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Efficient Third Party Liability of Auditors in Tort Law and in Contract Law

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Abstract

A wrong audit can cause damages to shareholders. This happens especially if outside shareholders base their investment decision on the audit and buy overpriced company shares. If such damages are recoverable under an implied contract between auditor and shareholder, the auditor is usually liable for simple negligence. In that case he has negligently violated a contractual duty to the shareholder, even though the explicit contract was between him and the corporation. If however these damages are only recoverable under tort law, simple negligence will not lead to compensation because they are pure economic losses and because most legal orders restrict or exclude liability for pure economic loss. For such damages, most legal orders grant compensation under tort law only if it is proven that the tortfeasor was willful, disloyal, reckless or grossly negligent . In most cases this excludes compensation. The economic literature on civil liability for economic loss has underlined the rationale for such restrictions. However, this literature remains silent with respect to the borderline between contract law and tort law. There is a general agreement that pure economic loss has to be compensated under contract law as the cost of this protection is internalized in the contract. If a wrong audit and a wrong and published balance sheet causes a pure financial loss to a shareholder, should this be regarded as a violation of contractual duties between the auditor and the shareholder, or just as a tort? Obviously, in most cases this question is decisive for whether the plaintiff receives compensation or not. We argue that this question should be answered in the affirmative, if the victim has an ex-ante willingness to pay for the costs associated with performing such a duty. In this article we argue that a wrong audit that causes damages to shareholders should generally be strictly regarded as a tort case. We also argue that a rule of gross negligence or of gross violation of professional standards in tort law can avoid the problems of underdeterrence as well as of overdeterrence in the compensation of pure financial loss in tort. However, we also argue that a wrong audit should lead to contractual liability, if it was made to prepare the sale of a company or parts of it from inside investors to outside investors or to prepare an initial public offering. Under this condition we argue that the economic rationale for restricting compensation for pure financial loss is not given. The paper first analyses the social value of an audit. Then several liability rules with precise and vague levels of professional care are treated with respect to their incentive effects. This leads to the proposal of a rule of gross negligence in tort law. In the last part we analyse the special conditions, under which the legal order should assume a contract with protective consequences for buyers of company shares, which leads to liability for simple negligence. The legal form of a contract with protective consequences for third parties (Vertrag mit Schutzwirkung für Dritte) is borrowed from German dogmatic scholarship, but may be interesting in this

respect for an international audience as well. This article draws from the literature on pure financial losses and from the literature on precise and vague negligence norms as well as from the literature on the tort contract boundary . The article does however not discuss the problem of joint and several liability and the strategic problems involved, which have been broadly discussed in the literature. The victim of a wrong audit might have a claim against the inside investor, the management, the firm and/or the auditor. This causes strategic interactions, which influence the level of care of all actors as well as the price of auditing . These problems have been extensively dealt with in the literature and are left out here completely. The focus is exclusively on the question, under which conditions the victim should be highly protected by contract law or get a lower level of protection under tort law.

Hans-Bernd Schäfer

Efficient Third Party Liability of Auditors in Tort Law and in Contract Law

A. Introduction

A wrong audit can cause damages to shareholders. This happens especially if outside shareholders base their investment decision on the audit and buy overpriced company shares. If such damages are recoverable under an implied contract between auditor and shareholder, the auditor is usually liable for simple negligence. In that case he has negligently violated a contractual duty to the shareholder, even though the explicit contract was between him and the corporation. If however these damages are only recoverable under tort law, simple negligence will not lead to compensation because they are pure economic losses and because most legal orders restrictor exclud e liability for pure economic loss. For such damages, most legal orders grant compensation under tort law only if it is proven that the tortfeasor was willful, disloyal, reckless or grossly negligent[1]. In most cases this excludes compensation. The economic literature on civil liability for economic loss has underlined the rationale for such restrictions. However, this literature remains silent with respect to the borderline between contract law and tort law. There is a general agreement that pure economic loss has to be compensated under contract law as the cost of this protection is internalized in the contract. If a wrong audit and a wrong and published balance sheet causes a pure financial loss to a shareholder, should this be regarded as a violation of contractual duties between the auditor and the shareholder, or just as a tort? Obviously, in most cases this question is decisive for whether the plaintiff receives compensation or not. We argue that this question should be answered in the affirmative, if the victim has an ex-ante willingness to pay for the costs associated with performing such a duty.

In this article we argue that a wrong audit that causes damages to shareholders should generally be strictly regarded as a tort case. We also argue that a rule of gross negligence or of gross violation of professional standards in tort law can avoid the problems of underdeterrence as well as of overdeterrence in the compensation of pure financial loss in tort. However, we also argue that a wrong audit should lead to contractual liability, if it was made to prepare the sale of a company or parts of it from inside investors to outside investors or to prepare an initial public offering. Under this condition we argue that the economic rationale for restricting compensation for pure financial loss is not given. The paper first analyses the social value of an audit. Then several liability rules with precise and vague levels of professional care are treated with respect to their incentive effects. This leads to the proposal of a rule of gross negligence in tort law. In the last part we analyse the special conditions, under which the legal order should assume a contract with protective consequences for buyers of company shares, which leads to liability for simple negligence. The legal form of a contract with protective consequences for third parties (Vertrag mit Schutzwirkung für Dritte) is borrowed from German dogmatic scholarship, but may be interesting in this respect for an international audience as well.

This article draws from the literature on pure financial losses[2] and from the literature on precise and vague negligence norms[3] as well as from the literature on the tort contract boundary[4]. The article

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[1] For surveys on the compensation of pure economic loss in tort see E. Banakas, Civil Liability for Pure Economic Loss, Kluver Law International, London et al. ,1996

[2] F. Parisi, Liability for Pure Financial Loss: Revisiting the Economic Foundations of a Legal Doctrine, George Mason University School of Law, Law and Economics Research Paper, 2001, 01-21; E. Silverstein, On Recovery in Tort for Pure Economic Loss, 32 University of Michigan Law Review, (1999) pp. 404; E. Banakas (ed.) Civil Liability for Pure Financial Loss, Kluwer Law International, London.The Hague-Boston, (1996), W. Bishop, Economic Loss in Tort, 2

does however not discuss the problem of joint and several liability and the strategic problems involved, which have been broadly discussed in the literature. The victim of a wrong audit might have a claim against the inside investor, the management, the firm and/or the auditor. This causes strategic interactions, which influence the level of care of all actors as well as the price of auditing[5]. These problems have been extensively dealt with in the literature and are left out here completely. The focus is exclusively on the question, under which conditions the victim should be highly protected by contract law or get a lower level of protection under tort law.

B. The optimal level of care of an auditor

 The problem of auditors´ liability arises, given that the auditor certifies a financial report such as a balance sheet of a company.

First, the auditor might cause damage to his contractual partner, the company and the company claims damages. The base of this claim is the contract with the auditor.

Second, the auditor testifies a financial report and a balance sheet, which inside owners use for preparing a transaction, when they sell the company or shares to new owners or if a firm goes public in an initial public offering. By the auditors' overvaluation of the corporation, the buyer suffers a loss. Here typically asymmetric information between buyer and seller of the firm exists. The audit is made to reduce this asymmetry.

Third, the auditor certifies a balance sheet, in which the net worth of the company is overvalued. This leads to an overvaluation of shares at the stock market until the bad company news reaches the market by other channels of information. Therefore, outside shareholders suffer losses. Here asymmetric information between buyers and sellers typically do not exist.

