TAXATION ISSUES IN VALUATION

OF PROPERTY CASUALTY OPERATIONS

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BIOGRAPHY:

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ABSTRACT:

Prior to the Tax Reform Act of 1986, federal taxes did not have significant impact in cash flow valuation models - the advent of the new law has made taxation a key factor in industry's future. Also, certain attributes of the TRA of 1986 create large tax credits or debits that should be valued in a merger or acquisition decision. Finally, certain other attributes which are temporary in nature present special cases over the next five to ten year that must be separately analyzed.

The method of acquiring a company can dramatically affect the value of the aforementioned items.

1986 TAX REFORM ACT AND VALUATION

Traditionally, valuation techniques have accounted for tax by applying the appropriate tax rate to the various income statement items. The TRA of 1986 has brought the balance sheet into the tax picture requiring a more sophisticated treatment of tax in valuation models. This paper is dedicated to the following five areas:

- Briefly discuss general valuation principles.

- Outline what major changes the Tax Reform Act of 1986 has brought to the valuation of mergers and acquisitions.

- Introduce a simplified valuation model which can be used to isolate tax impacts.

- Discuss the issues which must be addressed to maximize after-tax income as the buyer or seller of a property-casualty insurance company.

- Review the effects of various types of mergers and acquisitions in the face of TRA 86.

Here we should emphasize that this paper presupposes a basic knowledge of the major features of the tax code under the Tax Reform Act of 1986. [1]

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[1] For more background, see Gleeson, O.M. and Lenrow, G.I. "Analysis of the Impact of the Tax Reform Act on Property/Casualty Industry. 1987 CAS Discussion Papers, PP. 119-190.

VALUATION - GENERAL

Valuation of a firm consists of measuring the increase in shareholder wealth derived from its ownership. Such valuation includes:

1. Direct income generated by the firm.

2. Indirect income generated from other operations as a result of ownership. (synergy)

3. Non-economic income, such as prestige, reduction of risk or political expedience.

Actuarial valuation is limited to the first two of these areas or the Economic Valuation of operations. Income, for the purposes of valuation, is not the same as income in an accounting sense. Accountants recognize income as it becomes "reasonably certain". From a valuation standpoint income is recognized only when it is available for withdrawal from the firm or free to be applied to other operations. In the valuation of insurance operations there can be a significant amount of Accounting income that is not free for other uses. To allow for this the term "cash flow" is used to indicate the income which is free to be withdrawn from the firm or used to finance other writings within the firm.

MAJOR EFFECTS OF TRA 86 ON VALUATION

The first challenge is to identify those effects of the new tax law which significantly impact the value of a property-casualty insurance company. We have categorized these changes as items that affect the value of:

- Past Business
- Existing Business
- Future Business

A. Past Business

1. Loss Reserve Discounting - The loss and loss adjustment expense reserves on the balance sheet of a property-casualty insurance company have been discounted on the tax books as of December 31 of the prior year. This "embedded discount" will be released over the life of the reserves, generating tax credits (i.e. a tax asset). The size of this tax asset on a present value basis depends on:

   . Line(s) of Business

   . Whether industry or company generated discount factors are to be used.

   . Speed of loss payout

   . Adequacy/Redundancy of reserves

- Use of Reinsurance and International lines of Schedule O versus splitting back by line of business.[2]

- Method of acquisition of Target company

- Election to gross-up for Statutory Workers Compensation discounts. [3]

2. Recapture of 20% of the December 31, 1986 Unearned Premium Reserve (Transitional) - Under 1986 TRA, twenty percent of the year end 1986 unearned premium reserve (UPR) must be brought in as income ratably over six years. Therefore, three and one-third percent of the year end 1986 UPR of a property casualty insurance company must be added to taxable income in the years 1987 - 1992. The size of this tax liability will decrease over time until January 1, 1993 when it disappears altogether. We characterize this in the model as a "transitional" item. The size of this tax liability hinges on:

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[2] Recent changes in the NAIC Blank have affected this item.

[3] This can be a major factor in the tax impact. The complexitites involved make a discussion of this item beyond the scope of this paper.

. The year end 1986 UPR of the target company

. The year of acquisition.

After 1992, this item should be removed from any model.

3. Exemption from the Proration Provision (Transitional) - The change in tax law includes indirectly as taxable income 15% of the income generated from certain tax-exempt instruments purchased on or after August 8, 1986. All tax-exempts instruments purchased before that date are still fully tax-free, under the "grandfather" clause. This comparative tax savings on grandfathered income generates tax savings (i.e. tax asset), which will decrease on a nominal basis over time, as more of the grandfathered tax-exempts mature or roll over under the law. For this reason, prorationing is also considered transitional in our model. The size of this tax asset on a present value basis varies based on:

. Age distribution of tax-exempts of the company.

. Current tax-exempt yield.

. Method of acquisition of target company.

If the assets of the target company are purchased (or deemed purchased) during the acquisition, then all of the tax-exempt instruments are non-grandfatherable to the acquiring company. For this reason this balance sheet item is highly sensitive to the method of acquisition.

B. Existing Business

For purposes of this paper "Existing Business" is exposure which the company has committed to and is cancellable only at the option of the insured. The value of the business in-force is measured as the profitability of the unearned premium reserve (UPR). The value in the UPR can be expressed as:

1. Pre-tax profitability of UPR =

$$UPR \times [(1-ELR) - (\text{Expense Ratio} - \text{Commission Ratio} - \text{Tax Ratio} - \text{Front Loaded Expense Ratio})]$$

or

$$UPR \times [1 - \text{Combined Ratio} + \text{Deferred Acquistion Cost Ratio}]$$

On a statutory basis the profit in the UPR is enhanced by the pre-expensed Commission and Tax, as well as certain front loaded expenses. One estimate of front loaded expenses is 50% of Other Acquisition and General Expenses, which is what we have used in our model.

2. Tax on Profit in UPR - the tax liability (or asset if UPR is thought to be unprofitable) is equal to 34% of the Pre-tax Profitability of UPR.

