Prof. Dr. KASIRGA YILDIRAK

Curriculum Vitae

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Contact Address

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Academic Experience

2018 - Today	**Professor of Risk**	Actuarial Sciences Hacettepe University, Turkey Department Chair
2018 - 2021	**Faculty**	Graduate School of Health Economics and Pharmacoeconomics Hacettepe University, Turkey
2013 – 2018:	**Associate Professor of Econometrics**	Actuarial Sciences, Hacettepe University, Turkey Department Chair
2003 - Today	**Affiliated Faculty**	Financial Mathematics Program Middle East Technical University, Turkey
2010-2013	**Assistant Professor of Economics**	Department of Economics Trakya University, Turkey
2000-2004	**Research Assistant**	Department of Economics Middle East technical University, Turkey
1996-1999	**Tutor**	Disability Center North Carolina State University, USA
2012	**Research Visitor**	Concordia University, Canada
2004	**Post-Doctoral Research Visitor**	Kaiserslautern T.U, Germany
2003-2006	**Doctoral Research Visitor**	École Nationale Supérieure Des Télécommunications, France

Project Experience

2022-2023	Ankara Turkey	UN FA0	**Value Chain Risk Analyst**	Risk Identification, Risk Scoring and Vulnerability Assessment for Wheat value chain, policy recommendation, agri-food finance,
2022-2023	Ankara Turkey	Exim Bank	**Coordinator**	Obtaining total aggregate loss distribution, Reinsurance pricing, Economic impact and prioritization of incentives, Country Rating, Insurance Ratemaking, Buyers insurance portfolio loss distribution, Export Credit Risk Management, Supply Chain Risk Management for various goods,
2022-	Ankara Turkey	FAO-Union of Chambers and Commodity Exchanges (LOA)	**Risk Expert**	Agricultural Value Chain Risk Management, Finance related risk management tools (agricultural insurance, weather index insurance, agricultural finance and microfinance), Market related risk management tools (contract farming, commodity exchanges and futures markets, warehouse receipts systems),
2021 -	Istanbul Turkey	Sigortam.net	**Project Leader**	Consumer-Policy Recommendation System Development
2021 -	Istanbul Turkey	Efes Pilsen	**Consultant**	Prediction for Number of Broken Deposit Bottles/Containers in Beer Supply Chain
2019-2021	Ankara Turkey	Turkish Science Foundation	**Project Leader**	Actuarial Hail Risk Map for Agricultural Products, Vulnerability analysis, Aggregate loss distribution, Economic impact of Insurance system
2017-2019	Istanbul Turkey	Agricultural Insurance Pool	**Project Leader**	Determining risk clusters for over 120 products and 5 different risks including flood, drought, hail, fire landslide, Vulnerability analysis, Building a portfolio loss model. Determining risk regions. Majorization and prioritization of risks. Climate shocks and reinsurance pricing. Cost- Effectiveness Analysis. For different risk mitigation strategies.
2015-2016	Ankara-Turkey	General directorate of agricultural research and policies	**Project Leader**	Evaluation of the efficiency (and gap analysis) for Agricultural Insurance and Natural Disasters in Agriculture Risk Management,
2015-2016	Ankara-Turkey	General Directorate of Insurance, Insurance Association	**Project Coordinator**	Preparation of Life tables for Insurance Sector
2016-2021	Istanbul, Turkey	General Directorate of Insurance, Insurance Association	**Project Coordinator**	Computation of Actuarial Technical Interest for Insurance Policy Claims
2005-2018	Ankara, Turkey	Central Bank of Turkey	**Lecturer and individual project supervisor**	Lectures and projects on Financial risk modeling, interest rate modeling, derivative pricing, estimation of stochastic processes. Developing a credit risk index for Turkish markets and industries. Trading rules for FX markets. Bayesian VAR analysis for macro level default risk analysis. Financial Engineering related problem solutions and programming
2010-2012	Ankara, Turkey	UNDP-FAO MDGF-1680	**Coordinator**	Coordinator of UNDP-FAO funded project on Risk Assessment of Drought and Flood on Agricultural Losses. Drought forecasting. Drought and Flood related insurance products. Developed an algorithm for the burden of a

