

Christian Furrer *Curriculum Vitae*

Vognmandsmarken 29, 2. th., DK-2100 Copenhagen Ø.

Born May 12, 1994 in Svendborg, Denmark. Single, no children.

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Education

Dept. of Mathematical Sciences, University of Copenhagen	COPENHAGEN, DENMARK
PhD in Actuarial Mathematics (Industrial PhD)	2017 – 2020
BSc's and MSc's in Actuarial Mathematics, cand. act.	2012 – 2017

Experience

Dept. of Mathematical Sciences, University of Copenhagen	COPENHAGEN, DENMARK
Associate professor	Feb '24 – present
Tenure track assistant professor	Oct '20 – Jan '24
Teaching assistant	Sep '14 – Jan '17
Innovation & Models, PFA Pension	COPENHAGEN, DENMARK
Industrial PhD student	Sep '17 – Aug '20

Publications

1. *Expert Kaplan–Meier estimation*, with Bladt, Scandinavian Actuarial Journal 2024, pp. 1–27, 2024
 2. *Aggregate Markov models in life insurance: properties and valuation*, with Ahmad and Bladt, Insurance: Mathematics and Economics 113, pp. 50–69, 2023 [Corrigendum],
Life/IAALS Prize at ICA2023
 3. *Transaction time models in multi-state life insurance*, with Buchardt and Sandqvist, Scandinavian Actuarial Journal 2023(10), pp. 974–999, 2023
 4. *Extension of as-if-Markov modeling to scaled payments*, with Christiansen, Insurance: Mathematics and Economics 107, pp. 288–306, 2022 [Corrigendum]
 5. *Scaled insurance cash flows: representation and computation via change of measure techniques*, Finance and Stochastics 26(2), pp. 359–382, 2022
 6. *Computation of bonus in multi-state life insurance*, with Ahmad and Buchardt, ASTIN Bulletin 52, pp. 291–331, 2022 [Corrigendum and amended manuscript]
 7. *Dynamics of state-wise prospective reserves in the presence of non-monotone information*, with Christiansen, Insurance: Mathematics and Economics 97, pp. 81–98, 2021
 8. *Tax- and expense-modified risk-minimization for insurance payment processes*, with Buchardt and Møller, Scandinavian Actuarial Journal 2020(10), pp. 934–961, 2020
 9. *Forward transition rates*, with Buchardt and Steffensen, Finance and Stochastics 23(4), pp. 975–999, 2019
 10. *Experience rating in the classic Markov chain life insurance setting: An empirical Bayes and multivariate frailty approach*, European Actuarial Journal 9, pp. 31–58, 2019,
2019 Gauss Prize / EAJ Best Paper Award.
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Manuscripts

- *Conditional Aalen–Johansen estimation*, with Bladt, 2023 [R package on CRAN: [AalenJohansen](#)]
 - *Estimation for multistate models subject to reporting delays and incomplete event adjudication*, with Buchardt and Sandqvist, 2023.
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Other works

- *Matematikken bag bedre forsikringer til en mere fair pris*, with Bladt, Hiabu, and Steffensen, Aktuel Naturvidenskab 2023, pp. 27–29, 2023
 - *Introduction to actuarial mathematics*, second edition, lecture notes for *Insurance and Law*, 2023
 - *Multi-state modeling in the mathematics of life insurance: meditations and applications*, PhD thesis, 2020.
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Professional

- Member of the Steering Committee for the project frame [InterAct](#) (Jan ‘22 – present)
 - Organizer of the [Seminar in Insurance and Economics](#) (Jun ‘22 – present)
 - Conferences and workshops:
 - Co-organizer of a workshop on *fairness* with a view towards insurance (Aug ‘23)
 - Chairperson of the organizing committee of the [2024 Scandinavian Actuarial Conference](#)
 - Member of the European Actuarial Day 2023 Program Committee and the European Congress of Actuaries 2024 Program Committee
 - 2017 – present: Member of the Danish Society of Actuaries
 - Qualifying Actuary (Apr ‘19 – present)
 - Chairperson of the Education Committee (Dec ‘21 – Jan ‘24)
 - Member of the Education Committee (Jan ‘24 – present)
 - Chairperson of ‘Udvalg om implementering af Core Syllabus bestemmelse’ (Feb ‘21 – Jan ‘22). Member of ‘Kontaktudvalget’ (Dec ‘18 – Sep ‘20), ‘Efteruddannelsesudvalget’ (Oct ‘20 – Jan ‘22), ‘Udvalg om den fremtidige strategi for Aktuarforeningen’ (Feb ‘21 – Dec ‘21), and ‘Kommunikationsudvalget’ (Mar ‘22 – Jan ‘24)
 - Member of the Education Committee of the Actuarial Association of Europe and the Education Committee of the International Actuarial Association (Jan ‘21 – present)
 - 2020 – present: Member of the German Society for Insurance and Financial Mathematics
 - Management and leadership training:
 - Leading Research (Feb ‘23 – Jun ‘23)
 - Pedagogical training:
 - Introduction to University Pedagogy (Nov ‘17)
 - ‘Universitetspædagogikum’ (Aug ‘21 – Aug ‘22)
 - ‘Kursus for førsteårsundervisere’ (23 Nov ‘21)
 - Referee for ASTIN Bulletin, Applied Probability, Finance and Stochastics, Scandinavian Actuarial Journal, Statistics, and Stochastic Models
 - Media appearances: 12 May ‘21 in B.T. and 21 Sep ‘22 on videnskab.dk.
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Funding

