

Litigation Effects of Scheduling Awards for Personal Injury. Who should Decide What I Get Paid?

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• ***Introduction***

The Spanish liability system grants the victim a right against the injurer to claim damages for the total loss suffered as a result of an accident. Subsequently parties make decisions at different stages affecting the way their legal conflict shall be solved, either:

- A. Asking the Courts to enforce their rights, which may eventually lead to a trial and its subsequent verdict.
- B. Bargaining a settlement prior to the Court's decision.

Over the past few years we have witnessed significant legal reforms in the way they do so, as reactions to criticisms regarding the system's poor performance in the consecution of its goals. The most relevant of those changes is without any doubts the binding valuation system that compels the judiciary to a legally reckoned set of tables when estimating damage awards.

How does that change affect subsequent litigation within the tort system?

This paper tries to address the question from an objectively based analytical approach, using the economic analysis of litigation¹, as briefly presented in Section I. Then the multiple results of the analysis are shown in section II, and Section III summarises concluding remarks and points out further extensions.

The comparison brought here is one between two alternative legal frameworks for post-accident litigation, before and after that new piece of legislation came into force, namely,

- A. one with an open valuation system, *versus*
- B. another characterised by a tabular approach, in which damage awards must be extracted by the judge out a legal binding matrix.

That is, from a previous situation in which the judge is left unbounded and absolutely free to set the level of damages to be awarded, *versus* the new scenario of 1995. Since then, a legal table leaves the judge the only task of deciding about the facts –actual damage–, but not about the quantity of the payment set for both economic and non-pecuniary compensation. A recent judicial review process before the Constitutional Court has spoiled the chance of removing sound errors from it as it left 1995 legal reform almost unaffected².

This paper builds on standard litigation models seeking to identify and forecast the effects –both in terms of the costs and incentives– set by this legal reform on the way cases are litigated. This task not being fulfilled prior to its promulgation led to current legal problems and social inefficiencies brought by the new system, including the open rejection of the Supreme Court and the aforementioned judicial review. Instead, proponents of the legal reform just claimed it would immediately reduce the outraging levels of Court litigation, but did so without any analytical basis. The elementary model sketched here points, in some cases, in directions contrary to that intuition.

• **Section I: Dispute resolution and parties' predictions**

A standard decisional model of litigation can be used to identify the effects of legal reform on dispute resolution. Such analytical tool offers a mean to describe the relationship between the way litigants choose to solve their conflict, that is their the demand for litigation –settlement *versus* trial–, as a function of a finite set of variables on which it depends:

$$D = f(Q_e, Q_o, P, C, A, N)$$

Where

D= Demand for litigation

Q_o = Payment set for compensation, as estimated *ex ante* by the defendant

Q_e = Payment set for compensation, similarly predicted by the plaintiff

Q= Payment actually set in trial, thus unknown for the parties until then

P= Objective probability of a plaintiff verdict, used when parties' estimates on it coincide, that is, whenever $P_o = P_e$

C= Litigation cost in a trial, also used when parties' litigation costs coincide, that is, $C_o = C_e$

A= Costs of negotiating and reaching a settlement out of Court, also assumed to be symmetrical: $A_o = A_e$

N= number of claims filed.

Estimates as random variables. It is obvious to state that the actual value of the payment the judge would set for compensation –Q– remains unobservable for both litigants throughout litigation: there is no way they can possibly know in advance what the judge would decide the injurer must pay, should the case finally end up in trial. Such value depends not only on the merits of the case, but also on the judge's own personal bias, the legal framework, availability of appeal instances, etcetera. This uncertainty makes necessary for the parties to base their decisions on estimates, though it's actually their lawyers knowledge and experience in previous cases that play a starring role at doing so. The Spanish legal system's mandatory third party insurance coverage for drivers, jointly with the specialisation achieved through frequent agreements between many lawyers and insurance companies turn the former into real repeated players of this «game». Moreover those lawyers' incentives for litigating don't always go along with those of their clients.

There are two major ingredients underlying the formation of these estimates:

- 1) Available information on similar cases –precedents–. Which is highly dependent on the level of «noise» generated by variability in awards.
- 2) The attitude of the parties themselves, which as far as we are concerned in this paper shall be comprised to them being either optimistic or pessimistic.

This bias in parties' predictions has usually been considered to regard their estimates on the probability of prevailing in trial, but as will soon be shown we've taken optimism and pessimism into account as they affect not probabilities – P_o and P_e – but estimates on damages awarded by the Courts, that is Q_o and Q_e .

The fact that the stakes in the case –Q– remain unobserved throughout the entire litigation process blocks the way for its use during that time, as a certain value that can be associated to a real number. This compels the parties to build and then use those aforementioned estimates or forecasts as proxies to the potential value of Q. Those predictions of the parties perfectly match the concept of a random variable. This allows us to consider the whole range of probable values as a probability distribution, so that:

Q_e is the plaintiff's estimate of the judicial outcome,

Q_o is the defendant's.

As both try to come as close as possible to the –unknown– future value actually set by the Court, Q, with the limited information available to each, they incur in a certain degree of error causing those estimates to become stochastic. That is,

$$Q_e = Q + \varepsilon_e \text{ y } Q_o = Q + \varepsilon_o. \text{ Where } \varepsilon_e \sim N(\mu_e, \delta_e) \text{ y } \varepsilon_o \sim N(\mu_o, \delta_o)$$

Two simple assumptions are made about those subjective estimates in order to make them easier to handle. Neither one seems to distort reality significantly, while they very much do make analysis a lot straightforward. These are:

- 1) Parties' predictions are treated as normally distributed³ random variables that may, though don't necessarily have to share mean and variance values. The Central Limit Theorem applies easily due to the large amount of conflicts making the sample up.

$$Q_e \sim N(\mu_e, \sigma_e^2)$$

$$Q_o \sim N(\mu_o, \sigma_o^2)$$

2) Both predictions are probabilistically independent from each other⁴. This assumption is not strictly necessary, but does make the handling of the difference of the two distributions a lot easier, without pulling the model away from the reality it represents. After making this second assumption, the difference between both parties' estimates depends only on their mean and variance, not on the covariance –the importance of that difference will soon be brought up–:

$$\text{Cov} [Q_e, Q_o] = 0$$

Settlement and trial. The rationale behind the model is in fact a rather straightforward and intuitive idea: there will be a settlement out of Court whenever the plaintiff's minimum request does not exceed the maximum amount the defendant is willing to offer, both depending on the expected value given by each one to the final verdict, net of litigation costs.

