## Valuation of Insurance

Operations
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How To Do A Valuation

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## Objectives

- Generally we estimate a reasonable range of fair market value for $100 \%$ of the shareholders' equity of an insurance carrier as of a fixed point in time
- Valuations may be done for active carriers as well as run-off situations.
- Valuations can be done for entire groups as a single entity. Alternatively, subsidiaries and affiliates may be done separately by entity.
- Often a valuations is done for a single member of a group or, solely for a block of business.


## Purposes and Key Premises

- The premise of value is fair market value. For purposes of analysis, fair market value is defined as:
...the price at which stock would change hands between a willing buyer and a willing seller, neither being under compulsion to buy or sell and both having reasonable knowledge of all relevant facts as of the applicable valuation date.
- The level of value at which we estimate as fair market value is minority and marketable. As such, future earnings potential (inclusive of franchise value) is considered in the Estimation of fair market value. However, acquisition or tender premium are not normally considered at this level of value. Accordingly, in our valuation analysis we consider the future earnings potential of each as well as the franchise value.
- As with most economic events, market forces set the actual purchase price. Our efforts are usually to make an estimate of the actual purchase price and of intrinsic economic value. There are times where a valuation of an entity's purchase price will be materially different (higher or lower) than the actual price due to market conditions.


## Uses of a Valuation

- A buyer seeking advice as to value of a target
- A seller seeking advice as to value of a group or a spin-off (including a block of business)
- Tax issues, e.g., $338 \mathrm{~h}(10)$ elections
- State insurance departments for a demutualization
- Fairness opinions for stock (or policy) holders
- Other miscellaneous reasons that pop up from time to time (e.g., minority shareholder buyout, executive retirement,phantom stock plan, etc.)


## Shareholders' Levels of Value



Notes:
(a) Typical tender premia for publicly-traded insurance companies may range from $20 \%$ to $30 \%$.

## Components of Value

Total Assets


Going-Concern Value
Renewals of Existing Business
Franchise Value
New Business (Growth)

Total Liabilities and Equity
Operating Liabilities
Interest-Bearing Debt*



* Assumes interest-bearing debt is at market rates.
** Reserve Adequacy Adjustment is defined as the difference between the book value of reserves and an actuarial best estimate, net of applicable taxes. *** Discount relates to present value effects of paying incurred claims in the future, net of applicable taxes.


## Valuation Methodologies

## Guideline Company Method

The Guideline Company Method compares the subject company's risk profile and growth prospects to selected reasonably similar (or "guideline") publicly-traded companies. Valuation multiples are selected for various financial performance measures and applied to the subject company. These multiples estimate value by computing actual trading ratios of stock market prices to such indices as capital and surplus or earnings.

## Similar Transactions Method

This is similar to the Guideline Company Method. In the Similar Transactions Method, consideration is given to prices paid in recent transactions, and the resulting multiples therefrom, that have occurred in the subject company's industry or in related industries. Valuation multiples are selected and applied to the subject company.

## Actuarial Method

The Actuarial Method considers value to be the sum of: (i) adjusted statutory net worth ("Market Value Surplus"), (ii) the estimated net present value of insurance contracts inforce (including existing loss reserves), and (iii) the value of future business capacity (i.e., insurance contracts expected to be generated in the future).

## Guideline Company Method

## Insurance market selection criteria

- Use companies that predominantly have insurance carrier-related activities.
- Attempt to find companies with similar size and characteristics (Geographics, lines of business, Distribution system, etc.)
- The companies must be publicly traded.
- Adequate financial information about the company was available. (Stock price, beta, annual statements, etc.
- Premium for control is not addressed in this method.
- Hard to adjust if proposed savings/operational changes are to be incorporated.


## Guideline Company Method

| Insurance market comparative ratios ${ }^{(a)}$ Profitability | Comp |  |  | Co 2 | Co 3 | Co 4 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Target | Median | Co 1 |  |  |  |
|  |  |  |  |  |  |  |
| Return on Equity | 23.0\% | 12.7\% | 17.3\% | 6.1\% | 12.6\% | 12.8\% |
| EBIT Margin | 11.9\% | 39.5\% | 47.9\% | 28.9\% | 31.1\% | 49.1\% |
| Net Income Margin | 7.8\% | 37.1\% | 43.8\% | 17.7\% | 30.3\% | 45.3\% |
| Operating Margin | -40.3\% | 11.6\% | 11.4\% | 2.7\% | 11.7\% | 19.0\% |
| Combined Ratio | 135.2\% | 89.0\% | 89.6\% | 89.6\% | 88.3\% | 86.4\% |
| Leverage |  |  |  |  |  |  |
| Total Liabilities / Total Assets | 89.7\% | 55.1\% | 55.7\% | 54.5\% | 73.0\% | 53.9\% |
| Net Premiums Written / Shareholders' Equity | 130.4\% | 26.6\% | 22.5\% | 30.7\% | 32.5\% | 13.8\% |
| Loss Reserves / Shareholders' Equity | 1158.0\% | 79.3\% | 94.1\% | 12.8\% | 125.4\% | 64.5\% |
| Growth Analysis |  |  |  |  |  |  |
| 4-Year Compounded Revenue Growth | 24.2\% | 25.3\% | 27.2\% | 23.4\% | 43.7\% | 17.8\% |
| 4-Year Compounded EBIT Growth (b) | 14.9\% | 27.6\% | 37.6\% | 1.1\% | 17.6\% | 44.4\% |
| 4-Year Compounded Shareholders' Equity Growth | 5.0\% | 25.5\% | 35.9\% | 20.5\% | 19.5\% | 30.4\% |
| Loss and LAE Reserve Growth | 9.5\% | 107.7\% | 74.2\% | 214.3\% | 141.2\% | 0.3\% |
| AM Best Rating | A (c) |  | A++ | not rated (c) | A+ | A++ |
| S\&P Rating (debt) | Aa2(c) |  | A2 | A1 | Aa2 | not rated (c) |
| $\underline{S \& P}$ Rating (financial strength) | Aa2(c) |  | Aa2 | Aa2 | A1 | not rated (c) |
| Notes $\quad$ cer |  |  |  |  |  |  |
| (a) Ratios are for the latest twelve months, except where indicated. |  |  |  |  |  |  |
| (b) Company 2 is a three year compounded growth rate. |  |  |  |  |  |  |
| (c) Company 2 and Company 4 are not rated based on insufficient data. |  |  |  |  |  |  |