- 2017 – 2020: Industrial PhD project titled *Biometriske risici i livsforsikring* in collaboration with the University of Copenhagen and PFA Pension and co-funded by the Innovation Fund Denmark; the Industrial PhD candidate was myself
- 2022 – 2033: Member of the project frame *InterAct* managed by Mogens Steffensen and co-funded by partners from the Danish insurance and pensions industry
- 2022 – 2025: Industrial PhD project titled *Tab af erhvervsevne: forsikring og forebyggelse* in collaboration with Mogens Steffensen and PFA Pension and co-funded by the Innovation Fund Denmark; the Industrial PhD candidate is Oliver Lunding Sandqvist
- 2022 – 2023: Co-investigator of *FAIR: Forsikringsmatematisk modellering Adapteret til Individets Retsstilling* supported by Fynske Købstæders Fond
- 2022: Travel grant by Dr.phil. Ragna Rask-Nielsens Grundforskningsfond
- 2022: Travel grant by Verein zur Förderung der Versicherungs- und Finanzmathematik – Universität Oldenburg e.V.
- 2023 – 2024: Co-investigator of *WorkFair: Workshop og konference om fairness* supported by Fynske Købstæders Fond
- 2023 – 2024: Principal investigator of *MISS: Modeling and learning Insurance risks Subject to Systematic changes in information* supported by the Hanse-Wissenschaftskolleg
- 2024: Grant by the Carlsberg Foundation for the Scandinavian Actuarial Conference 2024.

Read more about the Innovation Fund Denmark's Industrial PhD programme via [this link](#).

Longer visits

- Visitor at *Institut für Mathematik, Carl von Ossietzky Universität Oldenburg*, Germany, 2018
 - Visitor at *Département de sciences actuarielles, Université de Lausanne*, Switzerland, 2022
 - Junior Fellow at *Hanse-Wissenschaftskolleg*, Delmenhorst, Germany, 2023.
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Presentations

- *Credibility for Markov chains*. The 21st International Congress on Insurance: Mathematics and Economics, Vienna, Austria, Jul '17
- *Empirical Bayes Credibility for the Classic Markov Chain Life Insurance Setting*. The 31st International Congress of Actuaries, Berlin, Germany, Jun '18
- *An empirical Bayes approach to group heterogeneity in the classic Markov chain life insurance setting*. The 4th European Actuarial Journal Conference, Leuven, Belgium, Sep '18
- ◇ *Forward transition rates*. Oberseminar Stochastik/Statistik, University of Oldenburg, Germany, Oct '18
- *Forward transition rates*. Actuarial and Financial Mathematics Conference, Brussels, Belgium, Feb '19
- *Simple shrinkage estimation in multi-state models*. Perspectives on Actuarial Risks in Talks of Young Researchers, Sibiu, Romania, Apr '19
- *Tax- and expense-modified risk-minimization for life insurance payment processes*. The 23rd International Congress on Insurance: Mathematics and Economics, Munich, Germany, Jul '19

