InDret

Burden of Proof and Strict Liability: An Economic Analysys of a Misconception

Fernando Gómez
Universitat Pompeu Fabra
Bafcelona, Spain

1.   *Introduction: a common misconception*

Among European Courts and legal commentators there is a not uncommon misconception concerning the strict liability rule and the allocation of the burden of proof of fault to the defendant. Though conceptually distinguishable, many think that both are closely related alternatives, share a common goal and underlying policy logic, and that they are indicated as legal rules in roughly similar areas of human activity[1].

Probably the clearest example of this misconception is the long-standing doctrine of the Spanish Supreme Court of practical identification of a rule of strict liability with a rule of reversal of the burden of proof of the injurer's fault: "… the most recent and constant of the Court's doctrine is oriented towards bringing tort liability under strict liability rule conditions, by applying the theory of creation of risk, thus paving the way for a reversal of the burden of proof" (STS, 1ª, 30.9.1986, RAJ 4925)[2].

In this paper my purpose is to try to dispel this misconception with the help of a simple economic model that will show how when the allocation to the injurer-defendant of the burden of proof of fault is attractive on efficiency grounds, strict liability is not, and vice versa.

The paper will be organized as follows: Section 2 contains a reminder of the main findings of economic analysis of Tort Law concerning the efficiency advantages of a strict liability regime. Section 3 presents a simple economic model of the allocation of the burden of proof and shows, within the framework of the Hay and Spier (1997) model, what are the gains, both in terms of care taking and the costs of presenting evidence in Court, of allocating the burden of proof of fault to the defendant. It also shows how the implications of the economic model of the burden of proof are incompatible with the accepted knowledge about the pros of strict liability. Section 4 is an application of the previous analysis to a related specific doctrine in the Law of Torts, namely the *res ipsa loquitur* doctrine. Section 5 concludes summarizing the findings of the paper.

---

[1] In Germany, see Deutsch (1995) at 413, and Kötz (1996) at 137, stressing that presumptions of fault, the same as *Gefährdungshaftung*, should only be applied to risky activities. In France, the *responsabilité du fait de choses*, the traditional and still conceptually dominant form of strict liability in France, operates mostly as a reversal of the burden of proof: See Starck/Roland/Boyer (1991). In Italy, there is a vivid scholarly and judicial debate on art. 2050 of the Italian Civil Code around the question of its being a strict liability rule or a reversal of the burden of proof of fault: See Franzoni (1988, 1993).

[2] This identification began at the end of the 1970's [SSTS, 1ª, 14.3.1978 (RAJ 815), 5.10.1979 (RAJ 3241)], intensified during the 1980's [SSTS, 1ª, 27.4.1981 (RAJ 1781), 10.5.1982 (RAJ 2564), 17.3.1983 (RAJ 1482), 14.2.1985 (RAJ 552), 15.2.1985 (RAJ 557), 21.11.1985 (RAJ 5624), 17.7.1987 (RAJ 5801), 19.10.1988 (RAJ 7588) y 20.12.1989 (RAJ 8856)] and continues well into the second half of the 1990's [SSTS, 1ª, 22.4.1995 (RAJ 3492), 5.2.1996 (RAJ 1089), 9.2.1996 (RAJ 953), 2.4.1996 (RAJ 2984), 16.4.1996 (RAJ 2954), 25.5.1996 (RAJ 3918), 28.5.1996 (RAJ 3859), 17.7.1996 (RAJ 5676), 22.11.1996 (RAJ 8643), 31.1.1997 (RAJ 253), 12.12.1997 (RAJ 9336), 19.2.1998 (RAJ 636)]. The best analysis of the birth and development of the doctrine of the reversal of the burden of proof of fault in Spanish Courts is Cavanillas Múgica (1987).

2. *The consequences of strict liability*

The distinction between negligence and strict liability is one of the basic dichotomies in Tort Law. The two constitute the essential duality that legislators and Courts must confront when regulating potentially harmful behavior with liability rules.

The effects that both rules have on the degree of care taken by the injurer (if the accident is unilateral, that is, the likelihood of it happening depends solely upon the behavior of the person causing harm and not upon the victim) or by the injurer and the victim (if the accident is bilateral, that is, the likelihood of it happening depends upon the behavior of both parties) have been at the core of the economic analysis of accidents and liability[3].

What is useful to recall, however, at this point, is the set of results from the economic theory of accidents and liability that bear on the potential comparative advantage of strict liability over negligence. From this, one can derive what are the indications for choosing a strict liability rule over a negligence rule for some area of accidental harms. Here is a brief summary of the canonical findings of economic analysis of Tort Law in this respect.

2.1 *Trials are simpler and less inclined to error*

To the extent that strict liability enables Courts to decide on the defendant's liability without taking into consideration the level of due care, or without establishing whether the actual care taken by the defendant reached such a standard, legal proceedings on this issue will naturally be simpler and less costly. As the outcome is also more predictable (in that a possible source of uncertainty, the decision over whether the defendant was negligent or not, is, by definition, avoided) the rate of out-of-court settlements for damages claimed over non-contractual liability will increase.