## Guideline Company Method

## Insurance market multiples

| Valuation Multiples |  | Co 1 | Co 2 | Co 3 |
| :--- | ---: | ---: | ---: | ---: | Co 4

TIC $=$ Total Invested Capital; MVE $=$ Market Value of Equity; EBIT $=$ Earnings Before Interest and Taxes.

## Guideline Company Method

## Insurance market recommended range of fair market value as of December 31, 1998

 (\$US in Million's)| Valuation M ultiples | Range of M ultiples |  | $\begin{array}{r} \text { Company } \\ \text { Data } \\ \hline \end{array}$ | Range of Enterprise Value |  | Interest Bearing Debt | M inority Interest | Range of Equity Value |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Low | High |  | Low | High |  |  | Low | High |
| Earnings Multiples |  |  |  |  |  |  |  |  |  |
| TIC / EBIT | 11.0 | 12.0 | \$200 | \$2,200 | \$2,400 | (\$100) | (\$300) | \$1,800 | \$2,000 |
| MVE / Projected 1999 net income (a) | 13.0 | 14.0 | 100 | 1,300 | 1,400 | n /a | n/a | 1,300 | 1,400 |
| MVE/Net income | 12.0 | 13.0 | 150 | 1,800 | 1,950 | $\mathrm{n} / \mathrm{a}$ | n/a | 1,800 | 1,950 |
| Balance Sheet Multiple |  |  |  |  |  |  |  |  |  |
| MVE / Book equity | 1.5 | 1.7 | 600 | 900 | 1,020 | n/a | n/a | 900 | 1,020 |

[^0]
## Similar Transactions Method

## Insurance market selection criteria

- Similar to Guideline Company Method but uses recent transactions to estimate multipliers
- Generally requires that $100 \%$ of the target's shareholders' equity was acquired in each transaction and that the general terms of the transactions are publicly available.
- As with Guideline Company Method we attempt to restrict our multiplier computations to companies that appear "similar".
- Has the advantage that the specific issue of premium for control is implicitly computed but suffers from similar disadvantages.


## Similar Transactions Method

## Insurance market selected transactions

| Effective <br> Transaction date | Acquirer | Target | Transaction Values |  |  |  | Multiples of total invested value ("TIC") to: |  | Multiples of equity value to: |  | Tender |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  | Revenue |  | $\begin{array}{r} \hline \text { B ook } \\ \text { Equity } \\ \hline \end{array}$ | $\begin{array}{r} \mathrm{Net} \\ \text { income } \end{array}$ |  |
|  |  |  |  | TIC |  | Equity |  |  |  |  |  |
| 10/25/96 | Munich Reinsurance | American Re Corp. | \$ | 3,836 | \$ | 3,761 | 2.0 | nmf | 4.5 | nmf | nmf |
| 10/02/96 | General Re Corp. | National Re Corp. |  | 1,095 |  | 881 | 2.7 | 13.2 | 2.9 | 17.0 | $61 \%$ |
| 06/11/97 | Exel, Ltd. | GCR Holdings, Ltd. |  | 687 |  | 637 | 4.5 | 7.3 | 1.6 | 7.0 | 19\% |
| 08/10/98 | Exel, Ltd. | M id Ocean Ltd. |  | 2,977 |  | 2,899 | 4.7 | 11.5 | 2.2 | 11.8 | $22 \%$ |
| open | Exel, Ltd. | NAC Re Corp. |  | 1,183 |  | 1,183 | 1.6 | 8.4 | 1.6 | 12.4 | 18\% |
|  |  |  |  |  |  | Low (a) | 1.6 | 7.3 | 1.6 | 7.0 | 18\% |
|  |  |  |  |  |  | High (a) | 4.7 | 13.2 | 2.9 | 17.0 | $61 \%$ |
|  |  |  |  |  |  | Average (a) | 3.4 | 10.1 | 2.1 | 12.1 | $30 \%$ |
|  |  |  |  |  |  | Median (a) | 3.6 | 10.0 | 1.9 | 12.1 | 21\% |

## Notes:

(a) All multiples exclude American Re .