		LOA with METU		possible Micro-Insurance portfolio on Government. Bayesian Estimation of crop yield function for rain-fed wheat. Socio-Economic impact of Drought and Flood on Agricultural areas.
2009 -2010	**Istanbul ,Turkey**	Retail Banking VakifBank	**Consultant**	Set-up a repayment plans for hybrid credit products, and establish a plan for assessing their risk. Loans for special projects with irregular repayment schemes were also integrated to account for the counter party and compute market risk associated with these loans.
2009 - 2010	Ankara, Turkey	General Directorate of Insurance, Insurance Association	**Expert Scientist**	Preparation of morbidity tables and developed associated morbidity risk modeling and management plan. Disease epidemiology statistics and actuarial risk computations were also identified to set-up the basis of a monitoring system.
2009 -2010	Ankara, Turkey	UN-FAO	**Consultant**	Participated in the evaluation of Drought Risk Assessment and Drought early monitoring system currently implemented in Turkey in partnership with various government institutions. Meetings with stakeholders. Organizing conferences and meetings to identify risks. Gap analysis for risk management system. Report to FAO and UNDP offices. Moderator for various international trainings and global meetings.
2007-2008	**Istanbul Turkey**	Risk Department Turkish Bank	**Consultant**	Setting up the basis of an historical simulation-based market risk modelling and programming. The outcomes were used to develop a management strategy to evaluate unaccounted risk mechanisms deriving financial uncertainties in various segments of managerial level decision making process.
2004-2006	Ankara, Turkey	Risk Department HalkBank	**Consultant**	Planning, development and implementation of a structured evaluation and monitoring mechanism composed of: market risk modelling and programming, credit risk modelling and programming, credit rating, and validation of risk models. Designing a system in order to measure and monitor credit portfolio deterioration. The on-site evaluation component included development of questionnaire templates with options for updating and monitoring the project loans at specific business scale, which then allowed evaluation of the results and mapping them into risk groups. Another important component was to design a system using quantitative variables and their corresponding mapping into a discrete ordering process. The main outcome of on-site evaluations would include a reference guide for Halkbank to understand best practices and associated implementation measures.
2007-2010	Istanbul Turkey	Merit Rating	**Consultant**	Developing web-based software for automatic computation of financial ratios, cash flows, financial balance sheet. Building a web-based credit rating and scoring system to supervise credit risk measurement and associated planning and management issues. Preparation, monitoring and finalization of templates to be used by rating representatives.
2004-2010	Ankara, Turkey	School of Banking and Finance, Ziraat Bank	**Lecturer**	Courses offered: Basel II Capital Accord, Market Risk, Credit Risk, Financial Derivatives
2003 - 2004	Ankara, Turkey	Risk Department VakifBank	**Supervisor**	Preparing a software for Monte Carlo and Historical simulation-based Market Risk and related issues such as yield curve modeling, short rate modeling and simulations, derivative pricing, bond pricing.

Education

2004	Ph. D	**Economics**	Middle East Technical University, Turkey
1999	M. A.	**Economics**	North Carolina State University, USA
1996	M. S.	**International Business**	Southern New Hampshire University, USA

1992	B. S.	**Economics**	Ankara University, Turkey

Teaching

Course Name	Level	# of times
Actuarial Risk Theory and Reinsurance	Undergraduate	2
Non-Life Insurance Mathematics	Undergraduate/Graduate	2
Financial Risk Assessment	Graduate	12
Financial Engineering	Graduate	4
Financial Derivatives	Undergraduate/Graduate	20
Financial Time Series	Undergraduate/Graduate	15
Micro Economics	Undergraduate/Graduate	22
Financial Mathematics	Undergraduate	20
Econometrics	Undergraduate/Graduate	11
Financial Project Evaluation	Undergraduate	4
Decision Making in Pharmacoeconomics	Graduate	2
Macro Economics	Undergraduate	4
Interest Rate Models	Undergraduate/Graduate	8

Research Interests

1) Data Driven Risk Modeling, Scoring/Rating Algorithms
2) Sustainability Computing
3) Prioritization and Majorization for Climate-Related Risks
4) Insurance Analytics
5) Statistical/Machine Learning Implementations
6) Numerical Methods Applied to Finance
7) Non-Life Insurance Portfolio Modeling
8) Derivative Pricing
9) Computational Risk
10) Financial Engineering
11) Economic Evaluations of Health Interventions
12) Counterparty Risk Modelling

Publications

Ilhan Taskin, Z., Yildirak, K., & Aladag, C. H. (2023). An enhanced random forest approach using CoClust clustering: MIMIC-III and SMS spam collection application. Journal of Big Data, 10(1), 38.

Nevruz, E., Atici, R. Y., & Yildirak, K. Actuaries Climate Index: An Application for Turkey. İstatistik Araştırma Dergisi, 12(2), 14-25.

