Dr S Prabakaran, M. Tech (I E & M), Ph. D

Professor (FINTECH)

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Academic Background

Degree	University	Year
Ph. D - Mathematical Finance	Indian Institute of Technology (AACSB accredited) – IITR, Roorkee, India.	2006
M. Tech - Industrial Engineering & Management	Indian Institute of Technology Dhanbad – IITD, India.	2001
B. E - Mechanical Engineering	Madras University, India	1994
PGP (Data Science)	Purdue University, West Lafayette, IN, USA	2002

Specializations

- Financial Risk Management
- International Finance
- Advanced Corporate finance
- Financial Modeling
- Portfolio Management,
- Quantitative Finance
- Mathematical Finance
- Stochastic Finance
- Quantum Finance and Quantum Field Theory
- Financial & Energy Derivatives
- Applied Statistics with Applications in Finance and
- FINTECH

Courses Taught

- Stochastic Calculus for Finance,
- Financial Derivatives
- Advanced Derivatives,
- Investment Strategies & Portfolio Management,
- Financial Risk Management,
- Corporate Finance,
- International Finance,
- Financial Markets and Institutions,
- Corporate Valuations,
- Investment management,
- Mathematics for Finance,

- Financial Engineering,
- Project Management,
- Investment management,
- R for Financial Applications,
- Foundations of Financial Data Science,
- Financial Data Analysis with R and PYTHON and
- Machine Learning in Finance

Research Interest

- Mathematical Finance (Derivatives-Black Scholes Option Pricing Model),
- Application of Statistical Mechanics in Management Problems,
- Applications of fuzzy stochastic calculus in the pricing of derivatives,
- Applications of the methods of quantum electrodynamics & field theory in finance,
- Quantum Computing, Game Theory, Quantum Finance and Quantum Field Theory
- Thermoeconomics and
- Physics of Finance (PHYNANCE)

Recent Publication

1. **A Toy Model of Financial Markets** with Singh. J. P -Electronic Journal of Theoretical Physics (EJTP). ISSN 1729-5254, Vol.3, Issue No 11, pp. 11-27 (May 2006).

2. **Black Scholes Option Pricing with Stochastic Returns on Hedge Portfolio-** Electronic Journal of Theoretical Physics (EJTP). ISSN 1729-5254, Vol 3, Issue No. 13 pp 19-28 (December 2006).

3. **Group Properties of The Black Scholes Equation & Its Solutions.** with Singh. J. P - Far East Journal of Mathematical Sciences (FJMS). ISSN: 0972-0871, Volume 27 No. 1, pp. 15 - 25(October 2007).

4. **On The Distribution of Returns & Memory Effects in Indian Capital Markets.** with Singh. J. P - International Research Journal of Finance and Economics. (IRJFE). ISSN 1450-2887, INDEXED IN SCOPUS, Issue 14, pp 165 – 176 (2008).

5. **Quantum Computing Through Quaternions**. with Singh. J. P - **International Journal of Pure and Applied Physics (IJPAP). ISSN 0973-1776**, Volume 4, Number 1 (2008) pp 87 - 96.

6. **Memory Effects on Saudi Arabian Stock Market – Empirical Evidence** with_Khalid Alkhathlan - Enterprises Risk Management (ERM), ISSN 1937-7916, 2009, Vol. 1, No 2: E2, pp 87 - 96.

7. **Black Scholes Model – An ECONOPHYSICS Approach** with K Ravichandran - Enterprises Risk Management (ERM), ISSN 1937-7916, 2010, Vol. 1, No. 1: E5, pp 115 - 127.

8. Prabakaran S et al. **Influence of Service Quality on Customer Satisfaction: Application of Servqual Model -** International Journal of Business and Management (IJBM), ISSN 1833-3850, Vol. 5, No 4, April 2010, pp 117 - 124.

9. Prabakaran S et al. **Application of Servqual Model on Measuring Service Quality: A Bayesian Approach** Enterprises Risk Management (ERM), ISSN 1937-7916, 2010, Vol. 1, No. 1: E9 pp 145 - 169.

10. **The Study of Markets and Prices –The Thermodynamics Approach -** International **Journal of Pure and Applied Physics (IJPAP), ISSN 0973-1776,** Vol 6, No 3 (2010), pp. 333–346.

11. **Market Fluctuations – The Thermodynamics Approach -** Global **Journal of Finance and Management (GJFM),** ISSN 0975- 6477, Vol 3, No 2 (2011), pp. 193-208.

12. **Rationality In Economics – The Thermodynamics Approach and Evaluation Criteria -** Journal of Empirical Economics (JEE). ISSN: 2310-3256 – Vol 3(2014), Issue 1. pp: 43-55.

13. **Exchange Rate Equilibrium – The Thermodynamics Approach-** International Journal of Financial Economics (IJFE). ISSN: 2310-3280 – Vol 3(2014), Issue 1. pp: 11-24.

14. **An Exposition on Foreign Currency Exposure** (July 30, 2014) with Singh, J.P.,. Available at SSRN: https://ssrn.com/abstract=2474235 or http://dx.doi.org/10.2139/ssrn.2474235.

15. **Thermodynamics Description in The Colombian Stock Markets -** International Research Journal of Finance and Economics. (IRJFE). ISSN: 1450-2887, Issue 126, October 2014.

16. **Stock Market - The ECONOPHYSICS Approach -** International Journal of Applied Business and Economic Research. (IJABER), ISSN: 0972-7302, Vol. 12, No. 3, (2014): 857-866.

17. **Laws Of Thermodynamics Description in The Economic System -** International Journal of Applied Engineering Research (IJAER), ISSN: 0973-4562, Volume 10, Number 11 (2015) pp. 28657-28668.

