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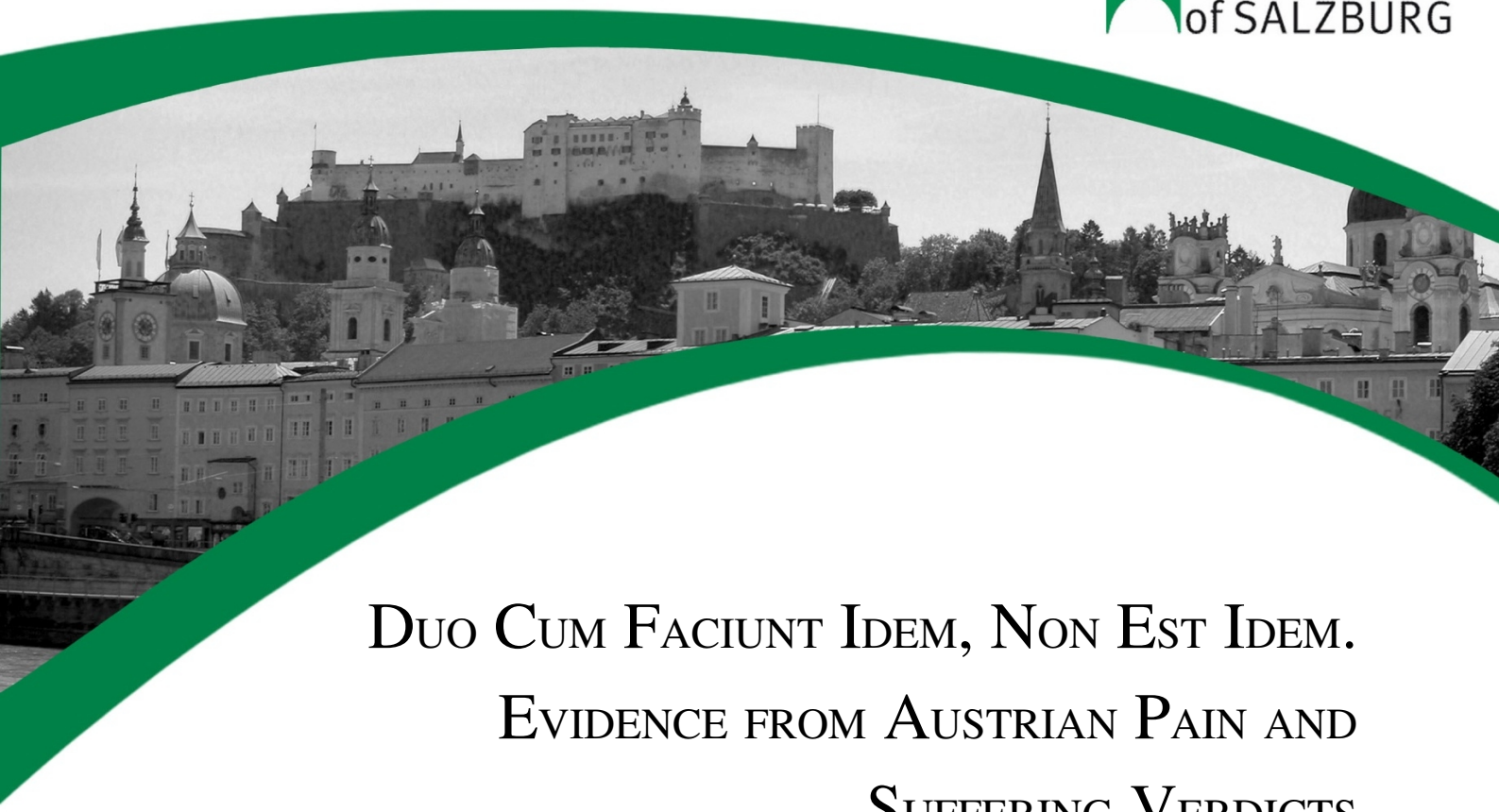

Duo Cum Faciunt Idem, Non Est Idem. Evidence from Austrian Pain and Suffering Verdicts

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Evidence from Austrian Pain and Suffering Verdicts

Andrea Leiter†, Magdalena Thöni‡ and Hannes Winner§

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Abstract

We analyze the pricing of pain and suffering and, in particular, whether the corresponding compensations are affected by a court's approach to value such damages. For this purpose, we use data on pain and suffering verdicts in Austria, where courts are generally free to choose between a *per diem* and a *lump sum scheme* to assess payments on damages for pain and suffering. We find significant higher payments under the lump sum regime, which are not vanishing even after controlling for individual- and injury-specific characteristics. Our evidence suggests that the observed difference between lump sum and per diem schemes mainly appears if the victims are female and exposed to multiple injuries and, to a lesser extent, to intensive past pain days.

JEL classification: K13, K41
Keywords: Tort Law; Per Diem Pain and Suffering Damages; Lump Sum Pain and Suffering Damages.

* *When two do the same, it is not the same (Terenz).*

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1 Introduction

Pricing damages for pain and suffering in an accurate and efficient way is of central interest in law and economics research. In this regard, different conceptual alternatives are proposed to deal with given court assessments. Geistfeld (1995), for instance, forwards the approach to ask the jury to assess how much a rational individual would have paid ex ante to eliminate the risk caused by a loss from pain and suffering (see also Calfee and Rubin 1992). Avraham (2006) introduces a system of age adjusted multipliers assigned to the plaintiff's medical costs to calculate the pain and suffering component, and Visscher (2008) proposes use values (quality adjusted live years, QALYs) to calculate damages in tort cases with personal injuries (see also Karapanou and Visscher 2009). Parallel to these contributions there is an eminent line of empirical research analyzing the determinants of damages for pain and suffering. Bovbjerg, Sloan and Blumstein (1989), for instance, investigate the computation of damages for personal injuries, relying on a sample of verdicts from Florida and Kansas City. Even though they find that the outcome of pain and suffering verdicts are somewhat arbitrary and random, they also identify systematic and influential factors behind such compensations, such as the severity of the injury (see also Leebron 1989, Geistfeld 1995, Anderson, Kling and Stith 1999, Lott and Manning 2000, or Avraham 2003, 2006, for related research).

This paper is rooted in the above-mentioned empirical research, but it deviates from these contributions in one important regard. In addition to generally investigating the determinants of damages for pain suffering, we focus on the role of the method to calculate such compensations. Depending on a country's legal system, judges typically use a *per diem* or a *lump sum scheme* when calculating the monetary compensation of pain and suffering. The former relies on monetary values for each day in past and future pain, which is usually distinguished by its intensity. The latter, in contrast, represents an overall assessment of a change in past and future life quality due to an injury and is, therefore, rougher and – from a judge's perspective – less standardized than the per diem approach.

