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ARTICLE INFO	Gene C. Lai and Yenyu (Rebecca) Huang (2010). The unresolved tax deductibility issues: a firm value maximization approach. *Insurance Markets and Companies*, *1*(3)
RELEASED ON	Wednesday, 29 December 2010
JOURNAL	"Insurance Markets and Companies"
FOUNDER	LLC "Consulting Publishing Company "Business Perspectives"

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
0	**0**	**0**

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The unresolved tax deductibility issues: a firm value maximization approach

Abstract

This paper first examines the tax deductibility issue related to Humana's subsidiaries case using the shareholder wealth maximization approach. The analysis suggests that the insurance premiums paid by Humana's subsidiaries to Health Care Indemnity should not have been deductible. This study next evaluates the current tax treatment of market insurance, self-insurance, captive insurance utilizing: (1) the shareholder wealth maximization or firm value maximization framework; and (2) the social welfare criteria. The authors conclude that market insurance has a comparative economic advantage over captive insurance offered by captives writing substantial outside business; this kind of captive insurance has a comparative economic advantage over self-insurance or captive insurance with only brother-sister insured entities or captive insurance with only parents risks involved. The conclusions derived from the shareholder wealth maximization approach are different from those obtained by Head and Porat (1990) and Porat et al. (1991).

Keywords: tax deductibility, shareholder wealth maximization, risk transfer, risk distribution.

Introduction

The Federal income tax policy, involving self insurance vs. market insurance and premiums paid to captive insurers by their parents and affiliated subsidiaries, has been controversial. For example, Hofflander and Nye (1984), Smith (1986), Han and Lai (1991), Porat, Spiegel, Yaari, Zim (1991), and Lai and Witt (1995) among others have analyzed the tax deductibility issues. Lai and Witt (1995) have provided detailed assessment and a substantial review of many aspects of the tax deductibility issues. Moreover, Cummins (1990) and Han and Lai (1991) have proposed solutions to most of the controversial issues, using a relative pure risk reduction methodology. However, two major issues remain unresolved.

Recent IRS rulings (Rev. Rul. 2005-40 and Rev. Rul. 2009-26), in dealing with the deductibility of insurance premium paid by the parent of the captive insurance company or whether a reinsurance company is entitled to favorable tax treatment, have based on the concept of risk distribution and risk shifting. Using the concept of risk distribution and risk shifting may result in incorrect results. For example, the U.S. Court of Appeals (Sixth Circuit) has ruled that premiums paid by Humana's subsidiaries to health care indemnity are tax deductible. The ruling can be challenged if a different concept is used.

A distinct approach based on the concept of shareholder wealth maximization or firm value maximization is used to analyze the tax deductibility issue involving captive insurers[1]. It is generally accepted in modern finance and economics literature that the goal of a manager for a publicly-held firm is to choose the course of action that maximizes the value of its stock. This shareholder wealth maximization approach would suggest that if a legal transaction, involving captive insurance, can substantially increase shareholder wealth on a relative basis, then the transaction has a legitimate risk financing purpose, other than the reduction of taxes. On the other hand, if a risk management transaction cannot substantially increase shareholder wealth in substance on a relative basis, then the transaction cannot be deemed to have legitimate risk financing purpose with economic substance for insurance purposes.

This paper first examines the tax deductibility issue related to Humana's subsidiaries case, using the shareholder wealth maximization approach. Specifically, this paper uses the shareholder wealth maximization criteria to evaluate whether the concepts of risk transfer and risk distribution used to aid Humana appellate court decision were applied appropriately. Our analysis suggests that the concepts of risk transfer and risk distribution were not applied properly in an economic sense in the recent Circuit Court decision, involving Humana (1989). Furthermore, the results suggest that the payments made by Humana's subsidiaries to Health Care Indemnity should not have been deductibles insurance premiums. These results are striking because the U.S. Court of Appeals (Sixth Circuit) has ruled that premiums paid by Humana's subsidiaries to health care indemnity, a wholly owned captive insurer of Humana Inc., are tax deductible. There is no insurance-economics foundation for this legal ruling based on legal form. Furthermore, the result also differs from that of Porat and Powers (1994), which suggests premiums paid by brother/sister subsidiaries are essentially tax deductible.

This study next evaluates the current tax treatment of market insurance, self insurance, captive insurance utilizing: (1) the shareholder wealth maximization or firm value maximization framework based on the modern finance and insurance-economics theory; and (2) the social welfare criteria suggested by Porat et al. (1991) and Head and Porat (1990). The conclusions

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[1] It should be noted that shareholder wealth maximization is equivalent to firm value maximization as long as shareholders do not exploit debtholders.

derived from the shareholder wealth maximization approach differ from those obtained by Head and Porat (1990) and Porat et al. (1991). In contrast to their conclusions, this study suggests that market insurance has a comparative economic advantage over insurance offered by captives, writing substantial outside business; nevertheless, such kind of captive insurance has a comparative economic advantage over self insurance or captive insurance with only brother-sister insured entities or captive insurance with only parents risks involved.

