Auditors' Professional Liability, Liability Insurance and Audit Reliability

Massood Yahya-Zadeh*
School of Business and Public Management
The George Washington University

Abstract :

Auditors provide assurance services and, as such, they are viewed by the investing public as guarantors of their investments in public corporations. Auditors and audit firms manage the risk from exposure to large lawsuits by shareholders of public corporations by purchasing liability insurance. This study examines the role of liability insurance in audit industry. Specifically, the auditors' optimal choice of liability coverage and their incentives to exercise due care under alternative legal regimes are examined. An analytical model of auditor decision-making is used, where the extent of auditing procedures and client risk determine the probabilities of incorrect audit opinions. An insurance market is also introduced, where liability coverage can be purchased at premiums with zero or positive markups. The study argues that auditors may not always find it optimal to acquire liability insurance and, when they do, they may prefer acquiring only partial insurance coverage. The policy implication of this finding is that auditor liability insurance may not be the appropriate vehicle, as is argued in the U.S. courts, to spread the potential investment losses to the accounting profession and eventually to the investing public.

Keywords: auditor liability, auditor insurance, liability insurance.

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1. Introduction

In the United States, over the last two decades, both the number of third parties to whom accountants are liable and the size of damage awards in lawsuits against public accountants have increased substantially. The recent accounting scandals of global corporations like Enron and WorldCom clearly demonstrated that in the face of such catastrophic financial events, even a major auditing firm like Arthur Anderson could be quite vulnerable.

Public accountants are liable to their clients, as well as to third parties, on the basis of common and statutory laws[1]. Auditors can be found liable to their clients in tort, in contract, under sections 11 and 12 (2) of the Securities Act of 1933, under section 18 of the Securities Exchange Act of 1934 and under the SEC rule 10b-5. The U.S. Supreme Court's broad interpretation in 1985 of the Racketeer Influenced and Corrupt Organization Act has further extended the reach of auditor liability laws. Auditors are understandably concerned that lawsuits under the RICO Act can result in payments of three times the amount of the damages plus the legal costs. The Sarbanes-Oxley Act of 2002 further tightens the regulations overseeing the work of the public accounting profession in the United States.

The growing number of lawsuits involving public accountants and the increasing sizes of damage awards threaten the existence of smaller audit firms. The U.S. courts have increasingly justified their rulings by resorting to the basic tenets of the product liability laws. For instance, in *Spherex Inc.V. Alexander Grant and Co.*, the New Hampshire Supreme Court argued:

"[A]n accountant, like the manufacturer under products liability law, is in the best position to regulate the effects of his conduct by controlling the degree of care exercised during the performance of this professional duty. The accountant, through the fee structure, can pass along to his clients the cost of insuring against financial loss sustained by them through reliance upon his negligent misstatement of fact."[2].

A similar argument was forwarded in *Rosenblum Inc. V. Adler*, where the New Jersey court argued:

"The imposition of a duty of foreseeable users may cause accounting firms to engage in more thorough review… which should tend to reduce the number of instances in which liability would ensue… Accountants will also be encouraged to exercise greater care leading to greater diligence in conducting audits… Isn't the risk of loss more easily distributed and fairly spread by imposing it on the accounting profession, which can pass the cost of insuring against the risk onto its customers, who can in turn pass the cost onto the entire consuming public."[3].

Compare the above arguments with the frequently quoted passage from Justice Traynor's options in Escola v. Coca Cola Bottling Co.:

"Even if there is no negligence, however, public policy demands that responsibility be fixed where it will most effectively reduce hazards to life and health inherent in defective products that reach the market. It is evident that the manufacturer can anticipate some hazards and guard against the recurrence of others, as the public cannot … The cost of an overwhelming misfortune to the injured person, and a needless one, for the risk of injury can be insured by the manufacturer and distributed among the public as a cost of doing business" [4].

Epstein (1985) argues that the above opinion presumes the availability and affordability of liability insurance, whereas, in reality, legal rules make certain types of risks uninsurable and, hence, certain types of products unmarketable.

It may be argued that this implicit assumption has contributed to the "liability crisis" of the 1980s and to the insurance crisis that followed it. According to a survey by Mednick (1987), insurance premiums for accounting firms increased about 1900 percent from 1980 to 1986. Mednick also found that one out of five CPA firms carried no liability insurance in the mid-80s. In a survey of 500 CPA firms, Berton (1992), reports that the growing threat of litigation and the increasing size of liability awards have forced 79 percent of surveyed firms to reduce the scope of their services, 87 percent to resort to disclaimers specifying appropriate use of their work, and 56 percent to limit industries served. Berton further reported that, due to the increased auditor liability, audit clients may experience a 20% to 30%|increase in audit fees [5].