3. Accretion of UPR offset - under the Tax Reform Act of 1986, twenty percent of the change in UPR since year end 1986 is includable as taxable income under the revenue offset provision. When the UPR is run off, this offset accretes, generating a tax credit in the subsequent year after acquisition. The present value of this tax asset depends upon:

   - Size of changes in UPR since year-end 1986

   - Year of Acquisition of target.

   This tax asset can be significant. However, one should recognize that this tax credit generated from the existing UPR will be mitigated by the remainder of the recapture provision stated earlier, and the continuing revenue offset arising in future years.

4. Discounting of Loss Reserves Generated from UPR - As the premium in the UPR becomes earned, losses are incurred and hence, reserves are generated. As these new reserves are put on the books, they must be discounted for tax purposes. These reserves fall only in the current accident year. This initial discounting (and subsequent accretion) is a tax liability for the acquiring company. The size of the tax liability on a present value basis varies based on:

- Lines of Business
- Industry or company factors
- Speed of loss payment pattern
- Loss ratio in UPR
- Mid-term treasury bill rate

C. Future Business - Tax ramifications are also important when estimating the value of anticipated future business. Loss reserves must be discounted, UPR offset by twenty percent and all of the new tax-free investments purchased will have fifteen percent of their income taxed. All of these amounts must be added to the valuation methods.

We have identified the major effects of the Tax Reform Act of 1986 on the valuation of property-casualty insurance companies. Also, these tax effects have been categorized into balance sheet items affecting past business, items affecting existing business and items affecting future business.

A SIMPLE VALUATION MODEL (APPENDIX II)

To facilitate the analysis of taxation on the value of a company we will introduce a Cash Flow based valuation model. Cash Flow valuation assumes that the value of the firm can be expressed as:

$$V = Cf_o + v \cdot Cf_1 + v^2 \cdot Cf_2 + \ldots.$$

where: V = the present value of the firm to the purchaser or seller

Cf_o = the cash immediately available in the form of "excess surplus" or the market value of assets which will be liquidated.

Cf_n = the cash available at time n.

v^n = the discount factor for cash available at time n. Discount factors should reflect the riskiness of future cash flows and need not use a constant discount rate. For simplicity a constant discount rate is assumed here.

Since for a given set of "v" factors the value of the firm is a linear function of cash flows the value can be expressed as the sum of present values generated by various aspects of the business. By decomposing the value in this way we will analyze the specific impacts of the TRA 86 provisions.

As discussed above, the value will be analyzed by component:

1. Value of Past Business - This includes the value of cash flow from existing loss reserves and balance sheet assets.

2. Value of Existing Business - This includes the cash flow generated by business the firm is committed to insure either through multi-year contracts, guaranteed renewal provisions or unearned premiums.

3. Value of Future Business - This includes the cash flow that is expected from future writings.

VALUE OF PAST BUSINESS

Previously earned premiums have released underwriting profit to the owners of the firm. As part of the valuation process loss and LAE reserves are restated to adequate levels. Any adjustment to reserve levels would be reflected as a cash flow in Cf_0 after adjustment for income tax. The balance of the value of previously earned premiums is in the cash flows from investment income and taxes which will arise during the runoff of reserves.

Starting with an assumed payout pattern for accident year reserves, unpaid loss reserves as a percentage of ultimate are estimated.

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[4] This data is derived for 1985 industry GL from Best's Aggregates and Averages 1986 and the payout formula prescribed by the Treasury Department. Actual expected payout patterns should be used for valuation.

The loss reserves will generate investment income (here a 6% after tax yield is assumed and applied to the average reserve level during each year). Future investment income is then discounted (throughout this paper a constant 15% discount rate is used). The result, shown in columns (e) & (f) of Appendix II, Exhibit I is that each dollar of new (adequate) reserve generates 18.15 cents of after tax value from investments. This same 18.15% would be the discount which would be required in a loss portfolio reinsurance transaction before profit, risk charge over the 15% discount and taxes.

Continuing on Exhibit I of Appendix II, columns (g) through (m) develop the "tax asset" imbedded in the reserves. For tax purposes the reserves are discounted at the end of the accident year, with taxes calculated including the initial discount. As shown on the "AY" row of column (h), 21.08% in discount is added to the taxable income resulting in 7.17% (column (k)) in taxes (both as a percent of loss and LAE reserves). In subsequent years the initial discount is unraveled reducing taxable income. Therefore, each dollar of new losses has 2.79 cents of net present value future taxes associated as a result of discounting.

At the end of the first year and all subsequent years reserve discounting for tax purposes results in a tax asset since the unraveling (or accretion) of the discount reduces taxes. For example, the tax asset is 4.94 cents per dollar of current year reserves (column (m) of "AY" line). As discussed previously, this asset is dependent on the discount factors used for tax purposes, actual loss payouts and other factors.

VALUATION OF EXISTING BUSINESS

For purposes of this paper "existing business" is business the firm is committed to write. This would include multi-year policies and long term agreements. For the most Property Casualty insurers the only commitment is for exposure related to unearned premiums.

As premiums are earned they generate expenses, underwriting profit or loss reserves. The cash flow impact for the first two items is fairly straightforward with the valuation of expenses displayed on Exhibit II of Appendix II. The valuation of reserves was discussed above. The unresolved topic related to the valuation of existing business centers on the income and tax values associated with the earning of premiums.

Exhibit III shows Pro-forma policy year written and earning patterns. In this example 85% of the premiums are booked during the policy year. In addition, 15% is booked as audits during the subsequent year. This is clearly not a typical booking pattern (no late reported premiums or retros) but it will illustrate the concepts involved. Premiums are earned pro-rata except for audits which are earned when booked. The top half of the exhibit examines the income and tax impact assuming all premiums are collected when written, adjustments for actual collection are calculated in the lower half of the exhibit.

Considering all premiums are collected in advance, the unearned premium reserve is balanced by investable assets (front loaded expenses are treated separately). These assets would generate the income shown in column (e). The present value of that income is calculated for the year end points in columns (f) & (g).

The provisions of the tax law disallows 20% of the change in unearned premium reserve as a "revenue offset". Taxable income includes both investment income and the revenue offset. The resulting present value of the revenue offset is shown in columns (k) and (l).