This paper is the first to examine: (1) the tax deductibility issue related to brother-sister companies; (2) the benefits and costs involved in market insurance, captive insurance, and self insurance, using the stockholder wealth or firm value maximization approach[1].

1. Shareholder wealth or firm value maximization and social welfare criterion

This Section proposes the shareholder wealth or firm value maximization approach and provides a brief review of social welfare criterion approach.

1.1. Shareholder wealth or firm value maximization. It is generally accepted in the modern finance and economics literature that managers in a company are supposed to maximizing the shareholder wealth (Ross, Westerfield, and Jordan, 2002). Modern finance theory suggests that shareholder wealth is the present risk-adjusted value of future cash flows which consist of dividends and capital gains. A negative cash flow (such as a loss) would reduce either dividends or capital gains. Thus, a negative cash flow, associated with a loss, will have a negative impact on the market value of a firm, other things being equal. If the firm uses one of the risk management tools, such as purchasing insurance from a traditional unrelated insurance company, then the insurer will indemnify the loss. Thus, the negative cash flow is neutralized and there will be no negative impact on the value of a publicly traded firm. Since traditional insurance can effectively neutralize or reduce risks from the shareholders' point of view, it is no surprise that competitive premiums, paid to a traditional insurer, are tax deductible because they can reduce the riskiness of a firm's cash flows and increase its market value, other things being equal.

While insurance can substantially reduce the financial consequences of a loss from a pure risk exposure, there are other methods to finance pure risks. For example, a parent can potentially reduce some of its financial risk by forming a captive that writes a substantial amount of outside risks or exposure units. The reason is that outside pure risks would share the economic risk with the parent through the loss pooling effect and by contributing premiums to the pool. If this is the case, the payments, made by a parent to the captive for risk financing purposes, might be deductible under certain circumstances as insurance premiums.

On the other hand, if a risk management transaction cannot substantially increase shareholder wealth then the transaction cannot be deemed to have legitimate business purpose for insurance purposes. Thus, the payments involved would not be tax deductible as premium payments but could be viewed as additions to self insurance reserves.

The advantage of the shareholder wealth maximization approach is that it can help resolve the current conflict between the Moline Properties doctrine and the risk reduction approach, because the shareholder wealth maximization approach is broader and more robust than the risk reduction approach. Furthermore, the shareholder wealth maximization approach can be used in conjunction with a more traditional approach premised on an implicit definition of insurance involving risk transfer and distribution to examine the tax deductibility issue. The shareholder wealth approach can also be used in conjunction with a more recent comprehensive insurance-economics approach based on the risk reduction approach. Finally, the wealth maximization approach is consistent with modern finance theory, because it is well accepted that the guiding principle for a firm in choosing a course of action is shareholder wealth maximization. In other words, the shareholder wealth maximization approach is directly related to the goal of financial management. Thus, it is the most relevant economic approach to examine whether a specific transaction is a sham or has a legitimate business purpose as a pure-risk financing transaction economically consistent with true insurance.

1.2. Social welfare approach. Head and Porat (1990) and Porat et al. (1991) have suggested that social welfare should be considered when tax issues involve captive insurance or self insurance. Although the social welfare approach has not been explicitly examined in the courts, it may need to be considered because the social welfare approach has the potential to recognize the impact of tax policy on economic growth and stability.

2. An evaluation of Humana rulings

This section valuates Humana rulings using the risk reduction approach. The rulings, involved in Humana case, have focused on two issues. First, both the Tax Court, the Sixth Circuit Court and some expert witnesses in tax cases appear to have utilized the net worth or balance-sheet approach in the rulings and debates. Second, the debates, involving the Moline

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[1] Mayers and Smith (1982) used firm value maximization approach to examine the comparative advantages of corporate insurance over self insurance. However, they never considered captive insurance in their model.

Properties and economic family doctrines, seem to have influenced on the rulings in the case. These two issues are briefly examined below.

2.1. The net worth and balance-sheet concept. The Tax Court ruled that the premiums, paid by Humana subsidiaries to Health Care Indemnity, were not tax deductible based on the analysis presented in a report by Plotkin and Stewart (1990). In essence, Plotkin and Stewart (1990) suggested that premiums are not tax deductible for the following reasons:

1. A firm, placing its risks in a captive insurance company in which it holds a sole ownership position, is not relieving itself of financial uncertainty.
2. It is, through its ownership, retaining the burdens and benefits of assuming the financial responsibility of its own risks.
3. True insurance relieves the firm's balance-sheet of any potential impact of the financial consequences of the insured peril[1].

