Pricing SME business

Agenda

- Introduction
- Characteristics of SME business
- The core pricing algorithms
- Structure of implementation
- Further developments
- SME Direct
- Conclusion
**Introduction**

Why am I here speaking to you today?
- Developed and implemented Allianz SME pricing^ as part of team inc. underwriting, IT, sales
- Worked on PremierLine (Allianz direct SME)
- Recently moved to Retail role

Presentation aimed at sharing my experience
- Practical not theoretical – no formulae
- No silver bullet
- Working with underwriters hugely important!

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Characteristics of SME business
What definition are we going to use?

Numerical definitions

- Turnover; number of employees; size of balance sheet
  - Micro <10 employees
  - vs Small <50 employees
  - vs Medium <250 employees

With above (EU) definition in 2006 UK SME represented:
- 99.6% of enterprises; 50.7% of economic value added;
- employed 54.8% of employees
Characteristics of SME business
What definition are we going to use?

Customer definitions
• Does business class itself as SME?

Pricing/underwriting definitions
• Packaged products meet needs
  “Business that is capable of being rules based over the short to medium term”

Characteristics of SME business
Complexity

Where does SME fall vs other lines of business

Personal household
Personal Motor
SME
Commercial property
Commercial Liability

less complex/ more data
more complex/ less data

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Characteristics of SME business

Complexity

Where does SME fall vs other lines of business

Personal household
Personal Motor
SME
Commercial property
Commercial Liability

SME lends itself to PL pricing techniques

less complex/ more complex/
more data less data

• Range of products (trade driven)
  – Retailer (inc. restaurants)
  – Office
  – Contractor
  – Property Owners
  – Business

• Variety of covers/things insured
  – Contents
  – Stock
  – Fixtures and fittings
  – Buildings
  – Goods in transit
  – Employers liability
  – Public liability
  – etc…
Characteristics of SME business

Complexity

- Various causes of loss covered – depending on section of cover
  - Fire
  - Theft
  - Flood
  - Accidental injury or damage to 3rd party or employee etc...
- Policyholders get some cover included as standard, other covers are optional and purchased depending upon need
- Level of cover determined by fixed limits, declared values (e.g. sum insured) etc..

Core covers are responsible for majority of the claims cost

What data is available

- Exposure information
  - Various definitions for different sections
- Matched claims information
- External data or groupings

Considerations

- Are items to be used for rating completed correctly?
  - plain English
  - commercial discounts vs underwriting adjustments
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**The core pricing algorithms**

**What I am not doing**

- Changing underwriting question set
- Changing range of products and things insured
- Changing excess levels

**What I am doing**

- Splitting risk, profit and expense (component pricing)

**What I could do**

- Analyse frequency and severity separately
- Use GLM techniques
The core pricing algorithms

• Break the pricing down into 3 distinct elements
  – Risk premium – to cover the cost of the insurance claims
  – Expense premium – to cover the cost of all expenses
  – Profit – to provide our required contribution to profit

• Calculate the cost of each element at the level each is operating
  – Risk calculated per peril per section of cover and per location
  – Expenses and profit calculated at total policy level

• Allocate each item of premium back to the low level
  – if you add items up they equal the total policy premium

Features of the algorithm are:
• Multiplicative rating from a base rate
• Additive for each peril, location and section
• Multiplicative for policy level loadings, but
  – some element still additive e.g. fixed expenses
• No minimum premium as a result of this structure, but
  – an implicit minimum for the lowest possible risk & exposure
• Analysis is forward looking
  Build the structure; Capture more data; Refine in future
The core pricing algorithms

The main benefits of this approach are:

• Rating factors better aligned to risk e.g. Trade effect
  – previously need to allocate/average across all perils but..
    – could be a poor risk from theft point of view,
    – but ok in terms of fire risk
  – Now able to rank as different risk by each peril, and apply appropriate exposure measure

• Expenses better aligned to costs and more easily tracked
  – Fixed element for basic policy quote costs and maintenance
  – Variable element for ability to bear larger £’s on bigger cases

• Profits aligned with plan expectations
  – Can explicitly move to follow underwriting cycle expectations
  – Split discounts away from the risk costs
  – Measure risk costs against claims instead of mixed with profit
### The core pricing algorithms