Since premiums are collected in this example over nine quarters the income and tax impacts are reduced. Column (p) shows the policy quarter collection pattern. Assuming even writings over the year the policy year collection pattern is developed. The resulting agents balances reduce investment income (early collections, in quarter zero, increase investment income). The value and tax impacts can then be calculated. Netting investment income and taxes results in an addition to value of 1.57% (1.92 less .35) from after tax investment income as a percentage of the unearned premium reserve. Additionally, the revenue offset provision creates a tax asset, equal to 6.26% of the unearned premium. This asset would be transferred in the reinsurance of unearned premiums.

VALUATION OF SURPLUS

A portion of the assets of an insurance firm are attributable to surplus. While the surplus is in an accounting sense the property of the owners, practically it is not available as cash. Regulation requires surplus to be held in the firm to support premiums and in most cases dividends are restricted to a percent of income or surplus without special permission. The key in considering the value of surplus is the timeframe of release as "free" cash. An analysis of insurance economics which is beyond the scope of this paper suggests that it is appropriate to maintain surplus in relation to reserves by line and age.

Since the surplus is not available today it is worth less on an actuarial basis than the current accounting value. The loss in value is offset by investment income. Since the surplus is invested in relatively conservative investments while being subject to the significant risk of insurance profit or loss the discount rate will exceed the investment yield on surplus. The result is a net value of surplus less than the "current value".

Exhibit IV shows the actuarial value of surplus, as a percent of the initial reserve for an accident year. The value of the surplus associated with the accident year starts at 75.7% of the nominal (contributed) value (row 1 of column (h)). The loss in value of 24.3% must be offset by gains in value from operations. By the end of the accident year 14.93% of the initial surplus can be released (9.20% in surplus, 5.72% in after tax investment income.

The value of end of year surplus increases to 78.3% of the nominal amount. Since nominal surplus in a given firm may exceed what is required there may be an addition to Cf_0 i.e., directly to value for surplus in excess of the nominal required surplus.

The actual cash flows and required nominal surplus should reflect the market realities of minimum premium to surplus and maximum dividends. Some freedom is allowed since free surplus can be put to other use within the firm to avoid any dividend restriction.

VALUATION OF TRANSITIONAL ITEMS

Two aspects of the new tax law have a temporary impact on valuation: the grandfathering of certain tax exempt bonds and the amortization of the 12/31/86 Unearned Premium Reserve writedown.

For municipal bonds purchased prior to August 8, 1986 there is no proration provision which results in a 5.1% tax on interest income (15% x 34%) as calculated on Exhibit V. Any transfer of these securities results in their re-classification and increased taxes. The value of this tax depends on the amount of coupon income these bonds generate, since this portion of the investment income is not subject to tax unless sold. Based on the 1986 Industry Annual Statement some $99 billion in municipal bonds were held.

The present value of the redemption (assumed to be Par) value can be approximately based on the term and current (12/86) yield. The balance of the market value is the value of coupons which is subject to tax. Multiplying by the tax difference results in the market value of grandfathering. For this set of bonds holding to maturity adds 2.7% to the value of grandfathered bonds. While this amount may not change the decision to purchase or sell, it should enter into the decision on how to structure the transaction. With respect to a specific valuation; actual yields, market values and maturities should be analyzed.

The Tax Reform Act requires the amortization of 20% of the opening 1987 UPR over five years. This increases future tax liability. the lower portion of Exhibit V shows the impact on value due to this transitional rule. Entering the table at the current year determines the present value of future taxes for this amortization.

TOTAL VALUE

The previous discussion introduced a series of valuation factors which could be used to evaluate a firm. Now we will give an example of how this method could be used in an actual valuation.

Exhibit VI displays the valuation of Balance Sheet items for a firm equal to one millionth of the property casualty industry's general liability business.[5] The first step is to value the unearned premium reserve of $7.2 thousand. The year end income factor from Exhibit III column (g) less column (u) results in $113 in future after tax investment income. The tax benefit of the revenue offset is 6.26% of UPR or $450. The result is a net value of $563.

Once the premiums are earned they become either profit, expense or loss reserves. The loss reserves can be valued using the factors from Exhibit I Columns (f) and (m). It is interesting to note that the tax rate on losses exceeds 34% because discounting accelerates taxes. For this chart the profit in UPR is split into the "GAAP Profit" and Deferred Acquisition Cost (DAC) offset. The GAAP underwriting profit implied in the U.P.R. can be calculated as the loss on the book of business if all losses and expenses were matched over the policy period (in this case -16.5%). The DAC allowance subtracts pre-paid expenses which will be recognized on the statutory books as premiums earned. The implied profit in the U.P.R. is 0.2% of premiums. Each of these items are cash flow in the current year and are fully taxable. Using a half-year discount factor and the 34% tax rate (which results in a 61.55% tax valuation factor) a $9 loss in value results. Overall the unearned premium has a value of $1,634 or 23% of the balance sheet liability. Column (h) shows that the value from the UPR is increased by 18.7% as a result of the changes in the TRA.

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5 The data is for Year end 1986 derived from Best's Aggregate and Averages - 1987, AM Best Company, Oldwick, N.J.

The valuation of loss reserves is done by applying the income and tax factors from Exhibit I to the (adequate) reserves by accident year. The result is that the $34,883 in reserves add $5,657 to the firm value due to after tax investment income. The unraveling of the discount adds another $1,734. There are three interesting aspects of this calculation: 1) that a loss portfolio reinsurance could cost as little as $27,495 ($34,883-7,388) and 2) that foreign reinsurers which don't benefit from the TRA would be at a price disadvantage in such transfers. 3) Domestic reinsurers which use the "reinsurance" line of Schedule "O" would not be able to reap the full benefit on deeper discounted lines (GL, Med Mal and Comp) and would also be at a price disadvantage on loss portfolio reinsurance of long tail lines.

The third balance sheet entry critical to this valuation is surplus. Surplus is held at 20% of reserves so some $8,359 in surplus supports this book. The surplus is required to support both loss and LAE reserves and the loss and LAE component of the unearned premium reserves. The total resulting surplus when compared with the $19,426 in written premium gives a 2.31:1 premium to surplus ratio for GL.

