annual income, age, educational background, etc. of both sides, the plaintiff's level of pain and harm, the victim's negligence, the defendant's repentance, and so on. Other than these factors, no conventional wisdom or rules of thumb exists for quantifying pain and suffering to date. In practice, the plaintiff generally simply claims an amount and contends that it is just, with little supporting evidence. The court decisions usually start with a template discussion that carbon-copies the list of factors emphasized by the leading cases,[6] then summarize the facts of the case at hand, and award an amount at the end. As judges have never elaborated their formulas and rarely provided concrete information regarding the factors, it is doubtful to what extent those factors listed in the template arguments affect the final amount of pain and suffering damages. In other words, the factors prescribed

another,…… the infringed party may claim reasonable pain and suffering damages."

[5] Judges in Taiwan are career judges who serve on the bench after passing a judiciary examination and receiving training for 2 years. As of 2015 December, there is no jury system in Taiwan, though a pilot program on introducing a "lay observer system" is under way (Kuo-Chang Huang and Lin 2013).

[6] Not all courts use the same template. The factors that a court explicitly claims to take into account slightly differ.

by the Taiwan Supreme Court failed to enhance legal predictability.[7]

Courts in Taiwan will review the receipts of all pecuniary expenses and only grant plaintiffs with reasonable expenses. Due to the mandatory national health care system that covers most medical treatments and medication, only medical expenses that are not covered by the health care plans (such as co-payment, certain special medicines and operations, and domestic nursery cares) can be recovered by the victim from the tortfeasor.

Plaintiffs do not have an incentive to claim unrealistically high amounts of pain and suffering damages. First, filing fees are proportional to the amount of claimed total damages (roughly, around 1% of the total claimed damages).[8] Second, the losing party has to pay filing fees. In a tort lawsuit, a plaintiff usually has to pay part of the filing fee if the court does not grant all her claims. The plaintiff generally has to pay [1–(court award/plaintiff's claim)] × filing fee. Hence, claiming a high amount of pain and suffering damages increases both the filing fee and the probability of bearing a higher percentage of the filing fee. Nevertheless, plaintiffs expecting the return rate of over-claiming to be higher than 1% will still over-claim.[9] One important caveat: when a plaintiff makes pain and suffering damages claims as part of the criminal proceedings against a defendant, and the defendant was found guilty, the plaintiff does not have to pay filing fees for her civil lawsuit in the court of first instance.

Taiwan can generally be considered a civil-law country. Almost all judges are career judges who may or may not have (most have not) practiced law before serving on the bench. Most jurists in Taiwan major in law as an undergraduate, and only a minority of jurists are trained in a JD-like graduate program. Jurists who pass the bar exam (its passing rate always below 11%) and finish six months of practical training are qualified to practice law. Jurists who pursue a career as judges or

[7] In unreported tables, we explored the factors that Taiwanese courts purport to have considered in determining pain and suffering damages. The information provided in the written court decisions is often insufficient to detect meaningful association between those factors and the amount of pain and suffering damages. That is, aided by regression models, we still cannot ascertain whether these factors are statistically predictable.

[8] Pursuant to Article 77-13 of Civil Procedure Code of Taiwan, the filing fee is assessed in the following way: 1. A fixed fee of NTD 1,000 for any claim that is worth NTD 100,000 or less (>=1%). 2. A 1.1% fee for the part of the claim that is above NTD 100,000 and no larger than NTD 1,000,000. 3. The filing fee rates decrease to 0.99%, 0.88%, 0.77%, and 0.66%, whereas the value of the claim hits the threshold of NTD 10 million, NTD 100 million, and NTD 1 billion.
For all the cases in our dataset, the filing fee is slightly higher than 1% of the worth of the claims.

[9] One of us, in another article, uses the expected judicial award predicted by hedonic regression models as the baseline to measure whether plaintiffs over-claim (Chang, Chen, and Lin 2015).

prosecutors have to take the court officer examination. Those who pass the examination receive training in the Academy for the Judiciary for two years. At the end of their training, based on their grades, preferences, and available openings, they will become judges or prosecutors. Judges are tenured, and thus presumably less influenced by external political influences. For civil matters, there are three levels of courts: district courts, appellate courts, and the supreme court. The former two can determine both questions of fact and questions of law, while the supreme court only deals with questions of law. Appealing to the appellate court is as of right, whereas large-stake cases represented by attorneys can be appealed to the supreme court, subject to its discretion (Eisenberg and Huang 2012; Chen, Huang, and Lin 2015).

III. Hypothesis and Methodology

A. *Major Research Questions*

Our core empirical question is to identify the major determinants of court-adjudicated pain and suffering damages. Our data set contains detailed information regarding the components of damages (in every case, we can break down total damages into ten components; see Table 1). Hence, we can measure the association of pain and suffering damages with various factors holding others constant. While we explore the association of several factors with pain and suffering damages, a purely kitchen-sink approach is not preferred. A behavioral theory of judicial decision-making in non-pecuniary damages would inform the empirical strategy. Lack of demographic information of the judges prevents us from directly testing any demographic theory. We instead focus on how the victims' behaviors, characteristics, and litigation strategy affect the amount of pain and suffering damages.

1. Severity of Injury as Proxy for Pain and Suffering

Our first conjecture, based on discussions with dozens of judges in all three levels of courts in Taiwan, is that judges consciously base the amount of pain and suffering damages on the severity of injury. "Severity of injury" in this article represents an abstract standard that varies among judges and is not specified by any statute, regulation, or court precedent. Indeed, no criterion has been explicitly endorsed by any court decisions.[10] As long as judges make common-sense judgment of severity of injury, the severity of injury shall be associated with certain quantifiable measures, such as medical expenses and level of injury (minor versus serious injury). Our first hypothesis is that both the medical expenses and level of

[10] There are a few ways to measure percentage of lost earning capacity, as discussed below, but most cases in our dataset do not involve assessment of lost earning capacity.

injury are positively associated with pain and suffering damages.

The level of injury and medical expenses are *our* proxies for the severity of injury, not necessarily judges'. Statistically significant and positive relations between these proxies and the amount of pain and suffering damages, however, would suggest that no matter which criterion judges used to render their decisions, the criterion must be highly correlated with our proxies. We use both proxies because a dummy variable capturing two levels of injuries is insufficiently sophisticated to capture the variety of injuries. Within each level of injury, the medical expenses, a continuous variable, serve to provide a more refined categorization of the severity of injury. Using medical expenses alone as a proxy, on the other hand, would fail to capture the categorical differences between a minor injury and a serious injury.

That the level of injury and pain and suffering damages are positively correlated is empirically plausible[11] and should be justifiable, while the relation between medical expenses and pain and suffering damages is less obvious. Avraham (2006: 112–14) conjectures that pain and suffering damages might be positively correlated with medical expenses (see also Epstein 1999: 442; Flatscher-Thöni, Leiter, and Winner 2013), but points out that the data available then only enabled researchers to test pain and suffering damages versus all kinds of pecuniary damages mixed together. Kritzer, Liu, and Vidmar (2014) provide a review of the relevant literature and a rare study of the relation between noneconomic damages and economic damages. They report a mixture of consistent and inconsistent patterns across multiple data sets. Kritzer, Liu, and Vidmar (2014: 38) conclude that "there tends to be considerably more variability in the relationship between non-economic and economic damages than between punitive and compensatory damages." Our detailed data allow us to assess which sub-category of pecuniary damages is most strongly correlated with pain and suffering damages and test whether Avraham (2006)'s conjecture is empirically valid.[12] The association should be normatively acceptable, to the extent that the medical expenses capture the severity of injury well (we do not have external criterion to verify this) and as long as the medical expenses in our data set are not constrained by the income or wealth

[11] Vidmar, Gross, and Rose (1998: 283, 296) adopt a nine-level injury classification used by U.S. National Association of Insurance Commissioners (NAIC) and find a consistent relationship between the jury verdict awards and the level of injury in several jurisdictions in the U.S. Flatscher-Thöni, Leiter, and Winner (2013: 110, 117) adopt the same injury-level classification and find similar results in Austria.

[12] Note that although pain and suffering damages in the U.S. could be assessed by judges or juries (see Part V), what Avraham (2006) has in mind might be jury awards. In this sense, our data on court-adjudicated pain and suffering damages in Taiwan cannot be used to test the claim. In Part V, though, we compare our Taiwan data with the U.S. data to shed light on this issue.

of the victim.[13]

2. Other Predictors

In addition to the level of injury, which we hypothesize to exert the most influence on the amount of pain and suffering damages, other factors may affect the assessed amount. Again, while we cannot establish causation with this research design, associations can be explored. Two predictors are explored here, while others are discussed in Part IV.

First, a victim's age could be a predictor of pain and suffering damages, but theoretically it is unclear whether judges should take age into account. Avraham (2006: 111) champions a system in which age is negatively correlated with pain and suffering damages, other things being equal, as permanent injuries produce more total pains for younger victims. Nonetheless, according to the adaptation theory (Bronsteen, Buccafusco, and Masur 2008; Ubel and Loewenstein 2008: S198–S202; Ariely 2011: 157–90), most victims' happiness level returns to their pre-injury stage, or at least rebounds, after a few years (but see Peter H. Huang 2008). Hence, age is largely irrelevant for total pains. While we cannot examine whether victims adapt, our data enable us to test whether judges consider ages to be relevant to total pains.

Second, adjudicators may use plaintiffs' future lost income as a reference point. If this is the case, white-collar workers would tend to receive more pain and suffering damages, although it is unclear whether high-wage earners suffer more pain than the low-wage earners for a given bodily injury, and whether the rich would need more compensation to ease their pain (Avraham 2006: 114). Pecuniary damages to property would be another example of dubious factors. In lawsuits involving car accidents, such a reference would give Lexus owners more pain and suffering damages than Toyota owners. Some prior empirical papers have found that objective losses positively correlated with pain and suffering damages. Hans and Reyna (2011: 141), using U.S. state court data, found that the amount of noneconomic damages is positively correlated with that of pecuniary damages. Other empirical studies have also found that jury-determined pain and suffering damages are often some multiple of the plaintiff's pecuniary losses or at least significantly correlated with the pecuniary losses (Bovbjerg, Sloan, and Blumstein

[13] Summary statistics shown in Table 2 demonstrate that the medical expenses are not as high as an American reader would guess, as the mean is 15,514 US Dollars and the median is 2,904 US Dollars. The highest several medical expenses consist mostly of estimated *future* nursing care (E2). That means at the time of litigation, the victim did not yet have to pay for it. Once the tortfeasor compensates the victim, the latter can afford to pay for the necessary nursing service.

1988; Viscusi 1988: 210–211; Geistfeld 1995: 787).[14] The data used in these prior studies are not sufficiently refined to tease out the different effects of medical expenses and non-medical expenses such as lost income and property damages.

3. Anchoring Effect by Plaintiffs' Claims

We do not assume that judges are always rational. Most judges would prefer to give reasoned decisions. Nevertheless, in tasks such as assessing pain and suffering damages, where a large amount of awards have to be determined without clear guidelines, judges might also be subject to the spell of heuristics. In other words, the court-adjudicated pain and suffering damages may not be entirely rational.

Psychological experiments have shown that, other features held constant, the higher the requested amount of compensation (the *ad damnum* clause), the higher the jury verdict (Campbell et al. 2014). This is the well-known anchoring effect (Ariely 2008: 25–48; Kahneman 2011: 119–128).[15] That is, another number, even an arbitrary or irrelevant one, might influence the amount of pain and suffering damages.