We concentrate on the second and the third constellation, when the victims of such losses have no direct and explicit contractual relation with the auditor. The question then arises, whether the victims should be protected by the contract between the auditor and the management of the firm or whether they should be restricted to a tort claim. We argue that liability in the second case should be stricter than in the third case. The rationale for this is found in the literature on pure economic loss in torts. The basic argument is that pure economic losses contain a redistributive component.

Oxford Journal of Legal Studies (1982) 1-29.V. Goldberg, Recovery for Pure Economic Loss in Tort following the Exxon Valdes Oil Spill, 23 Journal of Legal Studies (1991) pp.; M. Rizzo, A Theory of the Economic Loss Problem in the Law of Torts, 11 Journal of Legal Studies, 1982, 249-275

[3] see R. Crasswell and J.E. Calfee, Deterrence and uncertain Legal Standards", Journal of Law, Economics and Organisation, Vol.2 no.2 1986, pp.281; see also R. Schwartz, Auditors' Liability, Vague Due Care, and Auditing Standards, Review of Quantitative Finance and Accounting, 11 (1998); 183-207, and Ralf Ewert, Auditor Liability and the Precision of Auditing Standards, op. cit. Fn. 1.

[4] P.H. Rubin, torts and the Tort-Contract boundary in Product Liability, in F. Buckley (ed.), the Fall and Rise of Freedom of Contract, Duke University Press, 1999, Victor P. Goldberg, "A Reexamination of 'Glanzer v. Shepard': Surveyors on the Tort-Contract Boundary", Vol. 3, Theoretical Inquiries in Law (Online Edition): No. 2, Article 6 (2002). http://www.bepress.com/til/default/vol3/iss2/art6

[5] For a review of the strategic literature on accounting see R. Ewert, Auditor Liability and the Precision of Auditing Standards, JITE (1999), Vol.155, pp. 181-206. See also S.A. Hillegeist, Financial Reporting and Auditing Under Alternative Damage Apportionment Rules, The Accounting Review, Vol. 74, No. 3, pp. 347-369; Chi-Wen Jevons Lee, Zhaoyang Gu, Low Balling Legal Liability and Auditor Independence, The Accounting Review, Vol. 73, No. 4 1998, pp. 533-555., R.R. King, R. Schwartz, An Experimental Investigation of Auditors' Liability: Implications for Social Welfare and Exploration of Deviations from Theoretical Predictions, The Accounting Review, Vol. 95, 2000, pp. 429-451.

Therefore, the victims' loss is lower than the total societal loss, which might lead to overcompensation and overdeterrence of victims. The main purpose of this article is to show why this argument holds for the third, but not for the second constellation.

We first analyze the case in which the auditor´s mistake leads to an overvaluation of shares at the stock market such that shareholders might suffer losses, a case which in recent years and months has occurred in many countries. As usual in the law and economics literature the legal remedies are analyzed from a viewpoint of optimal deterrence. We first analyze the auditors' liability to shareholders and then proceed to the special case, in which the auditors' expertise is exclusively used for preparing the transfer of ownership from an inside to an outside investor and in which the buyers suffer a loss because the assets were overvalued. Throughout the article we assume that auditors as well as shareholders are risk neutral and maximize expected income.

I. The case of an information efficient capital market, the true yield parameter is known for every period

We begin the analysis with determining the efficient level of care of an auditor or in other words the efficient level of costs (x=x*) for auditing a company´s report or balance sheet. Thereafter it is asked, which liability regime and which scope of liability provides incentives to reach this level.

We analyze a stock listed company, in which one share represents one unit of capital. Let the net yield per period per share and per unit of capital be a and let the opportunity cost interest rate of capital be r. Then the net profit per period is a-r.
The yield (a) is regarded as a parameter whose value might be either high or low. For simplicity's sake the parameter can have only two possible values, which are common knowledge to shareholders, management and auditors. Depending on the conditions of the market as well as on technical productivity the parameter can take either a high or a low value in each period.

$$a \in \{a_1, a_h\}$$

If the capital market is information efficient in the strong sense the true parameter is known to the market and reflected in the market price. The market price is the discounted value of all future yield parameters. Consequently auditing cannot improve any decisions of shareholders or the management. Therefore mandatory auditing of annual reports, balance sheets and cash flow calculation is a mere waste as it creates additional costs to the shareholders without causing any benefits. Information efficient stock markets do not need mandatory auditing. Neither is there a rationale for any liability vis-à-vis stockholders, because by assumption auditors cannot cause losses to shareholders, regardless of the auditor´s level of care.

II. The yield parameter is known only for the first period

To relax informational assumptions assume that the exact value of the yield parameter for the first period is common knowledge at the beginning of the first period. But for all future periods the parameter is not known and cannot be revealed, neither by the management nor by anybody else. There exists only a probability distribution. In other words, one knows the near future with certainty, whereas the distant future is uncertain.

In this case the price of one share (p) in period 1 is

$p = a_h + R$

if the yield parameter is high during the first period. R is a constant term, which reflects the discounted value of expected earnings in the periods 2 to infinity. If the yield parameter is low in the first period, two possibilities arise. First, $a_l > r$. In that case the price for the share is

$p = a_l + R$

Second, if $a_l < r$, shareholders are interested that the management shifts the capital to alternative uses outside the firm such that the yield is r. This asset shifting should be repeated in any future period, whenever $a = a_l < r$. This also includes the possibility of permanent liquidation of the firm, if $r > R$. This shifting requires that capital is not firm specific and can be transferred without a cost to productive uses outside the firm. Throughout this article we assume that this is possible, because the basic argument still holds if only fractions of the capital can be put to a different use outside the firm as a reaction to low yield within the firm.

Therefore, if the management acts in the shareholders interest, if the capital market is information efficient and if the parameter (a) is low an immediate reallocation of resources takes place. This generates a yield of $r - a_l$, compared to the situation, in which the capital stock is used inside the firm. The auditor can neither promote nor prevent this yield.

III. The Yield Parameter is Not Known.

We now analyze a situation, in which the yield parameter for a particular period is uncertain at the beginning of the period, but reveals itself at no cost at the end of the period. The expected yield for any period is now the sum of the yield parameters, weighted with probabilities. Let the probabilities that the yield parameters are low and high in the first period be w and (1-w). The expected yield (ey) for the first period is then.

(1) $$\bar{a} = w a_l + (1 - w) a_h$$

For the second and all other periods we again add the constant term R to get the share price. The share price at the beginning of the first period is then

(2) $$p = w a_l + (1 - w) a_h + R$$

The uncertainty reflected in this equation can have two reasons. Either nobody, neither shareholders nor management, know the true parameter or the management knows the true parameter, but conceals it successfully from the shareholders. The management might for instance know that the company just "burns money", and needs restructuring or even liquidation ($a = a_l$) including dismissal of the management, but keeps this as a secret by fabricating positive news. Paradigmatic for such management behavior are the Holzmann bankruptcy[6] in Germany or the Enron scandal[7] in the USA. In both cases the management misinformed shareholders and was –for some time- able to keep share values up. In this case capital is used inside the firm even if –at the

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[6] Business Week online, January 28, 2002
[7] Welt am Sonntag, August 28, 2003

end of the period- it is revealed to shareholders that the yield parameter is low and that a loss of $r - a_l$ was caused which could have been avoided.

If the management knows the true value of the parameter at the beginning of the period and is loyal to shareholders, it will shift resources to uses outside the firm. If shareholders know this the share price will –by the amount of $w(r-a_l)$- be higher than in equation (2). Equation (2) therefore presupposes that either the true parameter is not known to the management or that it is known to the management but not to the shareholders and that the management acts disloyal to shareholders by neither informing them and nor shifting resources to uses outside the firm and continues "burning of money".