TIC $=$ total invested capital; EBIT $=$ earnings before interest and taxes.
Source of data: Securities Data Corporation / Houlihan, Lokey, Howard \& Zukin / Conning \& Company / Bloomberg.

## Actuarial Methodology

## General Approach

The Actuarial Method considers value to be:

- Market Value of Surplus (adjusted Stautory net worth)

Plus ("+")

- Net Present Value of After-Tax Future Earnings of future and in-force insurance contracts

Less ("-")

- Net Present Value of Opportunity Cost of Capital Needed to Support Underwriting


## Actuarial Methodology Sources of Data

- Statutory financial statements: generally at least five years by entity and consolidated
- GAAP financial statements
- Informational interviews with the senior management the nature and operations of the entities under study including:
- historical financial performance
- any existing business plans, future performance estimates, and budgets; and
- the operating and risk characteristics of the entities and associated cash flows.
- Actuarial studies for loss reserving, pricing etc.
- Lapse rate information for Policy counts, premium dollars and agent/broker relationships
- Reinsurance schedules and policies as needed


## Actuarial Methodology

## Surplus Considerations

- Book value of statutory surplus value is the amount reported in balance sheet of the Statutory Annual Statement
- Market value of surplus is calculated as follows:
- Bonds are marked-to-market;
- Provisions for deferred acquisition costs are removed;
- Non-admitted assets are added back to the extent that they have value;
- Provision for value of licenses
- Charge for Schedule P penalties and unauthorized reinsurance added back to the extent appropriate;


## Actuarial Methodology

## Surplus Considerations (cont.)

- Market value of surplus is calculated as follows (cont.):
- Loss and LAE reserves at actuarial "best estimate" compared to booked reserves
- Loss and LAE reserves are undiscounted (except as allowable by law);
- Reflect appropriate tax considerations;
- Special surplus adjustments include:
- Parental reinsurance expected to be gone;
- Off-balance sheet transactions.


## Actuarial Methodology

## Net Present Value of Future Earnings

- Project all future earnings from insurance operations: run-off of loss and LAE reserves, run-off of unearned premium reserves, renewals and new business.
- Follow statutory accounting as statutory accounting dictates when profits can be released.
- Future earnings considerations:
- Based on both historical experience of insurer and reasonable anticipated results;
- Projected future profit stream discounted at an appropriate riskrelated rate of return;
- Allows for recognition of investment income and deferred acquisition costs as earned under statutory accounting;
- Considers investment income using current rates; and
- Any "survivable" tax characteristics are reflected.


## Actuarial Methodology Net Present Value of Future Earnings (cont.)

- Growth
- Management has ability to maintain reasonable growth in premium volume without adversely affecting profitability; and
- Assumed equal premium rate adequacy of new and renewal business segments.
- Payout Pattern - need to estimate at best estimate
- In our example, payments were assumed to be made at mid-year, and investment income was assumed to be earned at mid-year, as a surrogate for continuous payments for earnings;
- Run-off of loss reserves and projected incurred losses were distributed to project payment year according to the selected payout pattern.
- Investment Income Rate - In our example we have assumed that theU.S.

Long Term Treasury Bond rate at time of valuation was $6.0 \%$

## Actuarial Methodology <br> Net Present Value of Future Earnings (cont.)

- Discount Rate - In our example, based on CAPM
- Opportunity Cost of Capital
- Cost of capital assumes: capital $=1 / 3$ of written premium (minimum). This may be greater than estimated risk-based capital requirements.
- Assumed cost of capital $=\mathrm{WACC}$, and treated as an expense for tax effecting.


## Actuarial Methodology <br> Opportunity Cost of Capital

- The opportunity cost of capital reflects lost opportunity of higher profits if capital were free to be invested at higher yields.
- Insurance capital and surplus must be invested in low yield assets having minimal return risk.
- As the opportunity cost of capital is a form of lost profits, it is treated as an expense and is tax-effected.


## Weighted Average Cost of Capital

## Insurance market

Insurers require capital to support their writings. Capital can be raised in many ways but, they generally reduce to debt or equity. In performing an actuarial valuation the cost of capital must be specifically considered as an actual cost since the actual surplus of the company is separately valued without regard to restriction for this purpose.

In our example The Weighted Average Cost of Capital ("WACC") analysis is utilized to estimate an appropriate discount rate. (Note: Other choices are possible.) The WACC measures a company's cost of debt and equity financing weighted by the percentage of debt and percentage of equity in a company's target capital structure. Arithmetically, the formula for calculating the after-tax WACC is:

$$
\text { After-Tax WACC }=\left(\mathrm{k}_{\mathrm{d}} \times(1-\mathrm{T}) \times \mathrm{D} /(\mathrm{D}+\mathrm{E})\right)+\left(\mathrm{k}_{\mathrm{e}} \times \mathrm{E} /(\mathrm{D}+\mathrm{E})\right)
$$

where:
$\mathrm{k}_{\mathrm{d}}=$ Cost of debt financing (based on targets actual borrowing rate)
$\mathrm{k}_{\mathrm{e}}=$ Cost of equity financing (in our examples we utilize CAPM)
$\mathrm{D}=$ Estimated market value (or book value) of debt
$\mathrm{E}=$ Estimated market value of equity
$\mathrm{T}=$ Assumed tax rate