Plotkin and Stewart (1990) appear to have used the financial risk and balance-sheet approach. The total financial risk approach may not be entirely correct in an insurance framework, if financial risk is defined to include both speculative and pure risks. Most recent literature and scholars have correctly concluded that only pure risk is relevant in determining the tax deductibility issue for insurance purposes, because, essentially, only pure risk is insurable in a classic sense[2].

The balance-sheet approach, based on the book value rather than the market value, may not necessarily be correct either. It is well documented in the finance and economics literature that a firm should make financial decisions based on the market value rather than the book value. In contrast to the balance-sheet approach, which focuses on the book value, the proposed shareholder wealth maximization approach focuses on the market value.

2.2. The Moline Properties and economic family doctrines. The dispute over the tax deductibility issues, involving captives, has focused on the implicit definition of insurance in Helvering v. LeGierse (1943): risk shifting and risk distribution. The internal revenue services (IRS) has used the economic family doctrine to suggest that there is no risk shifting and distribution possible when a captive accepts its parent's risk[3]. Specifically, the IRS has argued that a wholly owned captive and its parent company may be perceived as part of the same economic family, because the parent ultimately bears the profits or losses

of the captive. Thus, there is no risk transfer possible within the same corporate family. On the other hand, tax payers have argued that there is risk shifting and distribution in a legal sense, because the captive and the parent are two separate legal entities based on the Moline Properties (1943)[4]. Like other cases, the debate in Humana (1989) also focused on these two doctrines.

The Tax Court decision in the Humana case was appealed to the U.S. Court of Appeals, Sixth Circuit. The Sixth Circuit reversed the Tax Court decision in part as related to the brother-sister issue. Specifically, the Sixth Circuit Court ruled that premiums paid by Humana's subsidiaries to Health Care Indemnity were tax deductible, in essence, based on the separate legal entities doctrine in Moline Properties (1943). Specifically, the Court stated that: "We do not, however, as the government argues, look to Humana Inc., the parent, to determine whether premiums paid by the affiliates to health care indemnity are deductible. To do so, would be to treat Humana Inc., its affiliates and Health Care Indemnity as one "economic unit" and ignore the reality of their separate corporate existence for tax purposes in violation of Moline Properties[5]".

The Sixth Circuit Court went on to suggest that there is risk transfer from the Humana subsidiaries to Health Care Indemnity. Specifically, the Court stated: "The economic reality, however, of insurance between the Humana subsidiaries and Health Care Indemnity, where the subsidiaries own no stock in the captive and vice versa, is when a loss occurs, and is paid by Health Care Indemnity the net worth of the Humana affiliates is not reduced accordingly. The subsidiaries' balance sheets and net worth are not affected by the payment of an insured claim by Health Care Indemnity. In reality, therefore, when the Humana subsidiaries pay their own premiums under their own insurance contracts, as the facts show, they shift their risk to Health Care Indemnity[6]".

This assertion is correct only in a narrow legal sense, and not in an economic sense. Especially when there are no unrelated risks in Health Care Indemnity's portfolio, the statement is incorrect from the economic point of view. It should be noted that the Sixth Circuit Court focused its rulings on the concept of risk shifting, rather than risk distribution and reduction, which also was the focus of the Ninth Circuit in the Clougherty (1985) case[7]. The main reason that the Sixth Circuit Court adopted the analysis of the Ninth Circuit Court was that the

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[1] See Humana (1989, pp. 89-5144).
[2] For detailed discussion, please see Lai and Witt (1995).
[3] This argument is not economically correct because it is based on the book value approach.

[4] This argument is not economically correct if there are no unrelated risks in the captive insurer's portfolio of risks.
[5] Humana (1989, p.256).
[6] Ibid, p. 253.
[7] See Clougherty Packing Co. v. Commissioner, 84 TC 948 (1985), 811 F. 2d 1297 (9th Cir., 1987).

Court did not disturb the separate legal status of the various corporate entities. Like the Tax Court, the Sixth Circuit Court seems to have accepted an accounting or "balance-sheet and net worth" viewpoint which is not necessarily consistent with modern finance and insurance-economics.

The Sixth Circuit Court also argued that there is risk distribution in the Humana case. Specifically, the Court stated: "However, we see no reason why there would not be risk distribution in the instant case, where the captive insures several separate corporations within an affiliated group and losses can be spread among the several distinct corporate entities[1]."