For the plaintiff to be interested in a settlement offer, this has to match, at least, the amount he expects to win in trial, discounting the probability of that happening and net of litigation costs

$$\text{plaintiff's minimum willingness to settle threshold} = P \cdot Q_e - C + A$$

on the other side, the defendant will be willing to offer an amount up to what he thinks he can lose in trial, times the probability of that happening, plus the costs he would incur while trying to avoid that undesired outcome:

$$\text{defendant's maximum willingness to pay threshold} = P \cdot Q_o + C - A$$

Therefore, they can be expected to reach a settlement whenever the case meets the following condition:

$$P \cdot Q_e - C + A < P \cdot Q_o + C - A$$

This condition for settlement can be rewritten in terms of the predicted award, which represent the core of our analysis. Then there will be settlement whenever the probability –P– and the costs –C, A– relate to the predictions in the following way:

$$Q_e - Q_o < 2 * (C - A) / P$$

This expression of that simple idea highlights the great importance of the resulting function of subtracting both parties' estimates -hereinafter referred to as the «discrepancy»- to our analysis. Now both plaintiff's and defendant's decision about whether to file a suit, at first and whether to bring it to trial or settle an agreement out of Court instead, depend basically on the payment those parties predict they might face, on the probability of it being imposed and on the effort and resources they devote to achieve a favourable outcome. This is very helpful since new legislation basically affects the distribution of that discrepancy, and therefore all attention shall be directed to it by considering C, A and P to be constants in any certain case.

Once stated that estimates behave stochastically, it must be noted that the error in which parties incur when estimating the awards depends on two main features:

A) The foreseeability of the compensation the judge is likely to set. That is, the availability and quality of information regarding previous judgements in similar cases.

B) The presence of pessimism or optimism in the formation of the predictions.

Let us now go back to the process of developing those estimates to then go on to see how it is affected by the aforementioned legal reform.

• ***Section II: Incentives for litigation before and after tort reform being passed⁵***

How do schedules for personal injury awards affect the variables upon which we've made the resolution of legal conflicts dependent?

Changes in Q . The most relevant effect is the one over the damage awards, more precisely, over the random variables by which parties try to approach to it, Q_e and Q_o . In order to focus on the changes caused by tort reform in the way Courts award damages, other variables of the function for the demand of litigation are assumed to be certain and known by the parties. The presence of optimism has traditionally been modelled as affecting P , the variable representing the parties' subjective estimate on probability of a plaintiff verdict. More precisely, optimistic plaintiffs tend to overestimate their chances of prevailing in trial; while optimistic defendants understate the probability of suffering a plaintiff verdict. This effect has largely been addressed by the literature.

Since this paper seeks to determine the effects of scheduling awards for personal injury, I've concentrated on the random variables Q_e and Q_o , which are usually considered deterministic in traditional models. That implies other relevant parameters as winning probabilities, litigation or settlement costs being left aside so damage awards monopolise all the attention.

In order to make accurate comparisons among different quantities awarded under the two legal scenarios, before and after tort reform, we must assume to be comparing the same type of accident horizontally, that is to say that the victim's relevant features remain unchanged so we can concentrate on changes exclusively due to tort reform.

1. The liability regime prior to reform

a. Error 1: Optimism (distancing of the means of the estimates)

Judicial discretion offers an excellent breeding ground for the most typical error litigants tend to incur in the estimation of the stakes of the case. As a matter of fact it's lawyers who are broadly responsible for those estimations and have strong incentives to generate an optimistic bias; more so in Spain where their fees usually depend on the stakes of the case, but not on its outcome, leading to serious moral hazard problems.

Therefore optimistic plaintiffs tend to incur on systematic overestimation of the value of the future award; whereas an optimistic defendant will understate the expected trial

outcome he would have to face, should that probability come to fact.

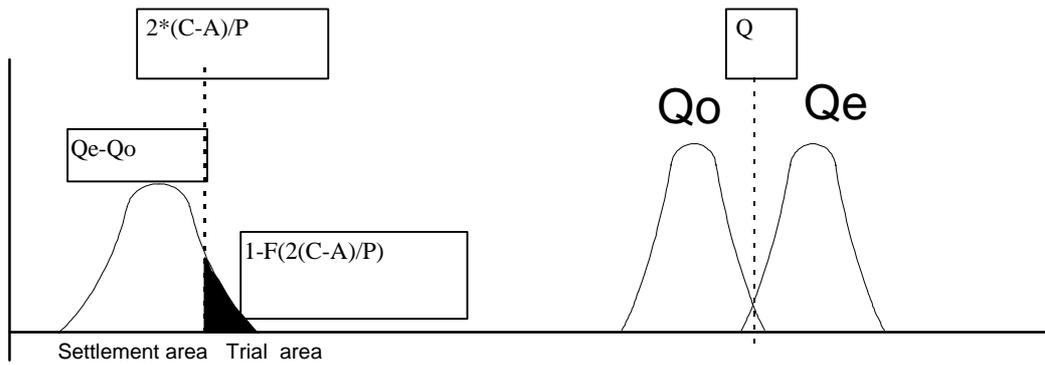
The consequence of these biases in the estimations is quite straightforward: it generates a separation of their distributions as both parties stand harder on their pre-trial negotiation positions, thus making the chances of reaching an out of Court agreement become slim. Obviously, pessimism plays the opposite role, bringing estimates together. In the model presented in this paper, optimism and pessimism have to do with the separation between parties' estimates as it affects the mean value of their distributions.