We analyze whether and to what extent compensations for pain and suffering are influenced by these calculation schemes relying on a dataset of about 1,300 Austrian pain and suffering verdicts from one instance between 1980 and 2004. The unique feature of the Austrian legal system is that courts represented by judges are basically allowed to choose freely between both evaluation schemes, and this gives us the opportunity to study the impact of a court's evaluation

scheme on damages for pain and suffering within the same legal system. Our estimation results suggest that damages for pain and suffering are significantly higher for courts relying on a lump sum scheme than for ones with a per diem regime. This difference does not vanish even after controlling for personal- and injury-specific characteristics (e.g., gender, age, severity and intensity of pain). Overall, we estimate a difference between both calculation schemes of about 18 to 27 percent (depending on the empirical specification). Further, we find that the gap in compensations is strongest if a victim is female and experiencing multiple injuries with intensive past pain days.

The remainder of the paper is organized as follows. Section 2 describes the essential institutional and legal background of pain and suffering verdicts in Austria, giving particular emphasis on the courts' calculation schemes to determine the corresponding compensations. Section 3 introduces the empirical framework to assess the role of different evaluation schemes on a court's pricing of pain and suffering. Section 4 provides some descriptive statistics, and Section 5 presents and discusses our empirical results. Section 6 concludes.

2 Pain and suffering verdicts in Austria

2.1 General legal background

Pain and suffering comprises a wide spectrum of sensory paraesthesia and is influenced by subjective and personal characteristics of the individual affected. It can be also interpreted as an emotional state relying on a physical as well as psychological dimension of life quality. Evaluating this state of life quality is first and foremost a qualitative task, well known in medical sciences. Nevertheless, civil courts assess pain also in a quantitative, monetary way, focusing on the transformation of physical and mental distress suffered from an injury into monetary values. This process is admittedly not concentrating on the impairment of the earning capacity, the recovery costs or the consumer behavior, but on the actual monetary evaluation of the state of pain, i.e., the physical and psychological discomfort. Accordingly, damages for pain and suffering are only focusing on the compensation of physical and mental distress suffered from an injury, including fractured body parts and internal ruptures as well as the pain, the temporary and permanent limitations on activity, the potential shortening of life and depression.

To evaluate this kind of physical and mental distress, the Austrian Civil Code (ABGB) only provides a vague framework stating in its article 1325 that the victim should receive '*... an appropriate compensation for pain and suf-*

fering, given the collected circumstances' (...'ein den erhobenen Umständen angemessenes Schmerzengeld'). Obviously, this norm does not explicitly define 'subjective collected circumstances' and a specific procedure of calculating the amount of such compensations. In doing so, it rests on the judge to appreciate the pain and to fix a payment that enables the victim to compensate the pain and suffering and the forgone life quality due to the injury, using either a lump sum approach or a per diem calculation scheme.

The Austrian legal system as well as the legal practice and the legal doctrine supports this judiciary decision making by different means. First, judges are guided by the basic functions of Austrian tort law, namely the compensation and the satisfaction function. While the former refers to the idea that the aggrieved party should be appropriately compensated for the damage, the latter intends to pander the experienced harm (see, e.g., Schäfer and Ott 2000). Second, courts are supported by the qualitative evaluation of the (changed) health status of expert opinions (mainly physicians) comprising the severity of the injury, the impairment of life quality, the intensity of suffering due to the damage (including psychological burden) and the duration of pain. Third, judges can typically refer to precedents and specific pain and suffering guidelines, mainly extracted from the Austrian jurisdiction. According to these guidelines, judges' evaluation of damages for pain and suffering should not distinguish between males and females since courts should follow a gender neutral line in reasoning (see Danzl 2008). Further, age as such should not determine the compensations as young and old people alike suffer from pain.[1] One exception might be permanent damages as young people are confronted with a longer period of poorer health than older persons (see Huber 2000). Similarly, the victim's income, wealth, social and economic position as well as subjective circumstances should not play a role when assessing pain and suffering.[2] Finally, courts should consider – if given – contributory negligence after they awarded the payment, following article 1304 ABGB.

2.2 Per diem and lump sum evaluation schemes

Given the legal framework, Austrian judges are generally free to choose between two different approaches to calculate compensations for pain and suffering. The *per diem (or time unit) approach* follows the idea that the noneconomic loss for

[1] For the specific reasoning see OGH 29.5.1957, 2 Ob 218,57; OLG Linz 15.7.1998, 1 R 152/98y.

[2] For the specific reasoning see OGH 5.1.1915 GIUNF 7231=ZBL 1916/133; 22.10.1952 SZ 25/268; 15.4.1958 ZVR 1959/ 128; 11.2.1959 ZVR 1960/87; 15.7.1987 JBl 1988,46; 15.11.1989JBl1990, 456.

a particular time period can be quantified at a monetary value and multiplied by the number of past and future days in pain (see Totaro 2006). Hence, this approach asks for a level of abstraction that is able to quantify pain and suffering, so that these units can be monetized in a second step leading to a final compensation. The *lump sum approach* is based on the evaluation of the judge, not referring to the above mentioned monetized time units, but on an assessment of the past and future change of life quality as a whole, neglecting any calculation method. The lump sum approach therefore reflects an overall amount of money to compensate for the pain and suffering of the plaintiff.

Interestingly, the four Austrian province courts (Oberlandesgericht, OLG) show a certain tradition in choosing one of the two approaches:[3] The OLG Innsbruck, OLG Graz and OLG Vienna are conducting the per diem calculation scheme, whereas the OLG Linz only uses the lump sum approach. This tradition can be dated back to the year 1990, when Hartl first introduced tariffs for different pain classes and thereby opened the door for calculating damages for pain and suffering using the per diem calculation scheme. The level of abstraction that is necessary for the per diem approach was found in different categories of pain, explicitly in days of moderate, medium, intense and severe pain, examined by experts during the proceeding based on the victim's decrease in health. To monetize these pain days, Hartl introduced the above mentioned tariffs for each category, based on average monetary values stemming from three Austrian province courts. These tariffs comprise values for one day of moderate (EUR 100), medium (EUR 200), intense (EUR 300) and severe pain (EUR 350 to 700). The application of these tariffs can be demonstrated by the following example: Suppose, a plaintiff was faced with three weeks of pain after an injury. Given a medical expert opinion, pain and suffering of these three weeks would be categorized in one week of intense pain, one week of medium pain and one week of moderate pain. This would lead to a final compensation of EUR 4,200 ($= 7 \cdot 100 + 7 \cdot 200 + 300 \cdot 7$). Apart from this amount, the judge might account for the severity and other circumstances of the injury (e.g., permanent damages).