Again, the Court's ruling is based on separate legal entities doctrine from Moline Properties (1943) that Humana subsidiaries and Human Care Indemnity should be treated as "distinct corporate entities". The Court's argument, unfortunately, does not seem to be valid economically, because it emphasizes legal form over economic substance. The shareholder wealth maximization approach, based on modern finance and insurance-economics, is briefly outlined below and used to examine the brother-sister issue in the following Section.

2.3. Is there risk transfer? The Six Circuit Court argued that the net worth of Humana subsidiaries, covered by Health Care Indemnity, was not reduced by an insured loss. Thus, it reasoned there was risk transfer from Humana subsidiaries to Health Care Indemnity in a legal sense. This argument is misleading and incorrect economically. Specifically, modern finance and economics emphasize shareholder wealth maximization, based on the market value of stock held by shareholders rather than book value maximization, based on accounting valuations. Thus, the narrow micro net worth approach, used by the Six Circuit Court, is misleading at best from the viewpoint of the modern finance and insurance economics.

It should be noted that the market value of Health Care Indemnity is reduced when anyone of the Humana subsidiaries suffers a financial loss, because there will be a cash outflow from Health Care Indemnity to the subsidiaries, other things being equal. Thus, the shareholder wealth of Humana Inc. (the parent) is reduced because Humana owns 100% of health care indemnity. The reduction in shareholder wealth of Humana also means that shareholders bear the loss when Humana subsidiaries merely shift or transfer a loss to a captive insurer in a legal sense, because these subsidiaries are wholly owned by Humana. In other words, the shareholders of Humana and those of its subsidiaries are exactly the same. Thus, a loss to the Humana subsidiaries

cannot be transferred or shifted to anyone else but the shareholders of Humana, the Humana subsidiaries, and Health Care Indemnity. Since the shareholders of the three related parties are the same, there cannot be a meaningful economic risk transfer, involving insurable risks. Loss shifting in a legal sense within a corporate group of companies, owned by the same shareholders, does not result in any meaningful risk distribution or risk reduction. Thus, insurance cannot result from the mere redistribution of losses in a corporate group of companies, owned by the same stockholders.

In summary, the market value of shareholders of Humana is reduced when any of the subsidiaries suffers a loss. Even though the loss is paid by Health Care Indemnity because shareholders of Humana subsidiaries and shareholders of Health Indemnity Care are the identical. Accounting and legal fictions cannot change economic reality or market value, except to the extent that courts allow legal form to dominate economic substance in deference to the separate legal entities doctrine enunciated in Moline Properties (1943).

2.4. Is there risk distribution? The concept of risk distribution or spreading in recent court decisions has focused on pooling and risk reduction, when unrelated risks were included in the pool. For example, the Tax Court stated that "[t]he concept of risk distributing emphasizes the pooling aspect of insurance[2]...." Furthermore, the Tax Court also stated that "the relatively large number of unrelated insureds [that] comprise approximately 30 percent of Rampart's business ... constitutes a sufficient pool of insureds to provide risk distribution[3]". In contrast, the Sixth Circuit Court stated that: "[R]isk distribution involves shifting to a group of individuals, the identified risk of the insured. The focus is broader and looks more to the insurer as to whether the risk insured against can be distributed over a larger group rather than the relationship between the insurer and any single insured[4]".

Clearly, one should not focus on the "relationship between the insurer and any single insured" for income tax purposes. However, one should also not ignore the fact that an insurer, owned by the same shareholders as the insureds, has important economic implications for risk distribution and reduction, especially when there are no outside or unrelated risks in the pool. Specifically, the risks, insured against, cannot be distributed over a "larger" group for the following reason. The size of the corporate group remains the same and is not changed by internal risk

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[1] Ibid, p. 257.

[2] See AMERCO (1991, p. 37).
[3] Harper (1991, p. 24).
[4] Humana (1989, p. 5150).

financing arrangements, because the ownership is the same for insurer or the insureds in this case. At first blush, it may erroneously seem that a group might become larger if one could include several separate corporations within the affiliated group. Moreover, losses might be perceived as being spread among several distinct corporate entities within the group. Unfortunately, losses in reality are merely redistributed among the shareholders of Humana affiliates themselves. Thus, there is no economic risk distribution or reduction in substance.