Liability rules and liability insurance policies influence incentives to reduce the risk of accidents. They, further, affect the allocation of risk among the parties involved. Shavell (1982) has shown that the availability of liability insurance has no undesirable consequences for the working of the liability system. He proves that the terms of insurance policies supplied in a competitive market provide appropriate substitutes for the deterrent incentives created by liability rules.

Using the insurance model of Shavell (1982, 1984, 1987), this study examines the role of liability insurance in audit industry. Specifically, the auditors' optimal choice of liability coverage and their incentives to exercise due care under alternative legal regimes are examined. An analytical model of auditor decision-making is used, where the extent of auditing procedures and client risk determine the probabilities of incorrect audit opinions. An insurance market is also introduced, where liability coverage can be purchased at zero or positive markups.

2. The Basic Model and the Concept of Efficiency

2.1 The Basic Setup

Auditors are legally liable to their clients and to third parties for incorrect audit opinions. Rejection of the client's financial statements, when no material error exists (type I error), can lead to legal action against the auditor by his client. On the other hand, false acceptance of the client's statements (type II error) can result in legal action against the auditor by third parties. Due to such contingencies, the auditor may frequently find it optimal to purchase liability insurance and pass the insurance costs, to the extent allowed by the market, to all of the firms' clients. The problems of interest are: (1) whether, and under what conditions, full or partial liability insurance will be acquired? and (2) how does the availability of an insurance market influence auditors' incentives towards audit quality?

To examine these problems, a unilateral model with a nonstrategic client is considered. It is assumed that the probabilities of type I and II errors are functions of the auditing effort, x, and the client's risk factor, p. The effort variable, x, can be viewed as the extent of auditing procedures, i.e., the amount of the control and substantive audit tests. The risk factor, p, represents the probability of a material error in the client's financial statements.

Denote the probabilities of type I and II errors by α (x, p) and . (x, p), respectively. Assume that (a) $\alpha_x < 0, \alpha_{xx} > 0, \beta_x < 0, \beta_{xx} > 0$ and (b) $\alpha_p < 0, \beta_p > 0, \alpha_{xp} > 0, \beta_{xp} < 0$. These assumptions are derived from the more basic assumption that the conditional probability of type I and II errors are decreasing and convex in x. Assumption (a) indicates that . and . are strictly decreasing and convex in x. Assumption (b) suggests that the probabilities of type I and II errors respond quite differently to changes in the client's risk factor. Type I error diminishes and becomes less elastic to audit effort as client risk increases. On the other hand, type II error increases and becomes more elastic to additional audit effort for riskier clients.

The next section defines the concept of efficiency and the due care standards used in this article.

2.2 Efficiency and the Due Care Standards

The efficient level of auditing effort is defined, in the tradition of economics and law literature, to be that which minimizes the expected social losses plus the costs of audit testing [6]. Assume that either type I or type II error results in a social loss, L. The loss may be due to such factors as the reduced investor confidence in the financial information about publicly traded companies. Assume, further, that the cost of audit testing; C(x), is normalized such that C(x) = x. A socially efficient or desirable level of audit testing can, then, be defined as the solution to the following problem:

$$\text{Minimize: } C(x) + [\alpha (x, p) + b(\beta, p)] L. \quad (1)$$

Replacing C(x) with x and setting the first order derivative of the above expression equal to zero, the efficient level of audit testing will be the solution to the following first order condition:

$$1 = -\alpha_x (x, p) L - \beta_x (x, p) L \quad (2)$$

The subscripts in equation (2) represent partial derivatives. The left and right hand sides of condition (2) represent, respectively, the marginal cost and the marginal social benefits of additional audit tests.

Denote the solution to equation (2) by x^R. Clearly, x^R defines the efficient testing level for a given level of social loss, L, and for clients of risk category, p. Assume that the regulators and the courts adopt the efficient auditing procedure to be the "due care" standard for auditors. Observe that the social optimization problem (1) and, thus, the standard of due care are unaffected by private losses of the clients, investors and creditors. This characterization is in contrast with results obtained in products liability literature, where the social and private losses associated with a defective product are one and the same. For instance, the social loss resulting from a broken car equals the cost to its owner of repairing the car. Consequently, in a products liability context, the due care standard, obtained in a similar manner, turns out to be a function of the private loss of the owner of the defective product. In contrast and in the present context, the loss to an investor could be a gain to another investor with a social loss of zero. One can conceive, at least in theory, of situations where the due care standard is based on a small or zero social loss, but investors could frequently experience large private losses.