## Risk Related Rate of Return

## Cost of Equity

To estimate the cost of equity financing (rate of return that an investor would likely expect for investments of similar risk, our example utilizes the Capital Asset Pricing Model ("CAPM"). (Note: Other choices are possible.) The CAPM measures the return required by investors given the company's risk profile. This model is expressed arithmetically by the following equation:

$$
\mathrm{k}_{\mathrm{e}}=\mathrm{r}_{\mathrm{f}}+\left(\beta \times \mathrm{rp}_{\mathrm{m}}\right)+\mathrm{rp}_{\mathrm{s}}+\alpha
$$

where:

| $\mathrm{k}_{\mathrm{e}}=$ | Cost of equity financing |
| :--- | :--- |
| $\mathrm{r}_{\mathrm{f}}=$ | Risk-free rate of return |
| $\beta=$ | Beta representing level of non-diversifiable risk |
| $\mathrm{rp}_{\mathrm{m}}=$ | Market equity risk premium |
| $\mathrm{rp}_{\mathrm{s}}=$ | Small stock equity risk premium |
| $\alpha=$ | Unsystematic risk factor |

## Weighted Average Cost of Capital

Low Range
Selected data for subject company

| Book value <br> of debt |
| ---: | | Market value |
| ---: |
| of equity | | Effective |
| ---: |
| tax rate |$\quad$| Levered |
| ---: |
| beta |$\quad$| Unlevered |
| ---: |
| Beta |

After-Tax Cost of Equity:
Relevered beta using selected data for subject company
Equity risk premium (a)
Company risk premium
add: Risk free rate: return on long-term Treasury bonds (b)
Unadjusted after-tax cost of equity
add: Small company risk premium (c)
add: Unsystematic risk factor (d)
Subtotal, after-tax cost of equity
After-Tax Cost of Debt:
Pretax cost of debt (e)
Estimated effective tax rate
Subtotal, after-tax cost of debt
$\begin{array}{r}6.6 \% \\ 20.0 \% \\ \hline 5.3 \%\end{array}$
Weighted A verage Cost of Capital

| Type of |  | After-Tax | Weighted |
| :---: | ---: | ---: | ---: |
| Financing | \% of Total | Cost | Cost |
| Equity | $95.0 \%$ | $13.1 \%$ | $12.4 \%$ |
| Debt | $5.0 \%$ | $5.3 \%$ | $0.3 \%$ |
|  | $100 \%$ |  | $12.7 \%$ |
|  |  |  |  |
|  |  | Rounded | $\mathbf{1 3 \%}$ |
|  |  |  |  |

Notes:
(a) Source: Ibbotson.
(b) Source: Federal Reserve Bank of St. Louis as of December 31, 1998.
(c) Source: Ibbotson.
(d) Qualitative adjustment based on company-specific/future performance estimate factors.
(e)

Source: Federal Reserve Bank of St. Louis as of December 31, 1998.

## Weighted Average Cost of Capital

## High Range

Selected data for subject company

| Book value <br> of debt | Market value <br> of equity | Effective <br> tax rate | Levered <br> beta | Unlevered <br> Beta |
| ---: | ---: | ---: | ---: | ---: |
| $5.0 \%$ | $95.0 \%$ | $20.0 \%$ | -- | 0.9 |

After-Tax Cost of Equity:
Relevered beta using selected data for subject company
Equity risk premium (a)
Company risk premium
add: Risk free rate: return on long-term Treasury bonds (b)
Unadjusted after-tax cost of equity
add: Small company risk premium (c)
add: Unsystematic risk factor (d)
Subtotal, after-tax cost of equity
After-Tax Cost of Debt:
Pretax cost of debt (e)
Estimated effective tax rate

Subtotal, after-tax cost of debt



Weighted A verage Cost of Capital

| Type of |  | After-Tax | Weighted |
| :---: | ---: | ---: | ---: |
| Financing | \% of Total | Cost | Cost |
| Equity | $95.0 \%$ | $15.1 \%$ | $14.3 \%$ |
| Debt | $5.0 \%$ | $5.3 \%$ | $0.3 \%$ |
|  | $100 \%$ |  | $14.6 \%$ |
|  |  |  |  |
|  |  | Rounded | $\mathbf{1 5 \%}$ |
|  |  |  |  |

## Notes:

(a) Source: Ibbotson.
(b) Source: Federal Reserve Bank of St. Louis as of December 31, 1998.
(c) Source: Ibbotson.
(d) Qualitative adjustment based on company-specific/future performance estimate factors.
(e)

Source: Federal Reserve Bank of St. Louis as of December 31, 1998.

# The Personal Automobile Insurance Company <br> Statutory Balance Sheet <br> As of 12/31/99 <br> (\$Millions) 

ASSETS LIABILITIES

| Bonds | 3,000 | Loss \& LAE reserve | 1,800 |
| :--- | :--- | :--- | ---: |
| Other Assets (includes reinsurance | 2,300 | Unearned premium reserve <br> receivable on paid loss) | 849 |
|  |  | Schedule P Penalty | 200 |
|  |  | Policyholders' Surplus | 2,451 |
| Total Assets | 5,300 | Total Liabilities | 5,300 |

As shown on pages 2 and 3 of PAIC's 1999 Statutory Annual Statement.

