BMS for MTPL

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Reinsurers

- Reinsurers do not use a priori tarification.
- Reinsurers only rely on past statistics and current exposure.
- Reinsurers provide a posteriori tarifications !
- Often their rates are retrospective !
- Reinsurers do not have tariffs.
- Reinsurers immediately react to changing conditions.

Insurers

- Insurers may rely on mass marketing.
- Insurers are able to price a priori.
- Insurers set up a priori tariffs.
- Insurers set up a posteriori tariffs.
- Insurers do (or should) react immediately to changing conditions.
- They don’t with compulsory BMS.

Belgian BMS

- Born in 1971.
- Adapted in 1992.
- Scale with 23 steps : from 0 to 22.
- Transition rule : -1 per year ; +5 per accident (limited to 0 and 22).
- New driver enters the system at level 11.

Belgian BMS

Step	%	Step	%	Step	%
0	54%	8	73%	16	111%
1	54%	9	77%	17	117%
2	54%	10	81%	18	123%
3	57%	11	85%	19	130%
4	60%	12	90%	20	140%
5	63%	13	95%	21	160%
6	66%	14	100%	22	200%
7	69%	15	105%		

A priori segmentation

- **Aim : provide classes of homogeneous policyholders.**
- **Covariables are : sex, age, use of car, power of car, garage, color of car, …**
- **Other covariables influencing the level of risk are missed : reflex of the driver, use of alcohol/drugs, …**
- **Conclusion : homogeneity is not perfect. Antiselection may be present.**

A posteriori tarification

- **Observed claims are used to replace missing covariables. Observed claims are used in order to decrease the antiselection effect.**
- **BMS are an example of a posteriori tarification in a tariff setup.**

Aims of BMS are

- **Reducing antiselection.**
- **Reducing moral hasard.**
- **Policyholders expect to pay premiums as fair as possible !**

A posteriori vs a priori

- **Missing covariables depend of used covariables.**
- **Assume insurer A : uses sex and age.**
- **Assume insurer B : uses sex, age and domicile.**
- **Both insurers miss the covariable reflex of the driver.**

A posteriori vs a priori

- For insurer A, domicile and reflex are missing covariables.
- For insurer B, only reflex is a missing covariable.
- Elasticity of BMS A should be larger than elasticity BMS B.

A posteriori vs a priori

- A posteriori (which accounts for missing covariables) has to be a function of a priori tarification.
- Assume a uniform BMS for insurer B.
- Assume (a priori) good drivers from Arlon and bad drivers from Brussels.
- With B, good drivers : 300 EUR ; bad drivers : 500 EUR.

A posteriori vs a priori

- Assume both drivers do not produce any claim on a 5 years period.
- If unique BMS, both drivers receive the same bonus in %.
- Question : is this logical ?
- A priori bad driver shows he/she is good : a priori bad driver shoud receive a higher bonus in % !

A posteriori vs a priori

- **Conclusion : good and bad drivers should have their own BMS : faster reductions for the (a priori) bad driver, slower reductions for the (a posteriori) good driver.**
- **A posteriori tarification is dependent of a priori tarification.**

A posteriori vs a priori

	Good		Bad	
Step	%	Premium	%	Premium
5	100%	300	100%	500
4	90%	270	80%	400
3	80%	240	65%	325
2	70%	210	50%	250
1	60%	180	40%	200

Changing conditions

- **Presence of BMS, new driving rules imply general reduction of claims frequency.**
- **The lower the claims frequency, the slower the reductions, and the faster the increases.**
- **When conditions change, BMS should be adapted !**

Hunger for bonus

- Due to our current BMS, some drivers do not report all their claims.
- Small claims are not reported due to future premium increases.
- Observed frequency is lower than true frequency.
- Observed severity has larger mean than true severity.
- Advantage : reduction of administrative costs.

Changing the BMS

- **Need for statistical material.**
- **Data are censored due to the hunger for bonus.**
- **New BMS will most probably imply a new kind of hunger for bonus.**
- **Problem extremely difficult to tackle.**

Conclusion

- On the one hand EU asks for a non compulsory / non uniform BMS.
- On the other hand : actuarial reasons for working with non uniform BMS.
- Obviously simplicity is required for commercial reasons.
- Complex methods are possible in the back office.
- Insurers should take the opportunity to propose innovative solutions !