3. Optimal Insurance Coverage under Strict Liability

3.1. The Auditor's Basic Problem

The auditor [7] is assumed to maximize his expected utility, that is:

$$\underset{x,\, q}{\text{Maximize}}\ EU = (1 - \alpha - \beta)\, U(A + F - x - G) + \alpha\, U(A + F - x - G - (1 - q)\, L_1) + \beta\, U(A + F - x - G - (1 - q) L_2), \quad (3)$$

subject to:

$$G = \mu q\, (\alpha L_1 + \beta L_2), \quad (4)$$

where:

- U = auditor's utility of wealth, where; $U' > 0$, $U'' \leq 0$,
- A = auditor's initial asset,
- G = insurance premium,
- q = coverage (percentage of liability covered by insurance),
- L_1 = liability to the client in the event of type I error,
- L_2 = liability to third parties (and possibly to the client) in the event of type II error,
- F = fixed audit fee, and
- μ = insurance loading charge (μ-1 = insurance markup, μ can be equal or greater than 1).

Note that the three components of the auditor's objective function (3) represent, respectively, the expected utility of the auditor under the no error, type I error and type II error situations. The constraint represents the insurer's pricing strategy, which is based on the expected liability losses and a markup.

3.2. Risk-Neutral Auditor

A risk-neutral auditor is indifferent to the risk of different decisions and courses of action. Given a certain audit fee, he would choose his audit effort and insurance coverage to minimize the overall cost of auditing and expected damages. In other words, for a risk-neutral auditor, problem (3) reduces to the following problem of expected cost minimization:

$$\underset{x,\,q}{\text{Minimize:}}\ (1-\alpha-\beta)\,[x+\mu q(\alpha L_1+\beta L_2)] + \alpha\,[x+\mu q(\alpha L_1+\beta L_2) + (1\text{-}q)L_1] + \beta\,[x+\mu q(\alpha L_1+\beta L_2)+(1\text{-}q)L_2]\,.$$

Simplifying the above expression, the problem can be rewritten as:

$$\underset{x,\,q}{\text{Minimize:}}\ x + (\mu-1)(\alpha q L_1 + \beta q L_2) + (\alpha L_1 + \beta L_2)\,. \qquad (5)$$

If insurance is supplied at an actuarially fair price (i.e., $\mu = 1$), problem (5) reduces to the familiar problem, where the goal is to minimize the sum of the auditing costs and the expected liability. When $\mu = 1$, the auditor's expected liability (i.e., $\alpha L_1 + \beta L_2$) is independent of the insurance coverage, q. Alternatively stated, the risk-neutral auditor is indifferent to the purchase of full, partial or no insurance coverage.

However, when the insurer charges a positive markup (i.e., $\mu > 1$), it follows from (5) that the risk-neutral auditor's expected liability costs will be an increasing function of insurance coverage, q. This result implies that no insurance would be purchased when auditors are risk-neutral and insurers charge a positive markup.

Next, consider the auditor's optimal choice of audit testing. Assuming that problem (5) has an interior solution, the optimal auditing effort is the solution to the following first order condition: [8]

$$1 + \alpha_x\,[(\mu-1)q+1]\,L_1 + \beta_x\,[(\mu-1)q+1]\,L_2 = 0. \qquad (6)$$

It is straightforward to show, using equation (6), that the optimal auditing effort is an increasing function of the insurance loading charge, μ. Implicitly differentiating equation (6), we obtain:

$$\frac{dx}{d\mu} = - \frac{q L_1 \alpha_x + q L_2 \beta_x}{[(\mu - 1)q + 1] (L_1 \alpha_{xx} + L_2 \beta_{xx})} > 0.$$

This result implies that auditing effort intensifies as the markup on liability insurance (α-1) increases.

To examine the effect of client risk changes on audit effort for a given level of insurance coverage, implicitly differentiate equation (6) to obtain:

$$\frac{dx}{dp} = - \frac{[(\mu - 1)q + 1] (L_1 \alpha_{xp} + L_2 \beta_{xp})}{[(\mu - 1)q + 1] (L_1 \alpha_{xx} + L_2 \beta_{xx})}$$

The sign of this partial depends on the sign of its numerator, because the denominator is, by assumption (or by second order sufficient condition), positive. It was earlier assumed that $\alpha_{xp} > 0$ and $\beta_{xp} < 0$. Thus, if judgment awards for type II errors are expected to be substantially higher than those involving type I error, then $dx/dp > 0$. That is, the auditor will respond to increased client risk by extending its auditing procedures. However, when the possibility of a type I error and the resulting expected damages are dominant, a higher client risk factor should mitigate the impact of higher penalties for type I errors.