Under these assumptions the screening by an auditor can lead to a socially valuable information[8]. Auditors often have a broader knowledge than managers about the general conditions of the market. They might for instance. see that a patent is valueless even though it is not yet expired or that housing prices in East Germany are likely to be depressed for a longer period, or that some of the main debtors of the company are close to bankruptcy etc. . Or they can just see and make public what an disloyal management tries to conceal from the shareholders. In these cases their work can help to avoid further unproductive investment and losses.

We assume now that the auditor acts at the beginning of a period, that his effort might lead to a revelation of the true parameter for this period, and if so that this forces the management to stop losses by shifting resources to alternative use. Throughout this article we use the following sequence of actions and events.

1. At the beginning of the period the productivity parameter is unknown to shareholders.
2. The audit is made. The auditor either finds or does not find the true productivity parameter. The audit is published for the use of outside investors.
3. If the auditor finds that the true parameter is low ($a=a_l$), this leads the management to shift resources to uses outside the firm.
4. If the audit does not reveal the true parameter, it reveals itself to the shareholders without cost at the end of the period.
The events 1.,2.,3. are all at the beginning of the period, the event 4. is at the end of the period. The company receives the yield (a_h, a_l or r).

To keep the analysis simple it is assumed, that the auditors effort cannot reveal the yield parameters for any future period t>1. The value of the firm per share is therefore always the expected yield of the first period, which is partly dependent on the auditors' effort plus a fixed term R as the discounted net income of all other periods.

We can now calculate the optimal effort level, which is set equal to the optimal cost level (x) of the auditor. The search costs of the auditor are x (per share). If inspite of his search the auditor does not find the true parameter value these costs are born by the shareholder and consequently the price of the share is reduced to.

(3) $p = wa_l + (1 - w)a_h - x + R = \overline{a} - x + R$

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[8] A socially productive information allows for an improvement of resource allocation, whereas a socially unprod uctive information does not have this capacity. A socially unproductive information can still be privately valuable, if it leads to a foreknowledge which can be used for a mere transfer of wealth, without improving the allocation of resources. See J. Hirschleifer,

If the auditor finds the true value of the parameter three constellations can arise. The true value is high and immediately publicized, then the share price increases[9] to

(4) $p = a_h - x + R$

The auditor finds that the parameter is low. If it is low but still higher than r, the opportunity cost of capital, the share price reduces to

(5) $p = a_l - x + R$

In this case the auditor has revealed the true value of the firm and found that it is lower than expected. But this does not lead to any improved allocation of resources. For a buyer of a company or a buyer of shares this might be a very profitable information. But socially this information is not productive as it does not lead to an efficiency gain.

If the auditor finds that the parameter is low and lower than r, an immediate reallocation of resources takes place to uses outside the firm. The future "burning of money" is prevented by the activity of the auditor. In that case the value of the firm is

(6) $p = r - x + R$

In this case the auditor´s work leads to a net efficiency gain of $(r-a_l)-x$.

We can now calculate the optimal costs of the auditor´s effort. We assume that the probability that the auditor´s search leads to the revelation of the true parameter is q=q(x). Consequently the probability that the true parameter is not found is 1-q(x). This function has the following properties: q=0 if x=0, $q \in (0,1]$ if x>0, $q_x(x)>0$ $q_{xx}(x)<0$, and $q \rightarrow 1,$ if $x \rightarrow \infty$ [10].
We now analyze the case in which the auditor´s effort can lead to an efficiency gain, that is the case in which the low yield parameter is lower than the opportunity costs of capital $a_l < r$.

The expected efficiency gain (eg) of the auditor´s work is then the probability that the true parameter is detected multiplied with the prior probability that this parameter is low and below the opportunity costs of capital (r) in the first period multiplied with the efficiency gain that is made possible in this case minus the costs of auditing.

(7) $eg = q(x)w(r - a_l) - x$

For the first order condition we get $q_x(x)w(r - a_l) - 1 = 0$ or

(8) $q_x(x) = \dfrac{1}{w(r - a_l)}$

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[9] It increases only if the costs of auditing are relatively small compared to the price increase due to the revelation the fact that the true parameter is high.

[10] An example for such a function is $q = \tan^{-1} x \dfrac{2}{\pi}$.

This is the Learned Hand formula for the optimal search costs of the auditor. It determines a unique optimal level of costs (x*). Consequently the auditor acts negligently as long as his costs are below this level.

The expected social loss (SL) of negligent behavior of the auditor is then the difference between the social gain of auditing if the effort level (x) is optimal minus the social gain if it is not optimal.

$$(9) \qquad SL = \left[q(x^*) - q(x) \right] w(r - a_1) - (x^* - x)$$

C. Consequences of liability rules

We can now analyze different tort liability rules which give the shareholder a claim against the negligent auditor. The following rules are analyzed.

(1) Full liability and partial liability (on the European continent better known as difference principle or "Differenzprinzip") under negligence, if the level of due care is precisely defined. It is shown that these rules lead to overcompensation of shareholders, but not to overdeterrence.

(2) Liability under negligence, if the level of due care is not precisely defined and the auditor knows only a probability distribution of the due level of care. It is shown that this rule leads to overcompensation and to overdeterrence if overcompensation is sufficiently high.

(3) Full liability under gross negligence or under an obvious violation of professional standards. It is shown, that this rule leads to overcompensation, but that the problems of overdeterrence are reduced under this rule.

I. Full liability under negligence, if the level of care is precisely defined

1. The cost minimizing auditor

This rule gives every shareholder who suffers the loss (p-a_1) at the end of the period a tort claim against the negligent auditor, who failed to detect the true value of the yield parameter at the beginning of the period. We assume that courts fix a due level of care which is equal to the efficient level of care. Negligence is then defined by the condition x<x*.

Under this rule the total costs of the auditor are TC, the expected liability costs are l and the costs of auditing are x

$$TC = \begin{cases} l + x \text{ if } x < x^* \\ x \text{ if } x \geq x^* \end{cases}$$

Obviously the auditor does not choose an $x > x^*$.

We now show that whenever he makes a choice in the range $x \in [0, x^*]$ he also must choose x* as his private cost minimum, because whenever he reduces x by some arbitrary amount below x* to save costs, the resulting expected damage compensation must be higher than the costs saved.

x* is the cost, which minimizes the sum total of x and $q(x)w(r-a_l)$, the expected social gain from auditing. Therefore any reduction of x below the value of x* leads to an increase of this sum that is to a social loss. The expected social loss (SL) from reaching a cost level below x* is then

$$(10) \qquad SL = q(x^*)w(r - a_1) - x^* - [q(x)w(r - a_1) - x] = [q(x^*) - q(x)]w(r - a_1) - (x^* - x)$$

We show that the private loss from choosing an x<x* is larger than the social loss for every x. That is a sufficient condition for the liability rule to give incentives to reach x*.

In the case of full liability the shareholder receives a damage compensation which is the difference between the price at the beginning of the period (p) and the price at the end of the period a_l, that is $(p-a_l)$.