In addition, if one assumes– as seems reasonable – that Courts may err in establishing the standard of due care and/or the degree to which the defendant's behavior met such a standard, then strict liability, which avoids all such possible errors, becomes even more attractive.

This "procedural" advantage of strict liability over negligence is, by and large, more theoretical than real. And not just because a system of strict liability is expected to lead to more compensation claims and, therefore, a greater number of lawsuits and higher overall procedural costs than would a system of negligence. The reason is more subtle, and is due to the fact that, with or without a negligence rule, it will always be necessary for the lawsuit to examine, apart from the actual causal link between action and harm, the issue of proximate causation. And given that proximate causation has to be analyzed in terms of costs of care, probability of the accident and magnitude of harm, it seems that proximate causation is almost conceptually indistinguishable from a cost-benefit analysis of the

---

[3] For the interested reader, excellent synthesis of this analysis can be found in Shavell (1987) and Schäfer/Ott (2000).

injurer's behavior, that is, from the Hand formula[4]. Consequently the lawsuit will probably not be significantly less costly under a strict liability rule than under a negligence rule. This means that the main reason for preferring, on efficiency grounds, the latter rule is the one considered below.

2.2   The dangerousness of the harmful activity

If the amount of the injurer's potentially harmful activity (number of kilometers driven, number of hours flown by the airline, how many Tons of output are produced by the polluting firm), and not only the safety measures which are adopted, is a relevant factor affecting the probability of harm occurring, then the negligence rule is unable to make the injurer adopt the socially desirable levels of activity.

Under the negligence rule, in order to avoid paying compensation, the injurer merely has to take due care. By adjusting his level of care to the legally required one, it does not run the risk of paying any compensation for harm resulting from his activity and, thus, the rule of negligence fails to provide any incentive to adopt a more suitable level of activity, in terms of an efficient reduction of the harm which may result from it. Instead, it will choose the level of activity that is personally most beneficial, a level that will be greater than that which would be ideal in terms of social welfare.

In contrast, the strict liability rule does force the injurer to internalize the external costs of its activity: as, regardless of the degree of care, he will have to pay for all harm caused, it is in his own interest to choose a level of activity which maximizes the difference between the utility from the harmful activity and the external harm caused, this being precisely the optimal level for social welfare.

This advantage over a negligence rule is not tremendously important when the potentially harmful activity is not in itself dangerous, that is to say, when it is an activity that, carried out with due care, poses a low risk of causing harm (technically speaking, when there is a low probability of harm occurring when due care is taken). Even if the amount of the injurer's activity is greater than is socially desirable, the resulting detriment to social welfare is not very worrying.

On the other hand, the above-mentioned weakness of the negligence rule does create significant trouble in activities that are inherently dangerous: in these, the potential harm is important even when the agent acts with due care. This potential harm can be severe as a consequence of both the high probability of its occurrence and its magnitude, even if, in the latter case, the probability of it happening is low (consider, for example, a nuclear power station: the probability of a leak may be small if the station is run with due care, but in the unlikely event that such a leak occurs the outcome is truly catastrophic).

---

[4] See on this point Miceli (1997).

In terms of inherently dangerous activities, therefore, it is in society's interest that whoever carries out such activities does not exceed socially optimal levels. Consequently, strict liability is, in principle, the preferred rule for activities of this nature.

> Of course, in bilateral accident settings, it is also necessary to take into account the amount of activity of the potential victim. The impact of both rules on the victim is, in certain cases, precisely the opposite of the one described above. This objection can be overcome, however, simply by restricting the analysis to unilateral accidents (airline, environmental and others) and to those bilateral accidents in which, with respect to the potential harm, the injurer's level of activity is more important than the victim's.

In more technical terms of probability theory, where:

F = "lack of due care by the injurer" (in other words, "fault")

~F = "not F", (thus, "due care by the injurer")

A = "accident"

Prob (A/F) = probability of A in the event of F having occurred

Prob (A/~F) = probability of A in the event of F not having occurred.

The likelihood ratio $\dfrac{\text{Prob (A/F)}}{\text{Prob (A/~F)}}$

can be considered a kind of dangerousness index. A result for this index of just over 1 means that event A, i.e. the fact that accidental harm has been caused is not a good indicator of whether or not event F, i.e. fault, has also occurred. And it should be remembered that it is in cases such as these that strict liability is preferable to negligence. As will be shown below, it is precisely the opposite situation which can be considered as one of the factors that recommend reversing the burden of proof in favor of the plaintiff, so that it is the defendant who would need to provide evidence showing the absence of fault on his or her part.

3   The burden of proof of fault and criteria of reversal

3.1   The general notion of burden of proof

Court decisions involve the assessment of events or circumstances that are not easily at their disposal, but rather are known to the parties involved, or to third parties.

When, with respect to such circumstances, one speaks of burden of proof, one is referring to two theoretically separate aspects: in order to be able to make a well-founded ruling, the judge or court needs to have a certain degree of inner confidence with respect to the occurrence of that circumstance. But for this to be the case, one of the parties involved needs to provide evidence that allows such a decision to be reached. Therefore, the law on burden of proof requires that two things be established: firstly, the level of confidence required by the adjudicator in order to settle the dispute; and secondly, which of the parties must provide the evidence necessary to reach such a level, under threat of losing if he fails to do so.