In a tort lawsuit that leads to awards of pain and suffering damages, several numbers exist and potentially become anchors. We submit that the plaintiff's requested amount of pain and suffering damages is more likely than other amounts to serve as anchors. Plaintiffs' requested amounts are directly related to the issue. Thus, before a judge turns to how much pain and suffering damages to award, she would need to remind herself of the requested amount (as her adjudicated amount cannot surpass the requested amount). This makes the requested amount more likely to anchor a judge's decision. Our hypothesis is that as judges had to determine a number without legislative guidance, plaintiffs' requests, holding constant other variables, have a substantial, statistically significant, and positive effect on the pain and suffering award. This empirical examination has strong policy implications. Plaintiffs in a handful of states in the U.S. are not allowed to bring up the *ad damnum* clause (Franklin, Cardi, and Green 2008: 299). Yet in many other states, plaintiffs can specify a dollar amount, on the assumption that juries or judges are free to regard it as irrelevant (Diamond et al. 2011: 150–52). The existence of the anchoring effect in

[14] For a critique of this practice, see e.g. Geistfeld (1995: 787).
[15] For introduction to the anchoring effect in law, see, e.g., Teichman and Zamir (2014). Other legal studies that found the anchoring effects in legal settings, see Guthrie, Rachlinski, and Wistrich (2000); Wistrich, Guthrie, and Rachlinski (2005); Rachlinski, Guthrie, and Wistrich (2007).

the real (legal) world would suggest that the effect is too strong for judges and juries to resist and that the current practice of assessing pain and suffering damages is not normatively flawless.

A caveat is in order. Judges are likely to be influenced by meaningful and meaningless anchors (Rachlinski, Guthrie, and Wistrich 2006). But most literature focuses on the meaningless anchors, whereas the experimental researches that study meaningful anchors are able to isolate the effect of meaningful anchors by holding other factors strictly constant. In an observational study like ours, it is difficult to control for everything. While, as elaborated below, the structural equation model used can control for the endogeneity problem, the plaintiffs' requested amount of pain and suffering damages itself contain both the meaningful and meaningless parts—the former reflects the true pain and suffering while the latter capture the exaggeration. Yet we have no reliable method to tease out the portions of these two parts. Hence, even when the plaintiff claim variable is statistically significant, we do not know which parts drive the result. The strongest claim we can make is only that the statistically significant result is consistent with the experimental literature in finding an effect by meaningless anchors.

B. *The Data*

All civil cases decided by the district courts in Taiwan since 2000 are available for download in the official website of the judicial administration ("Judicial Yuan") of Taiwan.[16] Using carefully chosen keywords,[17] we limited the district court cases yielded by our search to ones the plaintiff won and ones rendered between January 1, 2008, and December 31, 2012. The research period was chosen because other research teams in Taiwan have collected data on similar issues before 2008 and are collecting data on similar issues resolved in appellate courts. Our data thus fill in a potential data gap. Moreover, we focus on decisions by the court of first instance. As emphasized by Guthrie, Rachlinski, and Wistrich (2007: 4) and Eisenberg and Heise (2015), most cases are handled by the court of first instance. Many of these decisions are final in that they are not appealed. Such cases avoid the selection issues that arise in studying appellate cases, for example the parties' decisions to appeal and settle cases pending appeal. Small-claim and summary-proceeding cases are excluded because the judgments in these cases usually do not

[16] http://jirs.judicial.gov.tw/FJUD/ (website in Chinese).

[17] The search term is of course in Chinese and hard to translate. The literal translation of the search terms for car accident cases are: *(road traffic OR traffic accident OR car accident NOT state responsibility) AND (Article 195 OR Article 194) AND (defendant pays OR defendants jointly pay)*. The literal translation of the search terms for medical malpractice cases are: *(medical dispute OR medical incident OR medical malpractice) AND (defendant pays OR defendants jointly pay)*.

contain enough information about the cases.

We searched for and coded pain and suffering damages cases related to personal injury. Death cases were excluded because they are doctrinally and substantively different.[18] We limited our search to two types of tort cases—medical malpractice and car accident—to focus on negligent (rather than intentional) infringements that have similar background facts within the categories. Medical malpractice is a hotly debated tort issue in many jurisdictions, whereas car accident cases are numerous and thus not trivial. After irrelevant cases are filtered out,[19] 44 medical malpractice cases that ended with an award of positive pain and suffering damages were founded and coded. By contrast, more than 3,000 car accident cases showed up in our search. We coded a random sample of one-tenth of the car accident cases. To assure geographic representation of the whole country, we stratified the sample by judicial district to obtain 10% of car accident cases from each of the 20 jurisdictions. This resulted in 297 car accident cases in our dataset. A few cases have multiple plaintiffs. In 18 of the 341 observations, victims were in persistent vegetative state. Scholars and judges may have very different views regarding whether these victims should be awarded pain and suffering damages or how much discount or premium should be given to them. We thus omit these 18 observations from the following analysis.[20] The total number of observations is thus 323.[21] Unreported regression analysis reveals that the results are essential the same if these 18 observations are taken into account.

We examined whether substantial differences in awards existed across 12 court districts.[22] There was no significant difference in the ratio of pain and suffering damages to non-pain and suffering damages across the courts (Kruskal-Wallis p=0.33; ANOVA (natural log of ratio) p=0.19).[23] The absence of difference persisted when we subdivided the sample into car accident cases and medical malpractice

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[18] Under Taiwan law (Civil Code art. 194), claimants for pain and suffering damages in death cases are the deceased party's spouse, children, and parents, not the deceased party's estate or heir. Also, in death cases, the deceased party may neither experience long pain and suffering nor spend on medical expenses.

[19] In some cases, the plaintiffs did not request pain and suffering damages. Our search terms also capture cases in which the tort victims were dead—these cases are analyzed in Chang et al. (2015).

[20] In Part V, when comparing the Taiwan data with the U.S. data, we include the vegetative state cases, as there is no sufficient information to exclude these type of cases from the U.S. data.

[21] This gives us a large enough sample size for the structural equation model according to the conventional rules of thumb (such as a minimum sample size of 100 or 200, 5 or 10 observations per estimated parameter, and 10 observations per variable) (see generallyWolf et al. 2013).

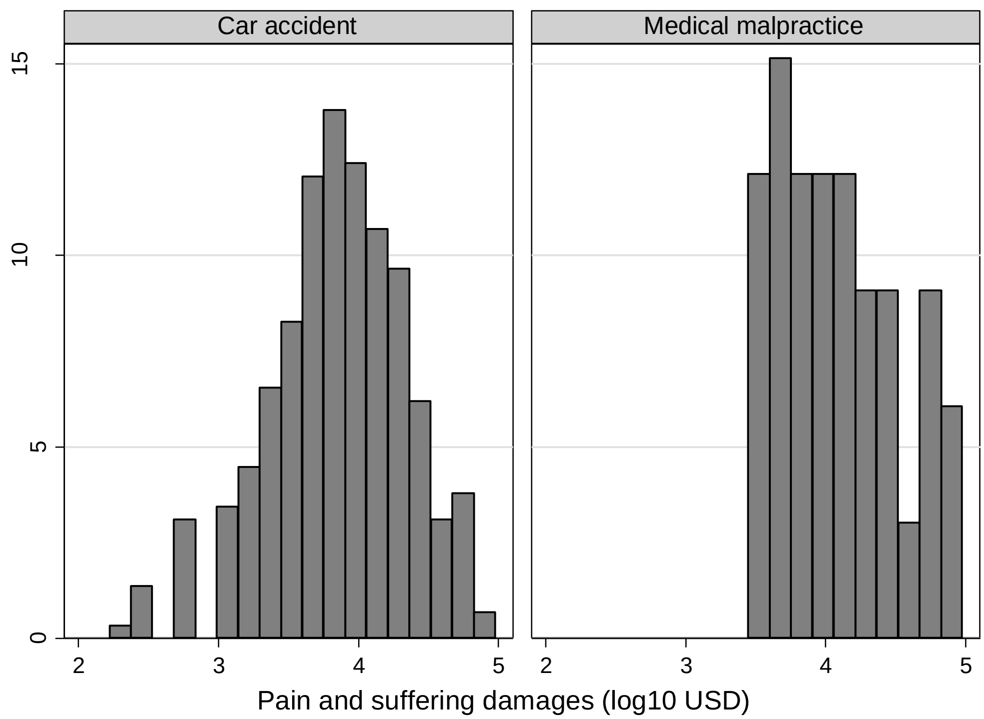
[22] We combine 12 of the 20 courts to produce a set of four dummies for courts that have few observations. The combinations are based on geographic proximity and similarity in economic development. In total, (20-12) + 4=12 court districts were used.

[23] In a regression model that accounts for the sample design, the p-value is 0.49.

cases. The absence of inter-court difference persisted when using the ratio of pain and suffering damages to total damages.

As Figure 1 shows, the pain and suffering damages awarded in car accident cases by courts in Taiwan exhibit a somewhat bell-shaped distribution (after a natural log transformation) around $10,000 US.[24] The skewed distribution supporting the natural log transformation is typical of unbounded award outcomes. The pain and suffering damages in medical malpractice cases, if awarded at all, were no less than $3,333 US (100,000 NTD). In all but three cases, courts in Taiwan awarded pain and suffering damages in multiples of 100,000 NTD. The most common amounts were 100,000; 150,000; 200,000; 300,000; 400,000; and 500,000 NTD. By contrast, court-adjudicated medical expenses ended with two or more zeroes in only 17 cases. This preference for round numbers in noneconomic damages is consistent with Hans and Reyna (2011: 133–137) gist-based model of juries.

Figure 1: Distribution of court-adjudicated pain and suffering damages in Taiwan personal injury cases



NOTE. Amounts are in U.S. dollars and the figure includes 323 Taiwan court cases decided from 2008 through 2012. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

[24] Throughout this paper, the conversion rate is US Dollars: Taiwan Dollars=1:30.

Table 2 provides selected summary statistics of the dataset. Panel A summarizes continuous variables and Panel B summarizes categorical variables. Car accident cases comprise 90% of the sample and medical malpractice cases 10%.