Due to the risk of writing GL the $8,359 of invested surplus has a value of $6,506. The $1,853 loss in value is recovered from earnings on the balance sheet items resulting in a gain of $7,169 ($1,634+$7,388-$1,853). This would mean the net price, cash paid less funds available on transfer (Cf_0) should be $7,169 before consideration of the value of future business. The TRA effects alone add $1,988 to the value of the balance sheet.

VALUATION OF FUTURE BUSINESS

Exhibit VII shows the valuation of the future policy year 1987. With 8% growth the written premium will be $20,980. Assuming increasing rate adequacy, the 1987 accident year contribution from 1987 policy year will have a lower loss ratio than the unearned premium reserve from the 1986 policy year. If a mid year rate change (in excess of loss trends) is expected the 1988 accident year piece of the 1987 policy year will have an even lower loss ratio. Surplus will be contributed in proportion to incurred losses, in this example the same 20% factor was used to set surplus.

The net result of applying the valuation factors to the future business is that the 1987 policy year with 112.4 combined ratio is valued at $3,508. This is $350 less than the required surplus (thus the rate level does not provide an adequate (15%) return). The TRA provisions cause a $577 reduction in value due to the acceleration of taxes. Under the assumptions used in this model a combined ratio of 108.8% is needed to provide a 15% return on GL (i.e., value at 15% discount equal to Nominal Investment).

For valuation of subsequent years the calculation would be repeated with the resultant net gain or loss discounted to the present. At some point an increasing perpetuity would be used to allow for the value of "horizon years".

OPTIMIZING TAX ATTRIBUTES

Up to this point in in the paper, we have concentrated on the identification and modeling of major valuation issues arising from the 1986 Tax Reform Act. This section will talk to optimizing tax strategy under TRA of 1986. We will begin with a brief summary of tax attributes resulting from various types of mergers and acquisitions. Then we will review what tax items under 1986 TRA will be influenced by the re-organization decision and cover each in detail. Finally we will present a few examples of this decision making process.

A. Types of Acquisitions

Appendix I displays various acquisition methods and whether a particular method results in new or carryover tax attributes.[6] New tax attributes signifies that when the entity is acquired, the depreciation method, discounting, tax basis, accounting method, etc. may be changed, or new elections made. Carryover means that all old tax attributes of the acquired company remain after acquisition. Another important aspect of the type of acquisition is whether assets were purchased (or deemed purchased) to facilitate the transaction. This information is also laid out in Appendix I. It is the interplay between whether tax attributes are new or carryover and whether assets were purchased or not during acquisition that will help determine an optimal strategy from a tax standpoint.

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6 Source: Growth Through Acquisition Second Edition, Peat, Marwick and Main, 1988.

We will concentrate on the major new tax attributes from the 1986 TRA namely; UPR offset provision, December 31, 1986 recapture provision, loss reserve discounting and bringing into income of fifteen percent of certain post August 8, 1986 tax free instruments. Additional tax issues such as net operating loss carryforwards and alternative minimum tax with regard to acquisition are beyond the scope of this paper. Certainly they should be considered in the decision. Also, it is quite possible that the method of acquisition hinges on other than tax purposes. Therefore the optimal tax decision is not always the optimal business decision.

B. 1986 TRA Tax Attributes Affected by the Method of Acquisition

The manner in which a target company is acquired affects some of the major tax features under the 1986 Tax Reform Act.

1. UPR Offset - the rule that 20% of the change in UPR must be brought into income cannot be influenced by how a merger or acquisition takes place. Therefore, the UPR offset provisions should not be included in the decision of how to acquire a target company.

2. December 31, 1986 UPR Recapture - Until 1993, three and one third percent of the year ending 1986 unearned premium reserve must be brought in as income. This is a fixed amount and cannot be influenced by the merger or acquisition. In cases where a new company is formed this liability will be recognized in the taxation of the seller. Where the company ownership is transfered the liability is transfered with the ownership.

3. Embedded Loss Reserve Discount - is the discounting in the existing book of loss reserves of the acquired company as previously discussed. This tax asset hinges on the company's 1987 decision whether to use industry or the company's own payout pattern to generate reserve discount factors. It also depends upon the payout pattern of the acquired losses. It is our belief that both of these attributes can be altered based on the method of merging or acquiring the company. The goal is to maximize the embedded discount, thus maximizing the size of the tax credits generated in the future.

4. Future Business Loss Reserve Discounting - This is the discounting and subsequent accretion of the discount on new accident years' business. The timing difference results in a tax liability on a present value basis. So while the same attributes affect the discounting of future business and the embedded discount, the total goal is to maximize the net resulting value.

5. Treatment of Certain Tax Free Instruments (Proration Provision) - A property casualty insurance company must reduce their loss reserves (thus increasing income) by fifteen percent of the investment income generated by certain tax-free investments. All tax-frees purchased before August 8, 1986 will be exempted from this rule under the grandfather clause in the 1986 TRA. If assets of the target company are purchased (or deemed purchased) by the acquiring company, all of the target company's pre-August 8, 1986 investments would be new investments for the acquiring company.

Thus the grandfather clause would no longer apply. Therefore, whether assets are purchased (or deemed purchased) can cause the parent to lose the grandfathering benefit of these older tax-frees.

Therefore, the methodology for acquiring a property casualty insurance company should be the method that optimizes the effects of the tax credits in the embedded discount, the tax debits on future business and the grandfathering of tax free instruments purchased before August 8, 1986.

C. Discussion of Loss Reserve Discounting

We have found that maximizing the tax effects of a merger or acquisition hinges on three items: one is the grandfather clause, which is straight forward; either it is applicable or it is not. The other two items both relate to loss reserve discounting. These issues are more complex and require some indepth discussion.

1. Embedded Discount - As previously discussed, we should maximize this amount. If a target company with a historically slower than average payout pattern (call it Company A) had used industry factors for discounting, then the acquiring company (Company B) may want to have the opportunity to select new tax attributes, namely using Company A's own historical payout pattern for discounting all acquired reserves. Since Company A had a slower payout pattern than the industry, the discounting will be deeper.

