

Scandinavian Actuarial Journal >

Volume 2018, 2018 - [Issue 7](#)

723 Views | 17 CrossRef citations to date | 0 Altmetric

Articles

Ruin probabilities in classical risk models with gamma claims





Corina Constantinescu , Gennady Samorodnitsky & Wei Zhu 

Pages 555-575 | Received 11 Dec 2016, Accepted 06 Nov 2017, Published online: 20 Nov 2017

 Cite this article  <https://doi.org/10.1080/03461238.2017.1402817>

 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

In this paper, we provide three equivalent expressions for ruin probabilities in a Cramér–Lundberg model with gamma distributed claims. The results are solutions of integro-differential equations, derived by means of (inverse) Laplace transforms. All the three formulas have infinite series forms, two involving Mittag–Leffler functions and the third one involving moments of the claims distribution. This last result applies to any other claim size distributions that exhibits finite moments.

Keywords:

[Ruin probability](#) [Mittag–Leffler function](#) [gamma distribution](#) [Laplace transform](#)

Notes

No potential conflict of interest was reported by the authors.

Additional information

Funding

GS acknowledges the ARO MURI [grant number W911NF-12-1-0385]; CC and WZ acknowledge the Seventh Framework Programme, Marie Curie, IRSES [RARE-318984].

Related research

People also read

Recommended articles

Cited by
17

[On a risk model with dependence between interclaim arrivals and claim sizes >](#)

Mathieu Boudreault et al.
Scandinavian Actuarial Journal
Published online: 18 Feb 2007

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



Taylor & Francis
by informa