Table 2: Summary Statistics

Panel A: Continuous variables	N	Mean	Median	St. Dev.	Min.	Max.
Court-adjudicated PS damages* †	323	11,599	6,667	12,484	167	66,667
Plaintiff's requested PS damages * †	322	52,497	16,667	371,171	667	6,333,334
% of plaintiff's PS request awarded†	322	50	40	30	0	100
Court-adjudicated medical expenses*† (A1+A2+E1+E2)	300	15,514	2,904	49,318	10	532,907
Court-adjudicated past lost salary* † (A3)	130	5,936	3,512	7,399	115	53,900
Court-adjudicated future lost salary* † (E3)	83	53,295	27,491	71,755	800	374,874
Court-adjudicated nonmedical expenses* † (A4+A5+E4)	217	4,351	1,765	6,657	4	53,900
Years of permanent lost earning capacity	55	25	25	13	3.6	65
Annual income used to compute future lost salary*†	54	10,143	7,512	5,296	6,000	33,070
% of lost earning capacity †	55	0.5	14	0	0	65
Number of plaintiffs	323	1.2	1	0.6	1	7
Number of defendants	323	1.1	1	0.5	1	4
% of plaintiff's negligence	323	0.2	0	0.2	0	0.8
Plaintiff's age	94	39	36	0	2	87

Panel B: Categorical variables	**N**	%
Defendant is a minor (parents vicariously liable)	323	2.5
Corporate defendant	323	20
Plaintiff with attorneys	323	41
Defendant with attorneys	323	32
Tort types	**323**	
Body injury	319	99
Fail to diagnose latent illness	4	1.2
Case types	**323**	
Car accident	290	90
Medical malpractice	33	10
Injury types	**323**	
Minor injury	251	78
Serious injury	72	22
Type of plaintiffs (car accidents cases only)	**288**	
Sedan driver / sedan passenger	19	6.6
Other	269	93.4
Type of plaintiffs II (car accidents cases only)	**288**	
Pedestrian	41	14
Driver	204	71
Passenger	43	15
Year	**323**	
2008	52	16
2009	64	20
2010	69	21
2011	62	19
2012	76	24

NOTE. PS = pain and suffering. The "A1" and similar abbreviations are explained in Table 1. Amounts column reports amounts adjusted to reflect the use of a 10% sample for car accident cases. N varies due to missing information. 18 cases whether the victims were in permanent vegetative state are excluded from this table. * In US Dollars. †Only amounts greater than zero are included. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

C. *Regression Models*

1. One Equation Models

We report regression models that account for stratifying the sample by court district, the 10% sampling of car accident cases, and the nonindependence of observations in cases with more than one plaintiff. The dependent variable is the natural log of the judge's pain and suffering damages award. The independent variables control for types of pecuniary damages, characteristics of both parties, and the nature of the tort action.[25] Year and court fixed effects are also included. The models take the following form:

$$\mathbf{PSD} = \beta_0 + \beta_1\mathbf{INJURY} + \beta_2\mathbf{PEC} + \beta_3\mathbf{PL} + \beta_4\mathbf{DF} + \beta_5\mathbf{TYPE} + \beta_6\mathbf{Di} + \beta_7\mathbf{Dt} + \varepsilon$$

where **PSD** is the natural log[26] of pain and suffering damages; **INJURY** reflects the victims' severity of injuries; **PEC** are variables representing pecuniary damages in natural log form; **PL** and **DF** are several variables capturing the characteristics of the plaintiff and the defendant, respectively; **TYPE** is a few variables controlling for the nature of the disputes, particularly the tortious acts; **Dt** and **Di** are dummy variables indicating the years and court jurisdictions of the case, respectively. The coefficients to be estimated are β_n; ε is an error term. We report robust standard errors clustered by cases.

More specifically, **INJURY** includes a variable that is the natural log of court-adjudicated medical expenses, a dummy variable that equals 1 if court-adjudicated medical expenses are zero, and a dummy variable capturing whether the victims suffered from minor injuries (=0) or serious injuries (=1). Medical expenses include

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[25] Oren Bar-Gill suggests to us that whether the victim was present in the courtroom and whether the victim's injury is visible to the judge may affect the amount of pain and suffering damages. From the written decisions, we can hardly tell whether the victim was present. We interviewed a few attorneys and judges, and were informed that most attorney-represented victims do not show up in the courtroom. While a few self-represented victims would try to show their scars to the judges, most plaintiffs rely on photos and medical reports to demonstrate their injuries, because the tort lawsuits usually take place months after the accident, and most wounds would have healed. We go back to the written decisions and try to code a dummy variable on whether the injury would be visible, and it turns out that (at least part of) the injuries in almost all cases are visible. Therefore, we do not change our models.

[26] We transform all damages and expenses into natural log forms to promote normality. Unreported regression models use un-logged damages and expenses, but the residuals exhibit heteroscedasticity, violating the assumption of OLS models.

the costs of medicines, doctor's visits, hospital expenses, medical devices, nursing care, and nutritious food (A1+A2+E1+E2). Expenses of nursing care are often higher than other sub-types of medical expenses combined in serious injury cases. Thus, medical expenses are more exactly "medical and caring expenses." For brevity's sake, we would still use medical expenses to refer to A1+A2+E1+E2.

Minor injuries and serious injuries are distinguished based on the standard stipulated in the Criminal Code of Taiwan. That is, a serious injury is one of the following conditions: 1. Destruction of or serious damage to the sight of one or both eyes; 2. Destruction of or serious damage to the hearing of one or both ears; 3. Destruction of or serious damage to the functions of speech, taste, or smell; 4. Destruction of or serious damage to the function of one or more limbs; 5. Destruction of or serious damage to the power of reproduction; and 6. Other serious injury to body or to health that is either impossible or difficult to cure.

PEC includes one variable, natural log of non-medical expenses, that is used in the first two regression models. Future lost salary (E3) is decomposed into three elements "number of years of lost earning capacity" (using a square root transformation to promote normality), "plaintiff's annual income" (in natural log), and "percentage of lost earning capacity," [27] and they are used in one model.

PL includes a variable on the percentage of plaintiffs' contributory negligence (in our dataset, from 0 to 0.75) and a dummy variable on whether plaintiffs retain attorneys. A variable on plaintiffs' ages and a dummy variable indicating whether plaintiffs' ages is missing are included, as does an interaction term of plaintiffs' ages and the dummy variable on serious injury. In one model using only car accident cases, three more variables are used[28]: a dummy variable on whether the plaintiff drove a sedan or other motor vehicles such as a taxi and a truck; two variables that distinguish whether the plaintiff was a pedestrian, passenger, or driver.

DF includes the natural log of the number of natural-person defendants; a dummy variable for whether the defendants include a corporation; a dummy

[27] In some cases, victims lose working and earning capacity only for a few years. In the regression models, we use the three component variables of the future lost salary only if the victim loses part of the capability *permanently* (there are 64 such observations)

[28] We have coded many details regarding the car accidents such as the vehicles used by plaintiffs and defendants during the accidents. We are not aware of any good theory that predicts whether these factors will or will not affect the judges' decisions. A lot of degrees of freedom would be consumed if all of these variables are included in models. We select these three variables based on Least Angle Regression, a model-building algorithm that values parsimony as well as accuracy (Efron et al. 2004). It is worth emphasizing that other variables in the models are chosen based on their theoretical importance.

variable for whether the defendant is a minor and his/her parents are vicariously liable; a variable on the number of medical-doctor defendants; and a dummy variable for whether the defendants are represented by attorneys. We also distinguish whether the parties were a driver, a passenger, or a pedestrian. [29]

TYPE includes a dummy variable that indicates whether it is a car accident case or a medical malpractice case; another dummy variable that further distinguishes, in medical malpractice cases, whether doctors performed sub-standard treatments/operations or failed to diagnose a latent cancer/illness.

Dt is a series of dummy variables (one for each year) that controls the timing of the judgment. **Di** are a series of court dummy variables that control for the variance among jurisdictions.

We report four models. The first model uses both the car accident cases and medical malpractice cases. The second model uses only the car accident cases and adds a few variables to test whether the other facets of the accidents influence the damages awards. The third model uses only the car accident cases and on the one hand contains selected variables from the first model whereas on the other hand adds three more variables related to victims' future lost salary. The fourth model uses only the medical malpractice cases. Due to the small number of observations, this final model is parsimonious, using only the few key variables.[30]

2. Structural Equation Model

Our data include the amount plaintiffs requested in pain and suffering damages. Such information has not been available in prior pain and suffering studies. Due to endogeneity, we do not include it in the above single-equation regression models. The requested amount is not independent of other explanatory variables such as medical expenses and level of injury. But the requested amount is of obvious interest and potential importance. It might be expected to influence the

[29] In unreported regression models, we also include the plaintiff's and defendant's annual incomes. There are many missing values for annual income of plaintiffs and defendants. Including these variables in the regression models would greatly reduce the number of observations and degrees of freedom. Thus we exclude them in the reported models. In unreported models, parties' incomes are not statistically significant in OLS and SEM models.

[30] Plaintiff's comparative negligence could not reasonably be included in Model (4) because it had a nonzero value in only one case. Recall that Model (4) is about medical malpractice, and naturally the plaintiff/patient is infrequently negligent

awarded amount in two ways. First, higher requested amounts put higher numbers before the judge. Anchoring theory suggests that higher requested numbers will be associated with higher awarded numbers independently of the merits of an increased award. Second, higher requested amounts may be associated with factors that should increase awards but that are not represented by observable variables in a single equation regression model. The plaintiffs, in formulating the requested amount, may have access to information about the degree or nature of pain and suffering that we cannot observe. To account for the more complex relationship among the variables in models that include the plaintiffs' request and to control for the endogeneity problem,[31] we employ a structural equation model,[32] which takes the following form:

$$\begin{cases} \mathbf{PSD} = \alpha_0 + \alpha_1 \mathbf{CLAIM} + \alpha_2 \mathbf{INJURY} + \alpha_3 \mathbf{PEC}_s + \alpha_4 \mathbf{PL}_s + \alpha_5 \mathbf{DF}_s + \alpha_6 \mathbf{TYPE}_s + \varepsilon \\ \mathbf{CLAIM} = \beta_0 + \beta_1 \mathbf{INJURY}_s + \beta_2 \mathbf{PL}_s + \beta_3 \mathbf{TYPE}_s + \beta_4 \mathbf{PLA} + \varepsilon \end{cases}$$

Where **PSD** and **INJURY** present the same variables as in the single-equation models. **CLAIM** is natural log of plaintiffs' requested amount of pain and suffering damages. **INJURY**, **PL**, and **TYPE** with a subscript *s* represent selected variables from the single-equation models. **PLA** includes plaintiffs' claimed medical expenses and a dummy variable on whether such expenses equal zero.

IV. Findings and Discussion

A. *Medical Expenses and Level of Injury Best Explain Pain and Suffering Damages*

Table 3's models indicate that medical expenses are highly statistically

[31] An endogeneity problem occurs when an explanatory variable is correlated with the error term. If the "independent variable" is correlated with the error term in a regression model then the estimate of the regression coefficient in OLS regression may be biased. There are many methods of correcting the bias, including instrumental variable and structural equations regression. The models we are considering are known as a recursive system (Wooldridge 2010: 228), the identification of these models are guaranteed. Endogeneity arises as a result of the recursive model specification. Using OLS for recursive systems does not give the most efficient estimates so better estimation methods are usually applied.

[32] Economists refer to models that combine explicit economic theories with statistical models as structural econometric models. The estimation method we are applying are called structural equations modeling (SEM). The results of the structural equations are estimated *simultaneously* by the Stata command "sem" (acronym for structural equation models) or "gsem" (acronym for generalized structural equation models). The term "generalized" is more like *generalized* linear models—that is, regression models for non-normal data. This should not be confused with *general* linear models, which are for normal-distribution-based linear models with a full covariance matrix that is to be estimated along with the linear effects—these types of models include the two-stage least square model. An alternative is the two-stage least squares estimation; however, we use the SEM approach.

significantly associated with pain and suffering damages ($p<0.001$ in all but the last model). For Models (1), (2), and (4), a 1% increase in medical expenses is associated with about a 0.25% increase in pain and suffering damages. The first-row graphs in Figure 2 demonstrate that the quadratic fitted line for medical expenses and pain and suffering damages are almost straight, suggesting that the relation between the two logged variables is close to linear.[33]

Unlike medical expenses, nonmedical pecuniary damages do not have statistically significant association with pain and suffering damages. Figure 2 provides a graphical exposition of the lack of association, particularly in the case of minor injuries.[34] Regression results reported in Table 3 also corroborate with the figure. These findings underpin the conjecture that judges emphasize medical expenses over non-medical expenses.

