Mortality Seminar - Zurich

Preferred Underwriting

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9 April, 2015
Agenda

- What is preferred underwriting?
- Preferred underwriting in the US
- Preferred underwriting elsewhere around the world
- Questions
What is preferred underwriting?

- A method of distinguishing between applicants for life/health insurance by placing them in groups with similar expected mortality/morbidity and charging all members of each group the same premium (based on gender and issue age)

- Focus here will be on life insurance and mortality risk
  - Those with the best anticipated mortality experience would pay the lowest premium and those with the worst anticipated experience would pay the highest premium
  - This doesn’t mean that all those in the class with the worst anticipated mortality experience will have claims before all of those in the class with the best anticipated experience

- The number of groups, criteria determining the groups, and cutoff levels can vary country by country and company by company within a country
How did preferred underwriting begin in the US?

- In the late 1980s, US life insurers became concerned about a possible AIDS epidemic.
- The US laboratories offered a blood test to determine if an individual had the HIV antibodies.
- The labs suggested that for a marginal additional cost, other blood test information (e.g., lipids) could be provided which would help in the underwriting process.
- Information from these additional blood tests along with some additional criteria formed the basis for preferred underwriting in the US.
- Some companies introduced preferred underwriting in the late 1980s and virtually all had preferred products by the mid 1990s.
What is the attraction of preferred underwriting?

- For the early adopters, it is the opportunity to write business on more of the risks with the best anticipated mortality, by charging them a lower rate, and hopefully improving the profitability on newly written business.

- For the later adopters, it is more of a defensive move:
  - If they don’t move to preferred underwriting, they will receive more than their fair share of the risks with higher anticipated mortality.
  - This will cause overall experience to deteriorate, leading to premium increases.
  - The healthier lives will leave, leading to worse and experience and an additional premium increase.
  - This process will repeat and is called the anti-selective spiral.
# Number of Preferred Underwriting Risk Classes in the US

<table>
<thead>
<tr>
<th>Category (NT = Non Tobacco, T = Tobacco)</th>
<th>1995 %</th>
<th>1997 %</th>
<th>2002 %</th>
<th>2010 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 NT, 1 T</td>
<td>51%</td>
<td>41%</td>
<td>12%</td>
<td>0%</td>
</tr>
<tr>
<td>3 NT, 1 T</td>
<td>0</td>
<td>8</td>
<td>14</td>
<td>17</td>
</tr>
<tr>
<td>4 NT, 1 T</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>2 NT, 2 T</td>
<td>43</td>
<td>36</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>3 NT, 2 T</td>
<td>2</td>
<td>8</td>
<td>43</td>
<td>35</td>
</tr>
<tr>
<td>4 NT, 2 T</td>
<td>2</td>
<td>5</td>
<td>18</td>
<td>35</td>
</tr>
<tr>
<td>5+ NT, 2 T</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Total # of Respondents</td>
<td>51</td>
<td>61</td>
<td>49</td>
<td>23</td>
</tr>
</tbody>
</table>

Preferred Underwriting Criteria Used in the US

- Alcohol and drug abuse
- Blood pressure
- Build
- Cholesterol
- Driving record
- Family history
- Personal medical history
- Tobacco use
- Miscellaneous (e.g., Aviation, Avocations, Citizenship, Foreign Travel, Residence)
Approaches to Preferred Underwriting

- **Knockout**
  - If the applicant misses the cutoff level on one or more criteria, they do not qualify for that particular risk class

- **Debit/credit**
  - A numerical value is assigned to the applicant for each individual criterion
  - The numbers for all criteria are summed and the sum determines the risk class the applicant is placed in
  - In the US, the debit/credit approaches typically include knockout for some of the criteria (e.g., tobacco)
  - Some different criteria for debit/credit includes exercise, albumin, and pulse rate

- **Hybrid (for companies not wanting to move fully to debit/credit)**
  - If applicant misses on only one criterion, but is better by a specified amount on several other criteria, they will still be assigned the better risk class
  - Alternatively, some companies allow other items (e.g., good treadmill reading, recent check up at Mayo Clinic) to offset one missed criterion and still be assigned to the better class
Other Items

- Most preferred underwriting criteria cutoff levels are published, but some are not (e.g., build)