Determining whether optimism or pessimism in trial outcome estimations is the actual trend for a certain legal environment points out crucial. The first brings the parties' estimates apart from each other increasing the positive difference between μ_e and μ_o , which correspondingly does shift the discrepancy to the right, as it increases its mean value ($\mu_e - \mu_o$). Contrarily to that, pessimism reduces μ_e while it increases μ_o and this in turn increases the negative difference of the discrepancy, so it gets shifted towards the left. What the following Graphics actually represent is «symmetric optimism», in the sense that both predictions are equidistant from the final value taken by the award $-Q$ —though always with the plaintiff's to the right and the defendant's to the left of the real Q . That equals to assume that both litigants are quantitatively as optimistic one each other. Undoubtedly, the more optimistic litigants become, the bigger the gap between them, and thus less likely shall they reach an agreement. The contrary assumption of pessimism would indeed add more ambiguity the model.

b. Error 2: Uncertainty about the expected award (high variance)

Informational problems surrounding the expected judgement get directly passed on to parties' estimates, thus striking the accuracy of their predictions. Such errors show up through the variances of those estimates, σ_e^2 σ_o^2 . In absence of any objective guidelines to value damages arisen from serious injuries, the judiciary tend to produce erratic decisions. This is claimed to generate extreme differences between payments awarded for similar accidents, not only within the same legal system, but even within the same jurisdiction in short periods of time. This situation affects the distribution of Q —awards actually set for similar accidents— undermining its consistency by means of unpredictable variability, thus leading to extremely disperse shapes for the distribution of parties' previsions $-Q_e$ and Q_o —, in short, high variances. Surprisingly, a first glance set of data show similar variation coefficients for spanish awards prior to reform and those set in the U.S. for pain & suffering alone⁶.

Graphic 1



Graphic 1 shows both errors. The latter –error 2– consists on the unforeseeability of estimates with skewed shapes on potential award in Q_e and Q_o density functions. This in turn makes most of the probability mass lie well apart from the mean values of both estimates. While the former error 1 –optimism– brings estimates apart from the central but unobservable value of the judgement actually passed for the case, Q , thus shifting the discrepancy to the right.

It is important for the clarity of our analysis to draw a clear distinction between these two effects –optimism and unforeseeability– over the mean and the variance of the distributions of the estimates. The difference between the plaintiff’s estimate – Q_e – and the defendant’s – Q_o –, $Q_e - Q_o$ is at the core of that analysis, and Graphic 1 thus sketches its appearance.

Since those estimates adopt the form of normally distributed probability functions, we know that the distribution of the difference between them, $Q_e - Q_o$, will also be another random variable with a normal distribution whose mean value will be the difference between the estimate’s means, and whose variance is the sum of the estimate’s variances. The reason why those estimates were assumed to be independent one each other was to avoid having to deal with the covariance⁷ between them, which unnecessarily hinders the analysis.

$$Q_e - Q_o \sim N[(\mu_e - \mu_o), (\sigma_e^2 + \sigma_o^2)]$$

In that distribution, the probability mass associated with the chances of that case ending up in a trial is represented by the black area, whereas the non-shaded area represents the probability of that case being settled. Put in an algebraic expression, and taking $Q_e - Q_o = x$, the probability mass of settling the case is equal to

$$F_x(2(c-a)/p) = \int_{-\infty}^{2(c-a)/p} \frac{1}{\sqrt{2\pi\sigma^2}} e^{-\frac{(x-\mu)^2}{2\sigma^2}} dx$$

That is, the area of the density function to the right of the critical point, $2(c-a)/p$.

Social costs of variability. The whole situation described above matches the automobile

accident liability regime in Spain prior to 1995, and entails several social costs, namely:

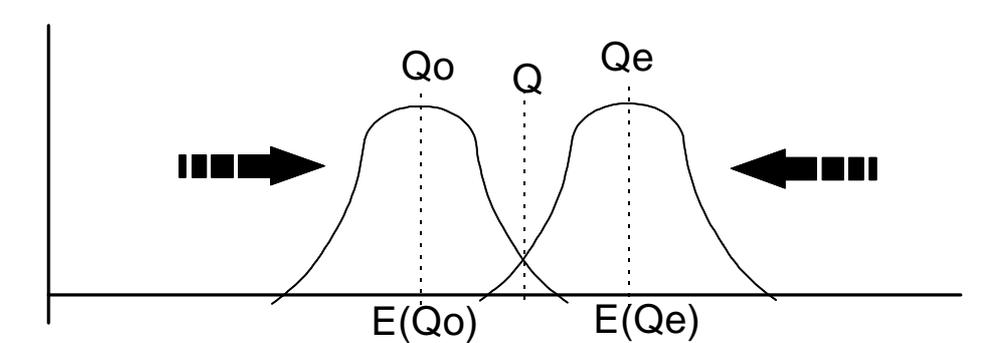
1. The use of Court verdicts for the resolution of conflicts that could have been more efficiently closed by out of Court settlements, and *viceversa*, are main relevant sources of the malfunction of the dispute resolution system as well as immediate causes of both private and social costs⁸.
2. Among those, an excessively high litigation rate –or a suboptimal number of settlements– generates harmful side effects as delay and jamming in the Courts. Then accidents take up Courts’ time and resources for the resolution of disputes for which the most efficient solution is a different one, thus detracting them from cases that really deserve access to justice.
3. Litigation costs being significantly larger than those incurred when the dispute is settled also contributes to worsen the aforementioned costs⁹, more so in Spain after the public component of litigation costs are mostly suffered by contributors since 1986.
4. The insurance market plays a central role here. Although there is a clear incentive for insurers to make the problem appear bigger that it is, the unforeseeability of awards puts them in dire straits when they have to endow resources for the awards they’ll have to pay for in the future. This is allegedly the case of the spanish automobile insurance industry during the eighties: From 183 companies in 1979 there where only 118 left in the sector by 1993, out of which only 92 made some profit. The results in 1990 where of 73.000 million pesetas lost by the entire sector, decreasing to 48.000 million pesetas for 1992. But those figures seem suspicious alone, with no further analysis since they very well could be the result of a selection process. The most inefficient ones just could be forced to leave a market as they fail to adjust premiums charged to their risks against which they offered coverage. This effect has recently been addressed and empirically tested by BORN & VISCUSI¹⁰.