The level of injury (minor injury or serious injury) is statistically significant, except in Model (4), which has only 33 observations, all medical malpractice cases. The sign and magnitude of the coefficients in the Models (1)–(3) indicate that victims with serious injuries receive 52%–65% more pain and suffering damages than those with minor injuries.

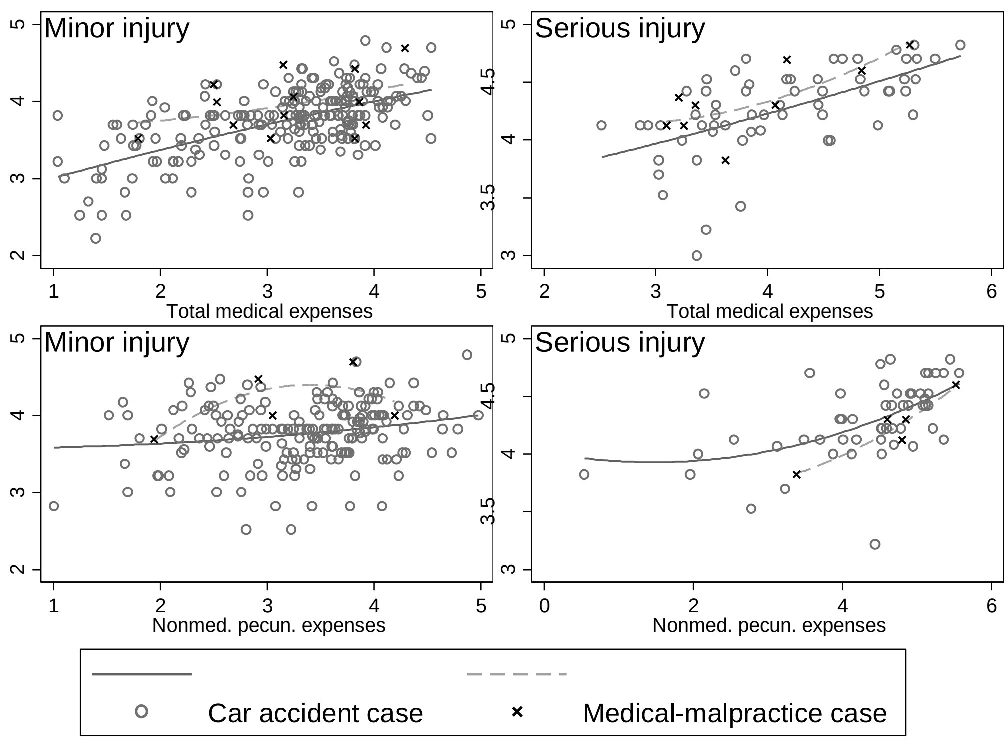
Note that Model (3) in Table 3 has many fewer observations than Model (2) since there are many missing values in the percent earning capacity lost, plaintiff annual income, and years lost earnings variables. Only the cases in which the victims ask for future lost salary would the court determine these factors. In addition 38 of the 290 car accident cases have missing percent earning capacity lost, the other 2 variables have similar pattern. The composition of the missing and the non-missing groups must be different and there may be some underlying selection. Since the regression models only include percent of earning capacity if it is permanent the non-missing group tends to have more serious injuries. In addition, victims in the non-missing group would tend to be working adults, not retirees or children. The main takeaway from Model (3) in Table 3 is that given the non-missing group, medical cost and injury level still dominate the percent earning capacity lost, plaintiff annual income, and years lost earnings variables.

[33] Unreported regression models include a quadratic term, the square of natural log of medical expenses, but this variable is not statistically significant.
[34] The lower bottom graph in Figure 2 may suggest that the relationship between natural log of pain and suffering damages and natural log of non-medical pecuniary damages is quadratic. An unreported OLS model adds the square of the latter into Model 2 in Table 3. Neither variables on non-medical pecuniary damages are statistically significant.

Medical expenses and level of injury are highly associated, as shown in Figure 3. The statistical significances of both the serious injury dummy variable and the medical expense variable suggest that when the medical expenses are the same, victims with serious injuries receive more pain and suffering damages than those with minor injuries. Also, within the injury category, higher medical expenses predict higher pain and suffering damages.

Note that medical expenses are unlikely to influence judicial decisions by being an anchor, as such expenses are a combination of several types of incurred and expected medically-related expenses. Their sums are not computed in the written judgments. That is, medical expenses are not one number (but several different numbers) for judges. That being said, as we discuss below, judges may still suffer from the anchoring effect (created by plaintiffs' claims) and may have adjusted the amount of pain and suffering damages according to factors that are normatively harder to justify.

Figure 2: Scatterplots of court-adjudicated medical expenses (first row) and non-medical pecuniary expenses (second row) versus pain and suffering damages



NOTE: Both X-axis and Y-axis are in US dollars and transformed to log 10. The first row of graphs shows the relation between pain and suffering damages and total medical expenses. The second row of graphs shows the relation between pain and suffering damages and non-medical pecuniary expenses. The curve in each plot plots the prediction for pain and suffering damages from a linear regression of pain and suffering damages (log 10) on (non-)medical expenses (log 10) and their squares (the *qfit* command in Stata). Observations in which medical costs=0 are excluded. The columns show the data by characterization of injury. The figure includes 311 Taiwan court cases decided from 2008 through 2012. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

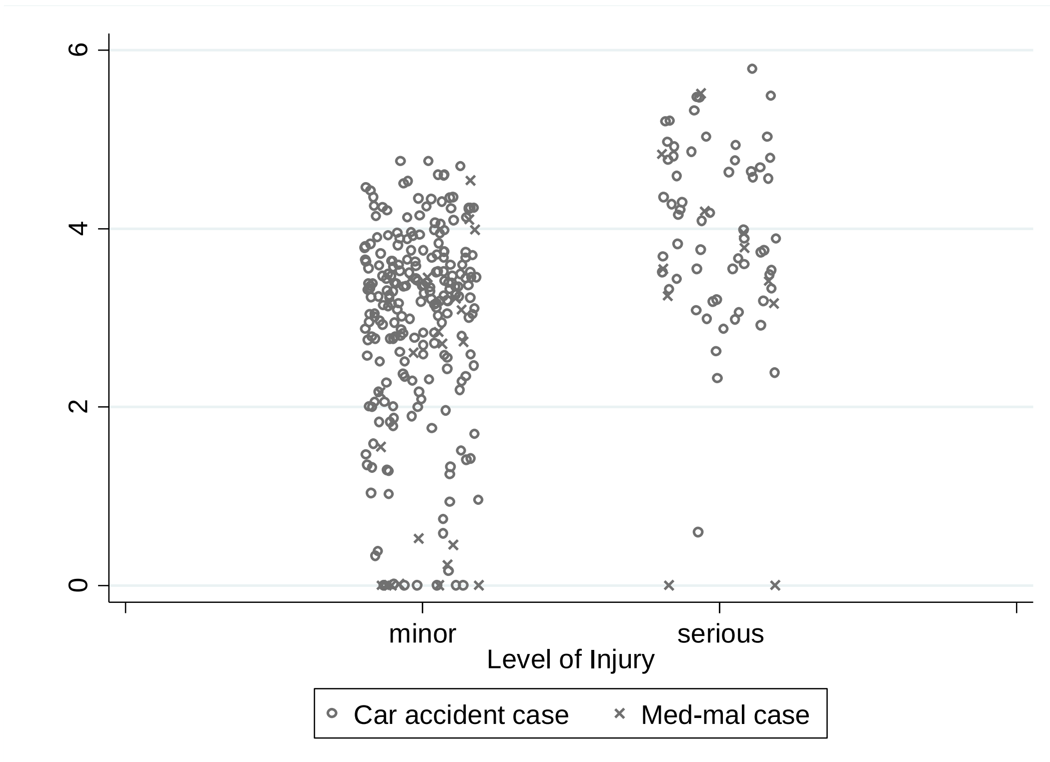
Table 3: Regression Models of Court-Awarded Pain and Suffering Damages

	(1)	(2)	(3)	(4)
	All cases	Car only	Car only	Med-mal only
Dependent variable: natural log of court-adjudicated pain and suffering damages				
=1 if serious injury	0.516***	0.654***	0.572*	0.555
	(0.134)	(0.168)	(0.223)	(0.371)
Medical expense (ln)	0.267***	0.253***	0.180***	0.235*
	(0.027)	(0.028)	(0.048)	(0.108)
=1 if medical expense is zero	1.899***	1.781***	1.120	2.546*
	(0.367)	(0.360)	(0.672)	(1.207)
Age	0.005	0.005		-0.016*
	(0.005)	(0.004)		(0.008)
Age * Serious injury		-0.007		
		(0.006)		
=1 if age missing	0.151	0.085		-0.909+
	(0.208)	(0.202)		(0.468)
Nonmed. pecun. exp. (ln)	0.015	0.016		
	(0.013)	(0.013)		
% of P's negligence	0.558**	0.505**	1.090**	
	(0.196)	(0.189)	(0.313)	
Number of natural-person D.	0.208	0.268	-0.244	
	(0.164)	(0.189)	(0.458)	
=1 if corporate defendant	0.065	0.065		0.553+
	(0.131)	(0.133)		(0.324)
=1 if parents vicarious liable	0.179	0.064		
	(0.186)	(0.200)		
Plaintiff had lawyer	0.017	0.035		
	(0.112)	(0.113)		
Defendant had lawyer	0.309**	0.334**		
	(0.118)	(0.118)		
Medical malpractice case	0.598**			
	(0.229)			
% earning capacity lost			-0.068	
			(0.367)	
Plaintiff annual income			0.110	
			(0.154)	
Yrs. lost earnings (sq. rt.)			-0.012	
			(0.044)	
Failure to diagnose				0.338
				(0.582)
N of doctor defendants				0.185
				(0.201)
Constant	8.423***	8.506***	9.116***	10.223***
	(0.411)	(0.422)	(2.053)	(1.340)

Court and year fixed effects	Yes	Yes	No	No
P driving types	No	Yes	No	No
Observations	323	288	51	33
R-squared	0.583	0.606	0.748	0.518

NOTE. P=plaintiff. D=defendant. Models (1)–(2) account for the court strata, the differential sampling of car accident and medical malpractice cases, and the nonindependence of multiple plaintiff cases. Models (3)–(4) do not account for strata due to single-observation strata. Models (3)–(4) cluster standard errors based on case. Robust standard errors in parenthesis. *** $p<0.001$, ** $p<0.01$, * $p<0.05$, + $p<0.1$. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

Figure 3: Court-adjudicated medical expenses by injury level



NOTE. Expense amounts are in U.S. dollars. This figure contains randomly sampled Taiwan court cases decided from 2008 through 2012. Jitter effects are applied. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

B. *Accounting for Plaintiffs' Requested Pain and Suffering Damages*

We now explore whether, in addition to the other influences on the pain and suffering award, the plaintiff's pain and suffering damages *request* is associated with the judge's pain and suffering award. We cannot meaningfully model the defendant's counter-claims concerning pain and suffering damages[35] due to its variety and lack

[35] Diamond et al. (2011: 174) find that juries are less inclined to reject the defendant's claim than the plaintiff's claim.

of explicit amounts.[36] At least three reasons suggest that the request should be relevant. First, judges will not award more than plaintiffs' requests. The request therefore caps the pain and suffering award and should be non-randomly associated with it. Second, plaintiffs have an incentive to make reasonable pain and suffering requests because the filing fee increases as the requested amount increases. Third, the medical or other pecuniary damages that inform a pain and suffering request are known to the plaintiff, as are other intangible aspects of the case.