It should be noted that the brother-sister issue in Humana (1989) differs substantially from the Sears-Allstate (1991) case. Losses were spread among the same shareholders in the Humana (1989) case, whereas losses were spread among shareholders of Sears and unrelated insured policyholders in Allstate, because Allstate wrote more than 99% unrelated risks. From the Humana shareholders point of view, there is no economic risk distribution or risk reduction because losses are merely redistributed among the Humana affiliates, which are all owned by the same Humana shareholders. Hence, there is no risk distribution or risk reduction in any meaningful economic or financial sense, when it is recognized that the insured separate legal entities were all owned by the same shareholders. This was the case in Sears (1991) because it was possible for Allstate to spread the underwriting risk, associated with Sears exposures to other unrelated insured entities through the premium and loss pool.

2.5. Is there risk reduction? The current focus on the implicit partial definition of insurance, based on Le-Gierse (1943) in dealing with the tax deductibility issue, may not be appropriate because LeGierse (1943) dealt with a simple case, involving interdependent life insurance and annuity contracts. The transactions between captives and parents and/or affiliates in recent court cases involved risk-financing mechanisms, which are more complicated risk management tools. These transactions sometimes involved fronting and reinsurance issues, as well as other issues. Thus, they complicated fact situations than the LeGierse (1943) case. Thus, a new approach consistent with modern finance and insurance theory would seem to be more appropriate.

As noted above, Lai and Witt (1995) have concluded that a pure risk reduction approach, first proposed by Cummins (1989; 1990) and Han and Lai (1991), should be used to examine the tax deductibility issues involving captive insurers. It should be recalled that risk reduction techniques, like insurance, are risk management tools. In fact, financial risk reduction is more general than insurance alone, because a firm can use risk financing and reduction techniques other than to reduce its risks.

The risk reduction approach, proposed in the academic literature by Han and Lai (1991) and presented in recent expert witness reports by Cummins (1989; 1990) and Doherty (1990), gained support from the Tax Court in the recent cases involving AMERCO (1991), Harper (1991), and Sears (1991). The risk reduction approach, used here to examine whether the premiums paid by Humana subsidiaries should be tax deductible, was based on the insurance-economic concepts of risk distribution and risk reduction.

A relevant question to ask is whether there is a risk reduction from the economic perspective of the ultimate owners of the Humana subsidiaries. The insurance-economics analysis suggests that there is no economic risk reduction. At first blush, there might seem to be risk reduction in a legal sense, because the pure risks of some Humana subsidiaries were shifted to Health Care Indemnity. However, the fact that the shareholders of the Humana subsidiaries are the same as those of Health Care Indemnity requires that the shareholder wealth of Health Care Indemnity needs to be examined on a consolidated basis. Since there were no outside risks in the Humana case, the underwriting risk of Health Care Indemnity consists of the pure risks of Humana and the pure risks of Humana subsidiaries. Without outside unrelated risks in the pool, there can be no risk reduction from the point of view of the ultimate shareholders of Health Care Indemnity and Humana subsidiaries.

In summary, the U.S. Court of Appeals (Sixth Circuit) has ruled that premiums paid by Humana's subsidiaries to Health Care Indemnity are tax deductible using the concept of risk transfer and risk distribution. But using the risk reduction approach which is consistent with the shareholder wealth maximization approach, we suggest that premiums are not taxable.

3. The comparative advantage of self insurance

Both firm value maximization and social welfare criteria are used in this Section to reexamine the comparative advantages of self insurance over market insurance, suggested by Head and Porat (1990) and Porat et al. (1991). Furthermore, whether there is a comparative advantages of self insurance over captive insurance is also assessed. It should be noted that the captive insurance issue, examined in this section, can be based on either a pure captive or a wholly-owned captive that underwrites substantial outside business.

3.1. Transaction costs. One of the alleged advantages of self insurance is that there are less transaction costs associated with self insurance than with market insurance. This advantage will be examined under shareholder wealth or firm value maximization approach. A good example, provided by Porat

et al. (1991), is the costs associated with asymmetric information. Search costs must be incurred for the underwriting process for market insurance, while no search costs are incurred directly for self insurance, unless outside consultants or brokers are utilized.

Another type of transaction costs, which can be saved, but is not mentioned in Porat et al. (1991), are commissions. There are no commissions involved when self insurance is used, but consulting advisory fees may arise. Corporations pay commissions as part of the expense loading, when market insurance is used.

Similar to self insurance, there are generally less transaction costs, discussed above, associated with captive insurance, except for management consulting fees, if any. Parent companies that insure their own risks through their own captive generally will not incur search costs or commissions.

Since transaction costs are considered as deadweight costs from the social welfare criteria, the results, obtained using shareholder wealth or firm value maximization approach, are the same as those, obtained using social welfare criteria. In summary, self insurance and captive insurance have comparative advantage over market insurance from the shareholder wealth or firm value maximization approach and social welfare criteria.