Further, a comparison of equations (2) and (6) indicates that the optimal audit effort may be higher or lower than the efficient level depending on the relative sizes of the social loss, L, and private losses, L_1 and L_2. To the extent that social trading losses are insignificant, the risk-neutral auditor's testing effort can be shown to exceed the efficient level regardless of insurance premiums. A sufficient condition for auditor's testing level to exceed the efficient level is the following:

$$L < \min\{[(\mu - 1)q + 1] L_1, \ [(\mu - 1)q + 1] L_2 \}.$$

When the above condition holds, we have:

$$1 + \alpha_x (x^R, p) [(\mu - 1)q + 1] L_1 + \beta_x (x^R, p) [(\mu - 1)q + 1] L_2 <$$
$$1 + \alpha_x (x^R, p) L + \beta_x (x^R, p) L = 0 \, ;$$

The above expression is equivalent to:

$$1 < - \alpha_x (x^R, p) [(\mu - 1)q + 1] L_1 - \beta_x (x^R, p) [(\mu - 1)q + 1] L_2 \, .$$

The above result states the following: the auditor's marginal benefit of incremental testing is greater than his marginal costs, making it advantageous to increase audit testing beyond the efficient level. Thus, if the social trading losses due to audit failures are smaller than the private losses, then a legal system of strict liability and compensatory damage awards will result in overauditing compared to the socially efficient audits. On the other hand, if private losses are relatively smaller than the social losses, then auditor's optimal choice of auditing effort will be socially inadequate.

This result is in contrast with the results reported on the accident or products liability literature, where the rule of strict liability is efficient in a unilateral setting. The difference in results is due to the disparity between the social and the private losses in the two contexts. The private and social losses of a defective product are typically the same under competitive market conditions, whereas, those of an audit failure are, in general, different.

3.3. Risk-Averse Auditor

Substituting for insurance premium, G, into the objective function (3) and differentiating with respect to q and x, we obtain the following first order conditions, respectively:

$$EU_q (x, q) = (1 - \alpha - \beta) (-\mu\alpha L_1 - \mu\beta L_2) U'(A+F-x-G) + \qquad (7)$$
$$+ \alpha (-\mu\alpha L_1 - \mu\beta L_2 + L_1) U'(A + F - x - G - (1 - q) L_1)$$
$$+ \beta (-\mu\alpha L_1 - \mu\beta L_2 + L_2) U'(A + F - x - G - (1 - q) L_2) = 0 \, ,$$

$$EU_x (x, q) = (1 - \alpha - \beta) (-1 - G_x) U'(A+F-x-G) - (\alpha_x + \beta_x)$$

$$U(A+F-x-G) \quad (8)$$

$$+ \alpha\,(-1- G_x)\,U'(A + F - x - G - (1 - q)\,L_1) + \alpha_x\,U(A + F - x - G - (1 - q)\,L_1)$$

$$+ \beta\,(-1- G_x)\,U'(A + F - x - G - (1 - q)\,L_2) + \beta_x\,U(A + F - x - G - (1 - q)\,L_2) = 0.$$

In above equations, EU_q and EU_x represent the marginal benefits (expected utilities), respectively, of increasing insurance coverage and extending the auditing procedures. To examine the solutions to the above equations, consider the following distinct situations:

(a) Insurance is supplied at an actuarially fair price (μ =1).

Under this assumption, the solution to equation (7) is q = 1 (i.e., full coverage) regardless of the optimal auditing effort. Note that the right hand side of equation (7) is strictly decreasing in q for a risk-averse auditor [9]. This property establishes the second order sufficient condition for the above maximization problem and the uniqueness of the solution obtained.

Given full coverage and no insurance markup ($\mu = 1$), the auditor's problem (3) reduces to the familiar problem of minimizing auditing costs plus the expected liability losses (i.e., $x + \alpha(x, p)L_1 + \beta(x, p)L_2$). The auditor's optimal choice under this condition was discussed above. This situation may lead to over-auditing, compared to the audit due care standard, when social trading losses are sufficiently small.

(b) Insurance is supplied at a positive markup ($\mu > 1$).

Under this condition, a risk averse auditor may continue to acquire full coverage as long as the insurance markup does not exceed his risk premium. For sufficiently high markups, the auditor will optimally choose partial coverage.

