

# A Multidisciplinary Approach To Risk Management For Accounting Firms

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## Abstract

*This paper develops an integrated risk management decision framework that provides insights into the many factors that are involved in controlling and managing risk for accounting firms. Borrowing from the areas of insurance economics, crime and punishment, accounting, and organization theory, factors are identified that affect the demand for risk reduction. The interaction and application of three different components of risk reduction (market insurance, self-insurance, and self-protection) within the context of risk reduction decision-making are examined.*

## 1. Introduction

The purpose of this paper is to develop an integrated risk management decision framework that can be used to evaluate and thus manage accounting firm business risk. The development of a comprehensive risk management framework is needed to address the many difficult issues facing the accounting profession today. The globalization of the market place, advances in information technology, mergers of accounting firms and divestiture of consulting, litigation activity and increased diversity in services offered are some of the current trends underlying the issues facing the profession. The change in the education requirements for professional accountants and increased academic research into risks (Simunic and Stein 1990, 1995; Huss and Jacobs 1991; Johnstone 2000) are attempts at addressing some of these issues. However, the emphasis in accounting research has focused on auditing services, thus little attempt has been made to develop a comprehensive and integrated approach to risk management that relies on available literature in the field.

As the accounting profession enters the new millennium it is confronted by a rapidly changing global economy producing new opportunities and new challenges while unresolved old issues such as independence continue to pose serious problems in the expanding assurance services market. Accounting firms are responding to the dynamic environment around them by re-engineering all dimensions of the organization, changing the traditional functional organization to a customer group or industry focus, considering offering new services that expand the definition of assurance and others that address the growing electronic commerce marketplace, and considering the divestiture of the consulting practice segment while maintaining a strong alliance between the spun-off consulting enterprise and the accounting firm.

Thus many of the larger accounting firms now view themselves, after re-engineering, as "Consulting" firms. All of these changes suggest that large accounting/consulting firms are currently managed as a whole business, which suggests the use of an integrated approach to risk management over all service offerings and/or customer groups. Such an approach is necessary in order to understand the dynamic interaction of various risk related variables in firm practice management.

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*Readers with comments or questions are encouraged to contact the authors via email.*

The problem with a limited or piecemeal approach to risk management is that not only may it fail to consider all the factors that affect the demand for risk reduction; it also fails to consider any interaction effects. If important variables and sources of risk are not given adequate consideration in the risk management decision-making process, optimal decisions will not be made in the financial and strategic management of the firm. This has serious implications for long-term success.

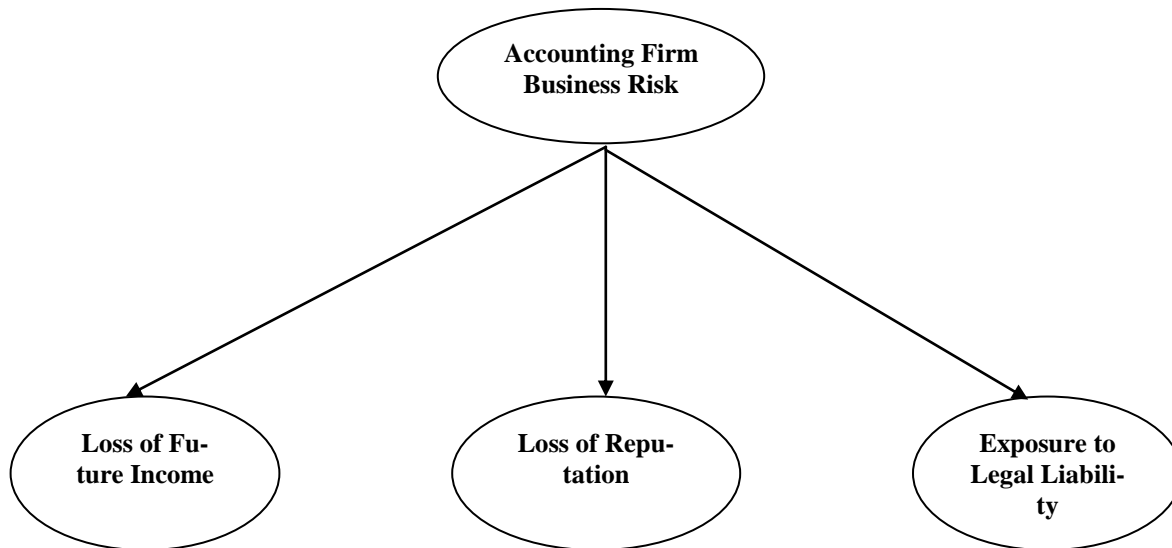
Long term success of any firm, including a professional accounting practice, is achieved by earning an appropriate risk-adjusted rate of return. By implication, risk and return are inversely related to the extent that higher risk opportunities produce a lower “risk adjusted rate of return”, ceteris paribus, while lower risk opportunities have the opposite effect. This portfolio approach to the management of average risk is well accepted in finance, economics, capital budgeting theory, and to a limited extent by Simunic and Stein (1990), who propose control of overall audit client risk by viewing the client portfolio as composed of a statistical distribution of clients, each with different risk characteristics. Thus, it is well accepted that long-term profitability is a function of revenues, expenses and risk. It is the purpose of this paper to suggest the importance of risk management to the accounting firm practice and to provide an approach for defining the portfolio risk as inclusive of all the service offerings of the firm, not just auditing.

The framework developed in this paper provides insight into the many factors that are involved in controlling and managing risk in a professional practice. This study borrows from the areas of insurance economics, crime and punishment, accounting, and organization theory to identify factors that affect firm risk and thus the demand for risk reduction. A framework is then developed to predict actions that a firm may take given a specific demand for risk reduction.

**2. Background**

Accounting firms traditionally provide three major groups of services to their clients: Audit or assurance, tax, and consulting services. The business risk associated with each of these service areas includes loss of future income, loss of reputation, and exposure to legal liability, as shown in Figure 1 (Brumfield et al. 1983). These risks are not mutually exclusive, thus a firm may have to deal with one or more of these risks simultaneously for a given service offering, and in an interdependent manner when multiple services are provided to a single client.