## The Personal Automobile Insurance Company Information You Have Gathered

|  | As of 12/31/99 (\$Millions) |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1995 | 1996 | 1997 | 1998 | 1999 |  |
| Gross Written Premium | 2,250 | 2,750 | 3,250 | 3,750 | 4,250 |  |
| Gross Earned Premium | 2,000 | 2,500 | 3,000 | 3,500 | 4,000 |  |
| Loss/LAE Ratio | 80.0\% | 100.0\% | 50.0\% | 50.0\% | 60.0\% | Taken from your loss reserve study |
| Commission (to WP) | 10.0\% | 13.0\% | 15.0\% | 10.0\% | 10.0\% |  |
| Other U/W expense (to EP) | 15.0\% | 12.0\% | 10.0\% | 9.0\% | 11.0\% |  |
| Accident year loss payout pattern | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |  |
| Incremental | 30.0\% | 25.0\% | 20.0\% | 15.0\% | 10.0\% | Taken from your loss reserve study |
| Cumulative | 30.0\% | 55.0\% | 75.0\% | 90.0\% | 100.0\% |  |
| Renewal Rates |  |  |  |  |  |  |
| Policies | 70.0\% | 60.0\% | 70.0\% | 70.0\% | 70.0\% | Taken from your loss reserve study |
| Premium | 60.0\% | 50.0\% | 90.0\% | 90.0\% | 80.0\% | Taken from your loss reserve study |
| Income Tax Rate | 20.0\% | 20.0\% | 25.0\% | 30.0\% | 30.0\% |  |

Notes: The following were based upon management interviews
No tax carryforwards exists. Company has paid no taxes in 5 years due to prior carryforwards now exhausted

Reinsurance: 25\% quota share, all years
For 1995-1997 Dead Re (now in liquidation) participated at 20\% [ for total of $5.0 \%$ ( $.25 \times 20$ )]
PAIC believes that they will ultimately recover all of this so the balance sheet has no adjustment.
To date, nothing has been recovered.
PAIC recently renegotiated its agency contracts.
PAIC has non-admitted assets of $\$ 400$.
Deferred acquisition expenses are $\$ 100$.
Market value of bonds are \$2,700.

| The Personal Automobile Insurance Company Run-Off Of Loss/LAE Reserves <br> As of 12/31/99 <br> (\$Millions) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Accident Year | Gross <br> Earned Premium <br> (1) | Est. Ult. Loss/LAE Ratio <br> (2) | $\begin{array}{r} \text { Gross } \\ \text { Ultimate } \\ \text { Loss/LAE } \\ (3)=(1) \times(2) \end{array}$ | $\begin{array}{r} \text { Net } \\ \text { Ultimate } \\ \text { Loss/LAE } \\ (4)=(3) \times 75 \% \end{array}$ | $\begin{array}{r} \text { Net } \\ \text { Paid } \\ \text { Loss/LAE } \\ \hline(5) \end{array}$ | $\begin{gathered} \text { Estimated } \\ \text { Net O/S } \\ \text { Loss/LAE } \\ (6)=(4)-(5) \end{gathered}$ | $\begin{array}{r} \text { Held } \\ \text { Net O/S } \\ \text { Loss/LAE } \\ \hline(7) \end{array}$ | Reserve Redundancy/ (Deficiency) $(8)=(7)-(6)$ |
| 1995 | 2,000 | 80.0\% | 1,600 | 1,200 | 1,200 | - | - | - |
| 1996 | 2,500 | 100.0\% | 2,500 | 1,875 | 1,688 | 188 | 146 | (42) |
| 1997 | 3,000 | 50.0\% | 1,500 | 1,125 | 844 | 281 | 218 | (63) |
| 1998 | 3,500 | 50.0\% | 1,750 | 1,313 | 722 | 591 | 459 | (132) |
| 1999 | 4,000 | 60.0\% | 2,400 | 1,800 | 540 | 1,260 | 978 | (282) |
| Total | 15,000 |  | 9,750 | 7,313 | 4,993 | 2,319 | 1,800 | (519) |
| Notes: (1), (5) and (7) taken from annual statement <br> (2) based upon actuarial study |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| Year | Pattern | $\underline{2000}$ | $\underline{2001}$ | $\underline{2002}$ | $\underline{2003}$ |  | Totals |  |
| 1995 | 100.0\% | - |  |  |  |  | - |  |
| 1996 | 90.0\% | 188 | - |  |  |  | 188 |  |
| 1997 | 75.0\% | 169 | 113 | - |  |  | 281 |  |
| 1998 | 55.0\% | 263 | 197 | 131 | - |  | 591 |  |
| 1999 | 30.0\% | 450 | 360 | 270 | 180 |  | 1,260 |  |
| Total |  | 1,069 | 669 | 401 | 180 |  | 2,319 |  |
|  |  |  | Held Loss/LAE <br> Net Loss/LAE Reserve Redundancy (Deficiency) |  |  |  | $\begin{gathered} 1,800 \\ (519) \end{gathered}$ |  |