Formally, the auditor will purchase full coverage, when the following inequality holds:

$$(1 - \alpha - \beta)\, U(A+F-x) + \alpha\, U(A + F - x - L_1) + \beta\, U(A + F - x - L_2) < U(A+F-x - \mu(\alpha L_1 + \beta L_2)) \; .$$

The left hand side of the above inequality is the auditor's expected utility without any coverage, and the right hand side is the expected utility when full coverage is purchased. Notice that when $\mu = 1$, the inequality holds by the assumption of risk aversion. However, as the markup increases, the expected utility of full coverage declines to the point where the auditor is indifferent between buying and not buying full insurance coverage. Thus, the critical loading charge, μ^c, is that which equates the two sides of the above inequality.

When $\mu > \mu^c$, the auditor faces the previously stated problem (3). In this case, the optimal coverage, given the values of x and μ, will be the solution to condition (7). To examine the effect of changes in insurance markup on the optimal coverage for the auditor, consider the curve CC in Figure 1. This curve represents the partial derivative of the auditor's objective function with respect to q, namely, the left hand side of condition (7). The intersection of this curve with the horizontal axis gives the optimal insurance coverage for given levels of x and μ (note that for $\mu = 1$, the curve intersects the horizontal axis at q = 1).

[Figure 1 about here]

To prove that partial coverage becomes optimal for sufficiently high insurance markups, it is necessary to note that (i) the curve CC is downward sloped (see Footnote 8) and (ii) that it shifts down as the markup μ increases [10].

The auditor's optimal choices of auditing procedures, x, and insurance coverage, q, are given by the solutions to equations (7) and (8). An examination of equation (8) indicates, however, that the auditor's optimal effort choice is independent of the factors affecting the regulator's choice of socially efficient effort level given by condition (2), and that the former can be greater or smaller than the latter.

4. Optimal Insurance Coverage under the Negligence Rule

Under the negligence rule, if an auditor fails to meet the due care standards, he is liable for any damages resulting from an inappropriate audit opinion. As before, the due care standard will be assumed to equal the efficient auditing effort given by equation (2).

4.1. Risk-Neutral Auditor

The problem of a risk-neutral auditor, when found negligent, is to minimize the costs of auditing plus the expected liability losses. This result holds regardless of the size of the insurer's markup. On the other hand, a nonnegligent auditor's expected costs are simply his auditing costs when exercising the due care auditing standards imposed by regulators. This result implies that the auditor's cost function is discontinuous at x^R. Thus, the auditor's problem is:

$$\text{Minimize:}\quad \begin{aligned} C(x, p) &= x + \alpha(x, p)L_1 + \beta(x, p)L_2 && \text{if } x < x^R, \\ C(x, p) &= x && \text{if } x \geq x^R \end{aligned} \qquad (9)$$

Assuming that the auditor is negligent, the first order condition for this problem is:

$$1 + \alpha_x (x, p)L_1 + \beta_x (x, p)L_2 = 0. \qquad (10)$$

The solution to this equation, x^*, will be the auditor's optimal choice if $C(x^*, p) < x^R$; that is, if:

$$x^R - x^* > \alpha(x^*, p)L_1 + \beta(x^*, p)L_2 . \qquad (11)$$

The above condition says that, when the additional auditing costs required to meet the due care standards are greater than the expected saving in liability losses, the auditor chooses to be negligent. Under this condition, the auditor does not purchase any coverage if a positive markup is charged, and is indifferent to the level of coverage purchased if the markup is zero. When condition (11) fails to hold, the auditor will choose x^R and act nonnegligently. Notice that condition

(11) is meaningful only when $x^* < x^R$.

4.2. Risk-Averse Auditor

A risk-averse auditor’s problem under the negligence rule is to choose the level of auditing effort to maximize his expected utility. When nonnegligent, the auditor’s expected utility is given by $U(A+F-x^R)$ and the purchase of liability insurance is unnecessary. However, for a negligent auditor the expected utility will be $EU(x^*, q^*)$, where x^* and q^* are the solutions to first order conditions (7) and (8). The auditor would choose to be nonnegligent, if $U(A + F - x^R) \geq EU(x^*, q^*)$; otherwise, the auditor would prefer to be negligent.

If $x^* \geq x^R$, the auditor is clearly better off reducing his auditing effort to the required standard. However, if $x^* < x^R$, then the auditor’s optimal choice cannot be predicted with certainly. In general, a high insurance markup combined with sufficiently large liability losses can motivate a risk-averse auditor to act non-negligently and to provide the socially efficient auditing effort.