Because the requested amount is not independent of other damages factors, we use a structural equation approach in which the structural equation includes the plaintiff's requested pain and suffering amount and an additional equation that models the plaintiff's requested amount as a function of objectively observable factors. Table 4 reports the results. The model accounts for the sample design, as described above.

The model is analogous to Table 3's first model to facilitate comparing the effect of including the requested pain and suffering amount with a model that does not include the requested amount. The pain and suffering award equation in Table 4 uses key explanatory variables from Model 1 in Table 3, but drops insignificant variables. The results of the structural equation model largely confirm what is found in the OLS model. The effects of plaintiffs' claims and attorney representation warrant more discussion.

1. Evidence for the Anchoring Effect

The award equation in the structural equation model shows a strong, significant association between the requested pain and suffering award and the actual pain and suffering award. This is evidence that the plaintiff's request, independent of objective measures of pain and suffering, is associated with the judge's pain and suffering award. The request equation models the plaintiff's requested pain and suffering damages. Rather than using court-adjudicated medical expenses, it uses the natural log of the plaintiff's claimed medical expenses, in addition to a dummy variable that equals 1 when such expenses are zero. The judge's award is not used as an explanatory variable because the award is unknown when the plaintiff makes a damages request. The presence of a lawyer for the defendant is not included in the model because the plaintiff does not know whether the defendant has a lawyer when the damages request is made. The request equation shows that the request is significantly associated with other explanatory variables in the award equation. This is, of course, plausible since the same principal factors that influence the judge's award likely influence the plaintiff's request.

[36] An unreported table shows that almost half of the defendants simply counter that plaintiffs' claims are too high.

Table 4: Structural equation model relating to the requested pain and suffering award

	Pain & suffering award	Pain & suffering request	Total effects of variables on awards
	(A)	(B)	(C)
Plaintiff's pain and suffering request (natural log)	0.440***		0.440***
	(0.053)		(0.053)
=1 if serious injury	0.253*	0.404**	0.430***
	(0.108)	(0.134)	(0.121)
Medical expenses (allowed by the court; natural log)	0.210***		0.210***
	(0.027)		(0.027)
=1 if medical expenses are zero	1.527***		1.527***
	(0.339)		(0.339)
% of P's negligence	0.592***	0.279	0.714***
	(0.160)	(0.234)	(0.195)
=1 if defendant has lawyer	0.075		0.075
	(0.095)		(0.095)
=1 if medical malpractice cases	0.205	1.062***	0.673***
	(0.178)	(0.215)	(0.173)
Plaintiff's claimed medical expenses		0.264***	0.116***
		(0.039)	(0.018)
=1 if plaintiff's claimed medical expenses are zero		2.728***	1.201***
		(0.561)	(0.225)
=1 if plaintiff has lawyer		0.282**	0.124*
		(0.101)	(0.051)
Constant	3.928***	9.864***	
	(0.607)	(0.447)	
Observations	322		
Coefficient of determination	0.589		

NOTE. The model is a structural equation model with the pain and suffering award and request modeled simultaneously. The model accounts for the court strata, the differential sampling of car accident and medical malpractice cases, and the nonindependence of multiple plaintiff cases. Standard errors in parentheses. Source: Chang et al. Pain and Suffering Damages Data Set 2015.
*** p<0.001, ** p<0.01, * p<0.05, + p<0.1.

The association between plaintiff's pain and suffering request and higher pain and suffering awards could be interpreted as evidence of an anchoring effect.[37] After objective measures of the qualitative nature of harm and the quantitative

[37] This finding is consistent with the experimental result on the same issue reported in Chapman and Bornstein (1996). But compare Diamond et al. (2011: 174) who find that juries in the Arizona Jury Project are more inclined to reject plaintiff's request than defendant's counter claim, particularly regarding the pain and suffering damages. They conjecture that the general suspicion about plaintiffs may be at work there.

monetary loss are accounted for, the size of the requested amount remains associated with the judge's pain and suffering award. Absent an experimental setting, it is difficult to isolate a pure anchoring effect from other unobservable factors that may increase the judge's pain and suffering award. Thus, our finding is consistent with the psychological literature on anchoring, but it is not an affirmative evidence that the anchoring effect does exist in litigation.[38]

In the anchoring interpretation, judges are thought to follow the "anchor and adjust" procedure (Tversky and Kahneman 1974: 1128). That is, judges use plaintiff's request as the starting point and adjust it by taking into account medical expenses and other factors we found statistically significant. Judges, however, made insufficient adjustments and thus award plaintiffs with more pain and suffering damages than they otherwise would without the anchor.

The anchoring effect is normatively problematic. It increases legal unpredictability of damages awards (Avraham 2006: 95). Like cases are treated not alike simply because plaintiffs who for whatever (often strategic) reasons claim higher. The existence of a possible anchoring effect also suggests that though judges have, overall speaking, done an admirable job in basing pain and suffering damages on factors that are highly relevant to the victims' pain, judges are still human, and they fell under the spell of anchors.

2. Attorneys' Influence

The model also suggests the mechanism through which lawyers may affect the judge's pain and suffering award amount. Table 2 shows that only 39% of plaintiffs had attorneys. The plaintiff having a lawyer is not significant in models of the pain and suffering award (Table 3). But it is highly significant in the equation modeling the requested pain and suffering amount (Table 4). This suggests that the lawyer effect is indirect and not readily detected in single-equation models (such as Models 1 and 2 in Table 3). The presence of a plaintiff lawyer increases the request, which in turn increases the judicial award.[39] (A single equation model that includes the pain and suffering request yields results consistent with those in Table 4.) The dummy variable on whether defendants retain attorneys is statistically significant in

[38] One of us, using a more refined empirical strategy and a different data set, tries to tease out the anchoring effect in real-world (Chang, Chen, and Lin 2016). We defer the job of identifying the anchoring effect outside the laboratory to that article.

[39] Our finding of a positive association between pain and suffering recoveries and the presence of an attorney is consistent with O'Connell and Simon (1972: 23–24)'s finding such an association in automobile accident cases. Their early study lacked the specific controls available to us.

the OLS model reported in Table 3, while it is not statistically significant in the structural equation model reported in Table 4. One of us, in another paper, focuses on teasing out the effect of attorney representation and attorney experience in torts litigation (Chang, Chen, and Lin 2015); thus, we will not go into further detail here.

Having a lawyer is associated with a higher requested damages amount. But having a lawyer is not in itself exogenous since lawyers may be sought in and attracted to cases with higher damages. To check the influence of the mechanism by which lawyers are selected, we used Stata's generalized structural equation modeling feature (the *gsem* command) to add equations modeling whether plaintiffs and defendants had lawyers. We assumed that the stakes of the case would be most influential to a lawyer's presence for plaintiffs. For the plaintiff lawyer equation, the explanatory variables we used were whether the plaintiff was seriously injured, the total damages other than pain and suffering and the degree of plaintiff's fault. For the defendant lawyer equation, we added to these variables whether the defendant was a corporation and whether the plaintiff had a lawyer. The results reported in Table 4 did not materially differ when these equations were added.[40]

C. *Lost Income and Pain and Suffering*

Cases in which victims request compensation for reduced earning capacity are an important subset of observations. For permanent reduction in earning capacity, courts usually award the victim a lump-sum consisting of lost salary from the time of judgment to the mandatory retirement age,[41] discounted to present value. The compensation is mainly based on three factors: years until retirement, current annual salary, and percentage of lost earning capacity. To determine the percentage, courts often rely on the "schedule of impairment" declared by a government agency for labor insurance purposes.[42] The annual salary is a matter of proof.[43]

One might expect that the percentage of reduced earning capacity would seriously compete with or supplement medical expenses and the level of injury as measures of victims' pain and suffering. The more one loses earning capacity, the more pain and suffering (due to the injury itself and the sense of fulfillment from

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[40] Plaintiff being represented by a lawyer was significantly associated with serious injury. Defendant being represented by a lawyer was significantly associated with whether the plaintiff had a lawyer and whether the defendant was a corporation.

[41] The mandatory retirement age was 60 years old before 2008 April and 65 years old since then.

[42] In 34% of the cases, courts explicitly refer to such a schedule.

[43] In 56% of the cases, courts use the victim's actual pre-injury salary. In 40% of the cases (usually with minor victims), courts use the minimum wage to calculate lost salary.

working) one may incur. On the other hand, a bodily impairment that causes substantial suffering may not always reduce earning capacity. Losing an eye may be a case in point. Thus, in some cases, reduced earning capacity may be an inadequate proxy for pain and suffering. It is therefore of interest to address the relation between earnings and pain and suffering in more detail. Model (3) in Table 3 includes three measures of permanently reduced earning capacity: annual income, percentage of lost earning capacity, and years of lost earning capacity. The regression result shows that they do little to add to medical expenses and injury levels as an explanation of pain and suffering.[44]

The insignificance of the three components of future lost salary is empirically unsurprising and normatively acceptable. Regarding annual income, utility theorists have posited how the utility of a given dollar changes when the rich become poor and when a healthy person gets injured (see also Posner 2011: 251–53). Yet before more solid empirical evidence of utility changes appears, judges can understandably regard the amount of salary as irrelevant to pain and suffering.[45]

In addition, percentage of lost earning capacity is itself correlated with positive-amount medical expenses (r=0.724; $p<0.001$; N=59), which strongly correlate with pain and suffering damages (r=0.704; $p<0.001$; N=311). Intuitively, judges have no obvious reason to give victims who lost more earning capacity higher pain and suffering damages, once judges have accounted for such victims' severity of injuries. Another reason for the insignificance of lost earning capacity might be that the percentage of lost earning capacity is ascertained in only about 17% of our observations, so we do not have sufficient statistical power to sort out its effect. Finally, the number of years of permanently lost earning capacity is highly correlated with the victim's age, but because not all victims work or claim lost income, the number of observation that contains years of lost earning capacity is not large. The statistical insignificance of this variable might be attributed to the lack of statistical power. Below we will demonstrate that the victim's age is sometimes a statistically significant variable.

[44] We have tried several other unreported model specifications, but the results are consistent: as long as the dummy variable representing injury levels and the medical expense variable are included in the regression models, none of the three variables regarding future lost salary are statistically significant. In unreported models, we have replaced the three component variables with one variable that captures the amount of total future lost salary. The result is essentially the same.

[45] Avraham (2006: 114) has argued that it is unjustified to base pain and suffering damages on incomes. Note also that the Pearson correlation coefficient between natural log of plaintiff incomes and natural log of court-adjudicated medical expenses is only -0.087. Thus, the lack of statistical significance of the plaintiff income variable cannot be attributed to the presence of medical expenses in the model.

D. *Other Variables of Interest*

Other than plaintiffs' comparative negligence, none of the variables besides medical expenses and injury levels are consistently statistically significant at the 5% level. [46] We discuss three interesting aspects of the empirical results below.

A few words regarding optimal deterrence here. Shavell (2004: 240) notes that to attain optimal deterrence, courts may award expected losses if they cannot ascertain actual losses in individual cases. If judges aim to award expected losses (and largely ignore the variation of facts across cases), in cases where pecuniary damages are low, courts might be inclined to award *higher* pain and suffering damages, so that the overall compensation awards would be similar across cases, creating specific deterrence for the tortfeasors. By contrast, if judges aim to award actual losses, low pecuniary damages would often come with *low* nonpecuniary damages, as victims in those cases may not have been seriously injured. Our data set suggests that judges in Taiwan appear to aim for compensating victims with their actual losses. The Pearson correlation coefficient between pecuniary damages and pain and suffering damages is 0.636 (p<0.001). Unreported scatterplots and the positive coefficients for medical expenses and non-medical expenses in Table 3 also provide a consistent story.