This larger embedded discount will generate larger tax credits in future years from existing reserves. Another way to look at it is by referencing Exhibit 1, column (i). The deeper the discount, the larger the initial change in discount. Similarly, the AY+1 and older change in discounts (or accretion of discount) will be more negative because in total the change is zero. Since existing reserves are all AY+1 and older, taxable income will be reduced for the acquiring company. The impact (as a percentage of incurred losses) could be measured by replacing industry reserve discount factors with company factors in Exhibit 1, column (g).

Company B would also wish to select new attributes if Company A were historically quicker paying (or more underreserved) than industry and had previously selected company generated factors.

A second variation of changing attributes exists. Suppose the purchasing company (B) uses their own payout pattern to generate reserve discount factors. Also assume that company B pays out slower than both the industry and the target company A; thus having the deepest reserve discounting factors. To maximize the size of the embedded discount, Company A reserves should be brought in on Company B factors. Thus, Company B could bring Company A in on a Type A Reorganization, which merges Company A reserves into Company B while retaining Company B reserve discount factors.

A third possibility is to combine Company A and Company B into a third company, Company C. This third company would thus have a new payout pattern, different than either A or B and can elect either industry discount factors or factors based on the merged firm. Because of the spuriousness of the mandated methodology for creating reserve discount factors, a larger embedded discount may be generated in this fashion.

The method of reorganization can also determine whether there should be a change in accounting procedure which could affect loss reserve discounting. Suppose Company A one line codes its reinsurance business in Schedule O, which Company B splits back reinsurance by line on Schedule P. If B acquires A, or A acquires B or A and B combine to form C, the line of business, hence the size of discount, can be altered on Schedules O & P.

The same holds true for a situation where one company statutorily discounts lifetime workers' compensation reserves while the other does not (or if they both discount for statutory purpose, but only one grosses up and re-discounts for tax).

2. Future Loss Reserve Discounting – Most of the issues are similar to the embedded discount issues with two major exceptions. The first is that the relative cost or benefit on future business moves in the opposite direction as the embedded discount. Future loss reserves are initially discounted in the possession of the acquiring company, while the embedded discount is generated from reserves initially discounted by the target company before the acquisition date. Once again referencing Exhibit I, deeper discounting would increase the initial change in discount (21.08%) and increase the accretion in future years. This will increase the present value of future taxes on new reserves to something higher than 11.01% (column m) of incurred losses.

The second difference is that the influence of the method of acquisition on the discounting of future business hinges on the election dates provided by the Treasury Department. Property and casualty insurance companies are allowed to switch between company and industry every five accident years. The next such election date is year end 1992. If we consider each five year period an independent choice, optimizing the loss reserve discount decision is a trade off between the present value of the embedded discount and the present value of the discount in future business up until the next election year.

If the acquisition occurred in 1990, then future business affected by the merger or acquisition would include accident years 1990 and 1991 only. If the acquisition year is the same as the election year (i.e. 1992) then the next five accident years (1992-1996) are affected by the merger or acquisition decision.

D. *One Final Example*

The decision has been made to acquire a company, whose payout pattern is deeper than industry; therefore reserve discount factors are lower on company factors than on industry - suppose this company had elected it's own payout. Next election year is in 4 years.

Assume the following:

	Company Factors	Industry Factors
Present value of embedded discount	= +$20 M	+$15 M
Present value of future business discounting; (incl. business in UPR) - 4 years only	= -$40 M	-$30 M
Total discount effect	= -$20 M	-$15 M
Present value of Grandfather Clause	= $8 M	$8 M

This scenario results in a $5 million benefit to be able to switch payout patterns from company-based to industry-based. We will only be willing to do this if we do not lose the grandfathering of tax free investments to get it.

Since there are no acquistion methods which allow new tax attributes for the acquired company while retaining ownership (thus grandfathering) of tax frees, than the acquiring company should elect a method that retains ownership of investments, as with a Type B reorganization.

Of course, a different set of growth assumptions might cause a reversal in this decision. For example, if we are relatively sure that the difference in tax offsets in future business discounting will remain $13 million or less, we have optimized our decision, because we would lose grandfathering and an embedded discount advantage totaling $13 million on a present value basis by choosing to re-elect industry factors.

Let's add two more variables to this scenario: The first relies on the spurious nature of the mandated methodology of creating reserve discount factors. It is possible that combining payout patterns will result in new a embedded discount and future business discount that would be advantageous when selecting company based factors in the face of losing the grandfathering on the acquired companies tax frees. This type of scenario is very likely when one of the companies' reserves have been growing while the other's has stayed flat or declined.

There is no way to determine whether combining payout patterns is beneficial other than calculating it and comparing the size of the embedded discount and discount on future business to the sum of the two companies separately.

The second variable is the Alternative Minimum Tax. If for any number of reasons, such as the existence of large NOLs, the firm will be an AMT tax-payer for many years, then the present value of the ability to grandfather tax frees is not fully includable in the tax base for valuation purposes. Instead, a permanent difference between RT and AMT will be generated with no cash present value. More likely, your corporation may be "marginally" AMT, or expect to be in the AMT mode for only a few years. In this case one of two things will happen;

You will sell tax-free investments to move from AMT to RT. Thus the value of the ability to grandfather under prorationing may be substantially lessened.

You will be AMT for X years, then move to RT. In this case the cash savings generated from the grandfather clause for years up to and including X-1 will be pushed to year x, thus reducing the present value of the grandfathering clause.

This will reduce the value (or opportunity cost) of the grandfather clause in either scenario. If the reduction in the present value is significant, the present value of the ability to change payout patterns may rule the reorganization decision for tax.

SUMMING UP

The Tax Reform Act of 1986 has changed the timing of taxation of the premium and loss flow of an insurance policy. Because our goal is to maximize after-tax earnings (while staying solvent) we need to match taxes back to policies that produce them.

Prior to TRA of 1986, calendar year taxes related very closely to the business a company earned in that calendar year (plus changes in estimates of prior years' incurred losses). Now an insurance contract generates effects for numerous calendar years, even if estimates of ultimates remain stable.