While the province courts of Innsbruck, Graz and Vienna welcomed this novelty and started working with the tariffs and the per diem calculation approach, the OLG Linz neglected this possibility due to the fact that Austrian judges should have the freedom to calculate a balanced lump sum. Additionally, the province court Linz stated that the deciding judge should not only rely

[3]The Austrian court system knows four province courts (OLG) for the nine federal states of Austria. In particular, the OLG Innsbruck is responsible for the federal states Vorarlberg and Tyrol, the OLG Linz for Upper Austria and Salzburg, the OLG Graz for Styria and Carinthia and the OLG Vienna for Lower Austria, Burgenland and Vienna.

on an expert opinion that identifies every single pain day but should first and foremost appreciate all necessary circumstances, including the healing course, possible long-term effects or permanent pain. Although Danzl (2007) and other authors (e.g., Fucik 1992, Hartl 1994 or Fucik, Hartl and Schlosser 2005) emphasize that the per diem calculation scheme should only be interpreted as a decision support system for Austrian courts, not replacing the (legal) assessment of the deciding judge who is independent, free of instructions and irremovable, the OLG Linz still refuses to use tariffs and works with the lump sum approach. In other words, the OLG Linz solely bases the evaluation of damages for pain and suffering on an assessment of the past and future change of life quality as a whole, neglecting any calculation method and not referring to the above mentioned Austrian tariffs.

In the following, we analyse the above mentioned calculation schemes empirically using verdicts on pain and suffering as published in Danzl, Gutierr-Lobos and Müller (2007). The data set consists of 1,310 verdicts of the four Austrian province courts (OLG Innsbruck, OLG Linz, OLG Graz and OLG Vienna) with sentencing dates between 1980 and 2004. It includes information on compensation paid for damages of pain and suffering, on the corresponding individual characteristics of the victims, as well as on injury- and court-specific characteristics.

3 Empirical framework

We estimate the impact of the two calculation approaches for pain and suffering using a standard linear regression model, which reads as

$$y_{it,c} = \delta LS_c + \mathbf{X}_{it,c}\boldsymbol{\beta} + \lambda_t + \nu_{it,c}, \tag{1}$$

where i indicates the i^{th} victim involved in a trial at year t; c denotes the province court where the case has been decided. y represents the log of compensation on pain and suffering, expressed in 2005 Euro. It reflects absolute awards including discounted annuity payments. LS represents a dummy variable for the calculation scheme described above. It takes entry one for the lump sum scheme and zero otherwise (i.e., in the case where court c applies a per diem scheme). $\mathbf{X}$ denotes a matrix of control variables explaining individual-specific determinants of damages for pain and suffering, and λ_t indicates the year where the verdict became final. ν is a classical remainder error term.

With regard to the individual-specific controls, we firstly exploit information

on a victim's gender, age and citizenship. Age in years is not available for the full sample, but information to which age cohort a victim belongs to. There are four age classes in the dataset: 'children' (victims between zero and 14 years), 'young people' (between 15 and 18 years), 'adults' (between 19 and 65 years) and 'retired persons' (older than 65). Based on this information, we construct three dummy variables for victims below 18 years, between 19 and 65 years, and retired ones (above 65 years). Citizenship is captured by a dummy variable taking entry one for Austrian citizens, and zero else. As discussed in the previous section, we do not expect a significant impact of each of these variables on damages for pain and suffering due to the Austrian legal guidelines. We would predict higher compensations only if younger persons suffer from permanent damages. This aspect is captured by interaction terms between the age cohort dummies and a dummy variable indicating whether a victim suffered a permanent damage or not. These interactions are included along with the dummy for permanent damages, for which we expect a positive effect on damages for pain and suffering.

Next, we account for injury-specific characteristics distinguishing between the severity of the injury and the resulting intensity of pain and suffering. The severity of personal injuries and the impairment of life quality are described by a nine point scale, adopted from the US National Association of Insurance Commissioners (NAIC). It ranges from emotional injuries only to substantial permanent injuries (see Table A.1 in the Appendix for further details).[4] Each severity class is assigned to an indicator variable and is incorporated in our basic specification from above. Since insignificant damages are left out as our base category we would predict a positive (negative) parameter estimate for the more (less) serious severity classes. In addition to these severity classes, we include a variable on whether a victim experienced multiple injuries. Here, it would be plausible to assume a positive impact of multiple injuries on damages for pain and suffering, on average.

The intensity of pain and suffering is measured in days of past and future pain. The former ones are classified into four categories of pain (i.e., moderate, medium, intense and severe), and the latter ones into three dimensions (i.e., moderate, medium and severe). We include the number of days in pain for each of these categories of past and future pain. In both cases, the base category is no days in pain, so that we would expect positive coefficients for each of these variables.

[4]For further information on the scaling see NAIC: http://www.naic.org/.

4 Descriptive statistics

Table 1 reports the descriptive statistics for all variables included in our empirical analysis. In particular, we provide mean values and standard deviations for the whole sample and for each of the courts we are focusing on. We obtain 1,259 observations for which we have full information regarding the above mentioned individual- and injury-specific characteristics. 230 observations of the sample are collected from OLG Graz, 638 from OLG Innsbruck, 288 from OLG Vienna, and 103 from OLG Linz.

As can be seen from the table, around 40 percent of all victims are females, most of them are Austrian citizens (around 90 percent) and are mainly in the age cohort between 19 and 65 years (around 78 percent; for persons where we have exact information on their age, which is the case for 453 observations, we observe an average age of around 33 years; this value is not reported in the table). With regard to these individual-specific characteristics, we generally do not find large differences over the courts. Perhaps one exception is OLG Linz with a somewhat lower share of females of around 32 percent.

> Table 1 <

Around 90 percent of all victims experienced multiple injuries, a value that is not varying considerably over the considered courts (the minimum is about 81 percent in Innsbruck, and the maximum is around 95 percent in Linz). The majority of these individual injuries (around 60 percent) can be classified as minor temporary damages, about one quarter (one tenth) belongs to insignificant temporary (minor permanent) injuries. The remaining six categories are of less importance in the data at hand. The duration of pain is decreasing with increasing intensity. The longest average time span, 76 days, refers to moderate pain. Medium, intense and severe pain lasts on average for about 25, 10, and 0.5 days. Further, future pain seems to be less of importance, on average. Only for moderate future pain we observe considerable values with about six days in pain. Again, we do not find strong differences in all pain categories over the courts. Finally, we can see that around 10 percent of all victims are faced with a permanent pain (with a maximum of 16 percent in OLG Innsbruck and a minimum value of around 2 percent in OLG Graz).

All in all, we do not really observe substantial differences over courts with regard to individual- and injury-specific characteristics. Given this evidence,

however, it is rather surprising that we find significant differences in payments on damages for pain and suffering. Table 1 reveals that average compensations on damages for pain and suffering amount to about EUR 19,300 for the whole sample, and they range from around EUR 15,800 in OLG Innsbruck to a maximum value of around EUR 30,460 in OLG Linz.

