Munir Hiabu

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Academic Appointments

Assistant Professor of Data Science and Actuarial Mathematics, Department of Mathematical Sciences, University of Copenhagen, Denmark — 09/2021–

Lecturer in Statistics, School of Mathematics and Statistics, University of Sydney, Australia — 10/2018–08/2021

Postdoctoral Research Fellow, Cass Business School, City, University of London, UK — 08/2016–07/2018
On an ARC grant of the Institute and Faculty of Actuaries: "Minimising longevity and investment risk while optimising future pension plans"

Education

Ph.D. in Actuarial Science, Cass Business School, City, University of London, UK — 06/2013–12/2016

Date Ph.D. granted: 14/12/2016

Title: "In-sample forecasting: structured models and reserving"

Supervisors: Jens P. Nielsen (City, University of London, UK),
Enno Mammen (Heidelberg University, Germany),
Maria D. Martínez-Miranda (University of Granada, Spain).

Examiners: Richard Verrall (City, University of London, UK),
Oliver Linton (University of Cambridge, UK).

M.Sc. in Mathematics (two years programme), Heidelberg University, Germany — 09/2011–12/2012

Title: "Estimation of the integrated volatility from noisy observations"

Supervisor: Mark Podolskij.

B.Sc. in Mathematics, Heidelberg University, Germany — 09/2008–10/2011

Title: "Central limit theorems and contractions"

Supervisors: Johanna F. Ziegel, Mark Podolskij.

Memberships and Associations

Co-founder & Co-organizer of the One World Actuarial Research Seminar (OWARS)	04/2020–
Executive Committee Member of the New South Wales branch of the Statistical Society of Australia	02/2020–01/2021
Council Member of the New South Wales branch of the Statistical Society of Australia	02/2019–01/2021
Associate Fellow of the UK Higher Education Academy	05/2017–
Subgroup leader (Statistical Evaluation) of the International Actuarial Association (IAA) ASTIN working party on Machine Learning and Traditional Methods Synergy in Non-Life Reserving	2017/2018
Associated member of the Research Training Group (RTG) 1953, "Statistical Modeling of Complex Systems and Processes", Heidelberg and Mannheim, Germany	09/2013–12/2016

Research Interests

Nonparametric statistics and statistical machine learning; in particular structured models and/in survival analysis.

Applications in various fields such as actuarial science, economics and public health; in particular via age-period-cohort models.

Publications

Work in Progress

1. Bischofberger, S., Hiabu, M., Nielsen, J. P., and Mammen, E. "Smooth backfitting of additive structured hazards"
2. Hiabu, M. "Component-wise local linear projection of survival data under a multiplicative hazard structure."
3. Hiabu, M., Nielsen, J. P., and Scheike, T. "Non-smooth backfitting for excess risk additive regression model for survival with calendar-time effects."
4. Hiabu, M., and Scheike, T. "Non-smooth backfitting for Cox proportional hazard model on two time-scales."
5. Hiabu, M., and Villegas, A. "An exposure-free age-cohort model for mortality data."
6. Edelman, D., and Hiabu, M.: "Nonparametric proportional hazards with categorical data"
7. Hiabu, M., Mammen, E., and Nielsen, J.P.: "Generalized structured hazard model."
8. Hiabu, M., Mammen, E., and Meyer, J.T.: "Random Planted Forest: a directly interpretable tree ensemble"

Peer-Reviewed Journal Articles

9. Hiabu, M., Scheike, T., and Nielsen, J. P. (2021) "Non-smooth backfitting for excess risk additive regression model with two Survival time-Scales" **Biometrika** 108(2), p.491–506.
10. Hiabu, M., Mammen, E., Martinez-Miranda, M. D., and Nielsen, J. P. (2020+) "Smooth backfitting of proportional hazards with multiplicative components." **Journal of the American Statistical Association** (accepted), doi: `https://doi.org/10.1080/01621459.2020.1753520`
11. Gerrard R., Hiabu M., Nielsen, J. P., and Vodicka, P. (2020) "Long-term real dynamic investment planning." **Insurance: Mathematics and Economics**, 92(May 2020), p.90–103.
12. Bischofberger, S., Hiabu, M., and Isakson, A. (2020) "Continuous chain-ladder with paid data." **Scandinavian Actuarial Journal**, 2020(6), p.477–502.
13. Bischofberger, S., Hiabu, M., Mammen, E., and Nielsen, J. P. (2019) "A comparison of in-sample forecasting methods." **Computational Statistics and Data Analysis**, 137(2019) p. 133–154.
14. Gerrard, R., Hiabu, M., Kyriakou, I., and Nielsen, J. P. (2019) "Communication and personal selection of pension saver's financial risk." **European Journal of Operational Research**, 274(3) p. 1102 –1111.
15. Gerrard, R., Hiabu, M., Kyriakou, I., and Nielsen, J. P. (2018) "Self selection and risk sharing in a modern world of life long annuities." **British Actuarial Journal** 23(e30) p. 1–23
16. Hiabu, M. (2017) . "On the relationship between classical chain ladder and granular reserving." **Scandinavian Actuarial Journal**, 2017(8), p.708–729.
17. Hiabu, M., Mammen, E., Martinez-Miranda, M. D., and Nielsen, J. P. (2016). "In-sample forecasting of local linear survival densities." **Biometrika**, 103(4), p. 843–859.
18. Hiabu, M., Margraf, C., Martinez-Miranda, M. D., and Nielsen, J. P. (2016). "Cash flow generalisations of non-life insurance expert systems estimating outstanding liabilities." **Expert Systems With Applications**, 45(1), p. 400–409.
19. Hiabu, M., Margraf, C., Martinez-Miranda, M. D., and Nielsen, J. P. (2016). "The link between classical reserving and granular reserving through double chain ladder and its extensions." **British Actuarial Journal**, 21(1), p. 97–116.
20. Agbeko, T. K., Hiabu, M., , Martinez-Miranda, M. D., Nielsen, J. P., and Verrall, R. J. (2014). "Validating the double chain ladder stochastic claim reserving model." **Variance**, 8(2), p.138-160.
21. Hiabu, M., Martinez-Miranda, M. D., Nielsen, J. P., Spreeuw, J., Tanggaard, C., and Villegas, A. (2015). "Global polynomial kernel hazard estimation." **Revista Colombiana de Estadístical**, 38(2), p.399–411.

