BIG DATA AND ANNUITIES

Working Party on Private Pensions

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Background

- Work on socioeconomic differences in mortality has highlighted the potential benefits of enhanced annuities and the increased segmentation of annuity pricing
- Work on Fintech has highlighted the increased amount and availability of data that can be used to infer information about individuals
- This note is meant to start a discussion around the benefits and potential risks of the use of big data in the pricing and distribution of annuity products

Big data and assumption setting

- Big data can facilitate segmentation…
  - More data on which to base assumptions means less uncertainty around assumptions
  - More variables available on which to segment means less variability around the mean
- …and improve risk assessment
  - Assess changes in variables
  - Real-time risk analysis
- Better assumptions and risk assessment -> lower risk margins

Segmentation in pricing

- Increased segmentation reduces the risk exposure of the annuity provider
  - Improves accuracy of pricing
  - Reduces adverse selection
- But insurance is based on risk pooling
  - Increased segmentation not always better for vulnerable groups
- Are there limits to segmentation?
  - Individualized pricing still insures idiosyncratic risk
  - Segmentation can be viewed as discriminatory

The potential for discrimination

- Example: post-code pricing
  - Good proxy for socioeconomic status…
  - …but also for race
- Machine learning with big data could perpetuate past discrimination
  - Bias in, bias out
  - Under-represented populations mean less accurate estimates
- Providing guidance is not easy
  - ESAs: need to justify variables used
  - IFoA: relevant, accurate, appropriate, consistent
  - Should causality be a consideration?
  - Should there be consistency in limits for different types of insurance?

Big data and distribution

- Potential benefits…
  - Improved suitability assessment
  - Tailored communication
  - Increased access
  - Simplified underwriting
- …but also risks
  - Ignored demographics
  - Artificial segments
  - Information asymmetry
  - Reduced comparability

For discussion

- What types of variables should be acceptable to use for segmentation? Should guidelines be established? Have you established guidelines or limits in your jurisdiction?
- How should algorithms used for pricing be audited and supervised?
- Should there be rules in place around how data is used for the distribution of insurance products?
- Would delegates like to pursue additional work on this topic, and if so what direction should this work take?

THANK YOU!

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