In the U.S. legal culture both aspects are independently analyzed as separate components of the generic "burden of proof" issue: thus, the terms "burden of persuasion", "level of confidence" or "standard of proof" are used[5] to refer to the former issue, rather than "burden of production" or "burden of proof" in the strict sense.

In Europe, generally no clear distinction – or no distinction at all – is made between the two aspects of burden of proof. This may be due to the implicit[6] assumption that there is only one level of confidence that is legally admissible in court with respect to the occurrence of a given event. This level would be that of total certainty, i.e. a 100% probability of occurrence, or something very close to it. I am in no doubt that this assumption does not reflect the reality of how European legal systems actually work. Moreover, it is in no way desirable as an objective. Just consider the degree of deterrence that would result from demanding such certainty from Courts or law enforcement authorities.

In Europe, burden of proof is usually defined as the rule by which the adjudicator resolves or judges a dispute in favor of the side not subject to it, in the event that the evidence provided is inconclusive. It is essentially a rule that enables *non liquet* to be avoided when there is a tie between the litigants in terms of the conviction of truth or falsehood of the event brought to court.

However, this notion poses a problem: statistically, a tie means that the adjudicator's conviction over the occurrence of the event in question, after the process and the presentation of evidence, is exactly 50%. If the probability distribution is continuous, the effective probability of it being exactly 50% is, in practice, non-existent, even if the

---

[5] Terms used, respectively, by Posner (1999), Hay and Spier (1997), and Davis (1994).

[6] See Sherwin/Clermont (2001) for references showing how in Continental European legal systems it is expected that the adjudicator will be convinced of the occurrence of an event without a shadow of a doubt. It is also striking that in Continental Europe there seems to be almost no difference between degrees of confidence in civil and in criminal cases, being the standard in both areas pretty close to the "beyond reasonable doubt" standard characteristic of criminal trials in the US: See for Germany, Schellhammer (1995), and for France, Sherwin/Clermont (2001). In Spain, though, civil and criminal standards differ: beyond reasonable doubt is not applicable in Tort Law cases (Decisions of the Spanish Constitutional Court, 13.12.1993 (RTC 1993\367), and Spanish Supreme Court, 20.2.1989 (RAJ 1215), 27.11.1995 (RAJ 9803) and 28.3.2000 (RAJ 2500), among many others).

adjudicator's conviction prior to the process was just 50% (or, to put it more technically, it is practically impossible for the posterior probability, in the Bayesian sense, to be exactly 0.5, even if the prior probability was 0.5).

Moreover, the dominant conceptualization of the burden of proof in the European legal literature focuses on the wrong subject, namely the Courts, rather than on those whose behavior – both evidentiary and out-of-court – is indeed relevant: the parties involved in the lawsuit[7]. The important thing about burden of proof is that in the hands of legislators and Courts it is a strategic instrument that enables the creation of incentives for the desired procedural and out-of-court behavior. With respect to the burden of proof, the concern of the judicial system is not merely academic but pragmatic, just as it should be in all other matters. Its objective is to regulate behavior in the real world.

3.2 Burden of proof and injurer's care

As has been pointed out in the previous sub-section, the general notion of burden of proof has two aspects which should be analyzed separately: one involves setting the level of confidence required to verify the circumstances on which a claim is based; the other involves establishing which of the litigants must provide the evidence needed to reach this level, such that if the party on whom the burden falls fails to provide the necessary evidence he or she will lose the lawsuit.

The first of these aspects has been extensively dealt with in the law and economics literature. In the first phase, it was analyzed as a mechanism that (in connection with others, such as the magnitude of the penalty) enables the procedural behavior of parties to be regulated (with respect to the merits of the claim, the cost of evidence production or the kind of evidence drawn upon)[8].

All the above models consider that the out-of-court behavior of parties (the degree of care taken, an offense being committed or not) is governed by external factors, so that the effect that the level of confidence adopted by the judicial system may have on such behavior is not analyzed.

---

[7] One could always attribute this view to the fact that legal procedure in Continental Europe is inquisitorial and not adversarial. The portrait of Continental legal systems under the heading of "inquisitorial regimes" is totally misleading, at least with respect to the civil process, as anyone familiar with these systems can verify. Even some who analyze the two extreme models acknowledge that the usual depiction of the inquisitorial system is a caricature of civil procedure in Continental Europe: Posner (2001), Sherwin/Clermont (2001). Probably, in my opinion, the true distinction lies in the gap between procedure before a civil jury with strong discovery rules, and procedure without those features.

[8] See Sobel (1985); Rubinfeld and Sappington (1987); Davis (1994); Sanchirico (1997); Daughety and Reinganum (1998).

In a second phase (which partly overlaps the first), the impact of this aspect of the burden of proof on people's behavior prior to – as well as during – proceedings is indeed taken into consideration, especially through the assumption that someone who has acted according to the law when out of court (by taking due care or not committing an offense) will incur less costs in proving his innocence than someone who has acted unlawfully (forging documents or bribing witnesses is expensive)[9].