- ◇ *Change-of-measure techniques for efficient computation of expected cash flows.* Oberseminar Stochastik/Statistik, University of Oldenburg, Germany, Jul '19
- ◇ *Predictive modeling of disability insurance: background, pitfalls, and open questions.* Workshop on Time to Event Data and Machine Learning with focus on pension insurance problems, Copenhagen, Denmark, Nov '19
- ◇ *On forward transition rates and representation of some non-classic payment processes via change-of-measure techniques.* Talks in Financial and Insurance Mathematics, ETH Zurich, Switzerland, Dec '19
- *Tax- and expense-modified risk-minimization for insurance payment processes.* Actuarial and Financial Mathematics Conference, Brussels, Belgium, Feb '20
- ★ *Experience rating in the classic Markov chain life insurance setting.* e-Jahrestagung von DAV & DGVMF, online, Apr '20
- ◇ *Multi-state modeling in the mathematics of life insurance: meditations and applications.* PhD Defense, University of Copenhagen, Denmark, Nov '20
- ◇ *Multi-state modeling in the mathematics of life insurance: meditations and applications.* Danish Society of Actuaries, online, Dec '20
- ★ *Change of measure techniques for scaled insurance cash flows.* European Actuarial Days, online, Jun '21
- *Beyond Markov chain modeling.* United as One: 24th International Congress on Insurance: Mathematics and Economics, online, Jul '21
- ◇ *Change of measure techniques for scaled insurance cash flows.* Joint Risk & Stochastics and Financial Mathematics Seminar, London School of Economics and Political Science, United Kingdom, online, Dec '21
- ◇ *Multi-state modeling in the mathematics of life insurance.* Actuarial Science Seminar, HEC Lausanne, Switzerland, Feb '22
- ◇ *Change of measure techniques for scaled insurance cash flows.* One World Actuarial Research Seminar, online, Apr '22
- *Extension of as-if-Markov modeling to scaled payments.* The 5th European Actuarial Journal Conference, Tartu, Estonia, Aug '22
- ◇ *Experience rating in the classic Markov chain life insurance setting.* 1st Convention A, online, Sep '22
- ◇ *Bewertung von Lebensversicherungsverbindlichkeiten – Entwicklungen in Dänemark.* Verein zur Förderung der Versicherungs- und Finanzmathematik – Universität Oldenburg e.V., Oldenburg, Germany, Sep '22
- ◇ *Change of measure techniques for scaled insurance cash flows.* Seminars in Mathematical Statistics, KTH Royal Institute of Technology, Stockholm, Sweden, Dec '22
- ◇ *Expert Kaplan–Meier estimation.* Seminars in Mathematical Statistics, Stockholm University, Sweden, Dec '22
- *Conditional Aalen–Johansen estimation.* Perspectives on Actuarial Risks in Talks of Young Researchers, Valencia, Spain, Jan '23
- ◇ *Conditional Aalen–Johansen estimation.* Riskcenter, University of Barcelona, Spain, Feb '23

- ◇ *Change of measure techniques for scaled insurance cash flows.* Stochastic Models VII, Bedlewo, Poland, Jun '23
- *Extension of as-if-Markov modeling to scaled payments.* The 26th International Congress on Insurance: Mathematics and Economics, Edinburgh, United Kingdom, Jul '23
- ◇ *Conditional Aalen–Johansen estimation.* Groupe de Travail: Actuariat et Risques Contemporains, Sorbonne University, Paris, France, Sep '23
- ★ *Multi-state modeling in life insurance.* DGVM-Workshop für junge Mathematiker*innen, Loccum, Germany, Oct '23
- ◇ *Conditional Aalen–Johansen estimation.* ZeSOB Kolloquium, University of Oldenburg, Germany, Oct '23
- ◇ *Multi-state modeling in the mathematics of life insurance.* Fellow Lecture at the HWK, Delmenhorst, Germany, Nov '23.

Contributed talks: ○ Invited talks: ★ Seminars & miscellaneous: ◇

Teaching and supervision

Doctoral students

Oliver Lunding Sandqvist (primary supervisor) *Feb '22 – present*

Industrial PhD project titled *Tab af erhvervsevne: forsikring og forebyggelse*.

Supervised jointly with Mogens Steffensen as well as Lars Frederik Brandt Henriksen and Niklas Lindholm (previously Kristian Buchardt) from PFA Pension.

Philipp Carsten Hornung (co-supervisor) *Aug '23 – present*

Within the project frame InterAct and titled *Payout phase and biometric risk in pensions*.

Supervised jointly with Mogens Steffensen.

Tessa Steensgaard (co-supervisor) *Aug '23 – present*

Within the project frame InterAct and titled *Methods in Interpretable Machine Learning*.

Supervised jointly with Mogens Steffensen and Munir Hiabu.

BSc's and MSc's Programmes in Actuarial Mathematics at the [Dept. of Mathematical Sciences, University of Copenhagen](#)

Inference, Market Consistent Valuation and Pricing in Life Insurance *Spring '18*

With Buchardt and Møller. Co-lecturer.

Evaluated as an 'A-course' by the Teaching Committee.

Beyond the Classic Markov Chain Life Insurance Setting *Winter '18/19*

Course coordinator and sole lecturer.

Evaluated as an 'A-course' by the Teaching Committee.