When damage awards are sufficiently small but auditing costs are high, the auditor may find it optimal to be negligent. The auditor’s demand for insurance in this case will be a function of the insurance markup and the auditor’s risk premium. For a sufficiently low insurance markup, full coverage will be purchased. Given higher markups, the auditor may decide to acquire partial coverage.

5. The Impact of Client Risk on Audit Fees and Insurance Premiums

Next, let us examine the impact of client risk on audit fees and insurance premiums using the setup of section 3.2. Assume that insurance premiums of audit firms are determined on the basis of observable x and p. Let $x^*(p)$ be the solution to the risk-neutral auditor’s problem (5). Assuming that there is no markup ($\mu = 1$) and that the audit firm acquires full coverage, the insurance premium will be determined by competitive insurers as:

$$G(p)= \alpha(x^{*}(p), p)L_1 + \beta(x^{*}(p), p)L_2 .$$

Differentiating with respect to p:

$$G_p = (\alpha_x x_p^* + \alpha_p)L_1 + (\beta_x x_p^* + \beta_p)L_2$$
$$= x_p^* (\alpha_x L_1 + \beta_x L_2) + \alpha_p L_1 + \beta_p L_2 .$$

Using condition (10), the above expression can be simplified to:

$$G_p = - x_p^* + \alpha_p L_1 + \beta_p L_2 .$$

The sign of G_p is, in general, ambiguous. Recall, from section 3.2, that the optimal auditing effort may increase or decrease as the client risk increases. Further, when client risk, p, increases, the probability of incorrect acceptance of client's financial statements increases (i.e., $\beta_p > 0$), thus raising the insurance premium. However, this effect may be offset by a reduction in the probability of type I error (i.e., $\alpha_p < 0$) and also by a possible increase in the auditor's optimal testing effort. The net result will be dependent on the relative sizes of these offsetting effects.

The impact on audit fees can be examined in a similar manner. If audit firms are to remain solvent in the long run and in a competitive environment, then audit fees should be sufficiently high to cover the auditing costs and the premium payments. That is:

$$F(p) = x^*(p) + G(p).$$

Differentiating with respect to p and using the results just obtained, it follows that:

$$F_p = \alpha_p L_1 + \beta_p L_2 .$$

This derived result can be misleading, because it suggests that changes in audit fees are independent of changes in auditing procedures, x, and depend exclusively on the responsiveness of type I and II errors to the client risk. This result is driven by the assumption of normalized auditing costs. The general result, where auditing costs are represented by C(x), is:

$$F_p = (C_x - 1)\, x^*(p) + \alpha_p L_1 + \beta_p L_2 \; .$$

As before, the effect of changes in client risk on the audit fee is ambiguous. To the extent that type II errors and the associated damage awards are more significant, an increase in client risk will increase auditor's insurance premiums and audit fees. However, in any discussion of the pros and cons concerning increases in auditors' liability, it is important to recognize the presence and the offsetting effect of type I error on audit fees.

6. Discussion

The goal of this study was a modest one: to examine some of the assumptions underlying recent arguments put forward in the U. S. courts to justify expanding the scope of accountants' liability. Frequently, in lawsuits involving accountants, statements are made, such as, "the risk of loss can be most easily and fairly spread by imposing it on the accounting profession… which can pass the costs onto the entire consuming public." Such views stem from a direct application of several principles of products liability laws to the auditing profession.

The first of these "borrowed" principles is the idea that insurance is readily available and that auditors can spread the risk of loss. To examine the weaknesses of this assumption, a unilateral model of auditor decision-making was considered. It was shown that, under the strict liability regime, risk-neutral auditors may purchase insurance only when it is supplied at an actuarially fair price. Risk-averse auditors, on the other hand, purchase full coverage at zero or low markups and only partial coverage when insurance markup is high.

Under the negligence regime, if auditing costs are low and the expected liabilities are sufficiently high, risk-averse and risk-neutral auditors both act nonnegligently and purchase no insurance. When auditing costs are high and legal losses are negligible, auditors fall short of due care standards. Under these conditions, a risk-neutral auditor does not purchase insurance policies offered at a positive markup and is indifferent to buying one, if the markup is zero. A risk-averse auditor, on the other hand, may continue to buy full or partial coverage so long as the markup is not excessively high.

In short, in a legal environment where purchase of liability insurance is not mandatory, auditors may optimally choose to carry partial or no insurance. When, as in the liability crisis of the recent years, the insurance premium markups increase in response to legal uncertainties, the likelihood of this outcome increases. In this situation, accountants may bear a higher share of the legal penalties than was originally intended by the existing legal system.