Moreover, most of these models establish the adjudicator's level of confidence according to the internal variables affecting the pre-procedural and procedural behavior of the parties involved.

In contrast to both the quantitative and qualitative importance given to the persuasion or confidence aspect of the burden of proof, the second issue has received relatively little attention in the Law and Economics literature.

However, it is precisely the question of who must prove the disputed act (in this case, the presumed tortfeasor's fault), under threat of receiving an adverse ruling, which is crucial for dispelling the confusion between reversal of the burden of proof of fault and strict liability.

In contrast to the aforementioned models, which attempt to analyze and illustrate the effect of level of confidence rules on people's out-of-court behavior, models of this second aspect of burden of proof assume this effect to be either ruled out (Hay (1997)) or absent (at least theoretically), as a consequence of the model: Hay and Spier (1997)[10].

But the argument that burden of proof is irrelevant outside of legal proceedings is unconvincing, whether as a starting point or as a conclusion. Even within Hay and Spier's simple model, which implies complete and symmetrical information among both parties and conclusive, unitary evidence, it is possible to demonstrate that allocating the burden of proof of fault to the plaintiff or defendant does indeed influence the incentive to take care on the part of the potential tortfeasor. And, what is also of great importance for our purposes, it is also possible to show that due to its impact on the incentive to take care, the reversal of the burden of proof is contraindicated when the activity producing the risk is inherently dangerous.

The model that will be used is essentially that of Hay and Spier (1997).

---

[9] Kaplow (1994); Sanchirico (1998); Sanchirico (1999); Bernardo, Talley and Welch (2000); Bernardo and Talley (1999). There are also models dealing to some extent with the issue of the burden of persuasion in a setting of choice between a competitive and a concentrated information providing mechanism (Shin (1998), Dewatripont and Tirole (1999), Palumbo (2000)), or concentrating on the effects of the burden of persuasion in criminal cases on law enforcement costs (Bac and Kanti Bag (2000).

[10] See also Bernardo, Talley and Welch (2000).

Where:

> **kc** =   cost of care (for the injurer: for simplicity's sake, it is assumed that the accident is unilateral);

> **kp** =   cost of presenting evidence regarding the injurer's fault (it is assumed that this cost is identical for both parties);

> **pc** =   probability of accident if the injurer takes due care;

> **pnc** =   probability of accident if the injurer fails to take due care;

> **D** =   harm caused to the victim as a result of the accident.

It is also assumed that:

> 1.   **kc < (pnc - pc) D**, that is to say, that the legal standard of due care is justified in terms of maximizing social welfare.

> 2.   **kp < D**.

> 3.   The evidence is conclusive, or at least sufficient to reach the adjudicator's level of confidence (such that the effects of allocating the burden of proof are separated from those which might cause a change in this confidence level).

Thus, if the burden of proof is allocated to the victim-plaintiff he or she will, given assumption 3 above, only decide to present evidence if – and only if – this evidence shows the injurer to have been at fault. Consequently, the expected cost to the injurer of not taking the measure of care would be **pnc x D**. The injurer will therefore always take care provided that:

> **kc < pnc D**, which is, by definition, the case, given assumption 1 above.

When the burden of proving his lack of fault is borne by the injurer himself, he will, given assumption 3, present evidence if – and only if – he was not at fault (otherwise, he will be forced to pay compensation, and, if **kc < pnc D,** will find himself induced into adopting the legally required measure of care), such that he will take care provided that:

> **kc + pc kp < pnc D**, which, given assumptions 1 and 2, is always the case.

This model allows us to conclude that the decision over who should bear the burden of proof need not concern itself with the incentives to take care which result from the allocation because these incentives will always be the socially adequate ones.

However, this conclusion depends crucially upon use of a rule of negligence that is not modified by *sine qua non* causality. If the modified rule of negligence is used (sense, i.e. incorporating *sine qua non* causality, such that the expected compensation will not be simply the probability – evaluated according to the level of care actually taken by the injurer - multiplied by the magnitude of the harm, because the expected harm evaluated according to the level of due care will have to be deducted[11]), the outcome is significantly altered (in a way that was not foreseen by Hay and Spier):

If the injurer-defendant bears the burden of proof then the condition of adopting the measure of care becomes, with the modified rule of negligence,

kc + pc kp < (pnc - pc) D, which is not always the case given 1 and 2.

On the contrary, <u>this condition indicates that allocating the burden of proof to the enjure reduces his incentive to take the optimal level of care</u>, in that the cost of presenting evidence makes the option of taking care less attractive than that of fault. Therefore, <u>the greater **pc** (and **pc**, remember, is the probability of an accident when the enjurer takes the socially optimal level of care) and **kp** are, the less attractive does allocating the burden of proof to the enjurer-defendant seem</u>. Similarly, for bilateral accidents, the same could be said of allocating the burden of proof to the victim over his or her own fault with a view to applying a rule of contributory fault or comparative negligence.