Payment of Loss/LAE reserves Including uncollectible reinsurance

|  | Projected Payment Year |  |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| All Accident Years | $\underline{2000}$ | $\underline{2001}$ | $\underline{2002}$ | $\underline{2003}$ | $\underline{\text { Totals }}$ |  |
| Loss/LAE Runoff | 1,069 |  | 669 | 401 | 180 | 2,319 |
| Uncollectible Reinsurance | 24 | 8 | - | - | 31 |  |
| Total | 1,093 | 677 | 401 | 180 | 2,351 |  |


| The Personal Automobile Insurance Company Computation of Future Profits - Loss/LAE Reserve Runoff As of 12/31/99 <br> (\$Millions) |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |  |  |  |
|  | 1999 | 2000 | 2001 | 2002 | $\underline{2003}$ | 2004 |  | Total |
| Loss/LAE Reserves BOY |  | 2,351 | 1,258 | 581 | 180 | - |  |  |
| Paid Loss/LAE |  | 1,093 | 677 | 401 | 180 | - |  |  |
| Loss/LAE Reserves EOY | 2,351 | 1,258 | 581 | 180 | - | - |  |  |
| Underwriting Cash Flow |  | $(1,093)$ | (677) | (401) | (180) | - |  | $(2,351)$ |
| Net Underw riting Profit |  | - | - | - | - | - |  | - |
| Investment Income @ 6.0\% |  | 108 | 55 | 23 | 5 | - |  | 192 |
| Discounted Pre-Tax Profits @ 14.0\% |  | 95 | 42 | 15 | 3 | - |  | 156 |
| Total Profits, After Tax @ 25.0\% |  | 71 | 32 | 12 | 2 | - | \$ | 117 |

Notes: (1) Why we don't discount loss/LAE reserves
(2) Allow s us to take risk into account

|  | The Personal Automobile Insurance Company <br> Runoff of Unearned Premium Reserve <br> As of 12/31/99 <br> (\$Millions) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 1999 | $\underline{2000}$ | $\underline{2001}$ | $\underline{2002}$ | $\underline{2003}$ | $\underline{2004}$ |  | Total |
| Net Written Premium |  | - |  |  |  |  |  |  |
| Net Unearned Prem. Reserve | 849 | - |  |  |  |  |  |  |
| Net Earned Premium |  | 849 |  |  |  |  |  |  |
| Loss/LAE Ratio |  | 80.0\% |  |  |  |  |  |  |
| Commission \% |  | 10.0\% |  |  |  |  |  |  |
| Other U/W expense \% |  | 10.0\% |  |  |  |  |  |  |
| Net Incurred Loss |  | 679 |  |  |  |  |  | 679 |
| Commissions (to WP) |  | - |  |  |  |  |  | - |
| Other U/W expenses (to EP) |  | 85 |  |  |  |  |  | 85 |
| Net Underwriting Profit |  | 85 |  |  |  |  |  | 85 |
| Incremental Payout Pattern |  | 30.0\% | 25.0\% | 20.0\% | 15.0\% | 10.0\% |  |  |
| Loss/LAE Reserves BOY |  | - | 475 | 306 | 170 | 68 |  |  |
| Paid Loss/LAE |  | 204 | 170 | 136 | 102 | 68 |  | 679 |
| Loss/LAE Reserves EOY | - | 475 | 306 | 170 | 68 | 0 |  |  |
| Underwriting Cash Flow |  | (289) | (170) | (136) | (102) | (68) |  | (764) |
| Investment Income @ 6.0\% |  | 42 | 23 | 14 | 7 | 2 |  | 89 |
| Total Profits, Before Tax |  | 127 | 23 | 14 | 7 | 2 |  | 174 |
| Discounted Pre-Tax Profits @ 14.0\% |  | 112 | 18 | 10 | 4 | 1 |  | 145 |
| Total Profits, After Tax @ 25.0\% |  | 84 | 14 | 7 | 3 | 1 | \$ | 108 |

[^1]
## The Personal Automobile Insurance Company <br> Adjusted Balance Sheet <br> As of 12/31/99 <br> (\$Millions)

ASSETS

| Bonds | 2,700 | Loss \& LAE reserve | 2,351 |
| :---: | :---: | :---: | :---: |
| Other Assets (includes reinsurance | 2,051 | Unearned premium reserve | 849 |
| receivable on paid loss) |  | Schedule P Penalty |  |
| Non-Admitted Assets | 400 | Policyholders' Surplus | 1,952 |
| Total Assets | 5,151 | Total Liabilities | 5,151 |

## Notes:

1) Book value of bonds of 3,000 adjusted to market value of 2,700
2) Other assets of 2,300 reduced for uncollectible reinsurance of 249
3) Held loss/LAE reserves of 1,800 adjusted for reserve deficiency of 519 and outstanding uncollectible reinsurance of 31
4) Policyholders' surplus of 2,451 adjusted for market value of surplus, uncollectible reinsurance, non-admitted assets and Schedule P penalty