In the present study, it was shown that, due to the disparity between social and private losses of an inappropriate audit opinion, the rule of strict liability does not, in general, result in socially efficient auditing effort. Under the negligence regime, however, low auditing costs combined with sufficiently high liabilities can bring about socially efficient auditing efforts, regardless of the difference between the social and private losses. While this result contrasts with that of the products liability literature, it is consistent with the results obtained in Yahyazadeh (1992).

The second precept or assumption adapted from the products liability law is that accountants can *control* the accuracy of financial statements to the same extent that manufacturers can control the reliability of their products. However, the reliability of financial information and of audit opinion, is as much a function of the client's internal control system and business risk factors as it is a function of the auditors' auditing procedures. Auditors simply respond to varying client risks by adjusting their testing efforts. It was shown that auditor's optimal effort is a function of the client risk factor, which affects type I and II errors differently. This property implies that increased legal penalties for type I errors may prove to be more harmful than beneficial, because it can actually create an incentive to reduce auditing effort.

Finally, the differential impacts of the client risk factor on probabilities of type I and II errors, on audit fees, and on the insurance premium were examined. It was shown that audit fees and insurance premiums will increase as client risk increases provided type I error and the legal penalties associated with it are insignificant in comparison with type II error and the corresponding liability. However, when type I error and the corresponding legal penalties are sufficiently large, the result is counterintuitive: audit fees and insurance premiums will *decrease* as client risk *increases*.

A basic lesson can be drawn from this study for future legal research concerning accountants' liability. While the increased scope and size of accountants' liability is a deterrent factor against inadequate audit testing and unreliable audit opinions, it cannot act as the main vehicle for spreading the risk of loss among the "consuming public." The more likely outcome, of the present legal system in the United States, is an increase in the cost of auditing services and a reduction in the overall supply of auditing services. This observation is consistent with the growth, in the early 1990s, of the number of accounting firms that no longer accepted auditing engagements. It is also consistent with the reductions in the scope of auditing services, the increased use of the opinions expressing disclaimers, limits on industries being served by individual audit firms and increases in audit fees [11].

References

Berton, L. (1992). Legal Liability Awards Are Frightening Smaller CPA Firms Away From Audits. *Wall Street Journal*, March 3, 1992: Page B1.

Causey, Jr., D.Y. (1986), *Duties and Liabilities of Public Accountants*, Third Edition, Prentice Hall International, London.

Danzon, P. M. (1985). Liability and Liability Insurance for Medical Malpractice. *Journal of Health Economics*. (Winter): 309-331.

Danzon, P. M. (1991). Liability for Medical Malpractice. *Journal of Economic Perspective*. (Summer): 51-69.

Danzon, P. M. (1994). Alternative Liability Regimes for Medical Injuries: Evidence From Simulation Analysis. *Journal of Risk and Insurance*. 219-244.

Epstein, R.A. (1985), Products Liability as an Insurance Market, *Journal of Legal Studies*, (December): 375-390.

Gormley, R.J. (1988), Developments in Accountants' Liability to Nonclients for Negligence, *Journal of Accounting, Auditing and Finance*, (Summer): 185-213.

Mednick, R. (1987) Accountants' Liability: Coping With Stampede to Courtroom. *Journal of Accountancy*. (September): 118-122.

Miller, M.A., and L.P. Baily, (1992), *Comprehensive GAAS Guide*, Harcourt, Brace & Jovanovich, San Diego.

Shavell, S. (1982), On Liability and Insurance, *Bell Journal of Economics* (Spring): 333-339.

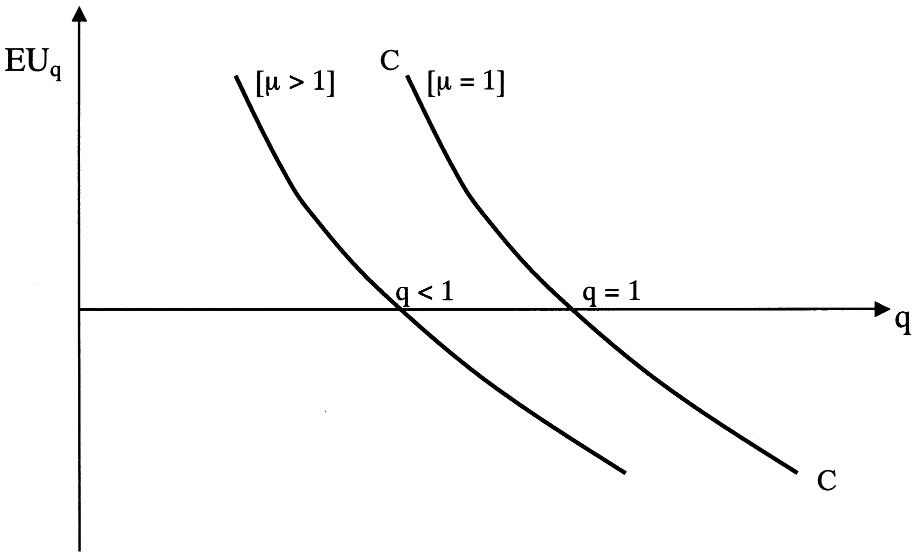
Shavell, S. (1984) A Model of Optimal Use of Liability and Safety Regulation, Rand Journal of Economics (Summer): 271-280.