So, using a simple model of burden of proof that assumes: (a) complete and symmetrical information from both parties; and (b), that the evidence is indivisible in terms of how it is presented and appraised and is sufficiently conclusive for the adjudicator, two propositions can be established:

Proposition i): The rules on allocating the burden of proof do indeed impinge upon the injurer's decision to take optimal care.

Proposition ii): The effect of the rules allocating on a general basis the burden of proof of fault runs as follows: the greater the dangerousness of an activity in terms of the residual probability of harm at the optimal level of care, and the greater the costs to the defendant of presenting evidence, the less indicated is reversing the burden of proof at the tortfeasor's expense.

In the following section I will try to show how, even when ignoring this effect on the care taken by the potential tortfeasor - i.e. even when the analysis is restricted exclusively to the

---

[11] This modified version of the negligence rule is proposed as a positive interpretation of the actual behavior of Courts by Grady (1983), Kahan (1989), and Gomez (1997).

parties' behavior when presenting evidence – proposition ii) above still holds: the correlation between an activity's dangerousness and the burden of proof of fault must be negative.

3.3   *Effects of the rules concerning the burden of proof on the presentation of evidence by parties*

Following the structure of the previous subsection, an attempt will be made to show how the burden of proof affects the litigants' decision over whether or not to present evidence and how, at the same time, these effects influence the optimal allocation of the burden of proof to one party or the other. Naturally, those conclusions pertinent to the relationship between strict liability and burden of proof will also be drawn.

The model is once again based on the following assumptions:

> i) There is a judicial dispute between two subjects, injurer (**C**) and victim (**V**), whose resolution depends upon the appraisal of some event, in this case, the fault of the injurer).

> ii) The existence or absence of fault is not directly verifiable by the adjudicator of the dispute, although this information can be observed by **C** and **V** (the information is complete and symmetricalfor both players, **C** and **V**).

> iii) Both parties, **C** and **V,** have access - at a certain cost, that is assumed to be the same for both of them and less than the amount at stake in the dispute – to evidence. Evidence is unitary in nature (it cannot be presented partially to the adjudicator; either all or none of it is presented) and enables the adjudicator to (correctly) appraise, with the level of confidence -whatever this might be- demanded by the legal system, the disputed event.

> iv) For simplicity's sake, the model will be presented with numerical values attached to the amount at stake in the dispute and to the cost of presenting evidence before the Court. It is assumed that the dispute involves the awarding of compensation, at **C'**s expense, of 10 monetary units to **V**), and that the cost of presenting evidence is 2 monetary units.

First, let us consider what will happen if the burden of proof of fault is allocated to the plaintiff, in this case, **V**. If the injurer, **C**, has been at fault, a fact that both parties, but not the adjudicator, know, then the strategies for presenting evidence will be as illustrated by Figure 1.

Figure 1.   Burden of proof: Plaintiff (victim)

Compensation   =   10
Cost of presenting evidence   =   2
Fault   =   Yes

		C	
		Present	Don't present
V	Present	(8, -12)	(8, -10)
	Don't present	(10, -12)	(0,0)

Naturally, it is not in the defendant **C's**, interest to present evidence as it would prejudice his own position to convince the adjudicator of his own fault. Anticipating such a strategy on the part of **C**, it is in **V's** interest to present evidence and thus obtain compensation. Technically, there is a Nash equilibrium = (Present, Don't present): given the dominant strategy for **C** (Don't present), **V** prefers to present evidence.

On the other hand, if, with the burden of proof borne by the plaintiff, **V**, there had been no fault by the other party, the strategies are different, as Figure 2 shows.

Figure 2.   Burden of proof: Plaintiff (victim)

Compensation   =   10
Cost of presenting evidence   =   2
Fault   =   No

		C	
		Present	Don't present
V	Present	(-2,-2)	(-2,0)
	Don't present	(0,-2)	(0,0)

In this case, neither of the parties has an incentive to present evidence: the plaintiff, **V**, because it would prejudice his interests; the defendant, **C**, because he doesn't need to do so (it is the other party who bears the burden of proof). Knowing that **V** will not present evidence, one can only expect that the adjudicator will decide according to the lack of evidence and the applicable rule on burden of proof. In technical terms of game theory, the equilibrium would be one in dominant strategies = (Don't present, Don't present). (Don't present) is the dominant strategy for both parties.

When the burden of proof is reversed, that is borne by the defendant, **C**, the expected equilibria will be, not unexpectedly, different. Figure 3 shows what happens under that burden of proof regime and **C** has been at fault.

Figure 3.   Burden of proof: Defendant (injurer)

Compensation   =   10
Cost of presenting evidence   =   2
Fault   =   Yes

		C	
		Present	Don't present
V	Present	(8,-12)	(8,-10)
	Don't present	(10,-12)	(10,-10)

Once again, this is a situation where it is not in the interest of either litigant to present evidence. **C**, who bears the burden of proof, lacks any incentive to present evidence because doing so would merely confirm his own fault and liability. And the plaintiff, knowing that the burden of proof is in his favor, need merely wait for the adjudicator's favorable decision when nobody presents evidence. Again, there is an equilibrium in dominant strategies (Don't present).

Figure 4 shows the expected outcome when the burden of proof is borne by the defendant and there is no fault on the injurer's, **C**, part.