Online Links to Papers

Completed papers and code can be found on my webpage:
https://mhiabu.github.io/.

PhD Students

Stephan Bischofberger (City, University of London, UK) 2016–2020
Topic: Estimating operational time in a survival analysis setting and application in actuarial reserving.
(Co-supervised together with Prof. Jens Nielsen and Prof. Enno Mammen)

Selected Presentations at Conferences and Workshops

RSFAS Summer Research Camp 2019, Canberra, Australia. **(Invited)**.	12/2019
7th Channel Network Conference (CNC 2019), Harpenden, UK.	07/2019
3rd International Conference on Econometrics and Statistics (EcoSta 2019), Taichung, Taiwan. (**Invited**).	06/2019
10th International Conference of the ERCIM WG on Computational and Methodological Statistics (ECRIM 2017), London, UK. (**Invited**).	12/2017
International Actuarial Association (IAAL) Life Colloquium on Long-Term Saving in an Ageing World, Barcelona, Spain.	10/2017
Actuarial Teachers' and Researchers' Conference (ATRC) on Ageing Populations and Actuarial Implications, Canterbury, UK. (**Invited**).	07/2017
The IFoA's Joint Risk, Investment, Pensions Conference, Newport, UK. (**Invited**).	06/2017
2nd International Congress on Actuarial Science and Quantitative Finance, Cartagena, Colombia.	06/2016
3rd International Society for NonParametric Statistics (ISNPS) Conference, Avignon, France. (**Invited**).	06/2016
12th German Probability and Statistics Days 2016, Bochum, Germany.	03/2016
8th International Conference of the ERCIM WG on Computational and Methodological Statistics (ECRIM 2015), London, UK. (**Invited)**.	12/2015
50th Actuarial Research Conference (ARC), Toronto, Canada.	08/2015
19th International Congress on Insurance: Mathematics and Economics (IME), Liverpool, UK.	06/2015
Workshop on age-period-cohort models in non-life insurance, Oxford, UK. (**Invited**).	05/2015
Perspectives on Actuarial Risks in Talks of Young researchers (PARTY), Liverpool, UK.	01/2015
R in Insurance, London, UK. (**Invited**).	07/2014
2nd International Society for NonParametric Statistics (ISNPS) Conference, Cádiz, Spain.	06/2014

Research Stays and Other Projects

Visits

Department of Public Health, University of Copenhagen, Denmark — 1 week 8/2017; 1 week 12/2019

Institute of Economics, University of Graz, Austria — 1 week 11/2016

Department of Statistics and Operations Research, University of Granada, Spain — 3 weeks 10/2014

Projects

Matrix, Nicosia, Cyprus. — 1 week 07/2016
Work on their stochastic reserving software.

Royal Sun Alliance (RSA), Horsham, UK. — 8 weeks 07/2014–08/2014
Supervision of three undergraduate interns from Oxford University. Project: Run Double Chain Ladder on real data sets and compare it to the internal methodologies.

Teaching

Lecturer

The University of Sydney

Linear Models (3rd year undergraduate (advanced stream) ∼ 20 students): Semester 1, 2019; Semester 1, 2020.

Statistical Thinking with Data (1st year undergraduate. Semester 1 ∼ 500 students, Semester 2 ∼ 1,500 students): Semester 2, 2019; Semester 1, 2020; Semester 2, 2020.

Introduction to Probability and Statistics (2nd year undergraduate ∼ 200 students): Semester 1, 2019.

Cass Business School

Financial Economics (2nd year undergraduate ∼ 90 students): Spring 2017, Spring 2018.

Teaching Assistant

Cass Business School

Probability Theory and Statistics (2nd year undergraduate): Winter 2016.

Financial Economics (2nd year undergraduate): Spring 2015, Spring 2016.

Stochastic Claims Reserving in General Insurance (M.Sc.): Summer 2014, Summer 2015.

Heidelberg University

Mathematics and Computer Science for students of Molecular Biotechnology (1st year B.Sc.): Summer 2011, Winter 2011/12, Summer 2012.

Linear Algebra (1st year B.Sc.): Winter 2010/2011.

Teacher at a High School

Berufliche Schulen Gross-Gerau

Mathematics, August 2012–January 2013.

Grants & Awards

LIFT research grant (A$7,320) 06/2020
Internal competitive grant.

Dimitris N. Chorafas Foundation Award ($5,000) 07/2016
Awarded in the last year of the Ph.D. for outstanding work in selected fields in the engineering sciences, medicine and the natural sciences.

Best Presentation Award (£1,000) 06/2015
Awarded by Cass Business School for the best talk given during the Ph.D. Research day of the Actuarial Science and Insurance Faculty.

Ph.D. Scholarship 06/2013–07/2016
From City University London.

Miscellaneous

Languages

German (native), Tigrinya (native), English (fluent).

Programming Languages

R, LaTeX.