2. Effects of the legal reform capping and scheduling damages

a. Effect 1: Reduction of optimism (regrouping of the means)

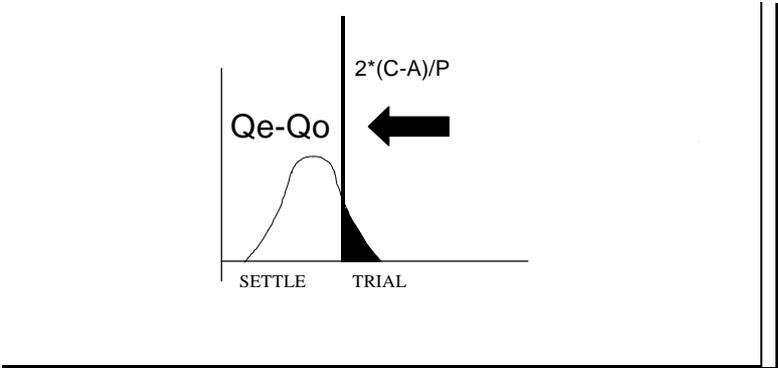
Introducing a legal schedule that objectively reckons the award set for accident compensation reduces the grounds left for optimistic bias in the parties’ predictions about the potential outcome of a trial. The immediate effect to be expected is the closing of the gap between plaintiff’s and defendant’s estimates about that outcome which implies both becoming closer to each other towards the certain value of Q.

GRAPHIC EF1



This convergence of the distributions is shown in GRAPHIC EF1. The table has caused a centripetal attraction force around point Q, thus causing the discrepancy –Qe-Qo– to shift to the left. This happens because the discrepancy’s mean value is equal to the

difference between those of the litigants' estimates and with that difference being reduced as a result of legal reform, the distribution is moved towards the left, thus rendering a greater probability mass to the left side –settlement– of the critical point, which remains in the same position. In short, the first partial effect in litigation one can expect from the promulgation of a schedule for damage awards points in the direction of a higher settlement rate.

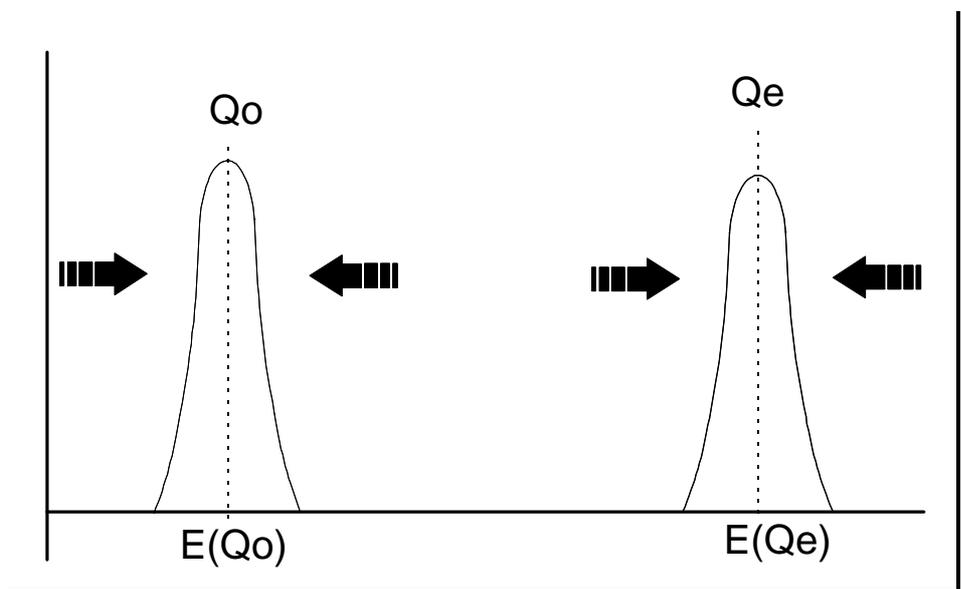


The contrary. It goes without saying that should pessimism be the case in litigants' estimates, then a schedule that corrects it would actually have the opposite effect, causing trial rates to rise as parties would tend to play harder in pre trial negotiations, thus narrowing the interval in which an agreement needs to be reached. This is how ambiguity shows up in the model starting from this first EFFECT 1.

b. EFFECT 2: More homogeneous awards (reduction of the variances)

It intuitively seems quite straightforward that scheduling awards will significantly reduce the dispersion of the real awards set by the Courts – Q – as well as the parties' estimates on them – Q_e and Q_o –. Accordingly, this will necessarily lead to a reduction in the variance of those estimates, as they must become centred closer to their mean values. That is exactly what GRAPHIC EF2 shows with more stylised distributions for Q_e and Q_o .

GRAPHIC EF2



As previously explained, if the discrepancy's distribution is

$$Q_e - Q_o \sim N[(\mu_e - \mu_o), (\sigma_e^2 + \sigma_o^2)]$$

these parallel effects in the parties' individual estimates get in turn passed on to their discrepancy, which was previously defined as the difference between those estimates. Then ¿how will that change affect dispute resolution, that is, the settlement/trial rates?

As for EFFECT 1, the probability of settlement was made dependent on probability of winning and both litigation and settlement costs. We also know how that probability is distributed –normally–, so we can thus put those variables together and compare how they interact *ceteris paribus* before and after the liability reform considered here. This in fact involves applying the litigation model presented in Section I to the changes in its variables described in Section II.