Figure 4.   Burden of proof: Defendant (injurer).

Compensation   =   10
Cost of presenting evidence   =   2
Fault   =   No

		C	
		Present	Don't present
V	Present	(-2,-2)	(-2,0)
	Don't present	(0,-2)	(10,-10)

For the plaintiff, **V**, there is no benefit in presenting evidence as it prejudices his position and is, moreover, costly. Anticipating this line of action, it is in the interest of the defendant, **C**, (who bears the burden of proof) to present the evidence needed to convince the adjudicator of his lack of fault and thus, to dismiss the claim. This, then, is a Nash equilibrium (Don't present, Present): for **V** (Don't present) is a dominant strategy, which, in turn, induces **C** to choose (Present).

As can be concluded from the equilibria described in the above figures, the rules on the burden of proof do not always achieve the most efficient outcome in terms of minimizing the cost of producing the evidence needed to reach a correct solution. Thus, when the burden of proof falls on the plaintiff, and the tortfeasor has indeed been at fault, to achieve a ruling in favor of compensating the victim requires the plaintiff to present evidence, at a cost that, ideally, should be avoided. Given the defendant's fault, it would have been better to have in place a rule of burden of proof in the opposite direction, and thus reach a pareto-optimal equilibrium. The problem is that the every person or body who could have altered the burden of proof (the Court in this case) was unaware of the fact (the injurer's fault) that made reversing the burden of proof desirable. And if it had been known beforehand, then it wouldn't have been necessary for anyone to present evidence. When the burden of proof is borne by the defendant, the same thing happens if he wasn't truly at fault: it would have been optimal, in terms of procedure costs minimization, to shift to the opposite rule concerning the burden of proof.

The best an efficient legal system (meaning, in this context, one which minimizes the cost of presenting evidence, given that it is assumed that there are no effects on care taken by parties) can hope to achieve is to allocate the burden of proof in terms of the probability of reducing these process costs to a minimum.

In more technical terms, where

> Prob (F/A) = probability that the injurer was at fault, given that harm has been caused.
> Prob (~F/A) = probability that the injurer was not at fault, given that harm has been caused.
> C Pv = cost to the victim of presenting evidence.
> C Pc = cost to the injurer of presenting evidence,

the burden of proof should be allocated to the victim (plaintiff) if, and only if, the following inequality is observed:

> Prob (F/A) x CPv < Prob (~F/A) x CPc

Using Bayes's theorem[12] this condition is equivalent to:

$$\frac{\text{Prob (A/F)}}{\text{Prob (A/} \sim \text{F)}} \; X \; \frac{\text{Prob (F)}}{\text{Prob (} \sim \text{F)}} \; X \; \frac{\text{C Pv}}{\text{C Pc}} \; \langle \; 1$$

The previous inequality would therefore be the condition under which it is more efficient to allocate the burden of proof to the victim (plaintiff). In this expression, the quotient between Prob (F) and Prob (~F) is simply the general *ratio* in society between fault and due care with respect to the harmful activity in question.

If we consider reversing the burden of proof of fault against the injurer (defendant), the efficiency condition will be:

$$\frac{\text{Prob (A/F)}}{\text{Prob (A/} \sim \text{F)}} \; X \; \frac{\text{Prob (F)}}{\text{Prob (} \sim \text{F)}} \; X \; \frac{\text{C Pv}}{\text{C Pc}} \; \rangle \; 1$$

The second term on the left-hand side of the inequality will, normally, be much less than 1 (otherwise, it would concern an activity in which, regardless of whether harm is caused, fault is more common than conformity with due care). If one recalls section II above, the expression of the first term of the left hand side of the inequality gets increasingly closer to 1 the more inherently dangerous an activity is, which means that, *ceteris paribus*, <u>the more inherently dangerous an activity, the more difficult it is for a reversal of the burden of proof against the injurer (defendant) to be efficient. Therefore, the identification between introducing strict liability and allocating the burden of proof of fault upon the injurer is not consistent with the requirements of efficiency, neither in the application of strict liability nor in terms of the process costs of presenting evidence.</u>

The implications of the model, however, do not suggest that it always undesirable, in the case of a dangerous activity, to allocate the burden of proof of fault to the injurer (defendant). But for this allocation to be efficient, it must be the case that the costs of presenting evidence of fault must be notably higher for the victim than for the injurer. This great difference in costs is not unimaginable, but largely depends, at least in my view, upon factors wholly unrelated to the inherent dangerousness of the activity.

---

[12] Bayes's theorem states a rule which allows to estimate a posterior probability in terms of the prior probability and the value of some evidence that we may hold or acquire:

$$P \, (F/A) = \frac{P \, (A/F) \times P \, (F)}{P \, (A)}$$

An excellent introduction of these issues for a legal audience is Brook (1990).

4   A simple application: the use of the "res ipsa loquitur" rule

As a further illustration of the ideas presented in the previous section I think it is useful to briefly analyze in such a context the doctrine of *res ipsa loquitur*. This doctrine, mainly of Common Law flavor, enables the plaintiff who claims compensation in a tort case to obtain it without presenting evidence of the defendant's fault if the circumstances under which the tort occurred make it impossible or very difficult to believe that it would have happened had the injurer taken due care.

