



Scandinavian Actuarial Journal >

Volume 2017, 2017 - [Issue 3](#)

180 | 4 Views | 0 CrossRef citations to date | Altmetric

Articles

A lattice-based model to evaluate variable annuities with guaranteed minimum withdrawal benefits under a regime-switching model

M. Costabile

Pages 231-244 | Accepted 01 Nov 2015, Published online: 14 Dec 2015

Cite this article <https://doi.org/10.1080/03461238.2015.1119716>

Check for updates

Sample our Economics, Finance, Business & Industry Journals
>> [Sign in here](#) to start your access to the latest two volumes for 14 days

Full Article

Figures & data

References

Citations

Metrics

Reprints & Permissions

Read this article

Share

Abstract

We consider the problem of evaluating variable annuities with a guaranteed minimum withdrawal benefit under a regime-switching model. We propose a trinomial lattice model to approximate the evolution of the investment fund value and the policy value at inception is computed through a backward induction scheme. Finally, the insurance fee is computed as the solution of the equation that makes the contract actuarially fair. Numerical results are reported to illustrate the consistency of the proposed model.

Keywords:

minimum guaranteed withdrawal benefit

variable annuities

regime-switching models

Acknowledgements

The author wishes to thank two anonymous referees for helpful comments and suggestions. All remaining errors are the sole responsibility of the author.

Notes

No potential conflict of interest was reported by the author.

1 In the case of λ , we set $\lambda = 0$, hence $\lambda^* = 0$. In other words, once the reference fund reaches zero it stays trapped there until maturity.

2 The existence of the solution is shown in the Appendix [4](#).

Related research

People also read

Recommended articles

Cited by
4

Information for

Authors

R&D professionals

Editors

Librarians

Societies

Opportunities

Reprints and e-prints

Advertising solutions

Accelerated publication

Corporate access solutions

Open access

Overview

Open journals

Open Select

Dove Medical Press

F1000Research

Help and information

Help and contact

Newsroom

All journals

Books

Keep up to date

Register to receive personalised research and resources
by email

 Sign me up

  

  

Copyright © 2026 Informa UK Limited Privacy policy Cookies Terms & conditions

Accessibility



Registered in England & Wales No. 01072954
5 Howick Place | London | SW1P 1WG