> Figure 1 <

Figure 1 depicts the court-specific distributions of (the log of) compensations. Obviously, damages for pain and suffering are significantly highest at the OLG Linz (the difference to the other courts is significant at the 1 percent level), and also the interquartile range is well above the ones of the other courts. However, Figure 1 also reveals that the difference in compensations between OLG Linz and the other courts might be influenced by outlying observations (e.g., the whiskers are somewhat smaller for OLG Linz). In the subsequent empirical analysis, we take account for this by applying a robust regression and, alternatively, by excluding observations at the extreme tails of the distribution. Apart from that, a sheer descriptive inspection of the data does not allow us to answer the question whether the observed differences in compensations between OLG Linz and the other courts is systematic conditional on individual- and injury-specific covariates or not. To answer this and the related question on the reasons of such a gap in compensations, we apply the regression analysis described above.

5 Estimation results

Table 2 displays the results of our empirical analysis, summarized in three alternative models. While Model A uses the full sample without correcting for any extreme compensation values, Models B and C take account for the fact that compensation on damages for pain and suffering might be driven by outlying observations (see Figure 1). Specifically, Model B provides a robust regression applying an iteratively reweighted least squares estimator (see, e.g., Huber 1973, Street, Carroll and Ruppert 1988), and in Model C we simply rely on ordinary least squares estimation as in Model A, but now exclude observations lying within the five percent lower and upper tail of the remainder error term (about 120 observations). In all models, we construct an indicator variable collecting the per diem courts to the base category with entry zero, and taking

entry one for the court that relies on a lump sum evaluation scheme (i.e., OLG Linz).[5]

> Table 2 <

Generally, the fit of our regressions seems well. The R^2 is around 0.57 in Model A, about 0.64 in Model B, and around 0.71 in Model C. In line with our expectation derived from the discussion of the institutional framework for pain and suffering in Austria (Section 2), individual-specific characteristics do not exert a significant impact on compensations. The only exception is citizenship in Models B and C, where we find a significantly negative association between Austrian citizenship and damages for pain and suffering. Further, we observe that multiple injuries are positively related to compensations, as expected. The point estimate is around 0.34 (and slightly lower at 0.30 in Models B and C), suggesting that multiple injuries increase the amount of experienced damages for pain and suffering by about 40 percent [calculated as $(e^{0.34} - 1) \cdot 100$]. From the last line of Table 2 we can see a parameter estimate of the year effect of about 0.03, indicating that compensations on damages for pain and suffering, on average, increased by about 3 percent per year.

Next, we find that those individuals suffering from emotional damages obtain about 26 percent [$\approx (e^{-0.2952} - 1) \cdot 100$] less compensations than victims experiencing temporary insignificant injuries (i.e., our reference category). In contrast, compensation is significantly higher for those persons that experience at least a minor temporary damage (see Bjovberg, Sloan and Blumstein 1989 for similar results using the same NAIC classification scheme). In particular, victims with minor (major) temporary injuries receive compensations that are 37 percent (94 percent) higher than in the reference category. Payments for minor (significant) permanent damages are 20 percent (36 percent) above the payments for insignificant temporary injuries. The highest premium, i.e., 464 percent [$\approx (e^{1.73} - 1) \cdot 100$], is assigned to those individuals that suffer from

[5] At this point, one might insist that we arbitrarily choose the three per diem courts as base category. In fact, although we clearly observe much higher compensations at OLG Linz as compared to the other courts, Table 1 also reveals much lower payments for pain and suffering at OLG Innsbruck. This, in turn, might motivate an alternative definition of the indicator variable, taking entry one for OLG Innsbruck and zero for the remaining three courts. However, re-defining the indicator variable in this way, we would observe a highly insignificant parameter estimate for the (Innsbruck) court dummy. Similar applies when assigning the other per diem courts with entry one.

severe injuries.[6]

With respect to the intensity of pain, our estimation results indicate increased payments for days in moderate pain (as compared to the base category with no days in pain), and, in turn, higher payments for days in medium, intense and severe pain. For instance, the parameter estimate of 0.0035 for moderate pain indicates a 0.35 percent impact for one additional day in moderate pain. This, in turn, translates into overall additional payments of about 27 percent for a person with 76 days in moderate pain (see Table 1). However, the additional payment per day does not considerably vary across the pain levels and is generally smaller for future than for past pain days. Victims that experienced permanent damages receive considerably higher compensations than those without any permanent damages (the parameter estimate is around 1 in all models, indicating a percentage impact of about 170 percent). As expected, the additional payments for permanent damages decrease as victims get older, as is shown in the negative coefficients for the corresponding age-interaction terms.[7]

Finally, let us turn to our main variable of interest, i.e., whether the calculation scheme does matter or not. In all models presented in Table 2, we clearly observe a significantly positive parameter estimate of the LS-dummy, indicating that courts with a lump sum evaluation scheme experience much higher compensations on damages for pain and suffering than courts relying on per diem schemes (which are the base category in all models). We observe a parameter estimate of 0.24 in Model A, indicating that the lump sum court in our sample (OLG Linz), on average, assigns by about 27 percent [$\approx (e^{0.2417}-1)\cdot 100$] higher compensations than its per diem counterparts, *all else equal* (i.e., given a specific combination of individual- and injury-specific characteristics). In Models B and C, where outlying observations are accounted for, we find slightly lower but still significantly positive coefficients. There, the differential impact of the lump sum court is around 18 to 20 percent [$\approx (e^{0.1619}-1)\cdot 100$ and $\approx (e^{0.1811}-1)\cdot 100$, respectively], which are somewhat lower than the 27 percent in Model A. To some extent, this seems to confirm our presumption from Figure 1 that extremely high and low compensations might contribute to an explanation of the payment differences between per diem and lump some courts. However, our

[6] Note that categories 'permanent major injuries' and 'death' are wiped out due missing observations (see the corresponding definitions in Table A1 of the Appendix). Further, the interactions of the OLG Linz dummy with the categories 'emotional injuries only' and 'permanent grave injuries' are dropped from the sample as we do not have observations for these variables from OLG Linz.

[7] There, we only find (weakly) significant effects in our models, which is not surprising given the close correlation between these interactions (see Table A.2 in the Appendix.)

evidence from Models B and C also demonstrates that the payment difference from evaluation schemes does not vanish even after dropping outlying observations and even after controlling for individual- and injury-specific characteristics. This leaves us with the question on how we can explain these differences in compensations over the courts considered in our sample.