If the auditor acts negligently (x<x*) and still finds the true value of the parameter with probability $q(x)$, he will –in spite of his negligence- not cause any loss. This excludes liability. The expected liability costs plus auditing costs (TC) of the auditor are then for any x<x*.

$$(11) \qquad TC = [1 - q(x)]w(p - (a_1 + R) + x = [1 - q(x)]w(\overline{a} - a_1)$$

The term (1-q(x) denotes the probability that the auditor does not find the true value of the parameter with a cost level of x. The expected private losses for the auditor (PL) of reducing the care level below the efficient level by the amount of x*-x are the total costs at the care level x<x* minus the efficient costs of auditing, which if spent would exclude liability.

$$(12) \qquad PL = [1 - q(x)]w[\overline{a} - a_1] - (x^* - x)$$

Also, x<x*. Here the term x*-x denotes the reduction of auditing costs from the efficient level to a level below the efficient level and the other term denotes the resulting expected liability. If one compares these private losses with the social losses from deviating from the optimal effort level one sees that these private losses are greater for any cost reduction below the level of x*. The reason is that we assumed that $\overline{a} > r$ and that (1-q(x))>(q(x*)-q(x)) (Compare the expected private loss in (12) with the expression for the expected social loss in (9)). Therefore the private loss for the auditor from choosing a cost level x which is below the efficient cost level x* is bigger than the social loss. Consequently the private cost minimum is x* . The ratio of private loss to social loss of not reaching the optimal and due level of care is bigger than 1.

$$(13) \qquad \frac{PL}{PS} = \frac{[1 - q(x)]w[\overline{a} - a_1 + R] - (x^* - x)}{[q(x^*) - q(x)]w[r - a_1] - (x^* - x)} > 1$$

Shareholders are overcompensated under this rule as is often the case with "pure economic loss" in which damage compensation is larger than losses inflicted to the society. The quota of overcompensation is given by the term $\dfrac{[1 - q(x)]w[\overline{a} - a_1 + R]}{[q(x^*) - q(x)]w[r - a_1]} > 1$

The private losses of the auditor from reducing costs to a level below x* are therefore higher than the social losses for any level of x. As social losses of reducing the effort level below the optimal

level (x*) are higher than the cost reductions (x*-x), this proves that any cost reduction to a level below x* increases total private costs, i.e. auditing costs plus liability costs for the auditor. And the auditor has an incentive to reach the optimal effort level. Therefore, even though damage compensation $\overline{a} - a_1$ is higher than the total social damages ($r-a_l$) in case a damage occurs, this does not lead to overdeterrence as long as the level of due care is precisely defined and efficient.

2. The share price if shareholders know the consequences of the liability rule

We can now also calculate the share price at the beginning of the period before the auditor gives his audit. If liability has the above properties, the shareholders will assume that auditors work efficiently and that they can prevent unnecessary losses in case the yield parameter is low. They also foresee that liability is just a threat and will not actually happen and that therefore the expected liability costs will be zero. The ex ante price (p), given the liability rule is then

$$(14) \qquad p = q(x^*)(wr + (1-w)a_h) + (1-q(x^*))\left[wa_1 + (1-w)a_h\right] - x^* + R$$

This price is higher than the price with which we worked above, by assuming that the shareholders believe that the work of auditors is useless for them. Consequently in case of a liability also the damage award (p-a_l) is higher. Therefore the fact, that this rule leads to overcompensation and efficient incentives also prevails for the price in (13).

II. Partial liability under negligence, if the level of care is precisely defined

1. The difference principle

Under partial liability the damage award is the difference between the wealth of the victim with and without the negligent act. This rule, known in Continental Europe as the difference principle, (Differenzprinzip in German, § 249 BGB) would not lead to a full compensation (p-a_l) of the shareholder by the auditor. To clarify this principle with respect to auditor´s liability we have to distinguish between three different cases.

(1) The buyer buys the shares before the beginning of period 1 and still keeps them after the end of period 1. The auditor fails negligently to discover and publish the low yield parameter at the beginning of period 1. At the end of period 1 the market reveals that the parameter is low (a_l). The buyer suffers a loss of p-a_l+R= $\overline{a} - a_1$ Under the difference principle the shareholder would however not be entitled to recover this loss. The defendant could argue that if he had been diligent and exercised due care and informed the public properly at the beginning of the period, the value of the shares would have dropped from p to r+R and that he has caused only the damage r-a_l. This resulted from the fact that the auditors did not cause the management to shift resources to uses outside the firm where they could yield the opportunity costs of capital. To my knowledge this defense according to the difference principle would be accepted in most legal orders. Damage compensation in this case would therefore result not in full liability (p-a_l+R), but in partial liability (r+R-a_l+R=r-a_r).

It is also noteworthy that in general the difference principle applies only, if the defendant shows that even without negligent behavior a certain damage would have occurred with certainty. The difference principle is however not applicable with respect to probabilities. If the defendant has reached a cost level of auditing of x<x* he cannot argue that even if he had reached the due level of

care (x*), the same damage might have occurred but with a lower probability. And he cannot argue that therefore the damage award should therefore be reduced to the damage (r-a$_l$) multiplied with the probability differential of the damage probability with and without the due level of care. At least this defense seems not to be possible within Germany, where the difference principle is part of the Civil Code and generally accepted by jurisdiction[11]. We will therefore interpret partial liability based on the difference principle as a rule which reduces liability if a full proof can be given that some of the damages would have occurred anyway, even if the defendant had reached the due level of care.

This means that –if the shareholder has bought the shares before period 1 and still holds them after the end of that period- the total costs of the auditor under this rule will be

$$TC = \begin{cases} (1-q(x))w(r-a_1) + x \text{ if } x < x* \\ x \text{ otherwise.} \end{cases}$$

In that case the total private costs of the auditor of deviating from the efficient level of care is the sum of auditing and liability costs if x<x* minus the costs leading to the efficient level of auditing x*.

(15) $PL = (1-q(x))w(r-a_1) - (x*-x)$

Is there overdeterrence in this case as under a rule of full liability? The shareholder receives a compensation equal to the social damage of r-a$_l$. The auditor cannot reduce his total costs by reducing his costs of care below the due level of care. This is due to the fact, that in case damage is paid, compensation is equal to the social loss. But the fact that the auditor cannot argue that the damage might have occurred even in the case of due diligence, however with a lower probability still makes the expected private loss of deviating from the optimal cost level of care larger than the expected social loss for every level of care x<x*(compare (15) with (9)).

(2)The buyer buys the shares after the beginning of period 1and keeps them until after the end of period 1.

In this case the buyer buys at price p in period 1. The auditor failed to find and make public that the yield parameter is low. The buyer keeps the share until after the true parameter is revealed to the market at the end of period 1 and suffers a loss of p-(a$_l$+R)=$\bar{a} - a_1$. Now the use of partial liability under the difference principle does not lead to any reduction of the damage award. Had the auditor not acted negligently and had he found the true parameter, the drop in share prices by (p-(r+R)) would have happened before the buy. Therefore, the defendant cannot argue that if he had acted diligently the plaintiff would have suffered a loss of (p-(r+R)) anyway which would reduce the damage award to (r-a$_l$). The difference principle leads to full liability and therefore –from a social point of view- to overcompensation. The total expected costs given that the shareholder bought the shares after the beginning of period 1 is then

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[11] In the case of Landwehrkanal in Berlin the German Supreme Court BGH held the state of Berlin liable for not cleaning the Landwehrkanal, an inner city canal, more than once in a year. The failure to reach a higher level of care led to full compensation of a shipowner whose ship propeller was damaged by floating filth. The fact that with more frequent cleaning the same damage might have occurred but with a lower probability did not lead to any reduction of the damage award. (BGHZ, Landwehrkanal…..).

$$(16) \qquad TC = \begin{cases} [1 - q(x)]w(\bar{a} - a_1 + R) + x, \text{if } x < x^* \\ x \text{ otherwise.} \end{cases}$$

(3)the buyer sells the share after the beginning and before the end of period 1.