This model allows us to anticipate these flows to create effective tax rates on various lines of business evaluated at their present value. We intuitively know that the General Liability effective tax rate is greater than that for Fire, but how much greater? Unless we quantify this difference we may miss opportunities in the marketplace that would maximize our after tax income.

Also, the new tax law forces us to re-study tax attributes every five years by allowing each company to select either industry or their own payout patterns for discounting every five years starting with the 1992 calendar/accident year. This election will effect future business, and only for the next five years (i.e., 1992 - 1996 accident years) for which another decision must be made. However, if a poor decision is made, then the company must live with it until the business runs off the books. We see an important emerging actuarial task as aiding tax planning by projecting loss payout patterns for the next five accident years. Monitoring these decisions is vital, to see how assumptions have held up. As a regularly scheduled occurrence every five years, property-casualty actuaries should view this as an important task to be added to the repertoire.

OTHER CONSIDERATIONS

The analysis presented is based on TRA of 1986 as it currently stands (and currently interpreted). The biggest test will be whether the Treasury reaches its taxation goals over the next 3 to 5 years. Right now, we believe they are slightly below their target, so we may see some changes to the law as in 1988, which brought us explicitly reducing reserves for taxation by anticipated salvage and subrogation. Barring a complete re-write of TRA 1986, this model should continue to be useful with minor adjustments. Perhaps this model should be given a credibility of somewhat less than 100%, with the complement of credibility being applied to some as-yet-to-be designed Tax Reform Act of 19XX.

APPENDIX I

METHOD OF ACQUISITION	TARGET COMPANY		PURCHASING COMPANY	
	TAX ATTRIBUTES	ASSETS PURCHASED ?	TAX ATTRIBUTES	ASSETS PURCHASED ?
ASSET PURCHASE	NEW	YES	CARRYOVER	NO
STOCK PURCHASE, SECTION 338 ELECTION	NEW	YES (DEEMED)	CARRYOVER	NO
STOCK PURCHASE, SECTION 338(h)(10) ELECTION	NEW	YES (DEEMED)	CARRYOVER	NO
STOCK PURCHASE, NO SECTION 338 ELECTION	CARRYOVER	NO	CARRYOVER	NO
TYPE A REORGANIZATION (INTO PURCHASING COMPANY)	NEW	YES	NEW	NO
TYPE A REORGANIZATION (INTO A NEWLY CREATED COMPANY)	NEW	YES	NEW	YES
TYPE B REORGANIZATION	CARRYOVER	NO	CARRYOVER	NO
TYPE C REORGANIZATION	CARRYOVER	NO	CARRYOVER	NO

Appendix II
Exhibit I

Taxation of Property Casualty Companies
Valuation of Incurred Losses & Loss Reserves
General Liability

Discount Rate: 15.0%
Industry Average Payout

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)
	Accident Year		6.0%	Present Value of Future Income		Industry			Federal	Tax Impact	Present Value of Impacts Discount		Present Value
Years	Payout	Unpaid Losses	A.T. Inv Income	% Incur.	% Reser.	Discount Factor	Discount	Change in Disc.	Tax Rate	of Discount	% Incur.	% Reser.	of A.T. Cash
		100.00%		18.15%	18.15%		0.00%				2.79%	2.79%	15.36%
AY	9.2%	90.80%	5.72%	14.73%	16.22%	76.7789%	21.08%	21.08%	34.0%	7.17%	-4.48%	-4.94%	21.16%
AY+1	16.2%	74.60%	4.96%	11.62%	15.57%	77.6987%	16.64%	-4.45%	34.0%	-1.51%	-3.54%	-4.74%	20.31%
AY+2	14.7%	59.92%	4.04%	9.03%	15.08%	78.3308%	12.98%	-3.65%	34.0%	-1.24%	-2.73%	-4.56%	19.64%
AY+3	15.1%	44.79%	3.14%	7.02%	15.67%	77.3635%	10.14%	-2.84%	34.0%	-0.97%	-2.11%	-4.70%	20.37%
AY+4	11.0%	33.80%	2.36%	5.54%	16.40%	76.2351%	8.03%	-2.11%	34.0%	-0.72%	-1.65%	-4.90%	21.30%
AY+5	8.9%	24.89%	1.76%	4.49%	18.03%	73.9097%	6.49%	-1.54%	34.0%	-0.52%	-1.34%	-5.39%	23.42%
AY+6	5.1%	19.78%	1.34%	3.72%	18.82%	72.9563%	5.35%	-1.14%	34.0%	-0.39%	-1.13%	-5.69%	24.52%
AY+7	4.3%	15.50%	1.06%	3.15%	20.30%	71.2185%	4.46%	-0.89%	34.0%	-0.30%	-0.97%	-6.26%	26.56%
AY+8	2.2%	13.34%	0.87%	2.69%	20.18%	71.9322%	3.74%	-0.72%	34.0%	-0.24%	-0.85%	-6.41%	26.59%
AY+9	1.0%	12.32%	0.77%	2.27%	18.42%	74.9278%	3.09%	-0.65%	34.0%	-0.22%	-0.74%	-6.04%	24.46%
AY+10	1.0%	11.30%	0.71%	1.85%	16.37%	78.2316%	2.46%	-0.63%	34.0%	-0.21%	-0.63%	-5.54%	21.92%
AY+11	1.0%	10.28%	0.65%	1.43%	13.94%	81.9168%	1.86%	-0.60%	34.0%	-0.20%	-0.50%	-4.88%	18.82%
AY+12	1.0%	9.27%	0.59%	1.02%	11.00%	86.0875%	1.29%	-0.57%	34.0%	-0.19%	-0.37%	-3.98%	14.98%
AY+13	1.0%	8.25%	0.53%	0.61%	7.38%	90.8971%	0.75%	-0.54%	34.0%	-0.18%	-0.23%	-2.76%	10.14%
AY+14	1.0%	7.23%	0.46%	0.20%	2.80%	96.5834%	0.25%	-0.50%	34.0%	-0.17%	-0.08%	-1.08%	3.88%
AY+15	7.2%	0.00%	0.22%	0.00%		96.5834%	0.00%	-0.25%	34.0%	-0.08%	0.00%		
Total	100.00%		29.16%					0.00%		0.00%			