However, the remaining variables yield the highest probability of settlement when litigation is relatively expensive face to face to settlement, and the difference between those two costs is significant compared to the stakes of the case, that is, when

$$\text{Max}\left\{\frac{(C_e + C_o) - (A_e + A_o)}{Q}\right\} \Rightarrow \text{Min D}$$

Section I showed that for a case to be settled, the parties' predictions about its final outcome needed to relate to the costs of litigation and the probability of rendering a plaintiff verdict in the way shown by the following identity,

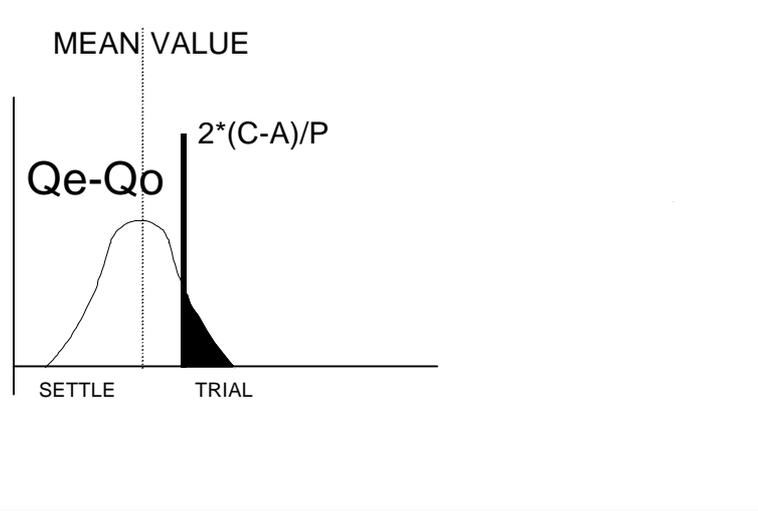
$$Q_e - Q_o < 2 * (C - A) / P$$

This means that the condition necessary for an out-of-Court agreement to take place is that the parties' discrepancy about the final award does not exceed the total litigation costs net of settlement costs and divided by the probability of a plaintiff verdict. Hereinafter that value $2*(C-A)/P$ shall be referred to as the «critical point», represented by a certain value lying on the horizontal axe of the discrepancy's density function, as a benchmark that will split that density function in two, resulting two cumulative distribution functions. Those two areas left at each side of the critical point each represent the probabilities of settlement and trial.

Ambivalence. Substituting judicial discretion for a tabular approach to damages should result in an increase on the quality of predictions about trial outcome and corresponding improvement of estimations. That particularly affects our analysis reducing variances in both estimates' density functions and therefore the discrepancy becomes more accurate as well. Changes in the subsequent probabilities of trial and settlement are to be expected after estimates become more stylised, as probability mass gathers up closer to the mean. But a problem arises when one tries to evaluate the effect of this change on the way disputes are solved: It is not a one-way effect but a twofold one, depending on which side of the discrepancy's density function is cut by the critical point. This quandary can only be overcome by distinguishing two alternative scenarios. Otherwise, tort reform consisting in a personal injury schedule may either result in an increase of settlement rates or operate in the opposite direction.

SCENARIO A: Litigation costs are large compared to those incurred for settlement and/or probability of a plaintiff verdict is low, so that the point $2(C-A)/P$ exceeds the mean value of the discrepancy –lies on its right side–, even after being shifted to the left by EFFECT 1.

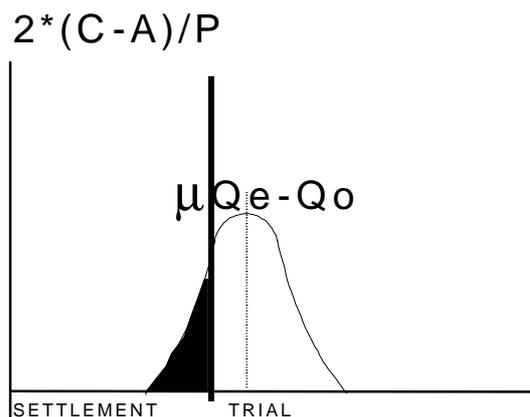
$$2*(C-A)/P \in ((\mu_e - \mu_o), \text{Max}\{Q_e - Q_o\}), \text{ graphically}$$



Then what EFFECT 2 is really doing, by stretching the distribution upwards and concentrating probability around the mean value of that distribution, is in fact switching some probability mass from the right shaded side –p. of trial– to the left non shaded tail –settlement– of the discrepancy. Thus under SCENARIO 1, EFFECT 2 decreases the probability of the case ending up in trial and being this a dycotomic model, correspondingly reduces the chances of reaching an agreement. Therefore, if all other variables remain the same, *ceteris paribus* this effect would add up in the same direction as EFFECT 1, both rendering a higher settlement rate as a results of legal reform.

SCENARIO B: When litigation costs are low and/or the chances of a plaintiff verdict are important the value of $2(C-A)/P$ is more likely to be smaller that the mean value of the discrepancy. SCENARIO B is characterised by the fact that the critical point $2(C-A)/P$ falls on the left tail of the discrepancy, even after EFFECT 1 has moved the distribution to the left. Under this assumption any reduction on the variance of the discrepancy steals probability mass from the left –settlement area– to the right side –trial– of the distribution area. GRAPHIC 3 describes this situation and substitutes GRAPHIC 2 when A,C and P and the estimates behave as follows:

$$2*(C-A)/P \in (\text{Min}\{Q_e - Q_o\}, (\mu_e - \mu_o)), \text{ graphically}$$



In the situation described as SCENARIO B, EFFECT 2 contravenes EFFECT 1 causing ambiguity to show up in the model. As the net effect of these two remain an empirical question demanding currently unavailable data, an increase in settlement rates cannot be attributed unquestionably to tort reform introducing a schedule for personal damage awards, contrary to what its proponents and the legislator held prior to its adoption.

Marginality and overall perspective. One must not forget that cases affected by this effect in reality are not all, but only those ones «in the limit». Those discrepancy distributions lying far away enough so they're not cut by the critical point are indifferent to tort reform's EFFECTS 1 and 2¹¹. Contrary to what happens in those cases, these two effects tend to be more intense the more rigid the schedule is, to the extent they narrow judge's room for generating variability. An open schedule that, say only defines a set of scenarios for the judiciary to move freely within, can be expected to affect litigation relatively less than would a narrow one. For instance, while the spanish schedule of 1995 could give the impression of a narrow one on paper, the way judges tend to implemented it in day by day tort litigation turns it into a much broader legal framework than one might initially expect. As a matter of fact, diverging interpretations dash all aims put on this reform to restore tort litigation within minimum certainty requirements. It could be said that the enforcement vector of such reform is small. Fortunately, a Constitutional Court decision in june 2000 has just recognized the binding effects of the schedule for judges.