Here the buyer sells shares at an overvalued price, because the auditor has failed to detect and publicize that the company is worth less than the market valuation. This resembles the case of an art collector who buys a painting at a high price, which is based on the expertise of an art expert, who negligently overlooked that the painting was a fake. The art collector resells the painting at a high price and only the second buyer discovers the fake and suffers the loss. To this shareholder the negligence of the auditor has caused a gain of $\bar{a} - r$ under the difference principle. Had the auditor not negligently failed to detect the true parameter, the shareholder would have suffered an equivalent loss. As this loss was avoided, the auditor has caused a gain to the shareholder. From an economic policy point of view this gain should be disgorged to the auditor according to the mitigation principle. But this is a practical impossibility. Therefore under the difference principle the private gains caused by the negligent behavior of the auditor are not disgorged, but the private losses of those who buy the shares within period 1 have to be fully compensated, which again leads to overcompensation.

2. Total expected damage compensation under the difference principle

We can now calculate the expected damage compensation under the difference principle. For this we assume that every shareholder who holds shares after period 1 has a constant probability of having bought the shares in period 1 (α) or before period 1 $(1 - \alpha)$.

The expected total cost for the tortfeasor (TC), damage compensation plus costs of auditing (x) is then

$$(17) \qquad TC = \alpha\big[(1 - q(x))w(\bar{a} - a_1)\big] + (1 - \alpha)\big[(1 - q(x))w(r - a_1)\big] + x \text{ if } x < x^*$$

The expected private loss of the tortfeasor (PL) of reaching a cost level below the efficient cost level is then TC-x* or

$$(18) \qquad \begin{aligned} PL &= \alpha\big[(1 - q(x))w(\bar{a} - a_1)\big] + (1 - \alpha)\big[(1 - q(x))w(r - a_1)\big] - (x^* - x) \\ PL &= [1 - q(x)]w\big[\alpha(\bar{a} - a_1) + (1 - \alpha)(r - a_1)\big] - (x^* - x) \end{aligned}$$

The ratio Q between the private and the Social loss is then

$$(19) \qquad Q(x) = \frac{PL}{SL} = \frac{[1 - q(x)]w\big[\alpha(\bar{a} - a_1) + (1 - \alpha)(r - a_1)\big] - (x^* - x)}{[q(x^*) - q(x)]w[r - a_1] - (x^* - x)} > 1$$

It can easily be seen that this ratio is also larger than one as long as $\bar{a} > a_1$ and that the private costs of the auditor of deviating from the efficient cost level x* are larger than the social losses caused by this deviation. Thus overcompensation is inevitable even under partial liability. However, as only the social loss is compensated, if the shareholder has bought his shares before period 1, the distance from social losses to auditor´s private losses is smaller than under full liability.

It is also easy to see that overcompensation does not lead to overdeterrence under partial liability, if the due costs of care are precisely defined at x*. For the same reasons as explained under full liability the cost minimum must be the efficient and due level of care.

III. Overcompensation and overdeterrence under negligence, if the due level of care is unknown ex-ante

In this section we analyze the effect of overcompensation on deterrence if the due level of care is not precisely known ex ante, neither to courts nor to tortfeasors[12]. Only during the judicial procedure, when the parties present the facts of the case and when the tortfeasor explains what he has done to reduce damages and when the plaintiff explains what could have been done the due level of care is fixed ex post. This is a realistic assumption for most of the cases. An ex ante precise level of care is to be found more often in regulatory law where experts can fix it beyond legal procedure. It is also to be found in those tort areas, in which a long accummulation of high court decisions has led to a precise rule. However in dynamic fields with changing technologies this is not to be expected and the due level of care is most likely known only as a probability distribution when the tortfeasor decides on his level of care. We change assumptions as explained by the following graph.

Fig.1
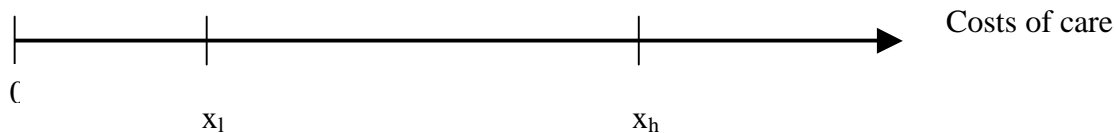
Here x is the cost of care. x_l denotes a lower threshold level of care for which negligence can be regarded as being obvious for an outside observer like a judge. If $x \leq x_l$ and a damage is caused, courts will assume negligence and liability results with certainty. If $x \geq x_h$ it is equally obvious that the due level of care was reached and courts will always accept this level or a higher level as sufficient to exclude liability. It is assumed that tortfeasors know these threshold levels defined by the courts and therefore know all levels of care which exclude liability with certainty and all levels of care which will lead to liability with certainty.

Between x_l and x_h the tortfeasor attaches a probability that he is held negligent to each possible care level. Denote this probability value with F=F(x). F has the following properties.

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[12] For an analytical exposition without bounds for the range of the distribution function F. see R. Crasswell and J.E. Calfee, Deterrence and uncertain Legal Standards", Journal of Law, Economics and Organisation, Vol.2 no.2 1986, pp.281, See also R. Schwartz, Auditors' Liability, Vague Due Care, and Auditing Standards, Review of Quantitative Finance and Accounting, 11 (1998); 183-207, and Ralf Ewert, Auditor Liability and the Precision of Auditing Standards, op. cit. Fn. 1

(20)
$$F(x) \in [0,1]$$
$$F(x) = 1 \text{ if } x \leq x_1$$
$$F(x) = 0 \text{ if } x \geq x_h$$
$$F_x(x) < 0 \text{ if } x \in (x_1, x_h)$$

To be able to analyze the effect of overcompensation, we assume that damage compensation is by a factor m (m>1) higher than the social damages for all levels of $x<x_h$. In equation (13) and (19) this ratio is shown for full and partial liability under the difference principle. From this equations it also follows that m can change with x, but that it is always larger than 1. However to avoid more complicated terms it is further assumed that m is a parameter (m>1).

We make the further assumption, that the efficient level of care (x*) is between x_1 and x_h. This is the most plausible assumption, if one assumes that the courts try to hit the efficient level of care when they fix the due level of care but for lack of information sometimes hit to the right and sometimes to the left of x*. The tortfeasor minimizes his expected costs.

Assume that $0 \leq x \leq x_1$. Then his costs are mD+x, where D reflects the damage compensation. In this range at every x an increase of x must decrease total costs, as by assumption the level of care is then smaller than the optimal level and any Δx leads to a higher reduction in damages ΔD and an even higher reduction in damage compensation $m\Delta D$, as m>1. The cost minimum in this range is therefore at x_1. Assume now that x is increased by a small value at x_1, then again total costs must decrease, as by assumption the level of care is then still lower than the optimal level and the resulting reduction in damage compensation $m\Delta D$ is higher than the increase in x at x_1. Furthermore also the probability of being negligent decreases below 1 which leads to a further reduction of the expected damage compensation. Consequently x_1 cannot be a cost minimum. If there exists a cost minimum it must be at a higher level of x than x_1. If $x \geq x_h$ total costs of the tortfeasor are x, as it is certain that the due level of care is reached. Consequently the cost minimum in this range is x_h. The cost minimum for all values of x must therefore be at at a level higher than x_1, and the highest possible cost minimum is x_h.

In the range $x_1 < x \leq x_h$ total expected costs of the tortfeasor (TC) are

$TC = F(x)mD(x) + x$. Differentiation with respect to x yields the first order condition
$TC_x = m[F_x(x)D(x) + D_x(x)F(x)] + 1 = 0$, with $F_x < 0, D_x < 0, D(x) > 0, F(x) > 0$.