**Figure 1**  
**Sources of Accounting Firm Business Risk**

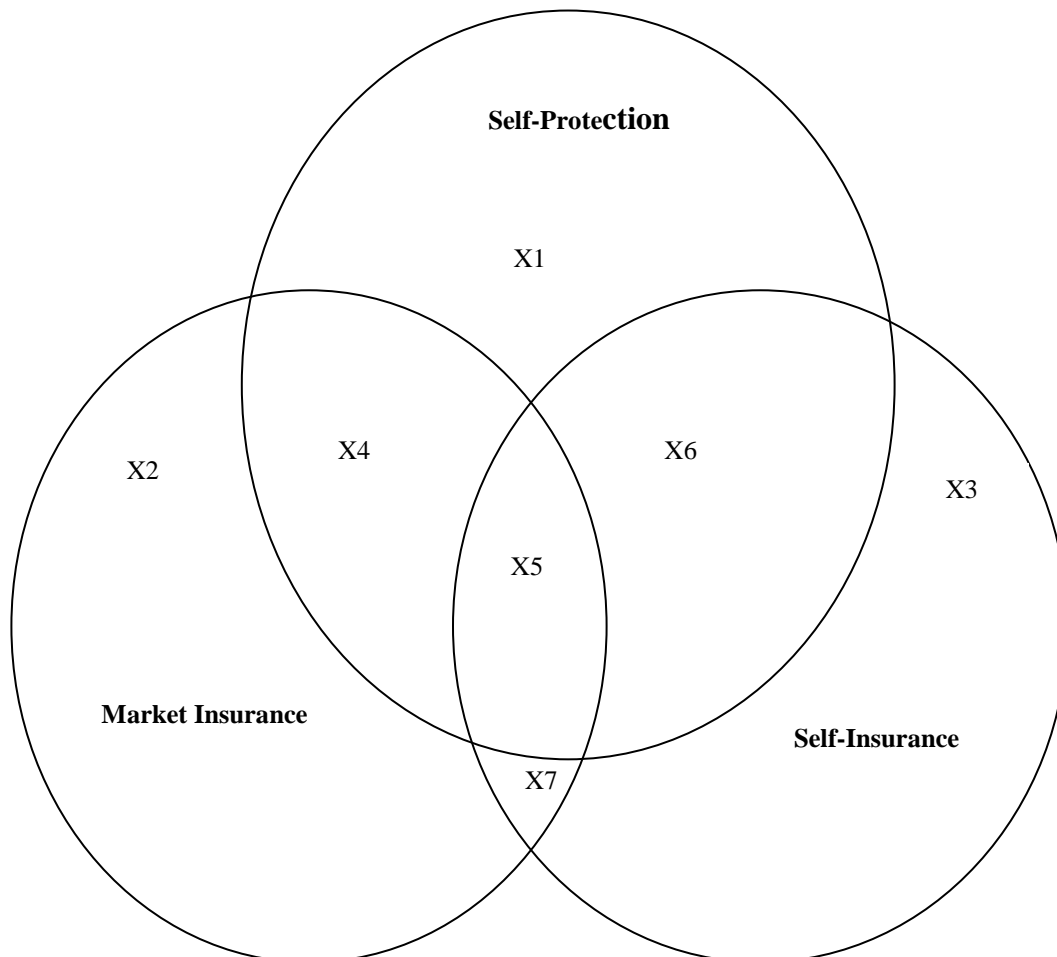


Of all the services performed by accounting firms, auditing has traditionally provided the highest visibility and is also the area of perceived highest risk, perhaps in all three-business categories. However, research has not examined the relative risks associated with the offerings of tax and consulting services. Thus, it is fair to say that accounting research related to risk has primarily emphasized the audit segment of the professional accounting practice.

To minimize the impact of litigation loss from user groups, firms can use a number of risk management approaches, including self protection, self-insurance, or market insurance. Self-protection involves measures to minimize the occurrence of litigation, including screening clients for riskiness prior to acceptance and continuation (Huss and Jacobs 1991; Johnstone 2000) ; McDonald 1997; Pratt and Stice 1994; Colbert et al 1996; Stice 1991; Walo 1995). Additionally, they can increase audit process costs (planning, testing, verifying, etc) and/or invest in extremely strong legal defense aimed at driving up the litigation cost of plaintiffs and thereby deterring the filing of lawsuits (Palmrose 1988). Other means of self-protection include diversifying the client portfolio to reduce total risk and pricing expected litigation costs into their services. After opportunities for self-protection have been optimized, firms can invest in self-insurance and/or market insurance. Investments in market insurance often involve the purchase of liability insurance from the insurance industry.

The risk management strategy pursued by a firm may involve the use of self-protection, self-insurance, market insurance, or any combination of these three options, as depicted in Figure 2.

**Figure 2**  
**Risk Management Strategy Options**



The actions taken by firm management are important because they define the characteristics of the firm. Decisions concerning the organizational structure of the firm, selection and training of personnel and level of investment in preventive measures are all critical in providing insights to the firm's attitude towards risk as implied in Figure 2. Firms in areas  $X_1$ ,  $X_2$ , and  $X_3$  may not be as risk averse as firms in quadrants  $X_4$ ,  $X_5$ ,  $X_6$ , and  $X_7$ . Firms in area  $X_5$  are the most conservative in their approach to risk management, for they use all available options in managing risk.

The focus of this paper is on the use of risk management by accounting firms to obtain an acceptable risk-adjusted rate of return. This paper will present a theoretical framework that examines factors that affect risk and thus, the demand for risk reduction. This paper is organized as follows; the next section is the literature review; section three presents the framework for risk reduction; section four discusses the implications of the framework, and section five presents the conclusions and possibilities for future research.

### **3. Prior Research**

The early approaches to modeling risk in accounting focus on the audit function, particularly on the risk of audit failure. For example SAS No. 47 (AICPA, 1984) defines audit risk as "the risk that the auditor may unknowingly fail to appropriately modify his opinion on financial statements that are materially misstated." This risk is comprised of inherent risk, control risk, and detection risk. Inherent risk is "the susceptibility of an assertion to a material misstatement assuming there are no related internal control structure policies or procedures" (AICPA, 1984, 1988). Control risk is the probability that a material misstatement will not be detected by the internal control system. Detection risk is the probability that audit procedures will not detect a material error that was not detected by the internal control system. The early work on risk reduction focuses on audit procedures required to reduce or control these three risks of audit failure.

There are many problems associated with this approach. First, it ignores the risks originating from the other service areas and thereby fails to recognize that the management of total risk from all service areas is the strategic objective. Second, it does not capture the interaction effects of the risks in the audit client portfolio (Simunic & Stein 1990). Finally, the steps involved in risk reduction (audit steps) in this approach are not directly observable.

An important contribution to the audit risk approach is the audit client portfolio risk perspective (Simunic and Stein, 1990). In this approach, the risk of an audit engagement is viewed not only as a function of the inherent risk, control risk, and detection risk of the engagement, but also as a function of the risks of the existing audit client portfolio. While this approach takes a broader and more integrative perspective to audit risk evaluation, it also fails to consider the interactive effect of the risks from other service areas. Furthermore, the approach does not consider the impact of overall firm strategy on risk control.

Another approach historically used to evaluate risk is to limit consideration to the risk of litigation. This approach focuses on the litigation exposure of accounting firms, and it arose because of the difficulty of directly observing the audit steps involved in the audit engagement. Litigation activity of accounting firms is somewhat observable and is used to make inferences about audit quality (Palmrose 1988) and riskiness of the audit client portfolio (Carcello and Palmrose 1994). Generally, high(low) litigation activity allows the inference of low(high) quality or high(low) risk. The problem with this approach is that litigation activity is a rough proxy for audit risk and audit quality because it assumes a perfect detection mechanism with costless enforcement. Additionally, the approach implies a limited view of risk, and does not capture the dynamic interaction suggested by the portfolio perspective suggested by Simunic and Stein (1990), or the framework presented in this study. The risk of litigation is indirectly related to the risk of audit pricing which is the risk that the auditor will charge a price that is too low to cover the total cost of the audit. Total audit costs include a resource cost component and an expected future (liability) loss component (Simunic and Stein, 1995). The resource cost component is increasing in the level of auditor's effort, and is a function of the auditor business risk (Bamber, Bamber, and Schoderbek 1993), size, complexity, riskiness, and other client specific characteristics. It is relatively easy to estimate the resource component cost, however, there is greater

uncertainty surrounding the estimate of the expected future loss component which is an ex post cost, the timing and amount of which are uncertain.