Although we do not have sufficient information to answer this question rigorously (e.g., composition of the courts, socio-economic background of the victims or circumstances that caused the injury), we can provide additional empirical exercises to give some tentative hints on the sources of the observed differences in compensations among Austrian courts. Specifically, we re-estimate eq. (1) including interaction terms between the LS-dummy and each covariate in the regression.[8] The corresponding regression is based on Model C of Table 2, and is, therefore, referred to as Model $C.1$ in Table 3.[9]

> Table 3 <

Column (1) of Table 3 reports the main effects of this regression, and column (2) summarizes the parameter estimates of the interaction terms. We leave out the LS-dummy as we are only interested in the differential impact of a specific variable among the considered courts.[10] First, we find that the main effects from column (3) of Table 2 are somewhat lower, but nearly unchanged with respect to their sign of the coefficients and also their significance. More importantly, we only observe significant effects in four out of the seventeen interaction terms included in this model. The positive (negative) parameter estimates for gender and multiple injuries (moderate and intense past pain days) suggest that the amount of compensations is upward (downward) driven under a lump sum scheme, i.e., if the victim is a woman or experienced multiple injuries (experienced moderate or intense past pain days). Of course, one should interpret these results very cautiously as the covariates included in Model $C.1$ might be closely correlated. In fact, Tables A.2 and A.3 in the Appendix show that we are confronted with relatively high correlations especially with regard

[8] For 'year of damage' and the interactions between permanent damages and age cohorts we leave out the interaction terms with the LS-dummy, as it is not meaningful to interpret the corresponding parameter estimates.

[9] We take this choice as the fit of the regressions is highest in Model C. It should be noticed, however, that our estimation results from this exercise are nearly unchanged when relying on Model B rather than Model C. Results are available from the authors upon request.

[10] If interest lies on the differential impact of a variable within a court (e.g., OLG Linz), one also has to include the LS-dummy.

to the interaction terms. For example, the correlations of the age interaction with the ones of citizenship or multiple injuries are well above 0.8, which might inflate the standards errors in column (2) of Table 3 substantially.

To circumvent this problem, we provide an alternative exercise by including the interaction terms between the LS-dummy and the explanatory variables on a one by one basis. Again, we use Model C in Table 2 as our baseline regression. The estimation results are reported in Model $C.2$ of Table 3. There, we only report the coefficients of the interaction terms, so that each entry in the table indicates one separate regression. Our estimation results seem to confirm Model $C.1$ with regard to the significantly positive interaction terms of gender and multiple injuries and to days in past intense pain, for which we observe significantly negative interaction effects. For the other variables, we observe even insignificant parameter estimates or effects that are inconsistent with column (2) of the table (e.g., moderate past pain days are insignificant in Model $C.2$, but are significantly negative in Model $C.1$). From this, we would cautiously conclude that gender, multiple injuries and, to a much lesser extent, the intensity of past pain might be the main driving forces behind the observed compensation differences between lump sum and per diem evaluation schemes.

6 Conclusions

This paper contributes to the empirical literature on the determinants of damages for pain and suffering. It particularly addresses the question whether and to what extent compensations for pain and suffering are influenced by a court's evaluation scheme to determine such damages. For this purpose, we rely on a dataset of 1,300 Austrian pain and suffering verdicts from province courts, with sentencing dates between 1980 and 2004. The specific feature of the Austrian legal system is that it allows the courts represented by the judges to choose freely between two broadly accepted calculation approaches, i.e., a *per diem* and a *lump sum evaluation*. While the former is based on a standardized tariff system for each day in (past and future) pain, the latter relies on a judge's overall assessment of a plaintiff's change in life quality due to the injury. Given this speciality of the Austrian legal system, we estimate the differential impact of per diem and lump sum calculation schemes on damages for pain and suffering, along with other individual- and injury-specific characteristics of the verdicts.

Our findings might be summarized as follows. First, we show that the type of the injury (permanent damages or not, multiple injuries or not) as well as the severity and intensity of pain are significantly related to compensations for pain

and suffering. Additional individual-specific characteristics, such as gender, age and citizenship are less of importance, confirming our expectation that the judges broadly follow the legal guidelines behind the Austrian pain and suffering law. Most importantly, we observe a substantial difference (being about 18 to 27 percent) in compensations between courts applying lump sum and per diem approaches, a differential impact that is not vanishing even after controlling for individual- and injury-specific characteristics. Further, we illustrate that the difference between both evaluation schemes is mainly influenced by the victims' gender, whether they experienced single or multiple injuries and, to a lesser extent, by their duration in past pain.

Our findings clearly indicate that the evaluation schemes themselves play a decisive role in assessing damages for pain and suffering. This evidence does not allow to draw any conclusions about the superiority of one calculation approach over the other one. Of course, such a statement would require a careful welfare analysis, which was not the intention behind this paper. However, what we can firmly conclude is that the simultaneous use of per diem and lump sum schemes leads to a systematic violation of horizontal equity in pain and suffering awards. One simple way to avoid such differences in legal treatment would be to eliminate the side-by-side application of both approaches in valuing changes of life quality.

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Table 1: Descriptive statistics

	Overall		OLG Graz		OLG Innsbruck		OLG Vienna		OLG Linz	
	Mean	*s.d.*	*Mean*	*s.d.*	*Mean*	*s.d.*	*Mean*	*s.d.*	*Mean*	*s.d.*
Compensation in 2005 Euro	19,296.8	20,379.5	19,434.6	17,087.1	15,794.8	16,241.7	22,952.8	25,029.0	30,457.9	28,573.7
log compensation	9.430	0.967	9.477	0.972	9.288	0.887	9.544	1.058	9.886	0.985
Gender [D]	0.417	0.493	0.400	0.491	0.439	0.497	0.417	0.494	0.320	0.469
Age cohort <19 years [D]	0.113	0.316	0.130	0.338	0.107	0.309	0.111	0.315	0.117	0.322
Age cohort 19-65 years [D]	0.774	0.418	0.743	0.438	0.806	0.396	0.733	0.443	0.767	0.425
Age cohort > 65 years [D]	0.113	0.316	0.126	0.333	0.088	0.283	0.156	0.364	0.117	0.322
Austrian citizenship [D]	0.881	0.324	0.913	0.282	0.823	0.382	0.958	0.200	0.951	0.216
More injuries [D]	0.861	0.346	0.922	0.269	0.812	0.391	0.892	0.310	0.942	0.235
Temporary injury: insignificant [D]	0.250	0.433	0.235	0.425	0.271	0.445	0.198	0.399	0.301	0.461
Emotional injury only [D]	0.004	0.063	0.004	0.066	0.002	0.040	0.010	0.102	0.000	0.000
Temporary injury: minor [D]	0.580	0.494	0.622	0.486	0.555	0.497	0.639	0.481	0.476	0.502
Temporary injury: major [D]	0.033	0.180	0.043	0.204	0.030	0.170	0.028	0.165	0.049	0.216
Permanent injury: minor [D]	0.111	0.315	0.070	0.255	0.127	0.333	0.101	0.301	0.136	0.344
Permanent injury: significant [D]	0.021	0.142	0.026	0.160	0.014	0.118	0.024	0.154	0.039	0.194
Permanent injury: grave [D]	0.001	0.028	0.000	0.000	0.002	0.040	0.000	0.000	0.000	0.000
Pain days: moderate	76.203	92.868	73.700	83.764	53.820	66.009	117.247	110.772	105.680	141.768
Pain days: medium	24.847	35.725	26.270	29.379	18.234	25.339	35.191	50.347	33.709	44.739
Pain days: intense	9.981	19.744	11.296	13.284	6.575	15.002	14.101	21.754	16.621	38.805
Pain days: severe	0.508	3.738	0.648	2.881	0.082	0.962	1.479	7.143	0.126	0.621
Future pain days: moderate	5.724	35.215	4.926	22.799	5.564	20.838	7.465	63.001	3.621	15.252
Future pain days: medium	0.683	8.013	0.578	3.878	0.524	6.010	1.031	13.511	0.932	4.282
Future pain days: severe	1.084	35.271	5.604	82.486	0.071	1.262	0.042	0.352	0.184	1.064
Permanent damage [D]	0.096	0.295	0.022	0.146	0.158	0.365	0.042	0.200	0.029	0.169

Notes: Overall 1,259 observations, 230 in Graz, 638 in Innsbruck, 288 in Vienna and 103 in Linz. *D* indicates a dummy variable.