Appendix II
Exhibit II

Taxation of Property Casualty Companies
Valuation of General Expense Payments
General Liability

Discount Rate: 15.00%

(a)	(b)	(c)	(d)	(e)	(f)
Qtrs	Operating Expense Payout	P.V. of Future Expense % of Exp	Federal Tax Rate	Taxes Paid	P.V. of Future Tax Savings % of Exp
0		92.51%	34.0%		31.45%
1	62.50%		34.0%	21.25%	
2	12.50%		34.0%	4.25%	
3	12.50%		34.0%	4.25%	
4	12.50%	0.00%	34.0%	4.25%	0.00%
5	0.00%		34.0%	0.00%	
6	0.00%		34.0%	0.00%	
7	0.00%		34.0%	0.00%	
8	0.00%	0.00%	34.0%	0.00%	0.00%
Total	100.00%			34.00%	

Appendix II
Exhibit III

Taxation of Property Casualty Companies
Valuation of Written Premium and Unearned Premium Reserve
General Liability

Discount Rate: 15.0%

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
					Present Value of Future A.T. Income					Present Value of Revenue Offset	
Qtrs	Policy Year Written	Earned	UPR	6.0% A.T. Inv Income	% of WP	% of UPR	Revenue Offset	Federal Tax Rate	Tax Impact of Revenue Offset	% of WP	% of UPR
0	0.00%	0.00%	0.00%		2.19%	2.19%	0.00%			0.35%	0.35%
1	21.25%	2.66%	18.59%	0.14%			3.72%	34.0%	1.26%		
2	21.25%	7.97%	31.88%	0.38%			2.66%	34.0%	0.90%		
3	21.25%	13.28%	39.84%	0.54%			1.59%	34.0%	0.54%		
4	21.25%	18.59%	42.50%	0.62%	0.82%	1.92%	0.53%	34.0%	0.18%	-2.66%	-6.26%
5	3.75%	22.34%	23.91%	0.50%			-3.72%	34.0%	-1.26%		
6	3.75%	17.03%	10.63%	0.26%			-2.66%	34.0%	-0.90%		
7	3.75%	11.72%	2.66%	0.10%			-1.59%	34.0%	-0.54%		
8	3.75%	6.41%	0.00%	0.02%	0.00%	0.00%	-0.53%	34.0%	-0.18%	0.00%	0.00%
Total	100.00%	100.00%		2.55%			0.00%		0.00%		

(m)	(o)	(p)	(q)	(r)	(s)	(t)	(u)
						Present Value of Future Lost A.T. Income	
Qtrs	Policy Year Written	Policy Qtr Collec-tion	Policy Year Collec-tion	Policy Year Agents Balances	6.0% A.T. Inv Income	% of WP	% of UPR
0	0.00%	10.0%	2.50%	-2.50%	-0.02%	0.60%	0.60%
1	21.25%	25.0%	8.75%	10.00%	0.06%		
2	21.25%	50.0%	21.25%	10.00%	0.15%		
3	21.25%	0.0%	21.25%	10.00%	0.15%		
4	21.25%	0.0%	18.75%	12.50%	0.17%	0.15%	0.35%
5	3.75%	10.0%	15.00%	1.25%	0.10%		
6	3.75%	5.0%	3.75%	1.25%	0.02%		
7	3.75%	0.0%	3.75%	1.25%	0.02%		
8	3.75%	0.0%	3.75%	1.25%	0.02%	0.00%	0.00%
9	0.00%	0.0%	1.25%	0.00%			
Total	100.00%	100.0%	100.00%	45.00%	0.67%		

Appendix II
Exhibit IV

Taxation of Property Casualty Companies
Valuation of Income on Surplus
General Liability

Discount Rate: 15.0%
Industry Average Payout

(a) Years	(b) Accident Year Payout	(c) Surplus	(d) 6.0% A.T. Inv. Inc	(e) Surplus Flow	(f) Cash Flow	(g) Present Value of A.T. Cash Flow % Orig.	(h) Present Value of A.T. Cash Flow % Curr.
		100.00%		-100.00%	-100.00%	75.70%	75.70%
AY	9.2%	90.80%	5.72%	9.20%	14.93%	71.05%	78.25%
AY+1	16.2%	74.60%	4.96%	16.19%	21.16%	59.02%	79.11%
AY+2	14.7%	59.92%	4.04%	14.69%	18.72%	47.80%	79.77%
AY+3	15.1%	44.79%	3.14%	15.13%	18.27%	35.38%	78.98%
AY+4	11.0%	33.80%	2.36%	10.99%	13.35%	26.37%	78.02%
AY+5	8.9%	24.89%	1.76%	8.92%	10.68%	18.88%	75.85%
AY+6	5.1%	19.78%	1.34%	5.11%	6.45%	14.80%	74.80%
AY+7	4.3%	15.50%	1.06%	4.28%	5.34%	11.29%	72.85%
AY+8	2.2%	13.34%	0.87%	2.17%	3.03%	9.74%	73.01%
AY+9	1.0%	12.32%	0.77%	1.02%	1.79%	9.28%	75.33%
AY+10	1.0%	11.30%	0.71%	1.02%	1.73%	8.82%	78.05%
AY+11	1.0%	10.28%	0.65%	1.02%	1.67%	8.36%	81.28%
AY+12	1.0%	9.27%	0.59%	1.02%	1.60%	7.89%	85.17%
AY+13	1.0%	8.25%	0.53%	1.02%	1.54%	7.42%	89.97%
AY+14	1.0%	7.23%	0.46%	1.02%	1.48%	6.94%	96.05%
AY+15	7.2%	0.00%	0.22%	7.23%	7.45%	0.00%	
Total	100.00%	536.07%	29.16%	0.00%	29.16%		

Appendix II
Exhibit V

Taxation of Property Casualty Companies
Valuation Transition Allowances
Insurance Industry 1986