The primary control for audit risk is the use of audit procedures to reduce inherent, control, and detection risks. However, Huss and Jacobs (1991) reported that audit risk is also being reduced by activities that occur outside of the audit engagement process. Specifically, they demonstrate that client selectivity is another risk control tool to reduce or control overall audit risk. Client selectivity involves the procedures and risk assessments used in deciding whether or not to accept or continue an audit engagement. Analysis of evidence gathered from reviews of client acceptance/review policies and procedures revealed significant difference among the then Big-Six accounting firms on the importance placed on client selectivity. This is an important extension of risk control, but like prior studies, it did not consider other risks nor the interactive effects of these risks across all activities of the accounting firm.

#### **4. Risk Reduction Framework**

Traditionally accounting firms have produced revenues and incurred risks from their three major service offerings, auditing, tax, and consulting. As discussed earlier, the risk facing accounting firms originates primarily from these three service offerings, around which the risk reduction framework is centered. The framework assumes that accounting firm's management is risk averse.

The components of risk reduction are market insurance, self-insurance, and self-protection. When faced with the probability of loss, a firm can use one or any combination of these three options. The following three subsections discuss each of the components of risk reduction.

##### **4.1. Market Insurance**

Market insurance redistributes income and opportunities from well-endowed states (good cash-flow) toward the less endowed states (bad cash-flow). In this paper, a less endowed state is one in which the accounting firm experiences a significant loss. Optimal decisions about how much market insurance to purchase depend on the price of market insurance, risk aversion, availability of self-insurance, and opportunities for self-protection. If the probability of loss is high, and the amount of the loss is significant, then more insurance will be purchased (Linville 2000), provided that market insurance is being offered at actuarially fair prices. If the market for liability insurance is relatively competitive, then the demand for market insurance should increase as the price decrease, and vice-versa.

The attractiveness of market insurance prices to firms will be relative to (1) the pricing strategies of insurance companies, (2) opportunities for self insurance and (3) the firm's investment in self protection (Schlesinger and Doherty 1992). Insurance companies that pool clients will charge a price that a low risk firm will consider unfair. However, the same price will appear actuarially fair or even better, to a high-risk firm. A low risk firm may be a firm that has invested strategically in self-protection to minimize the probability of losses and has experienced a relatively low number of loss situations. Given the existence of opportunities for self-insurance, a low-risk firm may self select out of the market for insurance. It should be noted that this will only happen if the marginal cost for self insurance is less than the marginal cost for market insurance, given equal amounts of marginal benefit.

##### **4.2. Self Insurance**

Self-insurance, like market insurance redistributes income and opportunities from well endowed states toward less endowed states (Ehrlich and Becker 1992) in order to reduce the magnitude of realized loss. Examples of self-insurance are (1) an investment fund set aside to cover liability losses, and (2) participation in a self-insured pool. Generally, a firm will self insure if market insurance is not available, the cost of market insurance is perceived higher than the cost of self-insurance, or the transaction costs or search costs for insurance is too high (Schlesinger and Doherty 1992). High transaction costs might render market insurance too expensive for some risks for some firms. Firms will self-insure if the search costs for insurers and obtaining information outweigh the potential benefits of market insurance coverage. To self insure, a firm may set aside an investment pool to cover liability losses if it

believes it can get a better rate of return in the market place than the implicit rate of the insurance company. Likewise, a group of firms with similar characteristics or objectives may self insure together if they believe they can do so at a lower cost than that charged by the insurance industry. A number of low risk firms may form a group in order to minimize processing and administration costs of self-insurance. This is likely to happen if the insurance industry is charging a price that low risk firms perceive to be too high.

### **4.3. Self Protection**

While market insurance and self-insurance redistribute income toward states with losses, self-protection reduces the probability of these losses (Ehrlich and Becker 1992). Thus, self-protection refers to the actions that a firm can take to minimize the occurrence of losses. A firm will spend more on self-protection if the marginal benefits of self-protection exceed its marginal cost. Benefits of self-protection include a lower likelihood of losses, an increase in quality reputation, and a lower cost of market insurance and self-insurance (Linville and Thornton 2000). Costs of self-protection include expenditures on personnel, technology, organization structure, and job design.

The amount a firm invests in recruiting, training and compensation of employees may be directly related to the likelihood of losses. A quality personnel recruiting system, training program, and an appropriate reward system are essential for ensuring quality work. Technology can also be used to manage risk through self-protection. The choice of an appropriate and adequate technology can be used to ensure and maintain quality of work, thus minimizing the probability of loss. For example, firms can invest in computing technology to ensure the accuracy and efficiency of work performed by employees. Firms can also use a highly formalized approach to their service process. For example, in a highly formalized audit environment, employees will have a checklist of tasks they have to perform and guidelines for most audit situations. A less formalized approach will rely more on the professional judgement of the auditor in charge (Kinney 1986).

The choice of organization structure of accounting firms is another form of self-protection. In instances of litigation loss, firms' partners bear the risk of losing not only firm's assets, but also the risk of losing their personal assets. A professional corporation (PC) form of business organization can provide limited protection for partners' personal assets in such instances (Linville and Thornton 2000). Organization structure has also been identified in organization theory literature as a variable that impacts the effectiveness of the organization (Robbins 1990). The manner in which a firm organizes its resources and employees will impact how effectively the firm discharges its obligations and how quickly it can react to changes in its environment. The organization of accounting firms as partnerships convey benefits of managerial discretion and wealth sharing, as partners bear the wealth effects of their decisions. The opportunity cost of managerial discretion obtained through the partnership form of organization is that owner/managers cannot take risk-reducing activities afforded through unrestricted ownership claims (Mayers and Smith 1992).

The organization behavior literature identified job characteristics as being important to performance and employee satisfaction. Hence, job design is another tool of self-protection that firms can use to reduce risk. A strategically designed job will have task characteristics that are congruent with the organization structure of the firm. This is necessary for the organization to be effective in achieving its goals and objectives.

Given alternative organizational structures and task characteristics, firms can select an organization structure and job design that will allow them to effectively diversify risk through client portfolio and service mix diversification. Firms will optimize risk through diversification if the cost of risk diversification is less than the cost of hedging risk through insurance (Mayers and Smith 1992). Figure 3 depicts the action firms are likely to take given the relationship between price of market insurance and perceived riskiness of accounting firms.

**Figure 3  
Interaction of Risk and Price of Risk Reduction**

		<b>Price of Market Insurance</b>	
		High	Low
<b>Accounting Firm Risk</b>	High	<b>Form Insurance Pool</b>	<b>Buy Market Insurance</b>
	Low	<b>Self-Insure</b>	<b>Self-Insure or Market Insure</b>

**5. Factors Affecting Demand for Risk Reduction**

The factors that affect the demand for risk reduction are price, states of the world, and risk aversion. The effect of price on risk reduction is discussed in the following section. In this section, we examine the effects of states of the world and risk aversion.

**5.1. States of the World Expectations**

The two states of the world assumed in this paper are a state where a loss<sup>1</sup> occurs and one in which there is no loss. The higher the probability that a loss will occur, the higher the demand for risk reduction, and vice-versa.