It is now easy to see that only by chance the tortfeasor gets incentives to reach the efficient level of of care, if

(21)
$$F_x(x^*)D(x^*) + D_x(x^*)F(x^*) = -\frac{1}{m}$$

This depends on whether at x* the joint effect of an increase of the costs of care on the probability of liability and on the damages just outweighs this increase. Otherwise the cost minimum is reached at some level of $x \neq x^*$ in the interior of the range or at $x=x_h$. The result is therefore either over- or undertederrence, if the standard of due care is known only as a probability distribution.
It is also easy to see that with an m high enough the value of 1/m must be higher than the value of the left hand side. That means that the equality can only be reached at a an x>x* and that therefore overdeterrence results.

Proposition 1. If the level of due care is imprecise ex ante within a range and if the efficient level of care is within this range, there exists an m>1 for which overcompensation in a negligence regime must result in overdeterrence. The same results for any number bigger than m.

Overdeterrence of auditors is therefore a likely outcome under a rule of simple negligence, if

-the purely redistributive component of liability is high enough and
-it is not possible to define ex ante clear and efficient rules of behaviour whose observation lead to an escape from liability and whose violation triggers liability with certainty. It is however questionable whether a complex task as auditing, which includes among other things asset valuation, can be efficiently prescribed by clear rules of behaviour and due care. However the problem of overdeterrence might still be solved or at least alleviated by a negligence concept of gross negligence.

C. Gross Negligence as a method to reduce overdeterrence.

For a solution or at least alleviation to this problem we present a concept of "gross negligence" or "gross violation of professional standards", that should trigger liability instead of normal negligence. To do this we have first to take a closer look at the distribution function F(x). This function is defined over the interval $[x_1, x_h]$. Its value is 1 at the lower bound and 0 at the upper bound of this interval. The legal interpretation of the upper bound is that at these costs of care it is obvious that the tortfeasor was not negligent. The legal interpretation of the lower bound is that it is obvious that the tortfeasor was negligent. F(x) is continuous and $F_x(x)<0$, $F(x) \in (0,1)$ everywhere in the interior of the interval. Now assume that the legal system imposes a restriction on the court decision. This restriction is a rule which fixes an upper bound x_g which is strictly smaller than x_h. Liability is then excluded with certainty, if $x_g<x_h$ is reached, even if it is not obvious that the tortfeasor was not negligent.

With an $x_g < x_h$ we now get a new distribution function whose value is 1 at $x=x_l$ and whose value is 0 at $x=x_g < x_h$. Let this function be G (x) and let it also be of the same type as F(x). Then we assume as a consequence:

(22) $G(x) < F(x) \text{ if } x \in (x_1, (x_1, x_g]$

(23) $G_x(x) < F_x(x) \text{ if } x \in (x_1, x_g]$.

This is illustrated by the following graph in whgich G and F are linear functions

Fig. 2

x_l x_g x_h
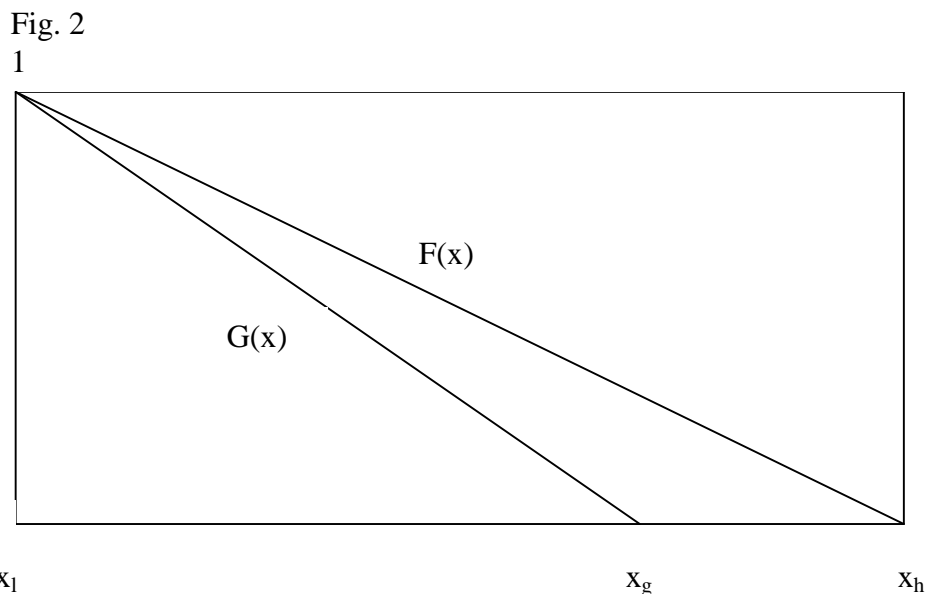
Here the absolute values of $G(x)$ and of $G_x(x)$ are strictly smaller than the values of $F(x)$ and $F_x(x)$ for any $x \in [x_1, x_g]$ We believe that this is a reasonable consequence also for other types of functions with the properties of $G(x)$ and $F(x)$ given as in (21) and (22).

The function $G(x)$ is interpreted as a definition of gross negligence. Under this definition the tortfeasor is liable in damages if it is obvious that his level of care was too low. But he can escape liability at a relatively low level of care at which it is not obvious that he was not negligent.

We now ask, whether it is possible to find an x_g and thereby define a range of gross negligence, which leads to efficient incentives for the tortfeasor, even in the case of overcompensation. For this purpose we now regard x_g as a variable, which can run from x_1 to x_h .This leads to a distribution function with the following properties.

(24)
$$G = G(x, x_g)$$

$$G = \begin{cases} 1 \text{ if } x = x_1 \\ 0 \text{ if } x = x_g \\ G \in (0,1) \text{ if } x \in (x_1, x_g) \end{cases}$$

In the latter case we also get

$$G_x < 0, G_{x_g} > 0$$

The total cost function for the tortfeasor in the range between x_l and x_g is then

(25) $TC = G(x, x_g) m D(x) + x$

For the first order conditions one gets

$$(26) \qquad \begin{aligned} TC_x &= m\big[G_x(x,x_g)D(x) + D_x(x)G(x,x_g)\big] + 1 = 0 \\ TC_{x_g} &= mG_{x_g}(x,x_g)D(x) = 0 \end{aligned}$$

It is now possible to ask for the socially optimal upper bound x_g^* of the distribution function $G(x)$. We ask which x_g minimizes the total expected costs of the tortfeasor, given an optimal level of care $(x=x^*)$.

$$(27) \qquad TC_x = \big[G_x(x^*,x_g)D(x^*) + D_x(x^*)G(x^*,x_g)\big] = -\frac{1}{m}$$

This yields an $x_g=x_g^*$. Proof: Assume as a starting point that m and x_g are high enough to lead to an overdeterrence at x_g i.e. $TC_x = \big[G_x(x^*,x_g)D(x^*) + D_x(x^*)G(x^*,x_g)\big] > -\frac{1}{m}$. Now reduce the value of x_g continuously towards x_l. That reduces the values of $G>0$ and of $G_{xg} <0$. G_{xg} must decrease below all limits, as $G_{xg} \to -\infty$ if $x_g \to x_1$. This results because the value of G drops from 1 at $G(x_l)$ to 0 at $G(x_g)$. Consequently the first derivative of the function within this range, which is always negative must decrease below all limits. The range of the function then becomes smaller and approaches 0. The value of the function must always run from 1 to zero within this range, however small the range is. This must decrease the value of the derivative below all limits.
 As $D(x^*)$ is positive and constant, there must therefore exist an $x_g=x_g^*$ at which $\big[G_x(x^*,x_g)D(x^*) + D_x(x^*)G(x^*,x_g)\big] = -\frac{1}{m}$. Assume now that the legal system chooses the range $\big[x_1, x_g *\big]$ over which the distribution function is defined. Then the tortfeasor minimizes his total costs when he chooses a care level which is equal to the socially optimal care level.