#### Calculation of risk premium

<table>
<thead>
<tr>
<th>Location 1</th>
<th>Location 2</th>
<th>Location 1</th>
<th>Location 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peril 1</td>
<td>Peril 1</td>
<td>Peril 1</td>
<td>Peril 1</td>
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<tr>
<td>Peril 2</td>
<td>Peril 2</td>
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<td>Peril 2</td>
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<tr>
<td>Peril 3</td>
<td>Peril 3</td>
<td>Peril 1</td>
<td>Peril 1</td>
</tr>
</tbody>
</table>

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### The core pricing algorithms

#### Calculation of expense and profit loadings

<table>
<thead>
<tr>
<th>Location 1</th>
<th>Location 2</th>
<th>Location 1</th>
<th>Location 2</th>
</tr>
</thead>
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<td>Peril 1</td>
<td>Peril 1</td>
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<tr>
<td>Peril 2</td>
<td>Peril 2</td>
<td>Peril 2</td>
<td>Peril 2</td>
</tr>
<tr>
<td>Peril 3</td>
<td>Peril 3</td>
<td>Peril 2</td>
<td>Peril 2</td>
</tr>
</tbody>
</table>

#### Expense and profit allocated back down

Sum of lower levels = higher levels

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The core pricing algorithms

Summary

- Total risk premium is sum of
  - Perils per location
  - Locations per section
  - Sections per policy
- Total expense/profit loadings
  - Fixed and variable expenses
  - Commission
  - Required profit load
  - Investment income
  - Reinsurance costs
  - Commercial load/discount^* set by various rating factors – will discuss later

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The core pricing algorithms
Calculating the risk premium

Step 1 – detailed discussions between actuarial and underwriting
- We have x questions which may be used as factors
- We have y sections of cover with various perils
- Tabulate in 2 way table and for each combination decide:
  - Will use in rating (Y)
  - May use in rating (?)
  - Will not use in rating (N)
- Some specific questions for certain trades
- Decide which exposure method will be used in each case
- Issue on sum insured vs scaling factor

If using GLM could take all variables and test significance
The core pricing algorithms
Calculating the risk premium

Step 2 – investigate claims and exposure data
- Extract of claims data
- Adjust for inflation and cap large losses
- IBNR and large loss loading applied e.g. from reserving data
- Link to exposures
- Link to other underwriting questions e.g. survey system
The core pricing algorithms
Calculating the risk premium

Step 3a – challenge

– For each factor (Y or ?) consider:
  – underwriting view
  – pricing data
  – Interactions – are 2 way or 3 way tables better?
  – market practice
  – Often not enough data so revert to judgement but..
    – Sometimes data supports presupposition – new rating impact
    – Try other data in company e.g. PL postcode tables
    – Try external data e.g. proprietary cat models

Aim to set relativities for each section of cover and peril

Step 3b – future proofing and ease of maintenance

– Set some tables up for future use and populate with 1s
  – Variables which may impact but too little data
– Widen ranges e.g. 20 rating areas but create with 1 to 60
  – Allows smaller steps if we move areas up/down scale
– Allocate some adjustment tables for ease of maintenance
  – Base rate adjustment factors A and B for property vs liability
  – Trade adjustment at policy level to drive simple overall change

Build up front as table value changes easier than new tables
The core pricing algorithms
Calculating the risk premium – an example

<table>
<thead>
<tr>
<th>Section</th>
<th>Peril</th>
<th>Exposure</th>
<th>Detail</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>Fire</td>
<td>Sum insured</td>
<td>Per location</td>
</tr>
<tr>
<td>Base rate</td>
<td>Adjustment factor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trade code</td>
<td>Trade group</td>
<td>Postcode</td>
<td>Postcode group</td>
</tr>
<tr>
<td>#claims last 5 yrs</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New venture</td>
<td>Take away food</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupied at night</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of heating</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shopping centre</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frying range</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

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Structure of implementation
Putting rates into market

Before launching rates we consider
• New vs old prices on existing policies
• Recent quotes – converted vs unsuccessful
• Market comparison data
• If radical changes then how to deal with transition
  – e.g. cap/floor mechanisms
  – translate into discount/load on policy

