Today’s Lecture - #18
Life Insurance Cost Comparisons

Types of Cost Comparisons
Uses of Cost Comparisons

Life Insurance Cost Comparisons

Traditional Net Cost
Interest-Adjusted Net Cost Methods
Surrender Cost Index
Net Payment Cost Index
Equivalent Level Annual Dividend
Yearly Rate of Return Method
Linton Yield Method

Traditional Net Cost

- Premiums Paid
- Dividends
- Cash Value at the End of the Period
= Net Cost

Traditional Net Cost Index =

Net Cost

# Years x # $1,000 Policy Face

Traditional Net Cost

Example

$100,000 Whole Life Policy
$1,000 Annual Premiums
$6,000 Projected Dividends over 20 Years
$22,000 Cash Value at end of 20 Years

Traditional Net Cost Index - Example

Traditional Net Cost Index =

(20x1,000)-6,000-22,000

20x100

= -4.00

The insurer gives you $4.00 each year for every $1000 of life insurance coverage you buy.

Traditional Net Cost Index

- Simple to calculate
- Ignores the time value of money

1+1=3

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Interest Adjusted Surrender Cost Index

- Accumulated Value of Premiums at Interest
- Cash Value at End of Period

Surrender Cost Index =
Total Interest Adjusted Cost
Annuity Due Factor x # $1000 Policy Face

Example

Same Policy
Assume 8% Interest Rate (i)
Accumulated Value of Dividends = $10,000
Annuity Due Factor for n years

\[
\frac{(1+i)^{n+1} - (1+i)}{i} = 49.423
\]

Based on an 8% interest rate, if you held the policy for 20 years and then surrendered it, it would cost $3.53 per $1000 each year.

Interest Adjusted Net Payment Cost Index

- Accumulated Value of Premiums at Interest
- Accumulated Value of Dividends at Interest

Net Payments Cost Index =
Total Interest Adjusted Net Payments
Annuity Due Factor x # $1000 Policy Face

Example

\[
\frac{(1000 \times 49.423) - 10,000}{49.423 \times 100} = \$7.98
\]

Based on an 8% interest rate, if you held the policy for 20 years and then died or continued to hold it, it would cost $7.98 per $1000 each year.

Equivalent Level Annual Dividend

- Accumulated Value of Dividends at Interest

Example

\[
\frac{10,000}{49.423 \times 100} = \$2.02
\]

If the insurer paid no dividends, then the surrender cost index and the net payments cost index would increase $2.02 per $1000 each year.
Problems with the Interest Adjusted Methods

- Results are sensitive to the interest rate assumed
- Dividends are not assured (but some will most likely be paid)
- Assume a specific holding period
- For surrender cost index, the cash value can be manipulated for common comparison periods

Yearly Rate of Return Method

Yearly Rate of Return for Policy Year \( t \) = 
\[
\frac{CV_t + D_t + (YP_t F_t - CV_t)(.001)}{P_t + CV_{t+1}} - 1
\]

- \( CV \) = cash value
- \( D \) = dividends
- \( YP \) = yearly price per $1000 of renewal term
- \( F \) = death benefit
- \( P \) = premium paid at beginning of year

Example

Same Policy
Cash Value at end of 19 years = $21,000
Dividend in 20th policy year = $800
Cost of Yearly Renewable Term for Policyholder = $5.00 per $1000

Yearly Rate of Return Method

Yearly Rate of Return for Policy Year 20 = 
\[
\frac{22,000+800+5.00(100,000-22,000)(.001)}{1000 + 21,000} - 1
\]

= 5.4%

This policy is providing the equivalent of a 5.4% rate of return to the policyholder. This should be compared with similar tax advantaged investments that are available.

Linton Yield Method

Iterative Calculation to Determine the Rate of Return on the Policy
Compare the Results with Other Policies and with Other Investment Alternatives