1. Victim's Fault

One interesting issue is whether the victim's own fault influences the amount of pain and suffering damages. In Taiwan, judges take into account the plaintiff's comparative negligence at the end of the damages computation process. That is, the various types of damages are first determined and summed, and then the deduction percentage (the comparative negligence attributed to the victim) is applied across the board.[47] The plaintiff's comparative negligence thus reduces both her pecuniary and pain and suffering damages.

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[46] Unreported regression models show that the annual income of both parties do not have statistically significant effects on the amount of pain and suffering damages. We have tried to use both "positive income only" and "positive plus no income" in our models. The results are the same. Note that the annual incomes used in the unreported models here are not necessarily the same as the incomes used in the calculation of lost salary. In the latter, sometimes courts do not use the actual annual income (such as when the victim was not working). Sometimes, victims who are working do not claim for lost salaries.

[47] For instance, assume that total pecuniary damages are 75 dollars and pain and suffering damages are 25 dollars—total compensation is 100 dollars. The plaintiff is 40% negligent. The defendant has to pay [100*(1-0.4)]=60.

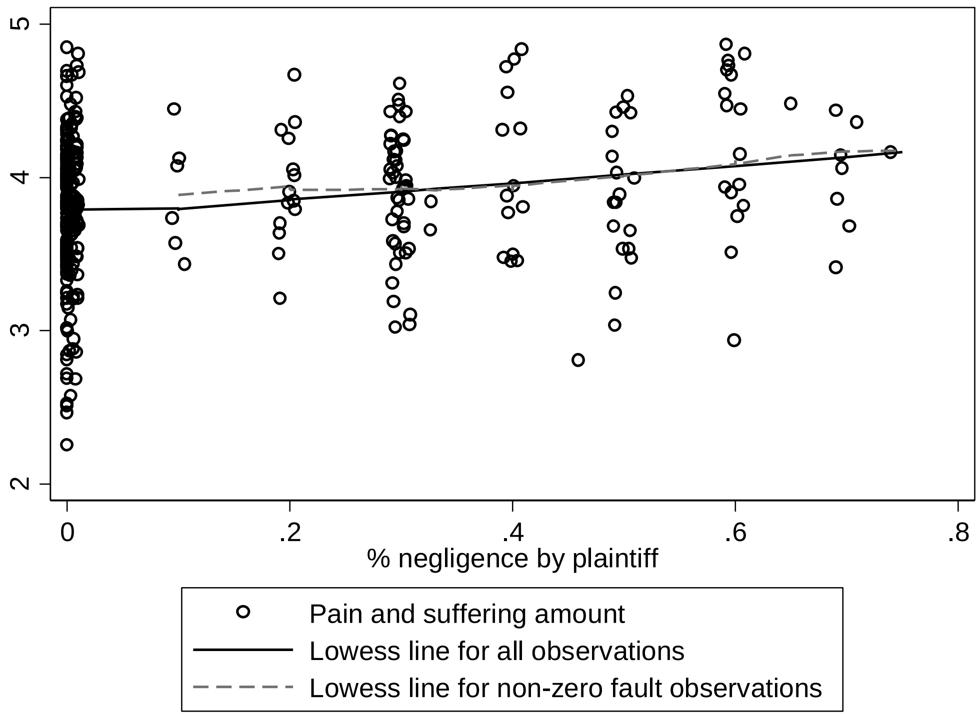
Figure 4 shows the relation between pain and suffering damages and the percent of negligence attributed to the plaintiff (0%–75% in our dataset). It does not show a strong association between the two, but the positive slope of the line is puzzling. It is counter-intuitive for judges to increase the amount of pain and suffering damages when the victim herself is more at fault. The regression models reported in Table 3 and Table 4, however, confirm the figure; the comparative negligence variable is statistically significant and is consistently positive.

The bunching of observations at zero fault for plaintiffs led us to explore models that also included a dummy variable that equals to zero when plaintiff's fault was nonzero and one when it was zero. Neither the zero-fault dummy variable nor the fault variable are statistically significant. Nevertheless, in the regression model that contains only the 123 observations in which plaintiffs are at fault, the fault variable is still statistically significant at the 5% level. Perhaps the cases with highest plaintiff fault resulted in more pain and suffering that is not captured by our injury-related variables. Negligence by the defendant and substantial negligence by the victim might lead to worse results than in cases in which the victim is modestly negligent or not negligent.

Another possible explanation arose in a round table discussion with several of Taiwan's most experienced judges. A few judges suggested that judges may be compassionate towards the tort victim, and, despite the victim's own fault, be unwilling to substantially reduce the post-deduction compensation. Hence, judges may award higher pain and suffering damages than they otherwise would in anticipation of the fault-based reduction.[48] The result of the structural equation model, reported in Table 4, echoes with this compassion theory: plaintiffs do not claim higher when they are more at fault—it is judges who increase the pain and suffering awards when plaintiffs are more at fault. A caveat, however, is in order. While plaintiffs more or less know whether they are at fault and to what extent they are comparatively negligent, they cannot accurately predict their levels of court-adjudicated fault. We use the court-adjudicated fault in the plaintiff-claim equation in the structural equation model because there is no other way to ascertain plaintiffs' evaluation of their fault at the time of their claims.

[48] Sharkey (2005: 391) hypothesizes an analogous effect when laws cap damages, pointing out that "where noneconomic damages are limited by caps, plaintiffs' attorneys will more vigorously pursue, and juries will award, larger economic damages, which are often unbounded."

Figure 4: Percentage of plaintiff's negligence and compensation level



NOTE. Damages amounts are in U.S. dollars and the figure includes 323 Taiwan court cases decided from 2008 through 2012. Jittering is used to facilitate viewing similar data points. The Lowess lines are nonparametric lines that best fit the data. It shows a modest upward sloping trend. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

2. Victim's Age

We discussed above whether the length of enduring pain would influence the amount of the pain and suffering damages. There the length is measured by the years of lost earning capacity. Here we use the victim's age as an approximate.

The effect of age may vary, depending on the nature of injury. If the injury is persistent, the victims are likely to suffer for the rest of their lives. Their ages are likely to be negatively correlated with the pain and suffering awards, as judges may reason that those with more years ahead of them may feel more total pain over the whole life. By contrast, provided that the injury is not persistent, after some years victims may adjust to the body impairment and their pain and suffering decreases—this is the psychological theory of adaptation (Sunstein 2008: S191). The pain and suffering damages thus will not correlate with victims' ages.[49]

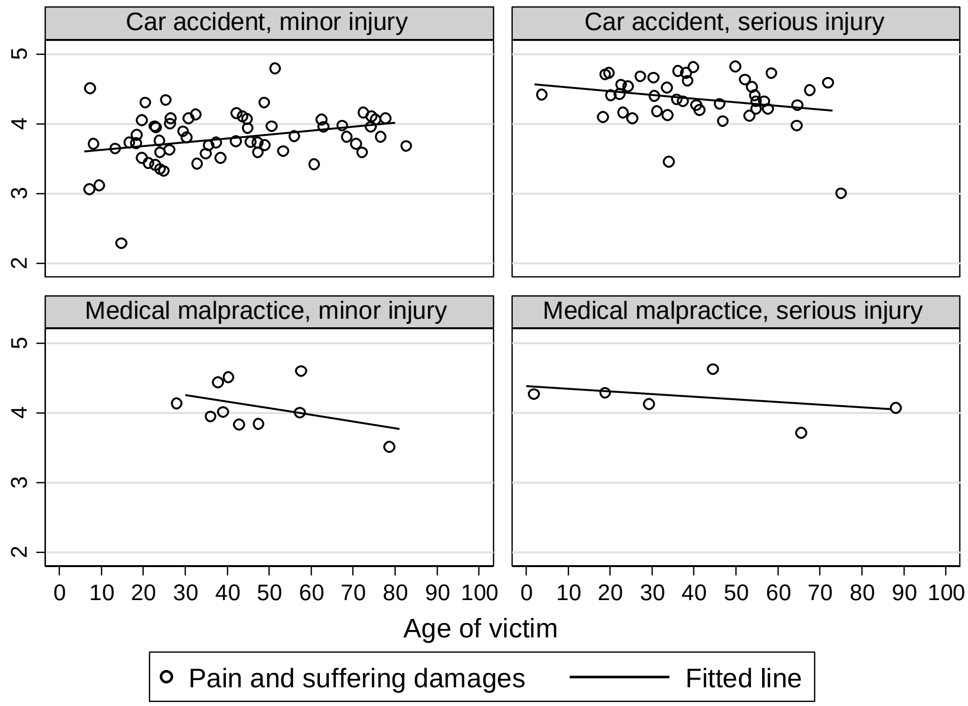
[49] Interestingly, the Tribunals of Milan and Rome in Italy use tables to compute the pain and suffering damages for personal injuries. The damages decrease with ages. We thank Alice Guerra for this information.

Our findings to some extent confirm the aforementioned hypothesis. As Figure 5 shows, in serious injury cases, pain and suffering awards are indeed negatively correlated with the victims' ages. When victims suffer from minor injuries, courts appear to have a different approach towards ages. In car accident cases, the victims' ages are positively correlated with pain and suffering awards, while in medical malpractice cases, the victims' ages are negatively correlated.

Regression results confirm the scatterplot. In medical malpractice cases, Model (4) in Table 3 shows that age has a negative sign and is statistically significant at the 5% level. As for car accident cases, Models (1) and (2) in Table 3 show that victim ages and interaction term of ages and serious injury are not statistically significant. The signs of the age variable and the interaction term are positive and negative, respectively.

The puzzle lies with the different effects of ages. In car accident cases, no matter whether the victims suffered from minor or serious injuries, their ages have no statistically significant effect. It appears that judges subscribed to the adaptation theory, perhaps believing that even victims who suffer from persistent pains (more likely to correlate with serious injuries in our coding) would return to the pre-injury hedonic level in a few years. This would be counter evidence to the "adaptation neglect" (Sunstein 2008: 158). In medical malpractice cases, adaptation theory cannot explain the results. There, judges appeared to believe that pain and suffering will never subside, thus total expected life matters. Hence, younger victims were given more pain and suffering damages. Our data, with many missing values, do not enable us to fully untangle this puzzle.

