33rd ANNUAL GIRO CONVENTION
Hilton Vienna Hotel, Am Stadtpark

Can one use the same model for pricing, budgeting and reserving?

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Pricing
The price is estimated from modern regression theory using GLM models and GAM models.
Pricing 2

An increasing number of covariates are being used e.g. GIS and credit scoring.

Reserving

Reserving is primarily based on triangle data: aggregated data grouped according to calendar year and duration.

Can one use the same model for pricing, budgetting and reserving?

Both are regression models and based on the same data.
Capital and volatility

The level of volatility determines the level of capital.

Capital and volatility 2

Pricing has so far not been taking volatility into account. Capital considerations on policy level is therefore difficult.

Capital and volatility 3

Volatility considerations have started big time when it comes to reserving.
Capital and volatility
Capital allocation is therefore typically based on aggregated data.

The Question!
Is it possible to combine the sophisticated regression techniques known from pricing with the volatility considerations known from reserving?

Answer to the question.
Yes, this is indeed possible!

Literature combining regression models with a time series is beginning to appear.

(See paper with Bent Nielsen on his web page at Nuffield College, Oxford).
Consider the typical regression model

\[ Y_t = g(X_t) + \epsilon_t \]

.. and with latent time series

\[ Y_t = g(X_t) + f_t + \epsilon_t \]

Organisational consequences

- Reserving Department
  - Reserving parameters
- Pricing Department
  - Pricing parameters
- Modelling department
Answer to the question.

It is possible to combine reserving and pricing.  
It will cut costs and provide a consistent framework for decisions.  
It does require further research!

Can one use the same model for pricing, budgetting and reserving?

Yes, in the near future!

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