3. *Litigation costs and risk aversion*

Not even settlement –not to mention Litigation– is for free. Putting an end to a legal dispute is at least a time demanding activity. One doesn't need to resort to one of those notorious legal cases that bring parties into an endless labyrinth of instances and appeals to understand how expensive and stressing litigation can get. A handful of popular sayings illustrate those snags including one's lawyer's fees, legal experts asked to report their opinion in Court, time devoted, anxiety, restlessness, lack of sleep. Those are known to be considerable not only when one has to walk into the Courthouse, but also in those cases settled.

Those litigation costs –C– are intuitively in a negative relationship with the demand for litigation itself: the most expensive an activity is the smaller people's willingness to

carry it out, and the most are willing to choose the alternative. The closest substitute for litigation is settlement, and so that explains why people tend to move to it as the cost of bringing their case to Court becomes a relatively more expensive alternative. That explains why C take a negative value in the plaintiff's minimum settlement petition while settlement costs –A– are positive. The plaintiff asks for an amount of money at least equal to what he expects to get out of trial, net of litigation costs he would not have to eventually incur then, plus settlement costs, thus transferred on to the defendant who makes the offer.

A personal injury schedule reduces both settlement and litigation costs, even if we assume it not to affect causation problems. Even then, the cost of valuing those damages is less in presence of a legal rule acting as a link between those damages attributed to the injurer and the amount of money the victim deserves as compensation. One must expect people to «buy» more court solutions to their problems as the «price» they pay for it decreases. For the same reason, settlement costs are lower when a schedule is used, thus providing a contrary incentive to settle. This is how again we must face conflicting effects, turning our theoretical model ambiguous once again.

Risk aversion as a way of optimism. As in general risk averse parties are those who prefer the most secure among several choices of the same expected value, when applied to defendants and plaintiffs, this attitude towards risk results in a general preference for settlement as the certain alternative face to face the more uncertain trial outcome. Therefore these can be expected to be willing to settle for some half-way compromise and not to «continue gambling» to either get or have to pay a higher amount should the case be sentenced by a third party. Thus it can be said that their positions get closer as they ease their stances if pre-trial negotiations. How shall a schedule affect that attitude?

A tort reform embodying a tabular approach to previously unpredictable damage awards will tend to undercut open-ended variability, thus removing uncertainty from the parties' estimations on the final outcome expected in trial. All things being equal, lower levels of uncertainty about the stakes of the case will reduce litigants' aversion to that unknown outcome, since it is now more easily predictable by means of the schedule and judges allegiance to its values. That means turning trials into a less fearful alternative to settlement. Litigants develop more accurate predictions and thus they become relatively less afraid of jeopardising the certain amount they could assure in a settlement in exchange for more attracting prospects should they continue.

This way a schedule would in fact be undercutting risk aversion's effect on parties and thus making them more confident or optimistic on the expected uncertain alternative.

4. To sue or not to sue

Once having sketched the effects of the new liability regime on the way disputes are solved –Q– it comes the time to tackle those over the number of legal claims actually filed, that is to say that the relevant parameter of the model shall now be N: the number of legal conflicts made explicit by the victims' decision to sue the injurer.

The analysis required to address this question is rather simpler than the one already shown in previous sections. The victim must establish a comparison between the expected value of a verdict rendered after trial and the costs –effort and resources– devoted to accomplish that favourable outcome, which can be presented in quite straightforward terms:

Accordingly to this simple scheme, the victim's decision about the legal claim will depend on the following identity. There are incentives for her to sue whenever doing so is cost justified:

$$C < P * Q_e$$

Note that as done before uncertainty has been limited as to the amount eventually set in trial; not about whether that will be the outcome, as most litigation models usually do. This in fact may be put in terms of the victims' estimate on what she could recover:

$$Q_e > C / P \Rightarrow \text{The victim decides to sue and thus become a plaintiff}$$

Since the effects of tort reform on estimates have already been defined, results here are a simplified version of what previously happened in this section.

a. Effect 1: Reduction of optimism (decrease in the estimate's mean value)

Removing optimism away from the plaintiff's behaviour means he will not over-estimate the potential award or at least that he will do so to a lesser extent. Then the distribution of his estimate will shift towards the left, closer to Q and the effect on litigation is clear. Given the point C/P remains constant after legal reform then there will result more probability mass to the left side of the distribution, which happens to be the not filing zone. Again, this result is consistent with one's first intuition: fewer claims are expected to be filed since the subjective stakes decrease for the plaintiff. Of course once the cost reduction effects of the schedule are taken into account both collide against each other.

b. Effect 2: More homogeneous awards (reduction of the estimate's variance)

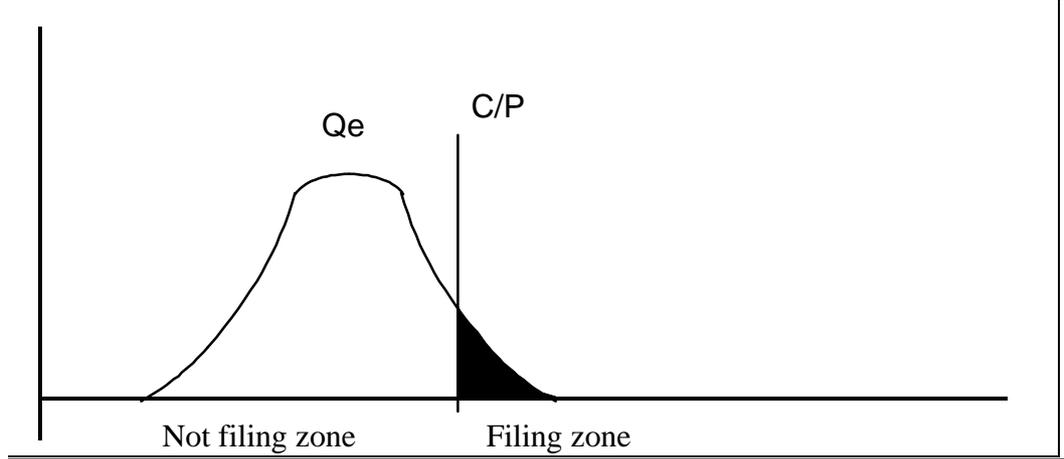
As Section II shows in detail, tables centre the random variable Q_e around its mean value so that that estimates' distribution variance becomes smaller. Again this effect over N depends on the relative values of Q_e , P and C which lead to the need of differentiating two alternative scenarios similar to those previously defined in this section:

SCENARIO C:

The costs are so high and/or the probability of a plaintiff verdict so low that C/P exceeds the mean value of Q_e , that is,

$$C/P \in (\mu_e, \text{Max}\{Q_e\}); \text{ or more clearly, } C/P > \mu_e$$

That places the critical point C/P on the right tail of the distribution so that once new legislation comes into force probability mass moves from the right to the left side of C/P . Being the former the not filing region, less claims should then reach the Courts. This effect adds up to the preceding one.

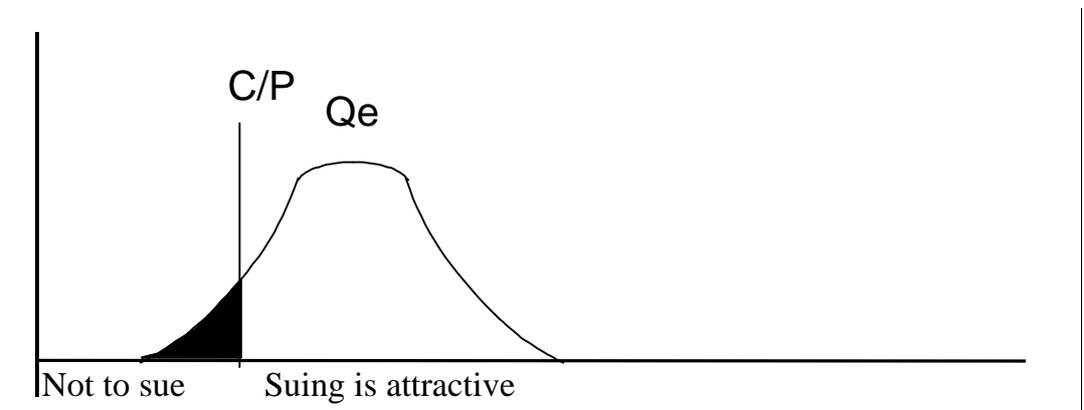


SCENARIO D

The costs are low and/or the probability of the plaintiff winning the case is high enough so that:

$$C/P < \mu e$$

This meaning the critical point falls now in the left –not filing– tail of the plaintiff’s estimate distribution, thus a reduction of its variance removes probability mass and relocates it in the contrary, which is the situation in which filing a claim makes sense for the victim. This again brings ambiguity back to the model, as EFFECT 1 acts against this EFFECT 2 in SCENARIO D.



• **Section III: Concluding remarks**

Tort reform. Two legal settings have been compared here face to face for valuing personal injury compensation within the liability system. On one hand an open valuation system where the judge is granted wide powers to evaluate the scope of compensable damages without constraint. In the opposite there is a recent tort reform which recently came into force in Spain for traffic accidents. Under this new system awards are automatically reckoned by a set of legal tables or matrices, thus leaving the judiciary with extremely slim chances to stray away from that schedule.

Two Effects. This legislation affects dispute resolution by means of causing the following two effects in litigation:

EFFECT 1: Removing optimism away from the litigants' predictions about compensation potentially awarded in trial make these more accurate in the sense that both parties' estimates become closer to reality in average.

EFFECT 2: Reducing the random error litigants make when forecasting the amount they expect to be awarded by the Court. This leads to a decrease in the variances of their estimates.

Where do those effects arise? The aforementioned effects have their bearing on two of the variables that explain whether disputes are put an end by settlement or trial:

Q = Payment finally awarded for compensation by the Court

Tort reform's EFFECT 1 over Q is straightforward: more cases are solved by settlements instead of being brought to trial. But even that effect's sign depends on the assumption one makes about how parties develop their estimates. It only holds in case they incur in an optimistic bias; should pessimism be the case, a schedule would in fact come to reduce settlement rates.

EFFECT 2 over Q is twofold but it can be identified using litigation costs and probability of a plaintiff verdict as a benchmark to define two alternative situations:

- A) If the difference between the plaintiff and the defendant estimate does not exceed in average the critical point $2(C-A)/P$, then this EFFECT 2 consists on an increase of the settlement rate, adding up to the preceding ones. This is SCENARIO A:

$$\mu_e - \mu_o < 2(C-A)/P$$

- B) If the situation happens to be the contrary -SCENARIO B-, that is parties disagree in mean values more than the point $2(C-A)/P$

$$2*(C-A)/P \in (\mu_e - \mu_o, \text{Max}\{Q_e - Q_o\})$$

then the new regime increases the demand for trials and causes less cases to be settled out of Court. Then EFFECT 2 over Q is against some others already studied so ambiguity appears in the model.

N = Number of suits being filed as a result of the victim's -plaintiff- decision to sue the injurer -defendant.

EFFECT 1 over N mimics what happened with Q: it decreases the number of claims filed, which reduces the demand for litigation, but only once given that parties behave optimistically.