We can make inferences concerning the expectations of either one of these states occurring if we know certain characteristics about the client portfolio of firms. Characteristics that are related to the riskiness of accounting firm client portfolio include SEC versus Non-SEC companies (SEC/Non-SEC); size of multinational corporations to total client portfolio (MNC/Portfolio); industries representation (Ind); and general financial condition of client portfolio (FC).

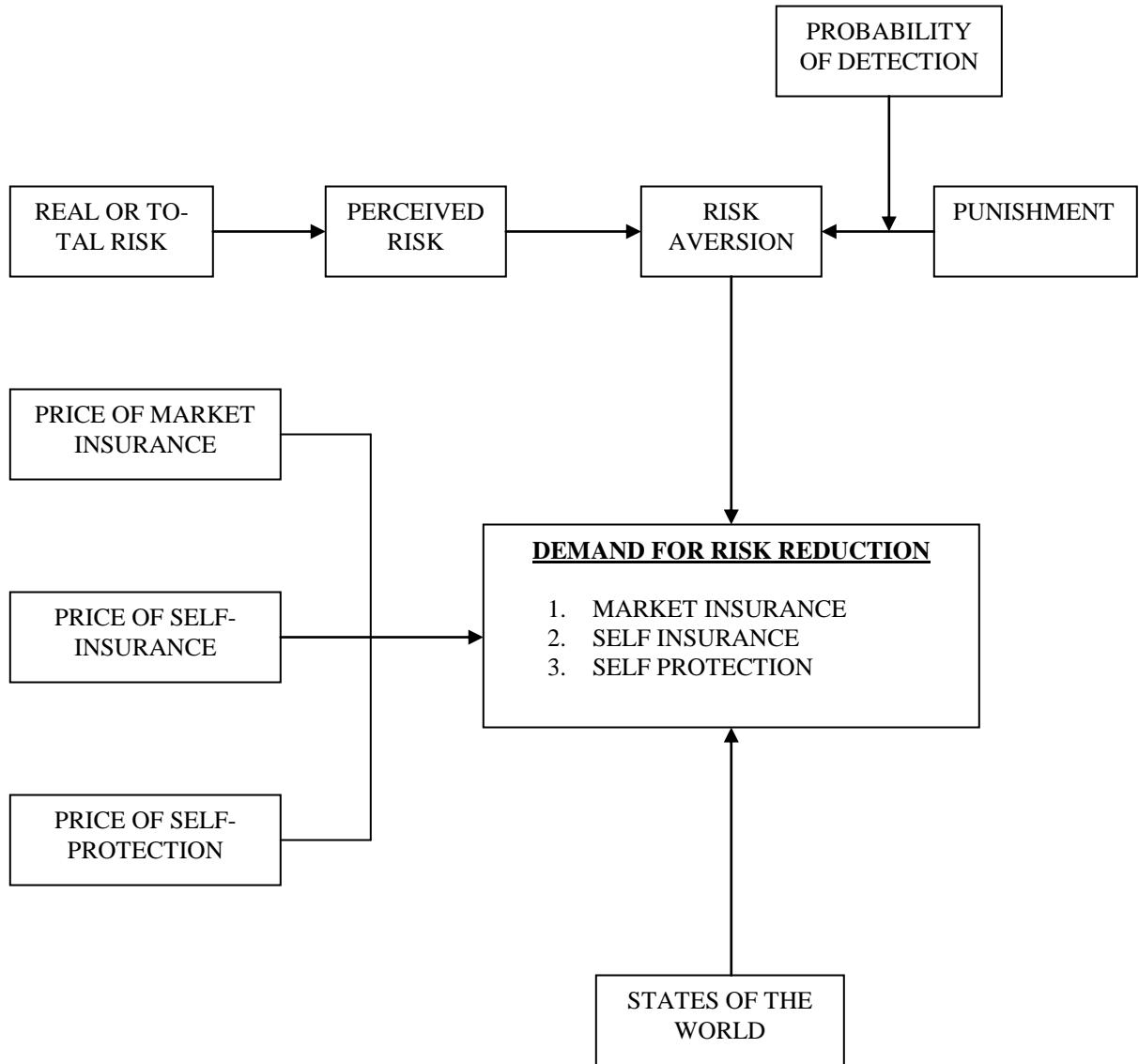
These characteristics, separately and in combination, can be used to evaluate the litigation risk, audit failure risk, and complexity of tasks in clients portfolio. Litigation risk originating from the audit segment is primarily from client and / or user groups. While litigation risk in the tax and consulting segments originate primarily from clients, it is no less serious than the risk originating from the audit segment. However, accounting research has paid very little attention to the potential risk from performing tax and consulting services.

Accounting firms providing services mostly to SEC companies have a higher exposure to the possibility of litigation losses than firms with clients that are privately owned. SEC companies are traded on the national exchanges, and financial information about them are more readily available. Anyone relying on this information is a potential plaintiff in a suit against the firm, thus firms with a significant portfolio of SEC companies have a higher probability of liability loss than firms servicing mostly non-SEC client companies. The higher the probability of loss, the higher the demand for risk reduction.

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<sup>1</sup> Loss as used here refers to losses that are significant and material to the firm

Figure 4  
Risk Reduction Model





Firms servicing large multinational companies (MNC) have an even larger exposure to liability loss than described above. MNC are more likely to have a more diversified base of stakeholders and institutional investors. The size and added complexity of MNC add risk to the audit engagement. The existence of institutional investors suggests that the work of the auditor will be under the scrutiny of sophisticated investors who have access to alternative sources of information. Therefore, errors and/or fraudulent activities are more likely to be detected. Furthermore, litigation can originate from geographically diverse locations and is more likely for larger clients (Carcello and Palmrose 1994). Consequently, the probability of liability losses is greater for firms with a relatively large portfolio of multinational clients.

The number and type of industries represented in an accounting firm client portfolio also has implications for the probability of loss. Generally, the greater the number of industries, the more diversified the firm portfolio. However, it should be noted that some industries are riskier than others, such as Insurance and Savings & Loan. However, a strategically diversified portfolio has the potential of mitigating exposure to liability loss.

The general financial condition of clients has been used to evaluate the litigation risk to firms. Some of the variables used to evaluate financial condition of firms that were found to be significantly associated with the risk of litigation (Carcello and Palmrose 1994) are probability of bankruptcy and persistence of net operating losses. The more financially distressed the clients of a firm, the greater the risks of litigation and liability losses to the firm (Latham and Jacobs 2000; Latham, Jacobs and Kotchetova 2000).

The above discussion identified a number of factors that can be used to make inferences about the probability of a liability loss occurrence. The higher the probability of a loss occurrence, the higher the demand for risk reduction. This demand manifest in the demand for market insurance, self-insurance, and self-protection.

## **5.2. Risk Aversion**

The relationship between demand for risk reduction and degree of risk aversion is positive, *ceteris paribus*, as the degree of risk aversion increases, demand for risk reduction increase. Generally, the more risk averse the firm, the more it will invest in risk reduction.

As depicted in Figure 4, factors that cause firms to be risk averse are perceived risk and punishment, including the likelihood of detection. Punishment can be in the form of fines, imprisonment, social sanction, loss of reputation, and other material economic loss potential. Size of punishment refers to the severity of punishment. If an accounting firm partner or employee is found liable for a business related offense, the punishment can range from paying a court imposed fine, imprisonment, revocation of CPA license, loss of reputation, and a significant reduction in post conviction income (John Lott 1990,1992). The more appropriate the punishment and the larger its size, the more its deterrence effect on loss inducing activities. Deterrence effects translate into investments in risk reduction that firms undertake to minimize the probability of occurrence of loss inducing activities.