Hagens, A., Inkaya, A.C., Yildirak, K., Sancar, M., Van der Schans, J., Acar-Sancar, A., Unal, S., Postma, M., Yegenoglu, S., "COVID-19 vaccination scenarios: A cost-effectiveness analysis for Turkey", Vaccine, April 2021

Tugac, S., Yildirak. K., "Wind Speed and Wind Direction Prediction: An Implementation of a Deep Learning Algorithm Enriched by SWT and Circular PCA, Florence Nightingale Directional Statistics Volume, Springer Verlag, Singapore, 2022,

Nevruz, E., Yildirak. K., "Spatiotemporal Interpolation through an Extension of Differential Evolution Algorithm for Agricultural Insurance Claims", Journal of Computational and Applied Mathematics, 2019

Mustafa Asim Ozalp, Kasirga Yildirak, Hakan Cagdas Aladag, Ibrahim Zor and Necmettin Unal, "Prognostic Performance of Artificial Neural Networks by Using Mimic-III Clinical Database" International Conference on Data Science, Machine Learning and Statistics - 2019

Ozalp, A., Yildirak, K., Yolcu-Okur, Y., "Optimal investment strategy and liability ratio for insurer with Lévy risk process" Hacettepe Journal of Math and Statisitcs, 2019

Nevruz, E., Yildirak, K., SenGupta., "Multivariate Stochastic Prioritization of Dependent Actuarial Risks in Agricultural Insurance" ASTIN / AFIR -ERM Colloquium, Panama City, 2017

İscanoglu Çekiç A., Yildirak, K; "Credit Scoring by Using Generalized Models: An Implementation on Turkey's Smes", Journal of Economics, Finance and Accounting, vol.4, pp.98-105,2017

Evkaya, O., Yıldırak, K., Kestel, S, "Assessment of Index-based Drought Insurance", EkonomikYaklaşım, vol.28, pp.1-18, 2017

Şahin Ş., Karabey U., Bulut Karageyik B., Nevruz E., Yildirak,K, "Actuarial Premium Calculation for Wheat Crop Insurance in Turkey", Turkish Journal of Agricultural Economics,vol.22,pp.37-47,2016

Gunay, S.G., Yildirak, K., "Choosing the Appropriate Amount of Mortgage Loan: Risk Based Decision Making", International Journal of Economics and Finance, vol.8, pp.12-29, 2016

Yildirak, K., & Selcuk-Kestel, A. S. "Adjusting SPI for crop specific agricultural drought". Environmental and ecological statistics, 22(4),

681-691. 2015

Yildirak, K., Kalaylıoglu, Z., & Mermer, A. Bayesian estimation of crop yield function: drought based wheat prediction model for tigem farms. Environmental and ecological statistics, 22(4), 693-704. 2015

Yildirak, K., Gulseven, O., "Indemnity Payments in Agricultural Insurance: Risk Exposure of EU States" Actual Problems of Economics, No 127 (1) 373-380, (2012)

Yildirak, K., Ekinci, C., Chapter 17, "Review of Market Risk Computation Techniques" Rethinking Valuation and Pricing Models: Lessons Learned from the Crisis and Future Challenges, Elsevier, 2013.

Ekinci, C., Yildirak, K., Taylan, A. S., "High-Frequency Performance of Value at Risk and Expected Shortfall: Evidence From Ise30 Index Futures" Chapter 18, Rethinking Valuation and Pricing Models: Lessons Learned from the Crisis and Future Challenges, Elsevier, 2013.

Yildirak, K., Suer, O., The Importance of Qualitative Factors in Firm Default: Evidences from Turkey, Actual Problems of Economics, June 2013

Kurum E, Yildirak K, and Weber G. W, A Classification Problem of Credit Risk Rating Investigated and Solved by Optimization of the ROC Curve "Central European Journal of Operations Research", DOI: 10.1007/s10100-011-0224-5, 2012

Altinsoy, G., I. Erol, and S.K. Yildirak, Time-varying Beta Risk of Turkish Real Estate Investment Trusts. "Middle East Technical University Studies in Development", 37, 2010, p.83-114.

Weber, G.W., Taylan, P., Yildirak, K. and Görgülü, Z.K., "Financial Regression and Organization", in the Special Issue on Optimization in Finance, of DCDIS-B (Dynamics of Continuous, Discrete and Impulsive Systems (Series B)) 17, (201 149-174. 2010

Uner S, Cakir B, Yildirak K. "Do we adequately respect the potential of routine primary health care services in reducing neonatal mortality in developing countries? The example of Denizli cohort" Cah. Socio. Demo. Med., 50(4): 477-500, September-December 2010