Shavell, S. (1987), *Economic Analysis of Accident Law*, Harvard University Press, Cambridge.

Yahyazadeh, M. (1992), The Impact of Alternative Liability Rules on Auditors' Choice of Audit Effort, Ph.D. Dissertation, Syracuse University.

Figure 1

The Impact of Higher Insurance Markup on Insurance Coverage



Notes

[1] See Millar and Bailey (1992), Causey (1986) and Gormley (1981) for comprehensive descriptions of accountants' liability under the common and statutory law in the United States.

[2] Spherex Inc. V. Alexander Grant and Co. 451 A. 2d 1308, 1312 (NH 1982).

[3] Rosenblum Inc. V. Adler, 461 A. 2d 138 (NJ 1983).

[4] Escola v. Coca Cola Co., 24 Cal. 2d 453, 150 p.2d 436 (1944).

[5] The liability crisis of the mid-80s and the resulting professional insurance crisis are not restricted to the auditing industry. For a thorough analysis of various aspects of medical malpractice liability and the related insurance issues see Danzon (1985, 1991, 1994).

[6] Shavell (1982, 1987) characterizes the "socially ideal Pareto optimal" solution to the accident problem as one which (i) leaves risk-averse parties with the same level of wealth regardless of whether accidents occur; and (ii) results in a level of care that minimizes the expected accident losses plus the costs of prevention. In the present setting, the risk sharing aspect of a socially optimal solution had to be suppressed due to the unilateral nature of the model.

[7] The term auditor in this context is quite broad. It may represent a single auditor or a partnership of auditors. I abstract from the organizational form of the audit firm (e.g., partnership, corporation, etc. and their potential impact on the present model). With this caveat, all the results of this article as stated for an "auditor" extend to an audit firm.

[8] The second order sufficient conditions are satisfied, given the assumed convexity of the error functions.

[9] Differentiating the left hand side of equation (7) with respect to q, we obtain:

$$(1-\alpha-\beta)(-\mu\alpha L_1 - \mu\beta L_2)^2 U''(A+F-x-G)$$
$$+ \alpha(-\mu\alpha L_1 - \mu\beta L_2 + L_1)^2 U''(A + F - x - G - (1-q) L_1)$$
$$+ \beta(-\mu\alpha L_1 - \mu\beta L_2 + L_2)^2 U''(A + F - x - G - (1-q) L_2) < 0 \quad ,$$

[10] To see that EU_q is a decreasing function of μ for sufficiently high value of μ, note:

$$EU_{q\mu} = (1-\alpha-\beta)(\alpha L_1 + \beta L_2) U'(A+F-x-G)$$

$$+ \alpha (\alpha L_1 + \beta L_2) U'(A + F - x - G - (1 - q) L_1)$$
$$+ \beta (\alpha L_1 + \beta L_2) U'(A + F - x - G - (1 - q) L_2)$$
$$+ \mu q (1 - \alpha - \beta) (\alpha L_1 + \beta L_2)^2 U''(A+F-x-G)$$
$$+ \mu q \alpha (\alpha L_1 + \beta L_2)^2 U''(A + F - x - G - (1 - q) L_1)$$
$$+ \mu q \beta (\alpha L_1 + \beta L_2)^2 U''(A + F - x - G - (1 - q) L_2)$$
$$+ q \alpha L_1 (\alpha L_1 + \beta L_2) U''(A + F - x - G - (1 - q) L_1)$$
$$+ q \beta L_2 (\alpha L_1 + \beta L_2) U''(A + F - x - G - (1 - q) L_2) .$$

Note that, for sufficiently high μ, the negative terms will dominate the positive terms in the above expression, making $EU_{q\mu}$, a decreasing function of the insurance markup.

[11] See Berton (1992).