Advanced Topics in Modern Life Insurance *Spring '20*

With Buchardt and Falden. Course coordinator and main lecturer.

Evaluated as an 'A-course' by the Teaching Committee.

Projects in the Mathematics of Life Insurance *Spring '23, '24*

With Sandqvist and Ahmad, respectively. Course coordinator and main lecturer.

Evaluated as an 'A-course' by the Teaching Committee in '23.

Insurance and Law *Spring '21, '22, '23, '24*

With Andreasen. Course coordinator and main lecturer.

Evaluated as an 'A-course' by the Teaching Committee in '22, '23.

Coordinator of the actuarial BSc's projects

Sep '22 – present

Course coordinator of Accounting and Law

Sep '23 – present

Supervision of MSc's theses

- Martin Ø. Rebild (with Lundgren), *Developing an Economic Scenario Generator for Insurance Applications*, Jan '24
- Sebastian B.G. Olsen, *As-if-Markov Models with Random Left Truncation*, Jan '24
- Olivia Juul-Branth, *Stochastic Retirement – a Non-Purely Incidental Approach*, Jan '24
- Mie J. Christensen, *Aggregate Markov models with stochastic retirement*, Jan '24
- Helene J.Z. Abildstrøm (with Sandqvist), *Loss of Income Insurance: Transaction Time Modelling with Duration Effects*, Jan '24
- Clara K. Opstrup, *Stochastic retirement and partial pension*, Jan '24
- Helene Ullum, *Aggregate Markov models in life insurance: The non-smooth case*, Jan '24
- Christopher H. Nielsen & Morten B. Larsen (with Sandqvist), *Disability Reserving in Transaction Time Models*, Jan '24
- Lars C. Geisler, *Two Principles of Market Consistent Valuation for Investment-Dependent Payment Processes in Life Insurance*, Jun '23
- Thea H. Larsen, *Partial pension*, Jun '23
- Frederik Skjødt (with Buchardt and Ott), *Design and computation of bonus in the presence of risk charge*, Jan '23
- Louise B. Dinesen, *Real Estate as a Pension Device: The Case of Reverse Mortgage Insurance*, Jan '23
- Christian S. Simonsen (with Lollike), *State Space Reduction Methods for Life Insurance*, Jun '22
- Sophie E. Gasser (with Ahmad), *Stochastic behavioral rates*, Jun '22
- Christiane A. Duus-Holm, *Comparative study on small population mortality modeling*, Jan '22
- Philipp C. Hornung, *Dynamics of the prospective reserve*, Sep '21
- Hamid Y. Mohammad (with Hessler), *Doubly stochastic Markov chains with application to life insurance*, Jun '21
- Oliver L. Sandqvist (with Buchardt), *Transaction time models in life insurance*, Jun '21
- Liu Li, *Risk-minimization of unit-linked life insurance contracts in the presence of taxes and expenses*, Jun '21
- Oliver P. Mikkelsen, *Stochastic retirement*, Jun '21
- Jacob J. Sørensen (with Steffensen), *Experience Rating in the Setup of Multivariate Correlated Frailties Using a Class of Conjugate Hierarchical Priors*, Dec '19
- Jamaal Ahmad (with Steffensen and Buchardt), *Elimination of Path Dependencies for Projection of Cash Flows in Multi-State Life Insurance*, Sep '19
- Mikkel A. Lilja (with Pedersen), *Valuation of Payment Processes in the Presence of Realistically Asymmetric Taxes on Investment Returns*, Jun '19
- Morten B. Jacobsen (with Pedersen), *A Case Study on Modelling Taxation on Investment Returns and Methods of Performance Assessment*, Jun '19.

Further activities at the [Dept. of Mathematical Sciences, University of Copenhagen](#)

Supervision of BSc's theses in Mathematics and Mathematics-Economics

- Savannah Willert, *Beregning af bonus*, Jun '22.

Miscellaneous

Courses for the [Danish Society of Actuaries](#):

- 4 Apr '22: *Fremregning for gennemsnitsrente: tilstandsvist og tilstandsfrit* (with Ahmad and Buchardt), 20 participants
 - 20 Mar '23: *Fremregning for gennemsnitsrente: tilstandsvist og tilstandsfrit* (with Ahmad and Buchardt), 10 participants.
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Miscellaneous

Languages: Danish (*mother tongue*), German (*fluent*), and English (*fluent*).

Chess: Former Danish scholastic chess champion (2013); currently on hiatus.

Other interests include: Art (modern and contemporary, especially *Jugendstil*), European politics, literature (Tolkien, Murakami, Houellebecq), music (Cohen, Marie Key, Fleetwood Mac), philosophy (Lakatos, Nietzsche).