3.2. Adverse selection. The insurance literature suggests that firms, which are of "high risk" relative to their class of risks, have greater incentives to purchase market insurance. Thus, equilibrium market insurance rates are likely to be higher than self insurance for "low risk" firms. Doherty and Smith (1993) suggest that adverse selection will deter insurance purchases by firms which are of low risk relative to their class.

Although the above observation is true from the firm value maximization perspective, the observation may not be totally correct from social welfare perspective. From society's point of view, total pure premiums and, thus, total social welfare stay the same even when an adverse selection problem could exist. In other words, the fact that only firms, which are of high risk relative to their class tend to purchase market insurance, do not necessarily reduce social welfare in a Porat et al. (1991) sense.

Parent corporations that insure their specific risks through a wholly-owned captive insurer will not suffer any adverse selection because the captive knows the parent's risk clearly. Thus, captive insurance has no costs associated with adverse selection when unrelated risks are covered.

In summary, self insurance and captive insurance have advantages over market insurance in terms of adverse selection from the firm value maximization approach. But there is no advantage from the social welfare criterion.

3.3. Moral hazard. Porat et al. (1991) have suggested that the insured with market insurance has a smaller incentive to undertake loss-control measures than a firm with self insurance because of moral hazard. To some extent, this argument has some merits, but Porat et al. (1991) ignore some market methods, that are commonly used to control the moral hazard. Specifically, the methods: are deductibles, schedule rating, experience rating, and retrospective rating.

Furthermore, Mayers and Smith (1982) suggest that market insurance can control the conflicts of interest between owners and managers of a firm, noted by Jensen and Meckling (1976) and Fama (1980). For example, if a manager's compensation package includes a bonus based on reported earnings, he or she may postpone some selected expenditures, such as a sprinkler system's maintenance in the short run until he or she leaves the company for a better position, in order to increase his or her expected compensation.

Parents, using their captives, will have an incentive to undertake loss-control measures and, thus, will not suffer such a moral hazard problem. On the other hand, captive insurance will not reduce the conflicts of interest between the owners and managers either.

The results, obtained above using the firm value maximization approach, are consistent with those, obtained using the social welfare criteria. In summary, self insurance and captive insurance may have more incentives to undertake loss-control measures, while market insurance is better to reduce the conflicts of interest between the owner and managers. Thus, it is not clear whether self insurance or captive insurance have a comparative advantage over market insurance either from the shareholder wealth or firm value maximization, or the social welfare criteria.

3.4. Diversification to reduce risk. We agrue that business firms cannot reduce risk through diversification. Most business firms do not have a large number of homogeneous exposure units. Furthermore, even if a firm had a large number of risks, the number of risks of the firm would be usually much smaller than the risks covered by a market insurer. Finally, it is well-known that only risks with high severity and low frequency are most appropriately dealt with through market insurance, while risks with high frequency and low severity are most appropriately dealt with through risk retention and risk reduction. Therefore, insurers, generally, have the ability to reduce risk more than a business firm that self insures. In other words, the comparative advantage for self insurance versus market insurance, in terms of "diversification to reduce risk", proposed by Porat et al. (1991), is misleading at best.

In summary, there may be a comparative advantage for self insurance or captive insurance over market insurance in terms of transaction costs, such as search costs proposed by Porat et al. (1991), and commissions proposed by the authors of this paper, even when a social welfare concept is used. Some other advantages for self insurance in terms of adverse selection and moral hazard are not as clear. It is true that adverse selection will tend to deter firms with risks lower than their class from purchasing market insurance. However, self insurance may not have a comparative advantage over market insurance when adverse selection is considered in the context of social welfare. As far as moral hazard problem is concerned, self insurance may provide greater incentives to control losses. However, market insurance can potentially control conflicts of interest between the owners and managers arising from moral hazard through increases in future premiums.

It should be noted that there is no advantage of self insurance over captive insurance. Essentially, the transaction costs, adverse selection, and moral hazard problems do not exist for captive insurance because parents and their wholly-owned captives are within the same economic family.

Overall, self insurance may have slight advantages over market insurance in the areas, examined above, but the degree of advantages are less important than what are suggested by Head and Porat (1990) and Porat et al. (1991). Furthermore, both Head and Porat (1990) and Porat et al. (1991) ignore the advantages of market insurance over self insurance, which will be examined next.

4. The comparative advantage of market insurance versus captive insurance and captive insurance over self insurance

Mayers and Smith (1982) provided an analysis of the set of incentives for the purchases of corporate insurance in the firm value maximization framework. Mayers and Smith (1982), however, did not examine the incentives for the purchases of captive insurance. This Section utilizes the modern financial theories and extends the analysis of Mayers and Smith (1982) and Doherty and Smith (1993) to examine whether the tax treatment of market insurance, captive insurance, and self insurance is economically sensible, using the value maximization and social welfare criteria.