Proposition 2: Assume overcompensation for pure financial loss leads to overdeterrence under a level of due care which is known ex ante only as a distribution function F(x) with a lower and an upper bound for the range of the function. Then there exists another distribution function G(x) with the same lower bound and a smaller upper bound of its range, which induces the optimal level of care.

Such a distribution function can be called "Gross Negligence" or in the case of auditors "Gross Violation of Professional Standards". If courts stick to such a standard, when granting compensation for pure financial losses, it is guaranteed that overcompensation does not systematically lead to overdeterrence.

Of course the informational requirements for such a gross negligence standard can often not be met by the courts. If a concept of gross violation of standards is used, it might be to lax i.e. x_g too close to x_1 (the level of obvious negligence) and then even lead to underdeterrence. Or it might be too close to simple negligence, i.e. x_g too close to x_h , leading still to overdeterrence just as under a normal legligence standard. How often this happens, is dependent on the informational level of courts and cannot be analysed here. But the systematic bias of overdeterrence as a result of overcompensation disappears, if the above concept of gross negligence is introduced.

In this context it is noteworthy that the German supreme court (BGH) has in various decisions on the liability of experts for pure financial damages used a standard of gross negligence to trigger tort liability. Basically the BGB (Bürgerliches Gesetzbuch) restricts liability for pure financial loss in tort to those cases in which the tortfeasor acts intentionally (vorsätzlich) and under violation of boni mores (Sittenwidrigkeit), § 826 BGB. This very restrictive rule for the compensation of pure financial damages was somewhat relaxed by jurisdiction. In several court decisions the BGH ruled

that gross negligence is sufficient for the court to assume both a violation of boni mores and intentionality[13]. This development was not accepted without critique within the legal profession[14]. It is seen as a deviation from the concept of intentionality for which the court in a civil law country lacks authority and as a silent introduction of gross negligence in a domain, which the legislator wanted in principle to exclude from liability. On the other hand it must be seen, that the very restrictive wording of § 826 BGB which practically excludes liability except for cases of proven disloyalty of the expert leads to efficiency losses. This loss is ever increasing over time as those professions which process and market information are becoming more and more important for the functioning of markets and especially the capital market. The jurisdiction of the supreme court should therefore be welcomed from an economic perspective. And it should be extended and generally used in cases of auditor´s liability in tort.

D. The tort-contract boundary

Our analysis would be of little value if it were restricted to tort law. The claimant has always the possibility to base his claim either on tort law or on contract law or on both. This is especially the case in the German civil law system (Anspruchskonkurrenz). With respect to the compensation of pure financial losses the difference between tort and contract is of fundamental importance, as in contract the usual restrictions to compensate pure financial losses do not exist. If within a contract an expert such as an auditor negligently delivers a wrong expertise and thereby causes a damage to the partner he is liable for the pure financial loss[15]. This is the general contractual default rule for consequential damages in Germany and in all major countries.

If for instance an expert negligently overvalues a house in his expertise, which his contractual partner buys at a too high price, the expert is liable under contract law, even though he escapes liability under tort law. The fact that this has only led to a redistribution of wealth between the seller and the buyer of the house has no consequence in contract law. In a contract the partner has a willingness to pay the expert his costs of care x and his expected liability costs to such an extent that the sum total of his private damages from a wrong expertise and these costs are minimized. The contractual partner gets the liability he pays in the price of the expertise and his willingness to pay is related to the avoidance of private losses. Consequently, the problem of sorting out pure financial losses from compensation does in general not exist in contract law. The due level of care is clearly oriented to the avoidance of private losses and not of social losses. These costs are transactions costs which allow the transfer of resources to the highest valued user.

The question here is, whether the shareholder has a contractual claim against the auditor. The auditor´s contract is not with the shareholders but with the corporation. An explicit contract does therefore not exist. This however does not exclude contractual liability, as all legal orders have developed concepts and routines that lead to a contractual claim under an implicit contract or a quasi-contract. It seems however that in Germany the scope of contractual liability is larger than in Common Law Countries. In Germany the concept of a contract whose protective effects are extended to third parties exists on which a contractual claim can be based in such cases (Vertrag mit Schutzwirkung für Dritte). Some authors[16] have proposed a liability concept sui generis, based on simple negligence, for the liability of experts whose legal consequences can however be taken either from contract law or from tort law. There exist different legal forms which have as a consequence, that the claim can be based on contract law even if the claimant has no explicit

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[13] BGH MW 1975, 559; BGH 1991, 3283=WM 1991, 2043 ff.
[14] See C.-W..Canaris, Die Reichweite der Expertenhaftung gegenüber Dritten, ZHR, 163, (1999), 206 ff.

[15] In Germany contractual liability of the auditor is capped. § 323, 2 HGB
[16] See C.-W..Canaris, Die Reichweite der Expertenhaftung gegenüber Dritten, ZHR, 163, (1999), 206 ff.

contract with the defendant. All these routines would lead to a compensation for pure financial loss under negligence. They therefore circumvent the restrictions of tort law with regard to pure financial loss.

It is neither possible nor necessary to deal with these concepts in detail. They have all one in common, which is crucial from an economic perspective[17]. They require that the protected person pays his protection in the price and that it can be assumed that he has a willingness to pay for his protection.

With regard to shareholder liability it has already been shown, that the liability costs and the costs of care reduce the profits of the company and are therefore fully reflected in the value of a share. Therefore the shareholder alsway gets what he pays. This condition of quasi contractual liability is therefore given without any doubt. (See under B.)

The question is whether the shareholder is willing to pay for his protection and how much he would be ready to pay. Here it is now crucial to distinguish between shareholders in the secondary market and buyers of shares in the primary market or in initial public offerings. For both groups the willingness to pay for the protection is different. Therefore also the scope of liability should be different.

I. Shareholders willingness to pay for protection in the secondary market.

The typical shareholder is an investment fund or pension fund or a private person with a diversified portfolio. When he calculates his willingness to pay for the contractual liability and for the scope of his protection he is "behind a veil of ignorance". There are three possibilities for him to occur (See above under B.II.1.).

(1) He has bought the shares before the audit, in which the company is overvalued. He still holds the shares after the bad news reached the stock market by other channels. The loss he suffered is therefore $r - a_l$. His private loss is then equal to the social loss, which the auditor caused.

(2) He has bought the shares before the balance was published and sells them after the wrong audit but before the bad news reaches the market, that is in period 1. The auditor has caused him a profit of $\bar{a} - r$ by his negligence. Had the auditor avoided the mistake the share prices would have dropped by this amount at a time when he was a holder of the share.

(3) He has bought the shares after the auditing took place (during period 1) and still keeps them, after the bad news reached the market anyway. Then he has suffered a loss of $\bar{a} - a_l$
Let the probabilities for the outcomes (1), (2) and (3) be u_1, u_2 and u_3.
$u_1 + u_2 + u_3 = 1$

Then we get for the expected loss of the shareholder (L), given a mistake of the auditor and given that the yield parameter is low:

$$L = u_1(r - a_l) - u_2(\bar{a} - r) + u_3(\bar{a} - a_l)$$

From section A III. we take, that the probability of a mistake of the auditor is $(1-q(x))$ and that the probability that this will result in a damage because the yield parameter is low is $(1-q(x)w)$.