## The Personal Automobile Insurance Company Projection of Future Earnings <br> As of $12 / 31 / 99$ (\$Millions)

|  | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Gross Written Premium |  | 4,750 | 5,250 | 5,750 | 6,250 | 6,750 |
| Net Written Premium |  | 3,563 | 3,938 | 4,313 | 4,688 | 5,063 |
| Net Unearned Prem. Reserve | - | 949 | 1,049 | 1,149 | 1,249 | 1,348 |
| Net Earned Premium |  | 2,614 | 3,838 | 4,213 | 4,588 | 4,963 |
| Loss/LAE Ratio |  | 80.0\% | 100.0\% | 50.0\% | 50.0\% | 60.0\% |
| Commission \% |  | 10.0\% | 10.0\% | 10.0\% | 10.0\% | 10.0\% |
| Other U/W expense \% |  | 10.0\% | 10.0\% | 10.0\% | 10.0\% | 10.0\% |
| Net Incurred Loss |  | 2,091 | 3,838 | 2,106 | 2,294 | 2,978 |
| Commissions (to WP) |  | 356 | 394 | 431 | 469 | 506 |
| Other U/W expenses (to EP) |  | 261 | 384 | 421 | 459 | 496 |
| Net Underwriting Profit |  | (95) | (778) | 1,254 | 1,366 | 983 |

## Notes:

UEPR percentage is $26.6 \%$ i.e. ( $849 /(4,250 \times 0.75)$ )
Only $73.4 \%$ [i.e. (1-0.266)] of 2000 new written premium is earned in year
Commission uses latest ratio ( $10.0 \%$ ) due to renegotiation
Other u/w expense uses latest 2 year average ratio (10.0\%) to earned premium

The Personal Automobile Insurance Company Computation of Future Business Loss Payments and Reserves As of $12 / 31 / 99$
(\$Millions)

| Accident | Estimated Ultimate | Cumulative Payout | Projected Payment Year |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Year | Loss/LAE | Pattern | 2000 | 2001 | $\underline{2002}$ | 2003 | $\underline{2004}$ |
| 2000 | 2,091 | 30.0\% | 627 | 523 | 418 | 314 | 209 |
| 2001 | 3,838 | 55.0\% |  | 1,151 | 959 | 768 | 576 |
| 2002 | 2,106 | 75.0\% |  |  | 632 | 527 | 421 |
| 2003 | 2,294 | 90.0\% |  |  |  | 688 | 573 |
| 2004 | 2,978 | 100.0\% |  |  |  |  | 893 |
| Totals |  |  | 627 | 1,674 | 2,009 | 2,296 | 2,673 |

## The Personal Automobile Insurance Company <br> Computation of Future Profits <br> As of 12/31/99 <br> (\$Millions)

|  | 1999 | $\underline{2000}$ | $\underline{2001}$ | $\underline{2002}$ | $\underline{2003}$ | $\underline{2004}$ |  | Total |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Net Incurred Loss |  | 2,091 | 3,838 | 2,106 | 2,294 | 2,978 |  |  |
| Loss/LAE Reserves BOY |  | - | 1,464 | 3,627 | 3,724 | 3,722 |  |  |
| Paid Loss/LAE |  | 627 | 1,674 | 2,009 | 2,296 | 2,673 |  |  |
| Loss/LAE Reserves EOY | - | 1,464 | 3,627 | 3,724 | 3,722 | 4,027 |  |  |
| Unearned Premium Reserve | - | 949 | 1,049 | 1,149 | 1,249 | 1,348 |  |  |
| Underwriting Cash Flow |  | 2,318 | 1,486 | 1,451 | 1,464 | 1,387 |  |  |
| Net Underwriting Profit |  | (95) | (778) | 1,254 | 1,366 | 983 |  | 2,730 |
| Investment Income @ 6.0\% |  | 70 | 189 | 324 | 336 | 340 |  | 1,259 |
| Total Profits, Before Tax |  | (25) | (588) | 1,578 | 1,703 | 1,322 |  | 3,989 |
| Total Profits, After Tax @ 25.0\% |  | (19) | (441) | 1,183 | 1,277 | 992 |  | 2,992 |
| Discounted After-Tax Profits @ 14.0\% |  | (17) | (339) | 799 | 756 | 515 |  | 1,714 |
| Average After Tax Profits |  |  |  |  |  | 598 |  |  |
| Value of Perpetuity at 14.0\% |  |  |  |  |  | 4,274 |  |  |
| Discounted Value of Perpetuity at 14.0\% |  |  |  |  |  | 2,220 |  | 2,220 |
| Total Discounted, After Tax Profits |  | (17) | (339) | 799 | 756 | 2,735 | \$ | 3,934 |
| Renewal Percentage |  | 0.740 | 0.548 | 0.405 | 0.300 | 0.222 |  |  |
| Value of pure renewal business |  | (12) | (186) | 324 | 227 | 607 | \$ | 959 |
| Value of pure new business |  | (4) | (154) | 475 | 529 | 2,128 | \$ | 2,975 |

Notes:
Discounted value of perpetuity $=4,274 \times(1.14)^{\wedge}-5$

| The Personal Automobile Insurance Company Computation of Future Profits Cost of Capital As of 12/31/99 (\$Millions) |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |  | Total |
| Net Written Premium | 3,563 | 3,938 | 4,313 | 4,688 | 5,063 |  |  |
| NWP / 3 | 1,188 | 1,313 | 1,438 | 1,563 | 1,688 |  |  |
| Cost of Capital @ 8.0\% | (95) | (105) | (115) | (125) | (135) |  |  |
| Cost of Capital, After Tax @ 25.0\% | (71) | (79) | (86) | (94) | (101) |  | (431) |
| Discounted After-Tax Cost of Capital @ 14.0\% | (63) | (61) | (58) | (56) | (53) |  | (289) |
|  |  |  |  |  | (86) |  |  |
| Average After Tax Cost of Capital |  |  |  |  |  |  |  |
| Value of Perpetuity at 14.0\% |  |  |  |  | (616) |  |  |
| Discounted Value of Perpetuity at 14.0\% |  |  |  |  | (320) |  | (320) |
| Total Discounted, After Tax Cost of Capital | (63) | (61) | (58) | (56) | (373) | \$ | (609) |