Table 2: Estimation results

Dependent variable: Log of compensation for pain and suffering (in 2005 Euro)

	Model A			Model B			Model C		
Explanatory variable	*Coeff.*	*St. Err.*	*Sig.*	*Coeff.*	*St. Err.*	*Sig.*	*Coeff.*	*St. Err.*	*Sig.*
OLG Linz	0.2417	0.0760	***	0.1811	0.0645	***	0.1619	0.0517	***
Sex (Female is 1)	-0.0195	0.0361		-0.0334	0.0330		-0.0237	0.0275	
Age cohort 19-65 years	-0.0532	0.0640		0.0008	0.0592		0.0680	0.0471	
Age cohort > 65 years	-0.0147	0.0874		0.0243	0.0756		0.0813	0.0589	
Austrian citizenship	-0.0762	0.0539		-0.0967	0.0525	*	-0.1179	0.0432	***
More injuries	0.3464	0.0571	***	0.2955	0.0529	***	0.3007	0.0411	***
Severity of pain (base category: insignificant damage)									
Emotional injury only	-0.2952	0.1479	**	-0.3152	0.1466	**	-0.2774	0.1433	*
Temporary injury: minor	0.3157	0.0467	***	0.2756	0.0456	***	0.2953	0.0356	***
Temporary injury: major	0.6621	0.1217	***	0.5294	0.1220	***	0.4680	0.0806	***
Permanent injury: minor	0.1845	0.0730	**	0.1288	0.0661	**	0.1060	0.0533	**
Permanent injury: significant	0.3106	0.1668	*	0.2897	0.1473	**	0.2554	0.1112	**
Permanent injury: grave	1.7370	0.0572	***	1.7164	0.0566	***	1.7368	0.0436	***
Past pain days (base category: no pain days)									
Moderate	0.0035	0.0004	***	0.0034	0.0004	***	0.0038	0.0003	***
Medium	0.0058	0.0013	***	0.0066	0.0016	***	0.0068	0.0012	***
Intense	0.0081	0.0025	***	0.0121	0.0051	**	0.0092	0.0025	***
Severe	0.0063	0.0097		0.0070	0.0091		0.0130	0.0041	***
Future pain days (base category: no pain days)									
Moderate	0.0025	0.0004	***	0.0023	0.0004	***	0.0021	0.0003	***
Medium	-0.0011	0.0025		-0.0037	0.0026		-0.0048	0.0016	***
Severe	0.0016	0.0001	***	0.0017	0.0001	***	0.0017	0.0000	***
Permanent damage	0.9605	0.2277	***	1.0099	0.3229	***	1.0928	0.1845	***
Permanent damage × Age cohort 19-65 years	-0.3639	0.2359		-0.4746	0.3259		-0.5918	0.1901	***
Permanent damage × Age cohort >65 years	-0.4493	0.2715	*	-0.5435	0.3438		-0.6237	0.2072	***
Year of damage	0.0344	0.0050	***	0.0338	0.0046	***	0.0324	0.0038	***
Observations	1,259			1,259			1,133		
R^2	0.571			0.638			0.713		

Notes: Constant not reported. *Model A* represents OLS estimation relying on the full sample, *Model B* a robust regression (iterated reweighted LS-estimator). *Model C* is identical to *Model A* but excludes observations out of the upper and lower five percent tail of the remainder error term. Robust standard errors in Models *A* and *C*. ***, **, * indicates significance at the 1, 5 and 10 percent level.

Table 3: Possible reasons of court effects

Dependent variable: Log of compensation for pain and suffering (in 2005 Euro)

	Model C.1						Model C.2		
	Main effect			Interaction term					
Explanatory variable	*Coeff.*	*St. Err.*	*Sig.*	*Coeff.*	*St. Err.*	*Sig.*	*Coeff.*	*St. Err.*	*Sig.*
Sex (Female is 1)	-0.0413	0.0284		0.2134	0.1025	**	0.1691	0.0842	**
Age cohort 19-65 years	0.0385	0.0451		-0.1943	0.1685		0.1172	0.0599	*
Age cohort > 65 years	0.0446	0.0580		-0.3249	0.2111		0.0560	0.1082	
Austrian citizenship	-0.1326	0.0446	***	0.0908	0.1638		0.1773	0.0525	***
More injuries	0.2542	0.0420	***	0.5026	0.1754	***	0.1962	0.0531	***
Severity of pain (base category: insignificant damage)									
Emotional injury only	-0.2702	0.1426	*	–			–		
Temporary injury: minor	0.2727	0.0370	***	-0.0290	0.1429		0.1427	0.0692	**
Temporary injury: major	0.4381	0.0914	***	0.3565	0.2950		0.4511	0.3286	
Permanent injury: minor	0.0954	0.0551	*	-0.0723	0.1918		0.1081	0.1282	
Permanent injury: significant	0.2889	0.1109	***	-0.0976	0.4342		0.2332	0.1371	*
Permanent injury: grave	1.7659	0.0449	***	–			–		
Past pain days (base category: no pain days)									
Moderate	0.0037	0.0003	***	-0.0020	0.0006	***	-0.0005	0.0005	
Medium	0.0062	0.0014	***	0.0011	0.0024		0.0011	0.0011	
Intense	0.0149	0.0027	***	-0.0104	0.0029	***	-0.0073	0.0025	***
Severe	0.0102	0.0044	**	-0.0021	0.0461		0.2430	0.1334	*
Future pain days (base category: no pain days)									
Moderate	0.0022	0.0003	***	-0.0010	0.0032		0.0017	0.0020	
Medium	-0.0061	0.0018	***	0.0088	0.0154		0.0140	0.0076	*
Severe	0.0017	0.0001	***	0.0078	0.0598		0.0777	0.0344	**
Permanent damage	0.8932	0.2100	***	0.6297	0.4157		0.2052	0.2957	
Permanent damage × Age cohort 19-65 years	-0.3897	0.2150	*	–			–		
Permanent damage × Age cohort >65 years	-0.3696	0.2291	*	–			–		
Year of damage[b)]	0.0333	0.0039	***	–			–		
Observations	1133								
R^2	0.723								

Notes: Model C.1 includes interaction terms of each explanatory variable with the OLG Linz dummy. *Model C.2* reports these interactions on a one by one basis. [a)] No observations for the interaction of this variable with the OLG Linz dummy. [b)] Variable not interacted with OLG Linz dummy. Robust standard errors throughout. ***, **, * indicates significance at the 1, 5 and 10 percent level.