The effect of punishment on risk aversion is moderated by the probability of detection. The higher the probability of detection, the more risk averse the firm. The probability of detection is positively affected by the amount of resources that society invests in detection. Society will invest more in detection if the social loss of the loss-inducing activities is great. The greater the social loss of the activity, the more investment society will make in detection (Becker 1968).

## **6. Demand for Risk Reduction**

The amount of risk reduction purchased by a firm will depend on expectations concerning the occurrence of various mutually exclusive and jointly exhaustive states of the world; the price of insurance, firm risk aversion, opportunities for self-protection, and the availability of other substitutes (Ehrlich and Becker 1992). For the sake of simplicity, assume that firms are risk averse and that there are two states of the world: loss (L) and no loss (NL). The higher the expectations for L, the greater the amount of risk reduction purchased, assuming insurance is offered at

actuarially fair prices. The factor loading<sup>2</sup> of insurance prices will depend on competition in the market place for liability insurance, and the opportunities for self-insurance and self-protection.

The framework used to examine the demand for risk reduction of firms is based on the theory of demand for insurance developed by Ehrlich and Becker (1992). The theory uses the state preference approach to emphasize the interaction between market insurance, self-insurance and self-protection, which are components of the demand for risk reduction. In the risk reduction demand framework presented in Figure 5, factors that affect the demand for risk reduction are degree of risk aversion, price of risk reduction, and states of the world<sup>3</sup>. We assumed that perceived risk and punishment are positively related to degree of risk aversion. The effect of punishment on risk aversion is moderated by the probability of detection. Market insurance and self-insurance are substitutes, while self-protection is a complement for either form of insurance. The two states of the world assumed are one in which a loss occur (L), and another in which there is no loss (NL). If the market for insurance is complete, accounting firms can use market insurance to eliminate the financial risk of loss (Schlesinger and Doherty 1992). In a complete insurance market, insurance will be available at actuarially fair prices, and a risk averse firm will purchase full coverage for all material risks. However, in an incomplete market certain types of insurance may be too expensive and insurance coverage may not be available for certain types of risk. In this situation, firms may prefer no coverage to full coverage. To obtain optimal coverage in an incomplete insurance market, firms have to rely on a mix of market insurance, self-insurance and self-protection.

We model the demand for market insurance as a function of (a) price of market insurance, (b) price of self-insurance, (c) states of the world, (d) investments in self protection, and (e) degree of risk aversion.

$$D_{mkt} = f(a, b, c, d, e)$$

The relationship between the variables in the model can be expressed as follows:

$$\frac{\partial D_{mkt}}{\partial a} < 0, \frac{\partial D_{mkt}}{\partial b} > 0, \frac{\partial D_{mkt}}{\partial c} > 0, \frac{\partial D_{mkt}}{\partial d} > 0, \frac{\partial D_{mkt}}{\partial e} > 0.$$

The above derivatives indicate that the demand for market insurance is negatively related to the price of market insurance, and positively related to price of self-insurance, states of the world, investments in self-protection, and degree of risk aversion. The lower the price of market insurance, the higher the demand for market insurance. The relationship between demand for market insurance and investments in self-protection will hold if and only if insurance companies give better rates to firms investing in self-protection<sup>4</sup>.

The demand for self-insurance is a function of (b) price of self-insurance, (a) price of market insurance, (c) states of the world, (d) investments in self-protection and (e) risk aversion.

$$D_{self} = f(a, b, c, d, e) \text{ and}$$

$$\frac{\partial D_{self}}{\partial b} < 0, \frac{\partial D_{self}}{\partial a} > 0, \frac{\partial D_{self}}{\partial c} > 0, \frac{\partial D_{self}}{\partial d} > 0, \frac{\partial D_{self}}{\partial e} > 0$$

The above derivatives indicate that the demand for self-insurance is negatively related to price of self-insurance, but positively related to price of market insurance, states of the world, investments in self-protection, and risk aversion.

<sup>2</sup> The factor loading is the deviation from actuarially fair prices and covers claims adjusting costs and other expenses. When insurance is offered at actuarially fair price, the factor loading is zero.

<sup>3</sup> It is assumed that firms have a preference for a state of no loss.

<sup>4</sup> In a study that involves eight of the major carriers of malpractice insurance for CPA firms, Linville and Thornton (2000) found that these insurance carriers offer significant reduction in premiums to firms that educate partners and staff about potential litigation pitfalls.

The relationship between the demand for self-insurance and investments in self-protection will hold if insurance companies do not give lower rates to firms based on increased investments in self-protection.

The demand for self-protection ( $D_{sp}$ ) is a function of (d) price of self-protection, (a) price of market insurance, (b) price of self-insurance, (c) states of the world, and (e) degree of risk aversion.

$D_{sp} = f(a, b, c, d)$  and

$$\frac{\partial D_{self}}{\partial d} < 0, \frac{\partial D_{self}}{\partial a} > 0, \frac{\partial D_{self}}{\partial b} > 0, \frac{\partial D_{self}}{\partial c} > 0, \frac{\partial D_{self}}{\partial e} > 0.$$

The above derivatives indicate that the demand for self-protection is negatively related to price of self-protection, but positively related to price of market insurance, self-insurance, states of the world, and the degree of risk aversion. The relationship between the demand for self-protection and investments in market insurance will not hold if insurance companies do not give lower rates to firms based on increased investments in self-protection.