- There is a distinction between preferred underwriting “stretch criteria” (last item on previous slide) vs. preferred underwriting “exceptions” (a company just decides to make an exception to their own criteria, e.g., for the president of the company’s son)
- The top reasons companies gave for using stretch criteria in the 2010 survey were enhanced underwriting flexibility, competitive reasons, and improved risk selection

- For Principles Based Reserves in the US, if a company does not have credible mortality experience, an algorithm has been developed based on preferred underwriting cutoff levels that determines the appropriate mortality table to use for valuation purposes
Preferred Underwriting Criteria Elsewhere in the World

- **Canada**
  - Uses same criteria as US

- **Israel**
  - Offers different rates to smokers and nonsmokers

- **Japan**
  - Typically only found in the small and medium size insurers
  - BMI
  - Blood pressure
  - Chest x-ray test result
  - Liver function test result
  - Urine test result
Preferred Underwriting Criteria Elsewhere in the World (cont’d)

- Netherlands
  - In addition to smoker/nonsmoker rates, wealth/income rates and rates dependent on the insured person are also used
  - Other underwriting criteria used:
    - Blood pressure
    - Current health condition
    - Drinking/drugs
    - Exercise
    - Height/weight
    - Medical history of parents
    - Past personal medical history
    - Smoking
Preferred Underwriting Criteria Elsewhere in the World (cont’d)

- Serbia
  - Some companies provide rates for two nonsmoker classes
  - Criteria used (besides smoker/nonsmoker) includes:
    - BMI (19-27)
    - Preferred profession
    - No dangerous hobbies
Preferred Underwriting Criteria Elsewhere in the World (cont’d)

- **South Africa**
  - Alcohol and drug abuse
  - Blood pressure
  - Build
  - Cholesterol
  - Family history
  - Personal medical history
  - **Social economic class** – based on income and education
    - Traditionally had 4 classes, but recently added a “super class” for professionals
  - Tobacco use
  - Miscellaneous (e.g., Aviation, Avocations, Citizenship, Foreign Travel, Residence)
  - Some companies do ongoing underwriting – lower rates if keep things like BMI and cholesterol at same as initial level; some monitor food purchases
Preferred Underwriting Criteria Elsewhere in the World (cont’d)

- **UK**
  - Uses following criteria to determine mortality rates, but do not form specific classes:
  - Alcohol and drug abuse
  - Blood pressure
  - Build
  - Cholesterol
  - Family history
  - Personal medical history
  - **Post code**
  - Tobacco use
  - Miscellaneous (e.g., Aviation, Avocations, Citizenship, Foreign Travel, Residence)
Countries without Preferred Underwriting

- These countries still determine whether risk is standard or substandard through the underwriting process
  - Australia
  - Denmark
  - Finland
  - Germany
  - Iceland
  - Norway
  - Poland
  - Sweden
  - Switzerland (distinct smoker/nonsmoker rates used)
Questions
Bio – Al Klein

- Al is a principal and consulting actuary with Milliman’s Bannockburn/Chicago office. He joined the firm in 2009.

- Al’s primary responsibilities include industry experience studies and helping clients with mortality, longevity, and underwriting related issues. This may involve product development, assumption setting, and mergers and acquisitions. Al’s expertise on mortality and underwriting includes traditional products, simplified issue, final expense, older age, and preferred.

- Prior to joining Milliman, Al worked for a large stock life insurance company where he was responsible for experience studies across all lines of business. He has also worked for other life insurance companies, a reinsurer and consultant, where he has been responsible for strategic planning, product development and traditional reinsurance aspects of the business.

- Al is a frequent speaker at industry meetings and currently involved with a number of industry activities, including:
  - SOA representative and co-Vice Chair for the Mortality Working Group (MWG) of the International Actuarial Association
  - MWG Underwriting Sub-group chair – goal is to study underwriting done around the world
  - SOA Longevity Advisory Group
  - SOA Mortality and Underwriting Survey Committee
  - Joint American Academy of Actuaries (AAA) / Society of Actuaries (SOA) Preferred Mortality Oversight Group
  - Joint AAA / SOA Underwriting Criteria Team
  - 2014 SOA Valuation Basic Table (VBT) Development Team
  - SOA Longevity Calculator Development Team
  - Longer Life Foundation Advisory Board

- Al received a Bachelor of Science degree in Actuarial Science and Finance from the University of Illinois, Urbana.

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