Grandfathered Municipal Bonds

(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)
Term	Statement Value*	Par Value	Market Value	Curr. Muni Market Yield	Market Value of Par	Market Value Coupons	Tax Rate Differece	Market Value of Grandfathering
upto 1	1,564,784	1,370,606	1,385,832	4.40%	1,341,413	44,419	5.10%	2,265
1 to 3	4,165,659	3,648,732	3,689,265	5.00%	3,309,508	379,757	5.10%	19,368
3 to 5	5,947,212	5,209,208	5,267,075	6.20%	4,095,186	1,171,890	5.10%	59,766
5 to 10	19,389,800	16,983,673	17,172,339	7.00%	10,224,764	6,947,576	5.10%	354,326
10 to 15	23,067,192	20,204,728	20,429,177	7.40%	8,277,506	12,151,671	5.10%	619,735
15 to 20	20,769,522	18,192,182	18,394,274	7.50%	5,131,409	13,262,864	5.10%	676,406
20+	24,808,724	21,730,150	21,971,544	7.60%	3,356,215	18,615,328	5.10%	949,382
Total	99,712,893	87,339,280	100,820,574		35,736,001	52,573,505		2,681,249
								2.66%

Amortization of 20% of 1986 Unearned Premium Reserve

(j)	(k)	(l)	(m)	(n)
				15.0%
Year	Unearned Premium Reserve Amortization	Federal Tax Rate	Taxes Payable	PV of Future Taxes % 1986 UPR
1986				4.79%
1987	3.33%	40.0%	1.33%	4.07%
1988	3.33%	34.0%	1.13%	3.47%
1989	3.33%	34.0%	1.13%	2.77%
1990	3.33%	34.0%	1.13%	1.98%
1991	3.33%	34.0%	1.13%	1.06%
1992	3.33%	34.0%	1.13%	0.00%
Total	20.00%		7.00%	

* Muni purchases during 1986 are assumed to be 25% of ending Muni's on a Statement Value basis. Assuming 40% of this 25% were purchased after 8/7/86 roughly 90% of the year end municipal holdings are grandfathered.

Exhibit VI

Taxation of Property Casualty Companies
Valuation of Existing Liabilities
Industry General Liability 1986

(a) Discount Rate:	(b) 15.0%	(c) Balance Sheet Value	(d) Income Valuation Factor	(e) Value Added	(f) TRA Valuation Factor	(g) TRA Impact ($)	(h) TRA Impact (%)	(i) Value
Unearned Premium Reserve		7,193						
Investment Income			1.57%	113	-6.26%	450	-398.7%	563
Losses & LAE in UPR @	96.1%	6,913	18.15%	1,255	2.79%	(193)	15.4%	1,062
U/W Profit in UPR	-16.5%	(1,187)	61.55%	(730)				(730)
DAC in UPR	16.7%	1,201	61.55%	739				739
Total Value in UPR		7,193	19.14%	1,376	3.58%	257	-18.7%	1,634
Loss & Lae Reserve								
1986		12,650	16.22%	2,052	-4.94%	625	-30.5%	2,677
1985		6,830	15.57%	1,063	-4.74%	324	-30.4%	1,387
1984		4,433	15.08%	668	-4.56%	202	-30.2%	871
1983		3,027	15.67%	474	-4.70%	142	-30.0%	617
1982		1,996	16.40%	327	-4.90%	98	-29.9%	425
1981		1,383	18.03%	249	-5.39%	75	-29.9%	324
1980		923	18.82%	174	-5.69%	53	-30.2%	226
1979		671	20.30%	136	-6.26%	42	-30.8%	178
1978		490	20.18%	99	-6.41%	31	-31.8%	130
1977		367	18.42%	68	-6.04%	22	-32.8%	90
Prior		2,113	16.37%	346	-5.54%	117	-33.8%	463
Total Value in Loss Res.		34,883	16.22%	5,657	4.96%	1,731	-30.6%	7,388
Surplus	(20.0%) of Reserves							
Losses & LAE in UPR		1,383	75.70%	1,047		1,047		1,047
1986		2,530	78.25%	1,980		1,980		1,980
1985		1,366	79.11%	1,081		1,081		1,081
1984		887	79.77%	707		707		707
1983		605	78.98%	478		478		478
1982		399	78.02%	311		311		311
1981		277	75.85%	210		210		210
1980		185	74.80%	138		138		138
1979		134	72.85%	98		98		98
1978		98	73.01%	71		71		71
1977		73	75.33%	55		55		55
Prior		423	78.05%	330		330		330
Total Value in Surplus		8,359	77.83%	6,506		6,506		6,506
Total Value		42,076	16.72%	7,033		1,988	-28.3%	15,528
1986 Written Premium:		19,426						
Premium:Surplus Ratio:		2.32 :1						

Appendix II
Exhibit VII

Taxation of Property Casualty Companies
Future Business
Industry General Liability 1986

Discount Rate: 15.0%

(a)	(b)	(c) Balance Sheet Value	(d) Income Valuation Factor	(e) Value Added	(f) TRA Valuation Factor	(g) TRA Impact ($)	(h) TRA Impact (%)	(i) Value
(1986 wp =	19.426)							
---------- 1987 ---------->		20,980	(Growth =	8.0%)				
Losses & LAE in W.P.								
1987 Acc. Yr.	93.3%	9,787	18.15%	1,776	2.79%	(273)	15.4%	1,503
1988 Acc. Yr.	90.6%	9,502	15.78%	1,500	2.43%	(231)	15.4%	1,269
Inv. Inc. on W.P.		20,980	1.59%	334	0.35%	(73)	22.0%	260
I.I. on Comm. & P.Tax	12.9%	2,712	0.0%	0				0
Inv. Inc. on Expenses	7.5%	(1,570)	61.06%	(958)				(958)
U/W Profit in W.P.	-12.4%	(2,591)	57.39%	(1,487)				(1,487)
Cash Value of Surplus	20.0%	3,858	75.70%	2,920				2,920
Total Value in W.P.		20,980	19.47%	4,085	2.75%	(577)	14.1%	3,508
Nominal Investment:		3,858						
Resulting Value:		3,508						
Gain/Loss on U/W Year:		(350)						