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[17] H.B. Schäfer, *Die Haftung für Wirtschaftsprüfer aus wirtschaftswissenschaftlicher Perspective*, AcP 2002 (202), 808-840.

Therefore, if not the corporation but the shareholders themselves would conclude the contract with the auditor, they would ask for a level of care, which minimizes the sum total of the expected shareholders losses plus the costs of auditing, because that would maximize their shareholders value.

$$\mathrm{Min}(1 - q(x))w\left[u_1(r - a_1) - u_2(\bar{a} - r) + u_3(\bar{a} - a_1)\right] + x$$

The shareholder would be interested that the auditor reaches the level of x that minimizes these expected costs.

Now we introduce an observation, which is crucial for the question of this article. Assume that the shareholder holds a diversified portfolio of stocks, bonds and money and neither plans to save nor to disinvest. The shareholder uses the dividends and interest payments for consumption. In that case the only motivation for the selling and buying shares is to improve the structure of the portfolio, to spread risks and to to accommodate the portfolio to changing overall economic indicators. In that case the ex ante probability of buying and selling a particular share in any period must be equal. The shareholder therefore expects ex ante with a certain probability, that he will either buy or sell shares of a particular company in any period. If he buys, and the auditor overvalues the company this will cause him losses. If he sells the auditor causes him an equal gain. The probabilities of these two events are equal. Now call the probability that the shareholder will trade (buy or sell) shares of a particular company in a particular period u. Then the expected loss, given the audit led to an overvaluation in this period is $u(\bar{a} - a_1 - \bar{a} + r) = u(r - a_1)$.

The probability that the shareholder will not trade in a particular period is then (1-u) and his expected loss in case the auditor overvalued the shares is $(1 - u)(r - a_1)$. Therefore the shareholder in a secondary market faces the following total expected losses, including the costs for the audit.

$$\mathrm{PL} = (1 - q(x))w\left[(1 - u)(r - a_1) + u(r - a_1)\right] + x = (1 - q(x))w(r - a_1) + x$$

This is the expected private loss, if the damage occurs. Differentiating with respect to x yields the first order condition

$$q_x(x) = \frac{1}{w(r - a_1)}$$

This yields a cost level of care (x), which is optimal for the shareholder, but it is also socially optimal. (Compare with the first order condition in (8) in section BIII above). The shareholder´s private interest in avoiding the loss is not larger than the interest of the society at large in an efficient organization of the capital market. One can therefore argue that there is no rationale to assume any implicit contract between shareholders and auditors, which would give rise to a liability which is stricter than under tort law. Pragmatism recommends to rule out any contractual liability under these circumstances. The shareholder has no special willingness to pay for his protection which improves his legal position beyond that, which he enjoys under tort law.

Admittedly this result arises only if the shareholder neither plans to save nor to disinvest continually over time. If for instance shareholders are young they tend to save into their portfolio and therefore buy more shares in any period than they sell. If shareholders are old they disinvest and are likely to sell more shares in any period than they buy. There exist other conditions which might lead to a constellation under which shareholders face ex ante probabilities of u_2 and u_3 which

lead to a different willingness to pay for the auditor. But we believe that such considerations would be too artificial to have any effect on how the liability rule for auditors should be set up.

II. Buyers´ of assets willingness to pay for protection in a primary market

These considerations however change if an audit is given for a firm for the reason to sell the firm or to go public and to inform potential buyers about the value of the firm. This constellation is not different from any asset valuation by an expert, which is made to inform the buying side and is therefore a transaction cost. Here the rationale of the audit and the expertise in general is to reduce the asymmetric information between the seller. It is obvious that the buyer has a willingness to pay for the reliability of this expertise, which is determined by the private losses he incurs, when he buys an overvalued firm. He is therefore interested in a higher level of care of the auditor than a shareholder at the secondary market. And the shareholder is a buyer or a seller with equal probability. The only reason why in such cases sellers and not potential buyers conclude the contract with the auditor is, that the expertise is a public good, valuable for all buyers and that free riding or unnecessary duplications of expertise would result if buyers concluded the auditing contract.

The buyer in a primary market wants the auditor to minimize the sum of his expected private losses and auditing costs which are in this constellation

$$PL = (1 - q(x))w \left[\overline{a} - a_1 \right] + x$$

This yields the first order condition of

$$q_x(x) = \frac{1}{w(\overline{a} - a_1)}$$

It also yields an x* as the efficient cost of care, which is higher than in the previous analysis, when the shareholder has to determine his willingness to pay for the audit not knowing whether he will gain or lose as a result of the auditor´s mistake. From an economic point of view there is therefore no reason to restrict liability. The due level of care depends on the losses of the buyers in case they buy an overvalued firm. It is therefore conceptually higher than for the secondary market. Incentives should be given to reach this care level. Normal negligence should trigger liability. This is in the interest of the buyer who is willing to finance the auditor as part of his transactions cost. This result can be obtained either by assuming an implicit contract between the buyer and the auditor or by extending the protective consequences of the contract between the firm and the auditor to the buyer or by a liability regime sui generis, which however leads to legal consequences as laid down in contract law. In Germany the result of liability for simple negligence can also be obtained within tort law (§ 823 Abs.2), if one interprets the regulatory statutes pertaining to the work of auditors as protection laws (Schutzgesetze). All these legal concepts would trigger liability in case of simple negligence with a negligence standard that reflects the possible private losses of the buyer as a consequence of an overvaluation. Whatever legal form is chosen, the borderline between a stricter and a less strict liability rule for the auditor should be whether the expertise was made for the secondary or the primary market.

In this context it is now possible to give a comment on the much debated Caparo vs. Dickman case in Britain[18]. Here a company had ordered an audit for the internal use of the management. An

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[18] See Caparo Industries PLC v. Dickman and Others. 1990. 1 All England Law Reports 568.

outside investor received this report. He noticed that the value of the firm given in the balance sheet was substantially higher than the market value at the stock exchange. He bought the majority of the company only to learn that the market value was correct and that the auditor had negligently overvalued the assets. The House of Lords denied compensation. Given the analysis in this article this decision was in line with economic considerations, as the auditor did not know and could not know that his audit was used for a particular transaction. Therefore, the private loss of a buyer was not part of his price for the audit.

E. Conclusion

Auditor´s liability leads to a compensation of pure financial loss. It has been argued in the law and economics literature that the restriction of damage compensation in such cases is justified, as in this group of cases private losses of claimants are higher than the social losses which might lead to overcompensation and overdeterrence. In this article it is shown, that overcompensation of the victims leads to overdeterrence of the auditors, if the level of care for auditing is not strictly defined and only known as a probability distribution. However, overdeterrence can be reduced or even eliminated, if the liability for negligence is relaxed to a lower level such as gross negligence. It is also argued that this solution should be restricted to the activity of auditors in secondary markets, such as audit of the yearly balance sheet. A shareholder who operates in such a market has in general no willingness to pay for an auditing effort, which is higher than the optimal effort for a well functioning capital market.

If however the audit is exclusively made for the sale of a firm or an initial public offering the efficient level of care of the auditor should reflect the potential private losses and be higher than in secondary markets. Simple negligence should trigger liability. Here the buyers' willingness to pay for his protection is higher than in the secondary market. Consequently, liability should be stricter. One way of obtaining this result could be to extend contractual liability to the relation between the auditor and the buyer of a firm or of shares in an initial public offering.

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