MIS needs to support rating complexity
Discounting strategy needs to be addressed

Structure of implementation
Putting rates into market

MIS as a minimum
  – Conversion
  – Retention
  – Rate strength
  – Discounting
  – Change in end price to customer
  – Claims frequency
  – Loss ratios (takes long time to develop)
  – Volumes (premium and policies)

All at detailed segmented level
Structure of implementation
Putting rates into market

MIS as a minimum
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All at detailed segmented level

- Supports feedback loop

Structure of implementation
Putting rates into market

Discounting and underwriting strategy needs addressing
- Complex rating – doesn’t help expert underwriting adjustment
- Order taking vs underwriting

- Lower expense
  - write some poorer risks
- Higher expense
  - individual risk scrutiny

- Better the algorithm, less problem of poor risk acceptance
- Consider where underwriters add value: referrals; terms; excess
- Underwriters may support other lines of business
- Better book rates for reference against if making judgement
Structure of implementation
Putting rates into market

Discounts can now be identified as commercial only

- High level of discounts will distort pricing aims
- Build in commercial discounts/loads in algorithm
  - By rating factors (and combinations)
  - Explicit cross subsidies exposed and monitored
  - Drives segmentation
- Need to significantly reduce other discounting authority

Business model is akin to personal lines

Negotiated business – but automated bespoke underwriting

- Consideration of what do with cases that fall outside rules

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Further developments

Let’s look to personal lines for pointers

• Ever more complex risk rating analyses e.g. spatial analysis
• Increased use of external data to supplement own
• Price optimisation through highly targeted profit load/discount
• Expense components reflecting distribution costs
• Profit from ancillary sales and downstream income
• Commission modelling of net rated to improve optimisation
• Rapid rate changes

Other suggestions

• More bespoke products by trade
• More trade specific questions
• Reduced referrals as automatic rating extends
• Increased underwriting footprint
• More innovative use of discounts
• Facilitates no touch underwriting and e-business
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SME direct Distribution

All ready a number of companies in this area
• PremierLine
• Direct line for business
• More than business etc.
And brokers getting involved on line
• The AA
• Endsleigh etc.
And traditional banks
• Lloyds TSB business etc.

Examples from a Google search of shop insurance – page 1
To the customer these all look like buying direct
SME direct Distribution

Appearance of some aggregator type models

- SMEinsurance.com
- Constructaquote.com
- Simplybusiness.co.uk
- Quotesearcher.co.uk etc….

And well known aggregators taking part

- Moneysupermarket.co.uk
- Gocompare.com etc….

But few have online quotation and comparison functionality

Some companies have pulled out of this channel

- Aviva website now directs you to a broker

Link with Commercial Vehicle is strong

- Direct line for business advertising appeared to switch

Very much an evolving landscape
SME direct Characteristics

How do things differ for pricing
• Core risk attributes are the same
• Second order effects of choosing to buy direct
• Expense costs up front and big
• …but renewal costs low
• Leads to lifetime value considerations
• ….and sunk costs so marginal pricing discussions
• Potentially more data available

SME direct Characteristics

How do things differ for the customer
• More time and effort involved
• Need to understand covers, definitions
  …so important we help e.g. plain English
• Trust and brand may be important
• Price expectations
• Service expectations
SME direct
Characteristics

What else matters?
• Customer contact and interaction
  – Call centre vs web
• Acquisition work
  – Traditional Mailing
  – E-mail
  – Advertising
  – Affinity marketing
  – Web PPC and SEO

All feeds into expense element of pricing
but do we want to apply different end prices by acquisition channel?

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Conclusion

Definition of SME: Small; Package products; Rules based pricing
Similarities with personal lines
Commercial discounts vs underwriting adjustments
Split of premium: Risk/Profit/Expense; Section/Location/Peril
Future proof the calculations – ease of updating
Implementation of rating
Role of the underwriter
Further areas of sophistication
Role of SME direct

Final thoughts

If you do SME pricing:
- talk to your personal lines pricing colleagues
and
- work closely with your underwriters
Conclusion

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

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