Table A1: Degrees of severity according to NAIC

Category	Variable name	Description
1	Emotional injury only	Emotional only Fright, no physical damage
2	Temporary injury: insignificant	Temporary Lacerations, contusions, minor scars, rash. No delay. Insignificant
3	Temporary injury: minor	Temporary minor Infections, misset fracture, fall in hospital. Recovery delayed
4	Temporary injury: major	Temporary major Burns, surgical material left, drug side-effect, brain damage. Recovery delayed.
5	Permanent injury: minor	Permanent minor Loss of fingers, loss or damage to organs. Include non-disabling injuries.
6	Permanent injury: significant	Permanent significant Deafness, loss of limb, loss of eye, loss of one kidney or lung.
7	Permanent injury: major	Permanent major Paraplegia, blindness, loss of two limbs, brain damage.
8	Permanent injury: grave	Permanent Grave Quadriplegia, severe brain damage, lifelong care or fatal prognosis.
9	Death	Death

Table A2: Correlations between main variables

Variable and interactions thereof		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
Sex (Female is 1)	(1)	1.00																					
Age cohort 19-65 years	(2)	-0.04	1.00																				
Age cohort > 65 years	(3)	0.02	-0.67	1.00																			
Austrian citizenship	(4)	-0.06	-0.10	0.08	1.00																		
More injuries	(5)	-0.06	-0.01	0.00	0.07	1.00																	
Emotional injury only	(6)	0.02	-0.06	0.02	0.02	0.03	1.00																
Temporary injury: minor	(7)	-0.03	-0.04	0.09	-0.01	0.09	-0.08	1.00															
Temporary injury: major	(8)	0.02	0.00	-0.06	0.01	0.06	-0.01	-0.22	1.00														
Permanent injury: minor	(9)	0.06	0.09	-0.07	-0.01	-0.30	-0.02	-0.43	-0.06	1.00													
Permanent injury: significant	(10)	-0.06	-0.01	0.00	0.03	0.01	-0.01	-0.16	-0.02	-0.05	1.00												
Permanent injury: grave	(11)	0.03	0.02	-0.01	0.01	0.01	0.00	-0.04	-0.01	-0.01	0.00	1.00											
Past pain days: moderate	(12)	-0.04	0.01	0.04	0.07	0.14	-0.03	0.14	-0.03	-0.07	0.18	-0.02	1.00										
Past pain days: medium	(13)	-0.02	0.01	0.04	0.03	0.16	0.00	0.11	0.00	-0.05	0.13	-0.02	0.56	1.00									
Past pain days: intense	(14)	-0.02	0.01	0.00	-0.01	0.16	-0.03	0.13	0.02	-0.06	0.07	-0.02	0.42	0.61	1.00								
Past pain days: severe	(15)	0.01	-0.02	0.01	0.05	0.06	-0.01	0.04	0.00	-0.01	0.00	0.00	0.21	0.22	0.25	1.00							
Future pain days: moderate	(16)	0.02	0.02	0.01	0.02	0.03	0.00	0.00	-0.02	-0.02	0.00	0.00	0.06	0.11	0.05	0.04	1.00						
Future pain days: medium	(17)	0.01	0.02	-0.02	0.02	0.03	-0.01	0.03	0.02	-0.03	0.01	0.00	0.13	0.16	0.23	0.55	0.19	1.00					
Future pain days: severe	(18)	-0.03	-0.06	0.08	0.01	0.01	0.00	0.02	0.00	-0.01	0.00	0.00	-0.03	-0.02	-0.02	0.00	0.00	0.00	1.00				
Permanent damage	(19)	0.04	-0.04	0.07	-0.04	0.00	0.02	0.01	-0.01	0.01	0.05	-0.01	0.02	0.03	-0.02	-0.01	0.10	0.01	-0.01	1.00			
Perm. damage × Age cohort 19-65 years	(20)	0.03	0.15	-0.10	-0.08	0.01	-0.02	0.01	-0.05	0.02	0.02	-0.01	0.03	0.03	-0.01	-0.02	0.08	-0.01	-0.01	0.84	1.00		
Perm. damage × Age cohort >65 years	(21)	0.01	-0.25	0.37	0.05	-0.03	0.10	0.07	-0.02	-0.05	-0.02	0.00	-0.01	0.01	-0.01	0.03	0.05	-0.01	0.00	0.40	-0.04	1.00	
Year of damage	(22)	-0.02	-0.02	0.01	-0.02	0.08	-0.01	0.01	0.08	-0.06	0.00	0.04	0.06	0.03	0.02	-0.02	-0.02	0.00	0.03	-0.03	-0.04	0.00	1.00
LS × (1)	(23)	0.20	0.00	0.01	0.05	0.04	-0.01	-0.04	0.03	0.11	-0.02	-0.01	0.05	0.10	0.07	-0.02	0.00	0.00	0.00	-0.04	-0.05	0.02	0.06
LS × (2)	(24)	-0.04	0.14	-0.09	0.05	0.06	-0.02	-0.06	0.04	0.05	0.02	-0.01	0.11	0.08	0.13	-0.03	-0.01	0.01	-0.01	-0.08	-0.07	-0.03	0.11
LS × (3)	(25)	-0.01	-0.19	0.28	0.01	0.01	-0.01	0.01	-0.02	-0.03	0.06	0.00	0.05	0.10	0.02	-0.01	0.01	0.02	0.00	0.03	-0.03	0.13	0.09
LS × (4)	(26)	-0.04	-0.01	0.01	0.11	0.07	-0.02	-0.07	0.02	0.03	0.06	-0.01	0.12	0.11	0.07	-0.03	-0.01	0.02	-0.01	-0.06	-0.08	0.01	0.14
LS × (5)	(27)	-0.04	0.00	0.01	0.06	0.11	-0.02	-0.05	0.02	0.01	0.06	-0.01	0.13	0.12	0.15	-0.03	-0.01	0.02	-0.01	-0.07	-0.08	-0.01	0.16
LS × (7)	(28)	-0.04	-0.01	0.03	0.02	0.06	-0.01	0.17	-0.04	-0.07	-0.03	-0.01	0.09	0.09	0.16	-0.03	0.00	0.01	0.00	-0.04	-0.06	0.04	0.09
LS × (8)	(29)	0.01	0.03	-0.02	0.02	0.02	0.00	-0.07	0.33	-0.02	-0.01	0.00	0.04	0.04	0.04	0.00	-0.01	0.00	0.00	-0.02	-0.02	-0.01	0.06
LS × (9)	(30)	0.09	0.05	-0.04	0.04	-0.01	-0.01	-0.13	-0.02	0.29	-0.01	0.00	0.00	0.01	0.00	-0.01	-0.01	-0.01	0.00	-0.03	-0.03	-0.01	0.01
LS × (10)	(31)	-0.05	-0.04	0.03	0.02	0.02	0.00	-0.07	-0.01	-0.02	0.44	0.00	0.19	0.15	0.10	-0.01	0.02	0.03	0.00	0.03	-0.02	-0.01	0.05
LS × (12)	(32)	-0.03	0.01	0.01	0.05	0.05	-0.01	-0.03	0.02	-0.01	0.16	-0.01	0.45	0.25	0.20	-0.02	-0.01	0.00	-0.01	-0.05	-0.05	-0.01	0.09
LS × (13)	(33)	-0.01	-0.02	0.04	0.04	0.06	-0.01	-0.02	0.02	-0.01	0.15	-0.01	0.28	0.40	0.34	-0.02	-0.01	0.01	-0.01	-0.04	-0.05	-0.01	0.08
LS × (14)	(34)	-0.02	0.01	-0.01	-0.04	0.04	-0.01	0.02	0.01	-0.01	0.07	0.00	0.14	0.22	0.68	-0.01	-0.01	0.00	0.00	-0.03	-0.03	-0.01	0.05
LS × (15)	(35)	0.01	-0.03	-0.02	0.02	0.02	0.00	-0.03	0.06	-0.02	-0.01	0.00	0.04	0.05	0.06	0.04	-0.01	0.00	0.00	-0.02	-0.01	-0.01	0.03
LS × (16)	(36)	0.00	-0.01	0.03	0.03	0.02	0.00	0.02	-0.01	-0.01	0.09	0.00	0.01	0.02	0.01	-0.01	0.12	0.06	0.00	0.00	-0.02	0.02	0.06
LS × (17)	(37)	-0.03	0.00	0.03	0.02	0.02	0.00	-0.01	-0.01	-0.02	0.10	0.00	0.00	0.03	0.00	-0.01	0.05	0.15	0.00	-0.02	-0.02	0.00	0.04
LS × (18)	(38)	0.00	0.03	-0.02	0.02	0.02	0.00	0.03	-0.01	-0.02	-0.01	0.00	-0.02	0.00	-0.01	-0.01	0.04	0.11	0.01	-0.02	-0.01	-0.01	0.03
LS × (19)	(39)	-0.01	-0.10	0.09	0.02	-0.03	0.00	0.01	-0.01	-0.02	0.12	0.00	-0.03	0.01	0.00	-0.01	0.01	0.00	0.00	0.16	-0.01	0.26	0.05