The Spanish Supreme Court has used this rule in two recent decisions on medical liability. The STS, 1ª, 9.12.1998 (RAJ 9427), granted the claim brought by an elderly woman's widower: she had been admitted to a clinic in Barcelona for a bunion operation, only to die a few days later from post-operative tetanus. The STS, 1ª, 29.6.1999 (RAJ 4895) ordered INSALUD (the Spanish Public Health Service) to pay 180.303,63 euros over the death of a 44-year old woman who died suddenly fifteen days after a simple gall bladder operation.

An extreme version of the *res ipsa loquitur* doctrine (one that is not used by the Spanish Supreme Court) is that which presumes fault if there is no possible evidence to the contrary. This irrefutable presumption only makes sense if the relationship between care and probability of accident is as shown in Figure 5 (borrowed from Miceli (1997) at p. 25)
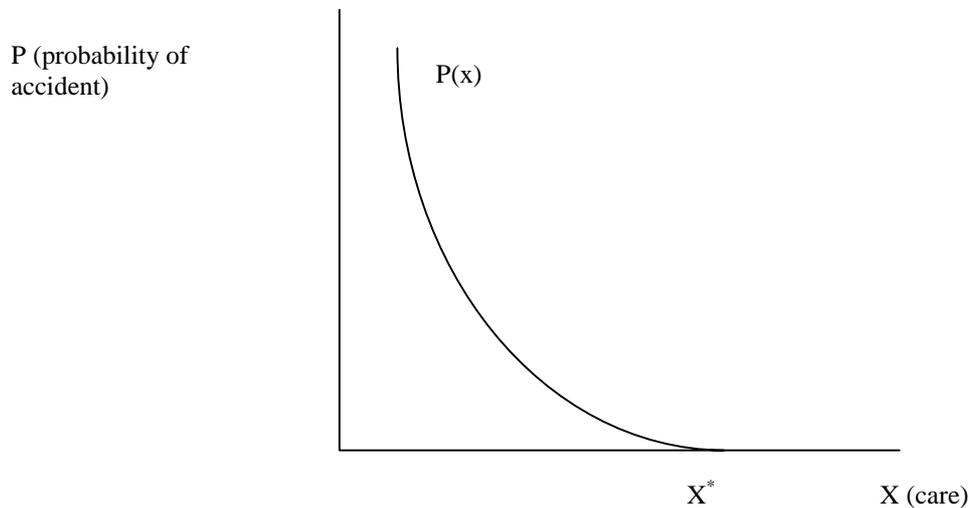
Figure 5

Figure 5 shows that at the socially optimal level of care, x*, the probability of an accident and harm being caused is zero. In other words, the fact that an accident has occurred constitutes a perfect piece of evidence showing with certainty that the injurer did not act with the due care. That is, in more rigorous probability terms, that $P(A/\sim F) = 0$. A *iuris et de iure* (non-rebuttable) presumption of fault, that would be an extreme case of reversing the burden of proof of fault, would only be justified under such extraordinary conditions.

However, it is difficult to imagine that the probability of an accident can be completely ruled out, even under extreme safety measures. Therefore, it makes more sense for *res ipsa loquitur* doctrine to be implemented through a mechanism of a reversal of the burden of proof which is rebuttable by contrary evidence provided by the defendant. This reversal makes sense if the index

$$\frac{\text{Prob (A/F)}}{\text{Prob (A/\sim F)}}$$

is high enough to meet the efficiency condition for reversal of the burden of proof described in section III.3) above. And this will be increasingly likely, ceteris paribus, the less inherently dangerous the harmful activity is. The use of the doctrine by the Spanish Supreme Court in an area such as medical malpractice – where, in theory, strict liability does not rule– would seem to confirm the implication of the theoretical analysis.

In this respect, the efficiency condition for reversing the burden of proof is more likely to be satisfied if one thinks of the event A not merely as the occurrence of accident and harm, but as such an occurrence surrounded by certain concomitant circumstances which make the probability of the event, given the injurer's fault – i.e. Prob (A/F) – significantly greater than the probability of the event, given due care on the part of the injurer – i.e. Prob (A/~F) - . As the Spanish Supreme Court puts it in STS, 1ª, 9.12.1998 (RAJ 9427), the harmful event occurs in such a way, or is surrounded by such circumstances, that it becomes a harmful event of the kind which is not normally caused unless the injurer has acted negligently.