## 7. Implications Of The Framework

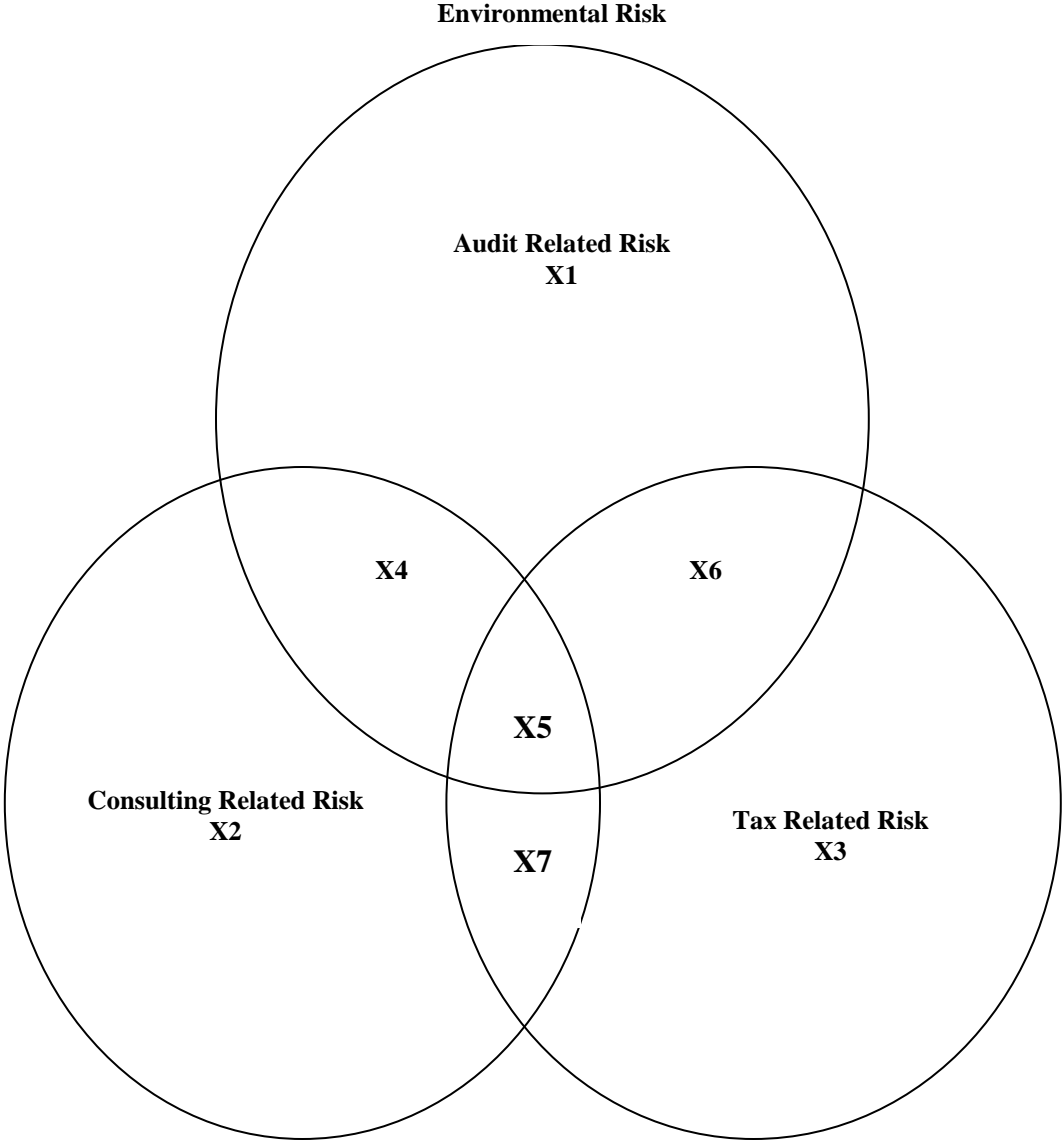
To provide a context for our discussion, we focus on the business risk likely to be confronted by accounting firms. Accounting firms' business risk can originate from sources internal or external to the firm. Risk external to the firm are environmental risk, many of which are conditioned on the type of services offered by the firm, their clients, the user group for their services, their litigation environment, and their general business environment. Risks that are internal to the firm can originate from the audit, tax, or consulting segments of the firm. As depicted in Figure 5, certain risks are unique to a particular segment, while other risks may originate from more than one operating segment.

As depicted in Figure 5, areas X1, X2, and X3 represent risk that is unique to each operating segment within the firm. Areas X4, X6, and X7 represent risk that are common to two operating segments. Area X5 represents risk that is common to all operating segments. The management of these three different categories of risk will require a different approach. Furthermore, the choice and adequacy of market insurance, self-insurance, self-protection, or combination thereof will be dependent on the category of risk confronting the firm.

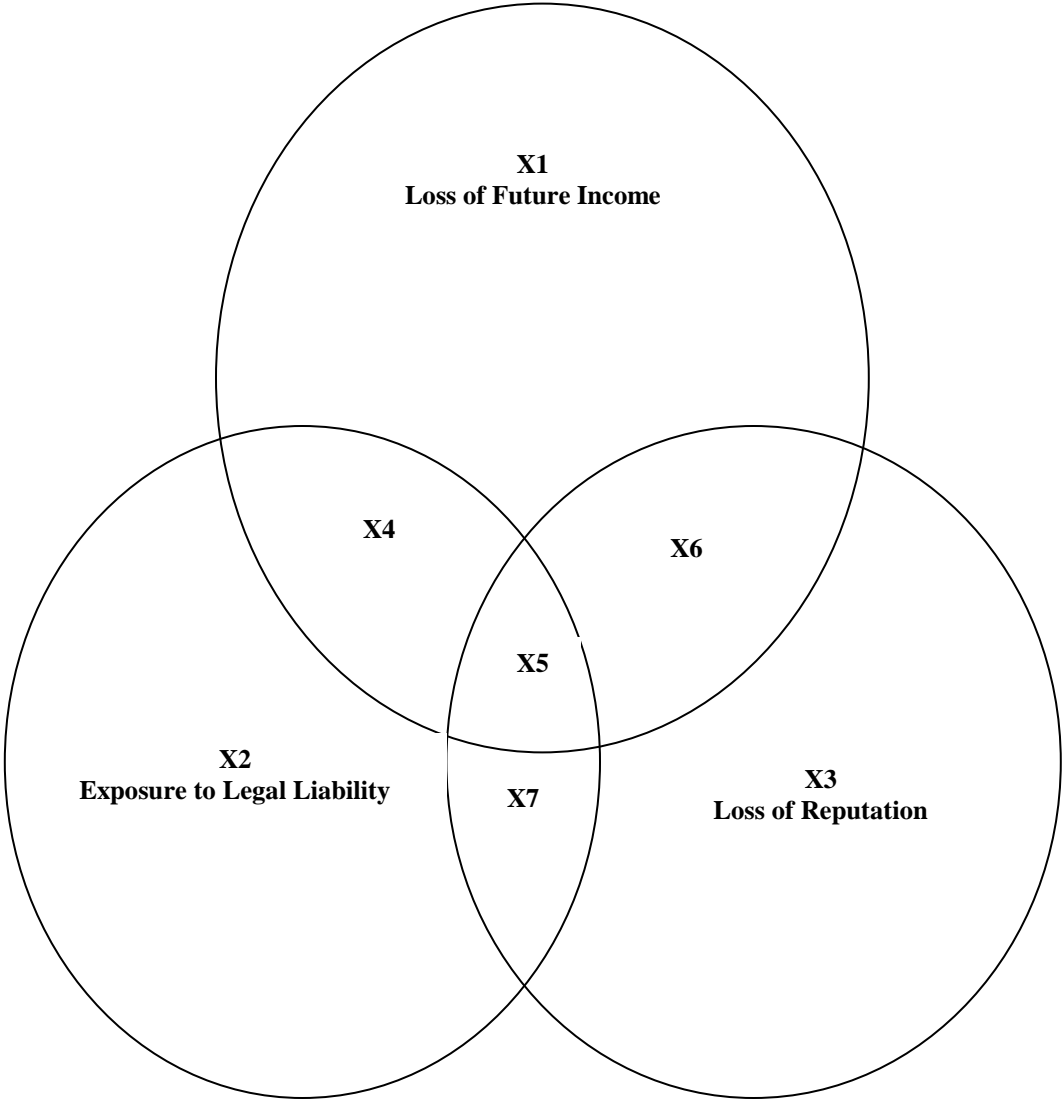
Another way to look at the nature of the risk confronting an accounting firm is from the perspectives of materiality and significance. A material risk is one where the loss from occurrence of the risk is material in amount. A significant risk is one where the occurrence of the risk has far reaching negative effects on the long-term success of the term. In Figure 1, accounting firm business risk was described as comprising of loss of future income, loss of reputation, and exposure to legal liability. A risk that would give rise to loss of future income, loss of reputation, and exposure to legal liability in a material amount is a significant risk.