4.1. Real-service efficiencies. Mayers and Smith (1982) and Doherty and Smith (1993) argue that insurers have a comparative advantage in providing ancillary services. These services include the estimation of the policyholder's loss distribution, safety and loss-controls, claim-processing services, and loss-mitigation services.

In general, insurers' experience, expertise, and data bases provide a comparative advantage over individual corporations in estimating the parameters of corporations' loss distribution, when the losses from exposures are frequent. A good example of these exposures would include fires, vehicle collisions and workers' injuries. Similarly, insurers also have a comparative advantage in safety and loss-controls, claim-processing services, and loss-mitigation services because of insurers' expertise and economies of scale.

A pre-loss risk-financing plan, such as selfinsurance or "insurance" through a wholly-owned captive insurer that does not underwrite unrelated risks (pure captive, hereafter), will not provide the same benefits of real-service efficiency as market insurance, because self insurance or a pure captive will not generally have the insurers' broad experience, expertise, or data bases. Furthermore, there are no economies of scale available to self insurance or pure captive, because there are no additional risks in the self insurance or pure captive pool without outside risks.

Lying between the traditional market insurance and self insurance (or risk management through a wholly-owned pure captive), captive insurers are underwriting unrelated business. They may be able to provide some partial benefit from real-service efficiency. Specifically, a wholly-owned "captive" insurer, underwriting a substantial amount of unrelated risks (such as Allstate), will have a comparative advantage over self insurance in estimating the parameters of loss exposures, in claim-processing, in providing safety and loss control services and in loss mitigation services. The reason is that when a captive underwrites a substantial amount of outside risks, the captive may not be significantly different from a regular insurer in terms of claim-processing, safety and control-services, and loss-mitigation services.

From a social cost perspective, the efficiency in claim-processing, safety and control-services, and loss-mitigation services will tend to increase social welfare. Thus, market insurance has an comparative advantage over insurance through a captive that underwrites substantial outside business. Furthermore, captive insurance, where the captive underwrites substantial outside risks, has comparative advantages over self insurance, pure captive insurance, or risk-financing arrangements between brother-and-sister institutions, when the firm value maximization and social welfare criteria are used to evaluate real efficiencies.

4.2. Costs of bankruptcy. Mayers and Smith (1982) suggest that purchase of insurance can reduce bankruptcy costs because the probability of bankruptcy is lower if firms transfer risk to the insurer by purchasing market insurance. In contrast, if a firm uses some

form of self insurance, the firm may go under if a large casualty loss occurs and the loss is larger than the firm's ability to absorb it even with some type of self insurance reserve. Thus, the expected bankruptcy costs are higher when self insurance is used, than when market insurance is used. Since bankruptcy costs are a dead-weight loss to society, market insurance will benefit society more than self insurance, other things being equal. It should be noted that the bankruptcy costs, discussed above, have two components: direct and indirect bankruptcy costs[1].

This paper argues that the costs to the society are far greater than bankruptcy costs defined above. When a firm goes under, not only the bondholders and stockholders of the firm suffer, but other stakeholders, such as the firm's employees, customers, and suppliers, also suffer. Thus, market insurance has a comparative advantage over insurance through captive that underwrites substantial outside business which has comparative advantages over self insurance or risk-financing arrangements between financially related brother-and-sister entities when the social welfare criteria is used to evaluate the costs of bankruptcy.

4.3. Comparative advantage in risk bearing. The amount of risk, that can be allocated to the stockholders and bondholders, is limited, if the equity and debt claims of the firm are relatively small compared to those of other stockholder, such as employees, customers, or suppliers. Purchasing market insurance enables the firm to shift some pure risks to an insurer, while self insurance is not able to shift the risks to unrelated third party. Thus, market insurance is superior to self insurance in terms of the allocation of risk bearing. In a competitive market, stockholders demand higher risk premiums which generates higher resource prices for firms with higher risks. For example, employees would be expected to require higher salaries from high risk firms, other things being equal. Thus, advantages of market insurance over self insurance exist in the context of risk bearing from a firm value maximization perspective as suggested by Mayers and Smith (1982) and Doherty and Smith (1993).

Purchasing insurance through its captive, which writes substantial unrelated business, enables the parent to distribute the parent-specific risk to unrelated third party. Thus, insurance through a captive, which underwrites substantial unrelated risks, has a comparative advantage over self insurance or risk financing arrangement through brother-sister firms.