5   Conclusion

The rules allocating on a general basis the burden of proof of fault on the part of the injurer's exercise influence both on care taking behavior by the parties and on the presentation of evidence regarding fault before the Court. If one starts from a basic rule of burden of proof in civil procedure that imposes upon the plaintiff the burden of proof of events on which the suit is based, a general doctrine of shifting in tort cases that burden upon the defendant can be defended on efficiency grounds using two types of factors: the defendant has consistently lower costs of presenting evidence regarding the presence or absence of fault, on the one side; the occurrence of the accident, or its surrounding circumstances, are good indicators in probabilistic terms of the presence of fault on the side of the injurer. There is no reason to think that these factors are particularly likely when the harm results from an inherently risky or dangerous activity. Moreover, the second factor is typically absent in those classes of activities. The sensibly accepted wisdom in the economic analysis of accidents and liability, on the contrary, points specifically to the dangerousness of the potentially harmful activity as the main factor bearing in favor of the use of strict liability rules. So, despite their possibly related (to some extent) historical origin, both sets of rules seem far apart when one considers their economic implications. This makes the not uncommon tendency to identify or, at least, to connect them, theoretically unfounded.

6 References

Mehmet BAC and Parimal KANTI BAG, "Law Enforcement Costs and Legal Presumptions", Working Paper, Bilkent University-University of London (2000).

Antonio BERNARDO, Eric TALLEY and Ivo WELCH, "A Theory of Legal Presumptions" 16 *J. L. Econ. & Org.* (2000).

Antonio BERNARDO and Eric TALLEY, "A note on Presumptions with Sequential Litigation", USC Law School Olin Working Paper 99-9 (1999).

Santiago CAVANILLAS MÚGICA, *La transformación de la responsabilidad civil en la Jurisprudencia*, Pamplona (1987).

Andrew DAUGHETY and Jennifer REINGANUM, "On the Economics of Trials: Adversarial Process, Evidence and Equilibrium Bias", Working Paper 98-w02, Vanderbilt University (1998).

Michael DAVIS, "The Value of Truth and the Optimal Standard of Proof in Legal Disputes", 10 *J. L. Econ. & Org.* (1994).

Erwin DEUTSCH, *Allgemeines Haftungsrecht*, 2nd ed. Köln (1995).

Mathias DEWATRIPONT and Jean TIROLE, "Advocates", 107 *J. Pol. Ec.* (1999).

Massimo FRANZONI, *Colpa presunta e responsabilita del debitore*, Padova (1988).

Massimo FRANZONI, "Commentario all' art. 2050" in *Commentario Scialoja-Branca*, Bologna (1993).

Fernando GÓMEZ, "Insurance Benefits, Insurance Subrogation and Imperfect Liability Rules", Working Paper, School of Law, Universidad Complutense de Madrid (1997).

Mark GRADY, "A New Positive Economic Theory of Negligence", 92 *Yale L. J.* (1983).

Bruce HAY, "Allocating the Burden of Proof", *Ind. L. J.* (1997).

Bruce HAY and Kathryn SPIER, "Burdens of Proof in Civil Litigation: An Economic Analysis", 26 *J. Leg. Stud.* (1997).

Marcel KAHAN, "Causation and Incentives to Take Care under the Negligence Rule", 18 *J. Legal Stud.* (1989).

Louis KAPLOW, "The Value of Accuracy in Adjudication: An Economic Analysis", 23 *J. Leg. Stud.* (1994).

Hein KÖTZ, *Deliktsrecht*, 7th ed., Neuwied- Kriftel-Berlin (1996).

Thomas J. MICELI, *Economics of the Law*, Oxford (1997).

Giuliana PALUMBO, "Trial Procedures and Optimal Limits on Proof-taking", 21 *Int. Rev. L. & Econ.* (2001).

Richard POSNER, "An Economic Approach to the Law of Evidence", 41 *Stan. L. Rev.* (1999).

Richard POSNER, *Frontiers of Legal Theory*, Cambridge MA (2001)

Daniel RUBINFELD and David SAPPINGTON, "Efficient Awards and Standards of Proof in Judicial Proceedings", 18 *Rand J. Econ.* (1987).

Chris William SANCHIRICO, "The Burden of Proof in Civil Litigation: A Simple Model of Mechanism Design", 17 *Int. Rev. L. & Econ.* (1997).

Chris William SANCHIRICO, "Enforcement by Hearing: An Integrated Model of Evidence Production", Working Paper, Columbia University Department of Economics (1998).

Chris William SANCHIRICO, "Games, Information and Evidence Production with Application to English Legal History", Working Paper, University of Virginia School of Law (1999).

Hans-Bernd SCHÄFER and Claus OTT, *Lehrbuch der ökonomische Analyse des Zivilrechts*, 3rd ed. Berlin (2000).

Kurt SCHELLHAMMER, *Zivilprozess Gesetz*, 7th ed., Heidelberg (1996).

Steven SHAVELL, *Economic Analysis of Accident Law*, Cambridge MA (1987).

Emily SHERWIN and Kevin CLERMONT, "A Comparative View of Standards of Proof", University of San Diego School of Law Public Law and Legal Theory Working Paper 32 (2001).

Hyun SHIN, "Adversarial and Inquisitorial Procedures in Arbitration", 29 *Rand J. Econ.* (1998).

Joel SOBEL, "Disclosure of Evidence and Resolution of Disputes: Who Should Bear the Burden of Proof?", en ROTH (ed.), *Game Theoretic Models of Bargaining*, Cambridge (1985).

Boris STARCK, Henri ROLAND and Laurent BOYER, *Obligations. 1. Responsabilité délictuelle*, 4th ed., Paris (1991).