Figure 6 shows the interaction of various risks facing the firm. The interaction of two or more risks represents areas of significant risk to the firm. As depicted in Figure 7, area X5 represents the most significant risk, followed by area X4, X6, and X7. Areas X1, X2, and X3 represent the least significant risk, relative to the other areas. The management of X5 requires a different approach from the management of X1, X2, and X3. Furthermore, the management of an X5 type of risk (risk from multiple sources within the firm) will differ from the management of risk that is unique to an operating segment within the firm (X1, X2 and X3 in Figure 5). Finally, a risk of loss that is both significant and material in amount, and is common to more than one operating segment of the firm will require more management attention than other types of risk.

**Figure 5**  
**Sources of Accounting Firm Business Risk**



**Figure 6**  
**Risk Significance**



## **8. Implications for Practice Management**

The implications of this approach to risk management for the management of an accounting practice are numerous. First, risk must be managed on a firm wide basis and not on a segment, division or transaction basis to achieve a desired level of overall risk exposure and thus a desired risk/return relationship. Second, the management control or information system must be enhanced to include all of the risk related variables pertinent to the practice in order for the optimal mix of self protection, self insurance and market insurance to be achieved. Third, "internal risk reporting" must be accomplished on a relatively "real time" basis in order to achieve the desired level of temporal risk so that the variance of risk assumed is managed. To accomplish this, the management information system of the firm should be designed to capture and report on critical risk variables of the firm. Finally, the risk management system must be given the same level of emphasis as the financial reporting system of the firm.

The implication of an appropriate risk management system cannot be over-emphasized. If a multi-dimensional perspective is not used in evaluating company-wide risk, it is likely that critical financial variables may be omitted in evaluating the performance of the firm or various projects within the firm.

## **9. Auditing Segment Risk Decision Model**

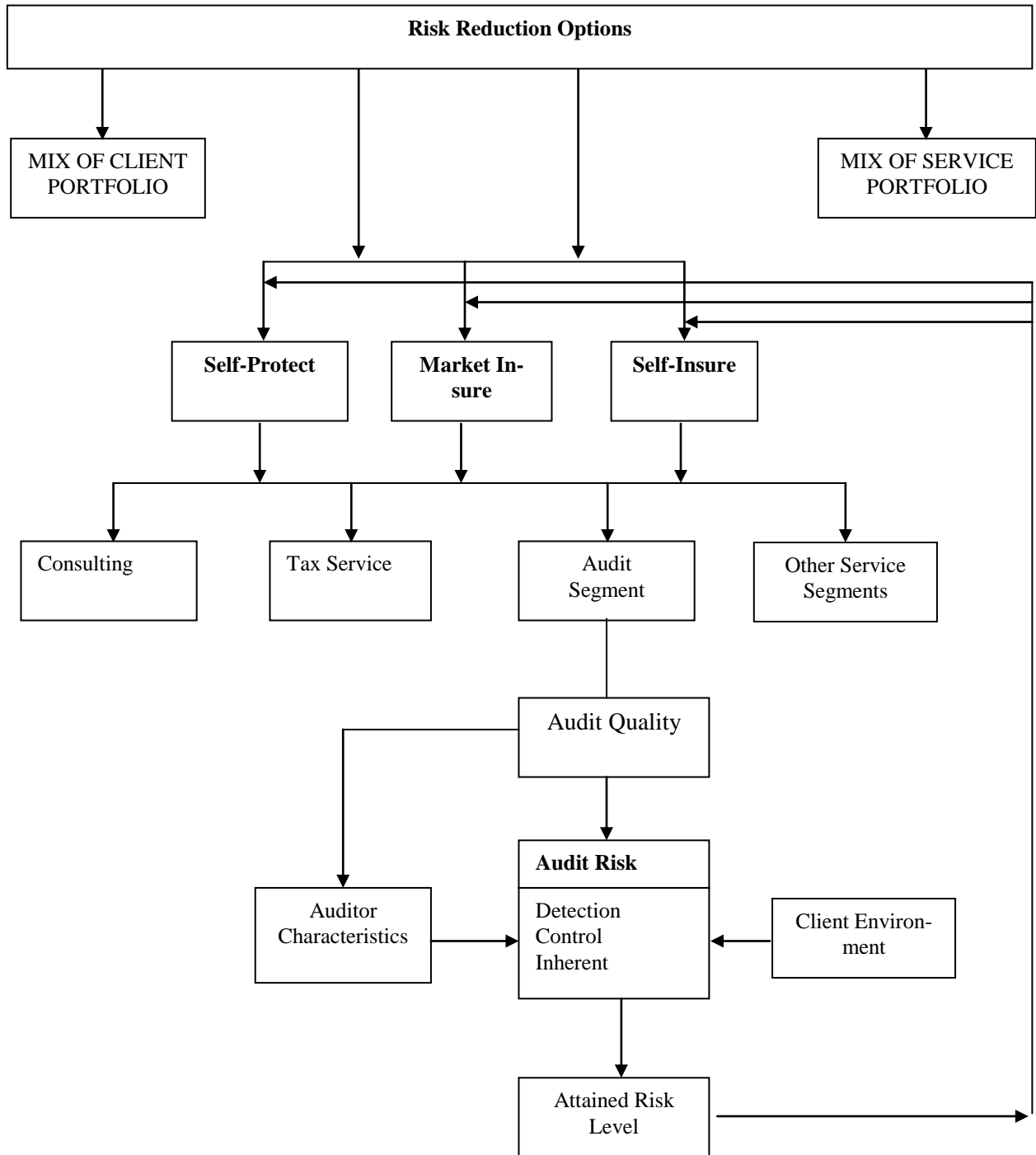
In this section, we introduce a variation of the risk reduction framework introduced above. The framework introduced here is specific to the auditing segment of a firm, but can easily be varied to accommodate other operating segments such as tax and consulting.

As depicted in Figure 7, firms have three tools for controlling audit risk. They can self protect, self insure, and/or buy market insurance. The optimal mix of these three risk reduction strategies will depend on the risk perceived by the firm, degree of risk aversion of firm's management, nature and magnitude of deterrence effect of audit failure, opportunity for self-protection, and availability and price of self-insurance and market insurance. These factors are depicted in Figure 4 and have been discussed in the previous sections.

Management of risk in the auditing section of a firm is a dynamic process. To illustrate, let us assume that a firm has a desired level of audit quality and risk that they strive for in an audit engagement. As depicted in Figure 7, audit quality and audit risk are functions of auditor and client characteristics. Auditor characteristics that may impact quality include size of the audit firm (size may proxy for depth of expertise), staff to manager/partner ratio, background and experience of the audit team, familiarity with the firm/industry, audit approach and technology. Client characteristics that may impact audit quality include size and complexity of the client, sophistication of the internal control system, presence and composition of audit committee, and quality of management.

At the end of the audit, or at some other designated time, the firm evaluates the attained risk level for the audit segment and compares this to the desired risk level. If there is a variation, positive or negative, some action may be required. If the attained risk level is greater than the desired risk level, the alternatives facing the firm is to do nothing (not a desirable alternative), invest more in self-protection, self-insurance and/or market insurance, or reduce risk in non-audit areas of the firm by adjusting their mix of client and/or service portfolios. If the attained risk level is better than expected, the firm may do nothing or may consider saving money by reducing its investment in one of the three risk reduction components. A firm that is active in managing its risk will go through this process of regular evaluation and adjustment on a continuous basis. This process of regular evaluation and adjustment is a form of self-protection in itself.