# The Personal Automobile Insurance Company <br> Summary of Results <br> As of 12/31/99 <br> (\$Millions) 

| Adjusted Surplus |  | 1,952 |
| :--- | ---: | ---: |
| Future Profits |  |  |
| Loss Reserves | 117 |  |
| Unearned premium Reseves | 108 |  |
| Renewals | 959 |  |
| Pure New Business | 2,975 |  |
| Cost of Capital |  | $3,509)$ |
| Totals |  | 5,501 |
| Total Economic Value |  |  |
| Multipliers |  | 2.245 |
| To Surplus |  | 2.819 |

## Comments:

No Value for Licenses
Terminal annuity for new business could be increasing
Can differ discount rates by type of future profit

## Limitations

1. This report has been prepared solely for the purpose stated, and should not be used for any other purpose. Neither this report nor any portions thereof shall be copied or disseminated through advertising, public relations, news, sales, Securities and Exchange Commission disclosure documents or any other public (or private) media without the express written approval of Ernst \& Young LLP.
2. The recommendations and calculations contained herein are not intended to represent the values of the subject company at any time other than the effective date that is specifically stated in this report. Changes in market conditions could result in recommendations of value substantially different than those presented at the stated effective date. We assume no responsibility for changes in market conditions or for the inability of the owner to locate a purchaser of the subject company at the values stated herein.
3. In the course of our analysis, we were provided with written information, oral information, and/or data in electronic form (e.g., computer diskettes), related to the structure, operation, and financial performance of the subject company. We have relied upon this information in our analyses and in the preparation of this report, and have not independently verified its accuracy or completeness.
4. Certain historical financial data used in our valuation engagement were derived from audited financial statements and are the responsibility of management. The financial statements include disclosures required by generally accepted accounting principles. Those disclosures required are not repeated herein, and those who are not informed about such matters should refer to the reviewed financial statements. In addition, certain historical financial data used in our valuation engagement were provided by management and are unaudited. We have not independently verified the accuracy or completeness of the data provided and do not express an opinion or offer any form of assurance regarding its accuracy or completeness.
5. No responsibility is assumed for information furnished by others (including target company management), and such information is believed to be reliable.
6. The estimates of cash flow data provided by the subject company, and included herein, are solely for use in the valuation analysis and are not intended for use as forecasts or projections of future operations. We have not performed an examination or compilation of the accompanying cash flow data in accordance with standards prescribed by the American Institute of Certified Public Accountants, and, accordingly, do not express an opinion or offer any form of assurance on the accompanying cash flow data or their underlying assumptions. Furthermore, there will usually be differences between estimated and actual results because events and circumstances frequently do not occur as expected, and those differences may be material.
7. The value calculation contained herein are based, in part, on the subject company's estimate of ultimate insurance underwriting losses. All actuarial data provided to us and reported in the financial statements of the subject company are the responsibility of the management of the subject company. We have not independently verified the accuracy or completeness of the data and do not express an opinion or offer any other form of assurance regarding its accuracy or completeness. Inherent in the estimate of ultimate losses are expected trends in claim severity and frequency and other factors which may vary significantly as estimated future claims are settled. Accordingly, ultimate losses may be materially less than or greater than the amount relied upon in our analysis.

## Limitations (cont.)

8. Our report assumes full compliance with all applicable federal, state and local zoning, usage, environmental and similar laws and regulations, unless otherwise stated
9. We assume no responsibility for any financial and tax reporting judgments, which are appropriately those of management. It is our understanding that management accepts the responsibility for any financial statement and tax reporting issues with respect to the assets covered by our analysis, and for the ultimate use of our analysis and report.
10. This presentation does not comprise a Comprehensive Written Business Valuation Report as set forth in BVS-VIII, as of January 1994 by the Business Valuation Committee of the American Society of Appraisers ("ASA") and approved by the ASA Board of Governors. Segments consisting of detailed description concerning the history and nature of the business, industry and economic outlook, and financial analysis have been omitted from this presentation. The data underlying these sections will be retained in the working papers and will be made available upon written request.
11. The recommendations of value contained herein do not take into account any potential liability to the subject company from computer malfunctions, errors, or other problems associated with not being Year 2000 compliant. Furthermore, we have not considered (unless otherwise described in this presentation) any potential costs or expenses associated with bringing the computer systems or other software of the subject company into Year 2000 compliance. It is recommended that the appropriate experts be retained to investigate and determine to what extent, if any, there are costs and/or potential liabilities for not being Year 2000 compliant.

[^0]:    Notes:
    (a) Future net income is based on 1999 forecast

    All information is based on undiscounted financial data.
    TIC $=$ Total Invested Capital; MVE $=$ Market Value of Equity; EBIT $=$ Earnings Before Interest and Taxes.

[^1]:    Notes:
    Commission uses latest ratio (10.0\%) due to renegotiation
    Other u/w expense uses latest 2 year average ratio (10.0\%) to earned premium