Figure 5: Victim age, case type, injury type, and pain and suffering damages



NOTE. Damages amounts are in U.S. dollars and the figure includes 103 car accident cases and 16 medical malpractice cases decided in Taiwan court cases from 2008 through 2012. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

3. Car Accident versus Medical Malpractice

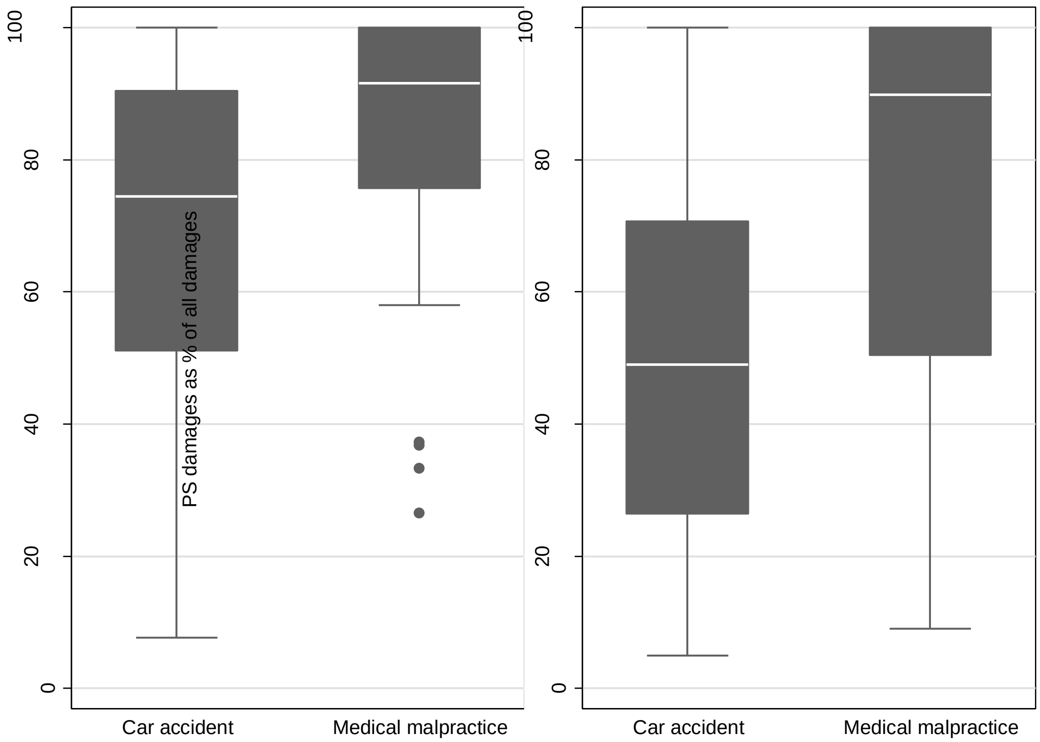
Car accident cases and medical malpractice cases exhibit different patterns. Figure 1 and unreported statistics show that the mean, median, and 25 and 75 percentiles of pain and suffering damages in the medical malpractice cases are higher than those in the car accident cases. The case type dummy variable in our regression model (Model 1 in Table 3) is statistically significant, again suggesting that, other things being equal, the medical malpractice cases are associated with more pain and suffering damages.

Avraham (2006: 95) has conjectured that victims in car accident cases might get less pain and suffering damages than those in medical malpractice cases because being injured in a special relationship causes more pain. As Koehler and Gershoff (2003) find, human beings are "betrayal averse." Medical doctors are "agents of protection." When doctors mistreat patients and become "agents of harm," people feel more painful toward the injury than the same level of injury incurred without betrayal. This conjecture is borne out by our data. The structural equation model reported in Table 4 provides a more nuanced explanation: the different pain and suffering awards are mainly driven by plaintiffs' claims; that is, plaintiffs claim more pain and suffering damages in medical malpractice cases. More specifically, the total effect is the sum of the direct effect and the indirect effect—the direct effect measures the influence of a variable directly on court awards, whereas the indirect effect measures the influence of a variable on court awards through its influence on plaintiff's request (Freese and Kevern 2013: 31). The medical malpractice dummy variable has strong total and indirect effects but a weak direct effect. This suggests that plaintiffs take into account the case type in claiming pain and suffering damages. The weak direct effect suggests that judges do not disagree with plaintiffs' judgments regarding the effect of case type on pain and suffering damages. The highly statistically significant total effects suggest that case types ultimately influence the court-adjudicated pain and suffering damages.

E. *Pain and Suffering Damages as a Percentage of Total Damages*

The prior literature on the pain and suffering damages and the literature on the relation between ordinary damages and punitive damages have focused on the percentage of "subjective" damages (that is, the pain and suffering damages or the punitive damages) in total damages. Figure 6 contains two sets of box plots, in which the horizontal line represents the median value of the percentage of damages consisting of pain and suffering damages and the boxes show the interquartile range. The left-hand box plots show the pain and suffering award as a percentage of the combined pain and suffering award plus medical expenses. The right-hand box plot shows pain and suffering awards as a percentage of the total award.

Figure 6: Pain and suffering damages as percentages of damages



NOTE. PS=pain and suffering. The figure shows the distributions of pain and suffering awards as percentages of damages by tort type. In these box plots, the horizontal line in each box is the median value or 50th percentile. The height of the box is a measure of spread of the distribution, called the interquartile range or IQR. It shows the 25th to 75th percentiles of the distribution. Extending out from the box are the "whiskers." The bottom whisker represents the 25th percentile minus 1.5 times the IQR. The top whisker represents the 75th percentile plus 1.5 times the IQR. Data points above and below the whiskers are considered outliers. The figure includes 290 car accident cases and 33 medical malpractice cases decided in Taiwan court cases from 2008 through 2012. Source: Chang et al. Pain and Suffering Damages Data Set 2015.

For car accident cases, the median percentage of pain and suffering damages in relation to medical expenses is about 70% and the 25th percentile is near 50%. So, in about 75% of the cases, the pain and suffering damages exceed the medical expenses. For medical malpractice cases, the median percentage of pain and suffering damages in relation to medical expenses is over 90% and the 25th percentile is over 70%. In almost all the medical malpractice cases, the pain and suffering damages exceed the medical expenses. The right-hand box plot indicates that, for car accidents, in about 50% of the cases, pain and suffering damages exceed pecuniary damages (including nonmedical expenses and lost salary). In medical malpractice cases, pain and suffering damages exceed pecuniary damages in about 90% of the cases. Part V discusses the results in comparison to U.S. results.

V. Relation to U.S. Trial Outcomes

We have information about the relation between pain and suffering damages and pecuniary loss, as shown across the range of pecuniary loss in Figure 2 and as summarized in Figure 6. Given the attention devoted to the behavior of U.S. juries with respect to pain and suffering damages payments, it is of interest to compare the outcome of Taiwan trials to that of US trials. Doing so requires using a data set that contains reasonably detailed information on U.S. trial outcomes. Data that specifically focuses on pain and suffering awards are rare (Avraham 2006), so we use a data set that reports on economic and noneconomic damages of which pain and suffering damages are the major component.

The U.S. data set for this part of our study comes from the Civil Justice Survey of State Courts, a National Center for State Courts-Bureau of Justice Statistics (BJS) project that has yielded four major datasets. The Civil Justice Survey gathered data directly from state court clerks' offices on tort, contract, and property cases disposed of by trial in fiscal year 1991–1992 and in calendar years 1996, 2001, and 2005. Each of these time periods corresponds to a separate BJS data set. The first three data sets covered state courts of general jurisdiction in a random sample of 46 of the 75 most populous counties in the United States. The 2001 Civil Justice Survey data included 46 counties; the 1991–1992 and 1996 data included 45.[50]

The 2005 Civil Justice Survey data used here included 156 counties. The 2005 survey included 46 of the 75 most populous counties selected to maintain backwards compatibility with the earlier Civil Justice Surveys. The 2005 survey expanded coverage by adding 110 counties to represent the 3,066 smaller counties not included in the country's 75 largest counties.[51] The 2005 data included all completed trials in the studied counties. The 2005 data included 8,872 trials of an estimated total of 27,128 in state courts in the United States in 2005, or 32.7 percent. Based on the sample design, the trials from the 46 counties are estimated to represent 10,813 general bench and civil trials disposed of in the nation's 75 most populous counties. Trials from the 110 smaller counties are estimated to represent 16,315 general civil and bench trials from outside the nation's 75 most populous counties (BJS 2008; authors' calculations).

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[50] For a summary of the data and methodology, see Bureau of Justice Statistics (1995); Bureau of Justice Statistics (1996); Bureau of Justice Statistics (2004). The initial Civil Justice Survey dataset (1991–1992) includes only jury trials. The two subsequent datasets, 1996 and 2001, include jury and bench trials. The three datasets include all completed trials in all three years in most of the counties.

[51] For a summary of the data and methodology, see Bureau of Justice Statistics (2008); Inter-university Consortium for Political and Social Research (2009).

We extracted from the 2005 data information about economic damages and noneconomic damages for automobile accident cases and medical malpractice cases, the two case categories in the Taiwan data. Given the concern about the high fractions of damages in the U.S. that consist of pain and suffering awards (Bovbjerg, Sloan, and Blumstein 1988; Viscusi 1988: 207–08; Avraham 2006), it is interesting to compare the percentages of damages that consist of pain and suffering awards in the Taiwan trials data with the fractions of damages that consist of noneconomic damages in the U.S. trials data. Table 7, panel A, reports the results for automobile cases and panel B reports the results for medical malpractice cases. For the BJS data, we report results separately for judge trials and for jury trials.

Table 5. Percentage of Damages Consisting of Noneconomic Damages

	Mean	Median	Std. dev.	N
A. Car cases				
Taiwan car (this study)	50	48	28	297
U.S. jury car (BJS)	49	51	25	532
U.S. judge car (BJS)	51	52	24	21
B. Medical malpractice cases				
Taiwan medical (this study)	73	92	34	45
U.S. jury medical (BJS)	67	73	28	81
U.S. judge medical (BJS)	72	81	29	5

Note. Taiwan data are from court cases from 2008 through 2012 (source: Chang et al. Pain and Suffering Damages Data Set 2015). U.S. data are from BJS (2008), which consists of state court trials ending in 2005. Cases where victims are in permanent vegetative states are not excluded from this table.

To those who attribute to U.S. juries unusually high percentages of damages awards that consist of noneconomic damages, the results should be startling. Professional judges in Taiwan's civil law system do not award meaningfully lower noneconomic damages as fractions of recoveries than do U.S. juries.[52] Even within the U.S., the table provides no evidence of meaningful differences between judges and juries. Too few U.S. judge medical malpractice cases exist to support inferences about that category of cases, but the other table rows contain reasonable number of cases.

[52] The absence of difference may be partially attributable to U.S. states' statutory damages caps, as 2 of the 532 jury trials on car accidents and 33 of the 81 jury trials on medical malpractice were affected by state laws capping damages. According to BJS (2008), MA, MO, MT, LA, NE, OH, SD, TX, WV, IN, FL, and CA have statutory damages caps in medical malpractice cases, whereas MI, KS, CO, NM, SC, and VA have broader statutory caps on nonpecuniary damages. Hawaii enacted statutory caps for pain and suffering damages.

Other differences between the two legal systems caution against hasty conclusions based on the two countries' data. For example, to the extent that the measure of noneconomic damages in the U.S. data includes components other than pain and suffering,[53] the percentage of U.S. awards that consist of pain and suffering is systematically lower than the percentages in Table 5. This suggests that pain and suffering awards by Taiwan judges likely are a higher percentage of total damages than are pain and suffering awards by U.S. juries and judges.[54] On the other hand, Taiwan's national care health system covers most routine medical treatments and medication (see Part II). So the medical expense portion of pecuniary damages in Taiwan likely is lower than that portion of pecuniary damages in the U.S. for similar injuries. The relatively lower medical expenses tended to make pain and suffering damages a higher percentage of total damages than in the U.S. Put differently, the percentage of Taiwan awards that consist of pain and suffering would be, again, systematically lower than the percentages in Table 5, if the tortfeasors have to pay to the victims the medical expenses covered by the national health care system. Despite these and other systemic differences, our results are evidence suggesting the absence of dramatic differences in the percentages of noneconomic damages awarded in the two countries.