Figure 7  
Accounting Firm Segment Dynamic Risk Decision Model



## 10. Suggestions For Future Research

Borrowing from the fields of insurance, economics, and crime and punishment, a risk reduction demand model is developed to examine the factors that affect the demand for risk reduction by accounting firms. The use of market insurance versus self-insurance is examined using demand factors such as insurance price, firm risk aversion, opportunities for self-protection, and expectations of liability occurrence.

While the model developed is theoretical, it offers practical implications for the management of risk in an accounting firm. Significant research is suggested from the development of the model, as little is known about the characteristics of providers of liability insurance coverage to accounting firms. Little is also known about how accounting firms manage risk for the firm as a whole. Are insurers homogenous or are there significant differences between them that can reveal the riskiness of firms' client portfolio? Do they provide any monitoring function and if so, what monitoring function do they provide? Given the litigation environment in which some accounting firms operate, to what extent do insurance companies factor in investments in self-protection in liability insurance contracts? If investments in self-protection are considered in liability insurance contracts, what criteria are being used to evaluate these investments?

Another issue deals with whether there are differences in the completeness of the insurance markets for Big Five versus Non-Big Five firms, or international, national, regional versus local firms? If the market is not complete, how do firms compensate for incomplete markets? Do firms have a strategy to obtain the optimal mix of market insurance, self-insurance, and self-protection? A related question in this area is whether some or all insurance companies pool all accounting firms together in setting premium rates or segment firms based on some riskiness criteria? If insurance providers segment firms, what risk criteria are they using?

Accounting researchers should study risk from the perspective of the firm as a whole with attention given to the different characteristics and mix of service offerings of various practice units within the firm. The focus on the audit process as the primary risk control mechanism can fail to recognize the interaction effects of risk management in other areas of the firm and thereby produce unreliable results, i.e., an "audit risk" model can be limited by incompleteness and the classical omitted variables problem. An important starting point in accounting research could be an exhaustive investigation of the risk management practices presently utilized by large and small practices with various organizational structures. Equally important might be an examination of the decision rules impacting the trade-off decisions in selecting the optimum amounts of each component of risk control. Another issue is how market insurers assess the relationship of the insurable risk to the total risk of the firm. In other words, how are insurers actually determining the level of co-insurance present in any set of contracts?

## References

1. American Institute of Certified Public Accountants, Auditing Standards Board. *Statement on Auditing Standards No. 47: Audit Risk and Materiality in Conducting an Audit*. AICPA, New York, 1984.
2. ----- . *Statement on Auditing Standards No. 55: Consideration of the Internal Control Structure in a Financial Statement Audit*. AICPA, New York, April 1988.
3. Anthony R. N., Dearden J., and Govindarajan V. "The Nature of Management Control Systems". *Management Control Systems*, 7th Ed., Irwin Inc., 1992.
4. Baker, C. Richard. "Audit Implications of Company Risk". 1997 Mid Year Meeting of the Auditing Section of the American Accounting Association.
5. Bamber, E. Michael, Bamber, Linda Smith, and Schoderbek, Michael. "Audit Structure and Other Determinants of Audit Report Lag: An Empirical Analysis". *Auditing: Journal of Practice & Theory*, Vol. 12, No. 1, Spring 1993.
6. Becker, G. "Crime and Punishment: An Economic Approach". *Essays in the Economics of Crime and Punishment*. 1988.
7. Carcello, Joseph V. and Palmrose, Zoe-Vonna. "Auditor Litigation and Modified Reporting on Bankrupt Clients". *Journal of Accounting Research*, 1994 Supplement, Vol. 32.



8. Ehrlich I and Becker S. "Market Insurance, Self-Insurance, and Self-Protection". *Foundations of Insurance Economics*, Kluwer Academic Publisher, 1992.
9. Huss, H.F. and Jacobs, F.A. "Risk Containment: Exploring Auditor Decisions in the Engagement Process". *Auditing: A Journal of Practice and Theory*, Fall 1991: 16-32.
10. Johnstone, Karla M. "Client Acceptance Decision: Simultaneous Effects of Client Business Risk, Audit Risk, Auditor Business Risk, and Risk Adaptation". *Auditing: A Journal of Practice and Theory*, Spring 2000.
11. Kinney, William. "Audit Technology and Preferences for Auditing Standards". *Journal of Accounting and Economics*, 1986, 8: 73-89.
12. Latham, Claire Kamm and Jacobs, F. "A. Monitoring and Incentive Factors Influencing Misleading Disclosures". *Journal of Managerial Issues*. Summer, 2000.
13. Latham, Claire Kamm, Jacobs, F. A. and Kotchetova, Natalia. "The Impact of Agency Structure and Management Team Characteristics on Disclosure Fraud". *Journal of Forensic Accounting*. December, 2000.
14. Linville, Mark. "Perceptions of Audit Litigation Risk and Malpractice Insurance Choices". Working Paper. August 2000.
15. Linville, Mark and Thornton, John. "Litigation Risk Factors as Identified by Malpractice Insurance Carriers". Working Paper. March 2000.
16. Lott, John R. "Getting Tough on White-Collar Criminals". *Regulation*, Winter 1990: 18.
17. \_\_\_\_\_. "Do We Punish High Income Criminals Too Heavily?". *Economic Inquiry*, October 1992: 583-608.
18. \_\_\_\_\_. "The Reputational Penalty Firms Bear From Committing Criminal Fraud". *Journal of Law and Economics*, October 1993: 757-802.
19. Mayers D. and Smith C. "On the Corporate Demand for Insurance". *Foundations of Insurance Economics*, Kluwer Academic Publishers, 1992.
20. \_\_\_\_\_. "The Interdependence of Individual Portfolio Decisions and the Demand for Insurance". *Foundations of Insurance Economics*, Kluwer Academic Publishers, 1992.
21. \_\_\_\_\_. "Ownership Structure Across Lines of Property-Casualty Insurance". *Foundations of Insurance Economics*, Kluwer Academic Publishers, 1992.
22. Palmrose, Z. "An Analysis of Auditor Litigation and Audit Service Quality". *The Accounting Review*, January 1988, 63: 55-73
23. Robbins, S. *Organization Theory: Structure, Design, and Applications*. Prentice Hall, New Jersey, 1990.
24. Schlesinger, H. and Doherty, N. "Incomplete Markets for Insurance: An Overview". *Foundations of Insurance Economics*, Kluwer Academic Publishers, 1992.
25. Simunic, D.A. and Stein, M.T. "Audit Risk in a Client Portfolio Context". *Contemporary Accounting Research*, 1990, Vol 6, No. 2-I: 329-343.
26. Simunic, D.A. and Stein, M.T. "The Impact of Litigation Risk on Audit Pricing: A Review of the Economics and the Evidence". *Conference on Auditor and Director and Officer Liability for Misstated Financial Statement*, March 1995, Business, Law, and Economics Center, Washington University.
27. Williams C.A., Smith M.L. and Young P.C. Chapter 2: "An Introduction to Risk Management". *Risk Management and Insurance*, 7th Edition, McGraw Hill, Inc, 1995.

Notes