Table A3: Correlations between interaction terms

		(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)
LS × (1)	(23)	1.00																
LS × (2)	(24)	0.51	1.00															
LS × (3)	(25)	0.20	-0.03	1.00														
LS × (4)	(26)	0.57	0.84	0.31	1.00													
LS × (5)	(27)	0.56	0.85	0.31	0.94	1.00												
LS × (7)	(28)	0.37	0.59	0.30	0.64	0.68	1.00											
LS × (8)	(29)	0.17	0.23	-0.01	0.21	0.21	-0.01	1.00										
LS × (9)	(30)	0.50	0.40	-0.01	0.36	0.30	-0.02	-0.01	1.00									
LS × (10)	(31)	-0.01	0.11	0.15	0.21	0.21	-0.01	0.00	-0.01	1.00								
LS × (12)	(32)	0.32	0.54	0.21	0.59	0.59	0.43	0.15	0.13	0.40	1.00							
LS × (13)	(33)	0.41	0.50	0.32	0.60	0.61	0.45	0.16	0.15	0.37	0.71	1.00						
LS × (14)	(34)	0.21	0.35	0.09	0.28	0.39	0.35	0.09	0.07	0.17	0.38	0.57	1.00					
LS × (15)	(35)	0.14	0.09	0.00	0.17	0.17	0.05	0.20	-0.01	0.00	0.14	0.16	0.12	1.00				
LS × (16)	(36)	0.16	0.19	0.18	0.24	0.24	0.25	0.00	0.04	0.22	0.11	0.13	0.06	0.00	1.00			
LS × (17)	(37)	0.07	0.19	0.15	0.23	0.22	0.16	0.00	-0.01	0.23	0.08	0.15	0.04	0.00	0.44	1.00		
LS × (18)	(38)	0.12	0.20	-0.01	0.18	0.18	0.21	0.00	-0.01	0.00	0.03	0.07	0.02	0.00	0.37	0.73	1.00	
LS × (19)	(39)	0.09	-0.01	0.35	0.18	0.12	0.17	0.00	-0.01	0.29	0.02	0.08	0.03	0.00	0.12	0.02	0.00	1.00

Notes: LS ... Dummy variable for court applying lump sum evaluation scheme (i.e., OLG Linz).

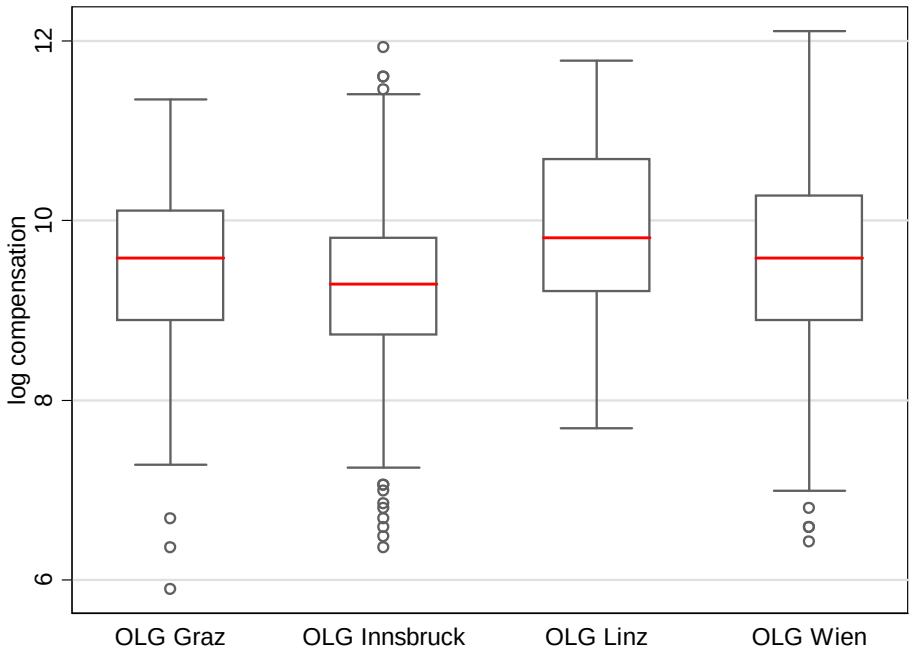

Figure 1: Damages for pain and suffering over Austrian courts