EFFECT 2 over N is also twofold and depends on the relative values of C, P and the plaintiff's Q_e in similar terms:

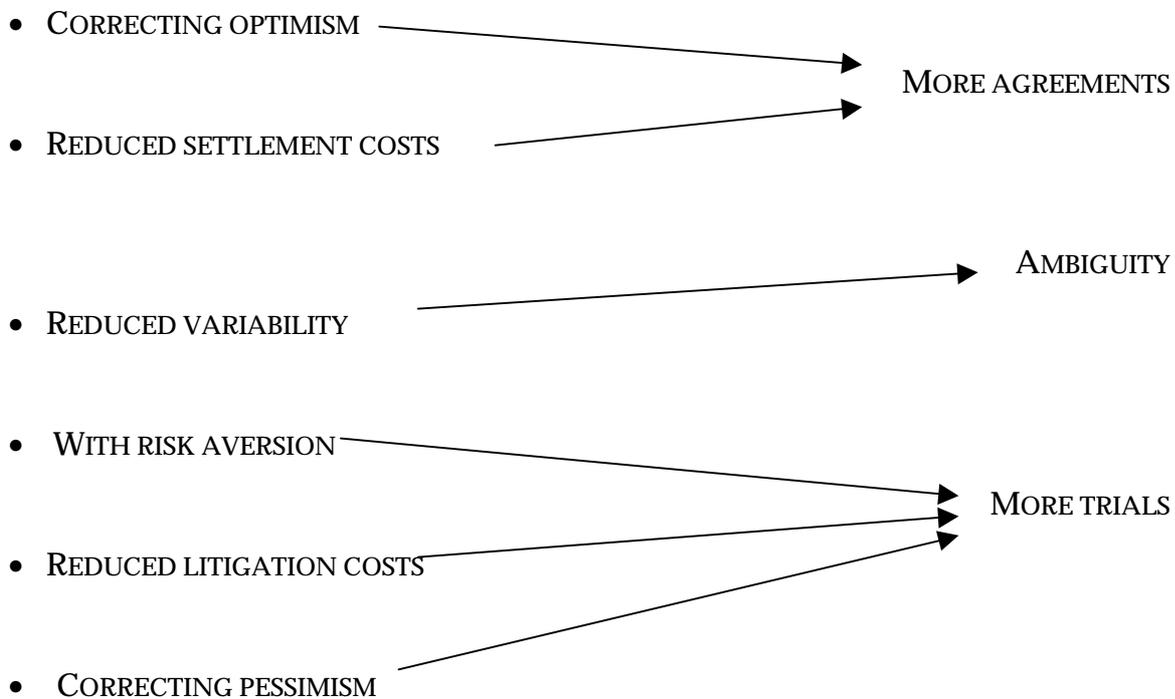
- C) If $C/P > \mu_e$ there will be less suits filed after damages are subject to legal provisions.

- D) If $C/P < \mu e$ then the mitigation of the error caused by the legal table leads to an increase in the amount of cases where filing a legal claim becomes cost-justified to the victim. This brings ambiguity around again.

• **Final conclusion**

The analysis carried out in this paper points out that the so presented beneficial effect of the schedules on litigation is not as straightforward as its proponents, nor a first intuition show. Since forcing more settlements and less trials was meant to be one of the three major healing powers of this legal change in the legislator's agenda, the ambiguity shown by the model encourages a reconsideration of its social desirability and thus more attention should be put on its side effects.

SCHEDULE EFFECTS ON LITIGATION



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¹ There is a solid analytical body based on the early model developed by William LANDES in 1971, Richard POSNER in 1973, J. GOULD in 1973 or Steven SHAVELL in 1982; more recently, COOTER & RUBINFELD in 1989. A Spanish survey was accomplished by PASTOR in 1993. *Vid.* COOTER, Robert & RUBINFELD, Daniel: "Economic Analysis of Legal Disputes and their Resolution", *Journal of Economic Literature*, núm. 27, sept., 1989; GOULD, J.: "The Economics of Legal Conflicts", *The Journal of Legal Studies*, II, 1973; LANDES, William: "An Economic Analysis of the Courts", *Journal of Law and Economics*, April, 1971; POSNER, Richard: "An Economic Approach to Legal Procedure and Judicial Administration", *The Journal of Legal Studies*, núm. II, 1973; SHAVELL, Steven: "Suit, Settlement and Trial: A Theoretical Analysis under Alternative Methods for the Allocation of Legal Costs", *The Journal of Legal Studies*, núm. XI, Jan., 1982; SHAVELL, Steven: "The Social Versus the Private Incentive to Bring Suit in a Costly Legal System", *The Journal of Legal Studies*, June, 1982; PASTOR PRIETO, Santos: *¡Ah de la Justicia! Política judicial y Economía*, Civitas-Ministerio de Justicia, 1993.

² Sentencia del Tribunal Constitucional, de 29 de junio de 2000, en www.indret.com, 3/2000.

³ With density function $F(x) = 1 / \sqrt{2\pi\sigma^2} e^{-(x-\mu)^2/2\sigma^2}$.

⁴ Though some colleagues at the Área de Dret Civil Seminar pointed out the convenience of removing this assumption, I finally decided not to do so for the sake of making the paper simpler to non-economists. I willingly sacrificed that in order not to increase the stakes for lawyers who decide to read the paper.

⁵ An alternative model of the way tort reform affects litigation is presented by BABCOCK, Linda & POGARSKY, Greg: "Damage Caps and Settlement: A behavioral Approach", *Journal of Legal Studies*, vol. XXVIII, June, 1999, though they specifically deal with the effects of caps on litigation, while I focus on schedules, counting on either pessimism or optimism.

⁶ Cfr. PINTOS AGER, Jesús: *Baremos, Seguros y Derecho de daños*, Cívitas & IUDEC, Madrid, 2000.

⁷ In fact, what that actually means is that $\text{Cov}[Q_e, Q_o] = 0$

⁸ The goal of the legal system is know to be that of providing the optimal legal remedy to a conflict; not necessarily a Court judgement. Settlement or other alternative dispute resolution methods have proven to be more efficient in certain cases, this being superior to a formal judicial verdict.

⁹ That difference between litigation and settlement costs can be a source of undesirable incentives for potential injurers who receive inadequate deterrence signals, *ceteris paribus*.

¹⁰ BORN, P. y VISCUSI, W. Kip: "The Distribution of Insurance Market Effects of Tort Liability Reforms", *Discussion Paper N. 243, John M. Olin Center, Harvard Law School*, october, 1998.

¹¹ Sort of speaking, because a normal function will always be cut by any point since its range goes from $-\infty$ to ∞ . What this means is that it is not cut in a point relatively close to the mean, but in either side of the tails.