From a social costs perspective, reduction of risk for stockholders will increase social welfare because people in general are risk averse. Thus, the results above would be similar when the social welfare

approach is used. In summary, market insurance has comparative advantage over insurance through a captive that underwrites substantial outside business when the shareholder wealth or firm value maximization and social welfare criteria are used to examine the allocation of risk bearing. Furthermore, a captive that writes substantial outside risks has comparative advantages over self insurance or pure captive, or risk-financing arrangement between brother-and-sister entities in terms of risk bearing.

4.4. Agency costs. Jensen and Meckling (1976) and Myers (1977) suggest that certain actions available to a firm, such as choosing a higher risk project, after bonds are issued, can reduce the value of the bonds. Under some circumstances, such as financial distress, a firm will accept a negative net present value project to increase the value of the equity, while reducing the value of the debt, if the risks of the project are high enough. Similarly, a firm may reject a risk-reducing positive net present value project which would increase the value of the firm. Mayers and Smith (1982) have suggested that the purchase of insurance can reduce the incentive of the firm's non-debtholders to accept a risk-increasing negative net present value projects or to reject risk-reducing positive net present value projects.

Mayers and Smith (1987) also suggest that the loss of an asset is like a call option because the equity-holders have the option of replacing the destroyed asset or not. The management, who acts in stock-holders' interest, may have incentives not to replace the destroyed asset, even if the replacement project has a positive net present value.

All of the economic behaviors, described above, are anticipated by rational bondholders. And the bond prices will decrease to reflect the possibility of these behaviors ex ante. Thus, it is the shareholders – not the bondholders – that bear the costs from distortions in project selection. The costs, discussed above, are called agency costs of debt in the finance and economic literature. Purchasing market insurance can control the manager's incentives to exploit the bondholder wealth, because it can reduce the expected bankruptcy probability and will replace the destroyed asset with insurance proceeds. Thus, purchasing market insurance can reduce the agency costs and increase the value of shareholders.

A firm that insures its risks through its captive, underwrites substantial outside risks, can also substantially reduce the expected bankruptcy probability arising from asset loss. Thus, it can control the manager's incentives to exploit bondholder's wealth. On the other hand, self insurance, a pure captive arrangement, or a brother-sister "insurance" arrangement will not be able to control the manager's incentives to exploit other bondholders.

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[1] See Warner (1977) for detailed discussions about the bankruptcy costs.

It is the opinion of the authors that acceptance (rejection) of negative (positive) net present value projects reduces social welfare. Therefore, market insurance is superior to self insurance in terms of social welfare. In summary, market insurance has an advantage over insurance through a captive that underwrites substantial outside business which has a comparative advantage over self insurance or pure insurance, or risk-financing arrangements between brother-and-sister entities when the shareholder wealth or firm value maximization and social welfare criteria are used to examine the agency costs.

Conclusions

This paper proposes the shareholder wealth maximization approach to examine the unresolved tax issues. Specifically, this paper first uses the shareholder wealth maximization criteria to evaluate whether the concepts of risk transfer and risk distribution used to aid Humana appellate court decision were applied appropriately. Our analysis suggests that the concepts of risk transfer and risk distribution were not applied properly in an economic sense in the recent Circuit Court decision involving Humana. Furthermore, the results suggest that the payments, made by Humana's subsidiaries to Health Care Indemnity, should not have been deductibles insurance premiums.

The tax treatment of market insurance versus self insurance, and captive insurance versus self insurance is analyzed in a shareholder wealth (or firm value) maximization framework and social welfare criteria suggested by Porat et al. (1991), respectively. In contrast to the conclusions suggested by Head and Porat

(1990) and Porat et al. (1991), this paper finds that market insurance has a comparative advantages over captive insurance, where the captive underwrites substantial unrelated business; nevertheless, such kind of captive insurance has comparative advantages over self insurance or pure captive insurance, or risk-financing arrangement through brother-and-sister entities in areas of real service efficiency, reduction of bankruptcy costs, risk bearing, and the reduction of agency costs. Similarly, captive insurance has comparative advantages over self insurance in these areas.

There may be a comparative advantage of self insurance over market insurance in terms of transaction costs, such as search costs proposed by Porat et al. (1991), and commissions proposed by the authors of this paper even when social welfare criteria are used. Some other advantages, involving adverse selection and moral hazard, however, are not as clear as Head and Porat (1990) and Porat et al. (1991) suggest. Furthermore, risk reduction from self insurance as claimed by Porat et al. (1991) is not correct.

In summary, it appears that the comparative advantage of self insurance over market insurance is marginal, while the comparative advantage of market insurance over self insurance is substantial. An implication of this finding is that the current tax policy, which favors market insurance and insurance through captives that underwrite substantial unrelated business, is consistent with the modern finance theory and insurance economics as well as social welfare criteria.

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