The Actuarial Profession
making financial sense of the future

General insurance pricing seminar, 17 June 2010
Kevin Wenzel, Allianz

Pricing SME business

Agenda

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

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Introduction

Why am I here speaking to you today?

- Developed and implemented Allianz SME pricing^
- 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!

^as part of team inc. underwriting, IT, sales

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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

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

Could this be our definition?

Numerical definitions

- Turnover; number of employees; size of balance sheet

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     vs Small   <50 employees

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With above (EU) definition in 2006 UK SME represented:

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         employed 54.8% of employees

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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"
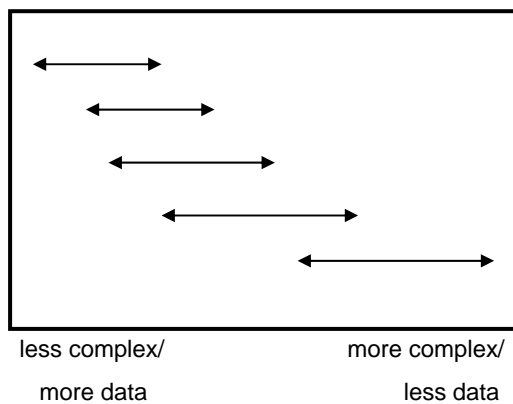
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Characteristics of SME business
Complexity

Where does SME fall vs other lines of business

Personal household
Personal Motor
SME
Commercial property
Commercial Liability

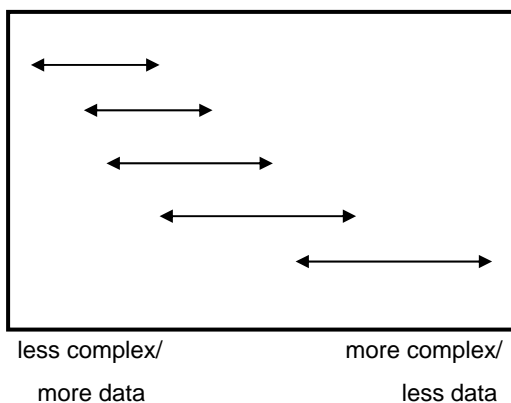| less complex/	more complex/
more data	less data

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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 data

more complex/
less data

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Characteristics of SME business Complexity

- 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…

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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

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Characteristics of SME business
Complexity

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

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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

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The core pricing algorithms

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

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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

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The core pricing algorithms

The main benefits of this approach are:

- 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

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The core pricing algorithms

Calculation of risk premium

Policy			
Section 1	Section 2	Section 3	Section 4

Location 1	Location 2	Location 1	Location 2		
Peril 1	Peril 1	Peril 1	Peril 1	Peril 1	Peril 1
Peril 2	Peril 2	Peril 2	Peril 2	Peril 2	Peril 2
Peril 3	Peril 3				Peril 3

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The core pricing algorithms

Calculation of risk premium

Policy			
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Location 1	Location 2	Location 1	Location 2		
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Peril 2	Peril 2	Peril 2	Peril 2	Peril 2	Peril 2
Peril 3	Peril 3				Peril 3

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The core pricing algorithms

Policy			
Section 1	Section 2	Section 3	Section 4

Location 1	Location 2	Location 1	Location 2

Peril 1	Peril 1	Peril 1	Peril 1	Peril 1	Peril 1
Peril 2	Peril 2	Peril 2	Peril 2	Peril 2	Peril 2
Peril 3	Peril 3				Peril 3

Calculation of expense and profit loadings

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The core pricing algorithms

Risk	Expense	Profit

Section 1	Section 2	Section 3	Section 4

Location 1	Location 2	Location 1	Location 2

Peril 1	Peril 1	Peril 1	Peril 1	Peril 1	Peril 1
Peril 2	Peril 2	Peril 2	Peril 2	Peril 2	Peril 2
Peril 3	Peril 3				Peril 3
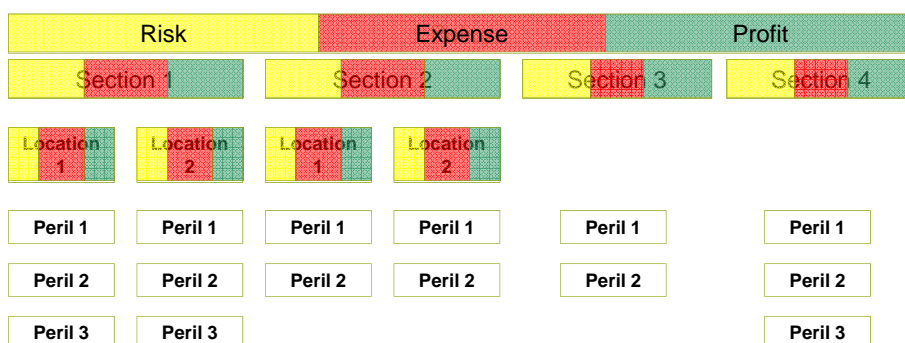
Expense and profit allocated back down
Sum of lower levels = higher levels

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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

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The core pricing algorithms
Calculating the risk premium

| | | Derived field | Policy data | | | | Location data | |
| | | | | | | | | |
Section	Peril	# locations	Trade	Frying range	Past Claims	New	postcode	construction
Contents	Fire	N	Y	Y	Y	?	Y	Y
	Theft	N	Y	N	Y	?	Y	?
	Other	N	Y	N	?	?	Y	?
Money	all	N	Y	N	?	?	Y	?
EL	all	?	Y	?	?	?	?	?

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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

| Claims | Exposure | Other rating |

Pricing data set

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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

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The core pricing algorithms
Calculating the risk premium

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

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The core pricing algorithms
Calculating the risk premium – an example

| Section | Peril | Exposure | Detail |

Contents	Fire	Sum insured	Per location
Base rate ⟶	Adjustment factor		
Trade code ⟶	Trade group	Postcode ⟶	Postcode group
#claims last 5 yrs			
New venture	Take away food		
Construction type			
Occupied at night			
Type of heating			
Shopping centre			
Frying range			

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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

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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

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Structure of implementation
Putting rates into market

MIS as a minimum
- Conversion
- Retention
- Rate strength
- Discounting
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- Volumes (premium and policies)

All at detailed segmented level

Supports feedback loop

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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   higher expense
write some poorer risks   individual risk scrutiny
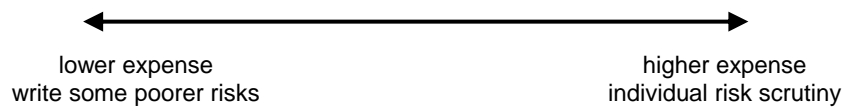
- Better the algorithm, less problem of poor risk acceptance
- Consider where underwriters add value: referrals; terms; excess
- Underwriters may support other lines of business
- Better book rates for reference against if making judgement

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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

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Further developments

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

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**SME direct
Distribution**

Appearance of some aggregator type models

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

The same search produced these sites – some PPC some natural search

And well known aggregators taking part

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

But few have online quotation and comparison functionality

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**SME direct
Distribution**

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

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**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

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**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

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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

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Conclusion
Final thoughts

If you do SME pricing:

    - talk to your personal lines pricing colleagues

  and

    - work closely with your underwriters

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Conclusion
Questions or comments?

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

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