Similarity extends to another important feature of damages, the relation between noneconomic damages and economic damages. Figure 7 contains scatterplots of that relation for the Taiwan and U.S. data. The first row's graphs cover automobile accident cases and the second row's graphs cover medical malpractice cases, with U.S. cases again separated by judge and jury trial. Each subfigure also shows the best fitting regression line from a simple regression of noneconomic damages as a function of economic damages. To facilitate comparison, the figure shows the Taiwan damages in U.S. dollars and uses common x and y scales for all graphs.

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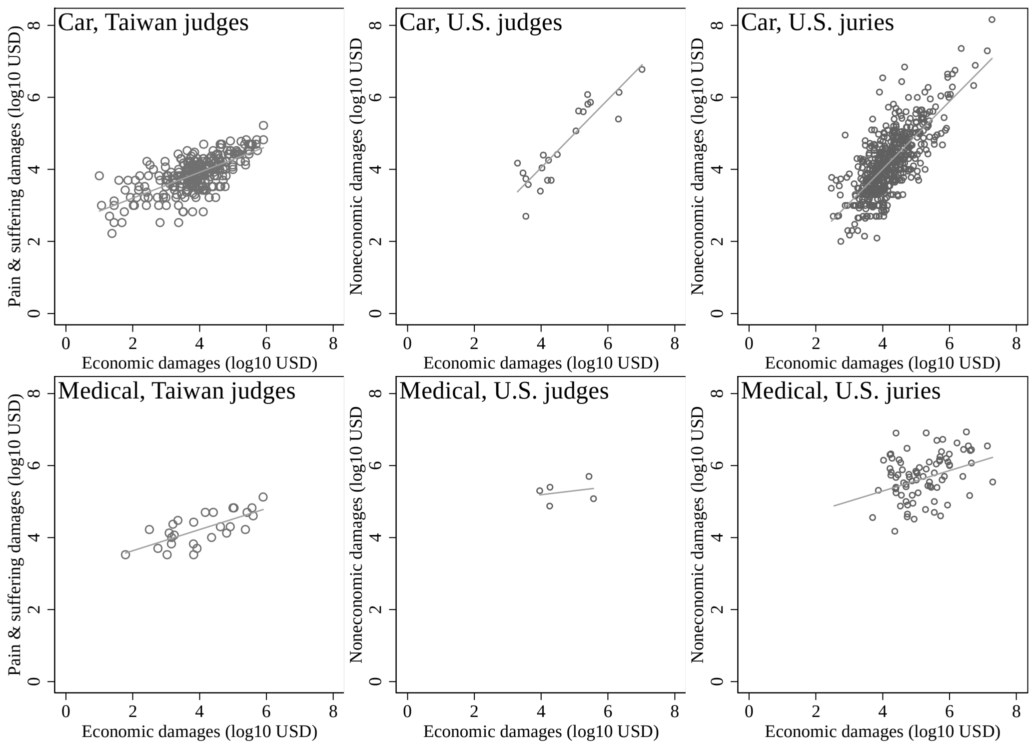
[53] As Kritzer et al. (2014) note, many state legislatures have defined additional categories of noneconomic damages, including disfigurement, loss of society, and loss of consortium. The codebook for BJS (2008) does not define non-pecuniary damages. See http://www.icpsr.umich.edu/cgi-bin/file?comp=none&study=23862&ds=0&file_id=1069839&path=NACJD (last visited March 23, 2016).

[54] Pain and suffering awards were found to not constitute a high proportion of awards in Illinois medical malpractice cases (Vidmar, Robinson, and MacKillop 2006).

Figure 7. Relation Between Noneconomic and Economic Damages, Taiwan & U.S.



Note. Y-axis is non-economic damages for the U.S. data and pain and suffering damages for the Taiwan data. Taiwan data are from court cases from 2008 through 2012 (source: Chang et al. Pain and Suffering Damages Data Set 2015). U.S. data are from BJS (2008), which consists of state court trials ending in 2005.

Figure 7 confirms strong associations between economic and noneconomic damages in the datasets. All scatterplots, except that of five medical malpractice judge-tried cases, suggest a significant positive relation between economic and noneconomic damages. As noted in our discussion of the Taiwan case results, increasing noneconomic damages likely reflect greater noneconomic losses being associated with greater pecuniary harm, or anchoring on the pecuniary loss, or a combination of the two. Simple regression models, reported in Table 8, confirm the figure's impression. Each model contains a single explanatory variable, economic damages, and either noneconomic damages (U.S. data) or pain and suffering damages (Taiwan data) as the dependent variable.

The coefficients for medical malpractice cases across the data sets are reasonably consistent, as shown in panel B.[55] But, as suggested by Figure 7's

[55] Kritzer et al. (2014: tbls. 3, 8) analyze additional pain and suffering data sets. The additional data come from Cook County (Chicago), California, and other jury verdict reporters, which may have a systematic bias towards reporting large awards. Those data for U.S. and Cook County car awards

second row, substantially less of the variance is explained in the jury-tried medical malpractice cases. This is in part a function of pooling data across heterogeneous U.S. states. Panel B breaks down the U.S. medical case data into New York County cases, Cook County cases, and other counties' cases.[56] Among the three groups, coefficients substantially and significantly differ with large differences in the variance in noneconomic damages explained.

Table 6. Regression Models of Noneconomic Damages

	Coefficient	Std. err.	p-value	N	R-squared
A. Car cases					
Taiwan judge car (this study)	0.359	0.023	<0.001	292	0.462
U.S. jury car (BJS)	0.917	0.038	<0.001	533	0.521
U.S. judge car (BJS)	0.946	0.107	<0.001	21	0.805
B. Medical malpractice cases					
Taiwan judge medical (this study)	0.293	0.060	<0.001	27	0.490
U.S. jury medical (BJS)	0.258	0.083	0.003	81	0.109
NY Cty.	1.026	0.182	<0.001	14	0.726
Cook Cty.	0.370	0.111	0.004	20	0.381
Other counties	0.087	0.104	0.408	47	0.015
U.S. judge medical (BJS)	0.110	0.234	0.670	5	0.069

Note. The models all use economic damages (natural log10 USD) as the explanatory variable. Taiwan models use pain and suffering damages (natural log10 USD) as the dependent variable. U.S. models use noneconomic damages (natural log10 USD) as the dependent variable. Taiwan data are from court cases from 2008 through 2012 (source: Chang et al. Pain and Suffering Damages Data Set 2015). U.S. data are from BJS (2008), which consists of state court trials ending in 2005.

Figure 7 and Table 6 also show differences between the countries. U.S. awards are consistently higher. Part of this difference may be due to differences in general economic conditions. Taiwan's 2012 per capita purchasing power was about 74% that of the U.S.[57] Almost no Taiwan awards exceed $1 million (US) and several are less than $100 (US). The U.S. data have awards above $1 million and no awards less than $100.[58] Panel A shows that the coefficient for economic damages is much smaller in Taiwan cases, suggesting a lesser increase in pain and suffering

show similar coefficients to the U.S. case coefficients in Table 8. Those data for Cook County and California medical awards show similar coefficients to the medical coefficients in panel B except that a data set for a mixture of non-California states results in a coefficient of 0.434 (p=0.031).

[56] New York County and Cook County were the only two counties with more than six jury-tried medical malpractice cases won by plaintiffs.

[57] International Monetary Fund, World Economic Outlook Database-October 2013, accessed 12/24/2013.

[58] Nevertheless, median car awards in Taiwan are comparable to those in the U.S.: $17,000 USD in 2012 dollars compared to $15,000 USD in the U.S. in 2005 dollars in the BJS study.

damages per unit increase in economic damages than in U.S. cases. Figure 7's first row shows this difference in slopes. This difference persists in median regression models, which reduce the influence of the large U.S. awards. The increased slope is not limited to U.S. juries as the slopes for the U.S. decision makers are similar and do not significantly vary (note again the small N of court adjudication cases in the U.S.)(for similar finding, see Hans and Reyna 2011). The higher slope may be attributed to U.S. noneconomic damages in the BJS data including components other than pain and suffering. Also, American juries may be concerned that a third or so of the damages will be paid to contingent-fee attorneys; thus, they up the ante when determining the awards. By contrast, attorneys in Taiwan collect fixed fees (usually no more than 3,000 USD); thus, even compassionate judges do not have to be concerned with attorney fees.

VI. Conclusion

Concerns have been expressed in Taiwan about the variability of damages for pain and suffering. We show that, in car accident and medical malpractice cases, these damages are strongly correlated with measurable quantities and are not numbers randomly generated by judges. The amount expended for medical expenses and the level of injury are two key variables that explain much of the pain and suffering award. We also provide evidence that the requested amount influences the awarded amount beyond the important objective influences on awards. Judicial anchoring on the plaintiff's requested amount may increase pain and suffering awards beyond the amount forecast by observable variables.

Evidence of the basic rationality of pain and suffering damages has implications beyond Taiwan. In the U.S., concerns about damages for pain and suffering damages have led to many statutes capping damages. Caps on damages are likely to reduce access to counsel given the reduced expected recoveries (Garber et al. 2009). In the classes of cases studied in the two countries, we show that noneconomic damages in the U.S. do not constitute a higher percentage of the total damages award than do pain and suffering damages in Taiwan. Given the evidence of rationality of the Taiwanese system, this should reduce concerns based on the substantial portion of damages consisting of pain and suffering damages in the U.S. (e.g., Viscusi 1988: 207). Both countries' systems show strong associations between noneconomic damages and economic damages. Reform proposals in both countries should be considered in light of the consistent evidence of rationally functioning systems.

Concerns about pain and suffering damages in Taiwan and the U.S. should also be considered in light of data from other countries. Karapanou and Visscher (2010a) compare pain and suffering awards from European country cases with amounts that might be awarded if a metric from health care economics, Quality Adjusted Life Years (QALYs), were used.[59] QALYs are based on surveys of people in various health conditions. QALYs in two states of health can be compared to quantify the difference between two states. Karapanou and Visscher (2010a) employed a conservative approach to monetize differences in health conditions based on QALYs, which they use to monetize pain and suffering. They compare their conservative estimates for amputations, spinal injuries, and deafness to awards in court cases from Germany, Greece, Italy, and the Netherlands. They conclude that pain and suffering damages in Europe are systematically too low—in our parlance, unreasonable. Policymakers should seriously study QALYs or other metrics that could set reasonable and predictable pain and suffering damages.

Lastly, our Taiwan data are a product of judges' behavior; U.S. data come from both judges and juries. Given the tendency of the media and policy makers to focus on U.S. juries, some similarities are worth noting. Taiwan judges, U.S. judges, and U.S. juries all produce strong statistically significant associations between noneconomic damages and economic damages. The three sets of decision makers also produce reasonably similar percentages of total awards that consist of noneconomic damages. Policy recommendations based solely on data relating to juries that recommend reducing their responsibility (e.g., Kahneman et al. 1998) omit the relevant comparison group, judges.

[59] A QALY is a measure of the value of living one year in a particular health condition. Each condition, such as amputation of a foot, is assigned a QALY-weight, varying from 0.00 (death) to 1.00 (perfect health. The QALY-weight associated with a condition is the sum of the QALY-weight health condition for the duration the condition was experienced (Hammitt 2002). For theoretical argument for using Quality Adjusted Life Years, a metric from health economics, to better assess pain and suffering damages, see Karapanou and Visscher (2010b).

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