18. **Black Scholes Option Pricing Model – Brownian Motion Approach -** Global Journal of Pure and Applied Mathematics (GJPAM). ISSN 0973-1768 Volume 11, Number 6 (2015), pp. 4587-4602.

19. **Statistical Thermodynamics of Money (THERMONEY) -** Journal International Journal of Applied Engineering Research (IJAER). ISSN 0973-4562 Volume 11, Number 5 (2016) pp 3409-3420.

20. **Construction Of Risk – Neutral Measure in A Brownian Motion with Exotic Option -** Far East Journal of Mathematical Sciences (FJMS). Volume 100, Number 10, 2016, Pages 1643-1674 ISSN: 0972-0871, ISSN: 0972-0871,

21. **Modeling And Pricing of Weather Derivative Market -** Global Journal of Pure and Applied Mathematics (GJPAM). ISSN 0973-1768, Volume 13, Number 12 (2017), pp. 8103-8126.

22. **Stochastic Process on Option Pricing Black - Scholes Pde– Financial Physics (PHYNANCE) Approach -** Global Journal of Pure and Applied Mathematics (GJPAM). ISSN 0973-1768. Volume 13, Number 12 (2017).

23. Chapter published - Springer Proceedings in **Business and Economics, in Advances in Panel Data Analysis in Applied Economic Research**, 2017 International Conference on Applied Economics (ICOAE) - 2018 – Springer publisher.

24. **Modeling And Pricing of Energy Derivative Market** - International Journal of Engineering & Technology. (IJET). ISSN 2227-524X, INDEXED IN SCOPUS. 7 (4.10) (2018) 148-156. DOI - 10.14419/ijet. v7i4.10.20826.

25. **Construction of Pde Black - Scholes with Jump-Diffusion Models** - Far East Journal of Mathematical Sciences (FJMS): 0972-0871, ISSN: 0972-0871, Volume 110, Number 1, 2018, Pages 131-163.

26. **The Black Scholes Option Pricing Model for Insurance Derivative -** Journal Global Journal of Pure and Applied Mathematics (GJPAM): ISSN 0973-1768 Volume 16, Number 1 (2020), pp. 131-144.

27. **Construction of the Black Scholes Pricing Model in The Stock Market by Using Of Brownian Motion Approach** - Far East Journal of Mathematical Sciences (FJMS): 0972-0871, ISSN: 0972-0871, Volume 123, Number 2, 2020, Pages 139-161.

28. **A Temperature Stochastic Model for Option Pricing and Its Impacts on The Electricity Market** with Jose U. Mora, Ph.D., and Dr. Isabel Cristina Garcia Arboleda - Economic Analysis and Policy (EAP), WoS Q2, Under Elsevier 68 (2020) 58 - 77.

29. **Connecting Different Branches Domains Through Mathematical Modelling: An Interdisciplinary Approach** with Dr. Animesh Acharjee - International Journal of Interdisciplinary Research Methods, Vol.7, No.3, pp. 31-47, December 2020, Published by ECRTD-UK Print ISSN: ISSN 2398-712X, Online ISSN: ISSN 2398-7138.

30. **Description Of Colombian Electricity Pricing Derivatives -** International Journal of Finance Research (IJFR): e-ISSN: 2746-136X. Vol 2, No.3, September 2021, Pages 191 - 211. DOI: https://doi.org/10.47747/ijfr.v2i3.349.

31. **Interdisciplinary Science: Exploring Connections Among Natural, Social, And Engineering Sciences For Solving Real-World Problems** with Dr A Acharjee, Sadi Journal of Interdisciplinary Research 1 (1), 1-12. March, 2023.

32. **An Evaluation of an Option Pricing Model for the Colombian Peso-US Dollar Exchange Market -** International Journal of Financial Studies - Open Access - ISSN: 2227-7072 – **Under Review.**

INTERNATIONAL CONFERENCE SEMINARS

1. Paper presented at an International Conference on 5th Consortium of Students in Management Research (COSMAR 2005) held at the Department of Management Studies, Indian Institute of Science-Bangalore. Title - **A Generalized Option Pricing Model.**

2. Presented a research paper at a National Seminar on Management in the New Global Order – Quest for Excellence held at the Department of Management Studies, Indian School of Mines- Dhanbad. Title- **Some Results In Derivative Pricing Through Quantum Mechanical Methods.**

3. Presented a research paper at a National Conference on Intelligent Optimization Modeling (NCIOM-2006) held at the Department of Mathematics, Gandhi Gram Rural Institute- Deemed university- Gandhi gram. Title- **Construction Of Symmetry Groups Of The Black Scholes Equation.**

4. Presented a research paper at National Seminar on Management Challenges- The Road Ahead held at the Department of Management Studies, Indian School of Mines- Dhanbad. Title- **Derivatives Accounting- Issues And Dimensions.**

5. Research Paper presented at an International Seminar on RECENT TRENDS IN CAPITAL MARKETS AND FINANCIAL INNOVATIONS (RTCMFI-2008) held at the Department of Commerce and Financial Studies, BHARATHIDASAN UNIVERSITY – TIRUCHIRAPPALLI, Tamil Nadu, Title - **Construction Of Deformed Levy Processes & Option Pricing.**

6. Research paper presented at a National Seminar on Pattern Recognition – NSPR – 2008, Titled **- On the Relativistic Effects on Quantum Entanglement of Quantum States Of Massive Particle** held at the Department of Computer Science, PERIYAR UNIVERSITY, Salem, - 636 001, Tamil Nadu, India.

7. Research Paper accepted at an International Seminar on RECENT TRENDS IN CAPITAL MARKETS AND FINANCIAL INNOVATIONS (RED CAM FIN -2010) held at the Department of Commerce and Financial Studies, BHARATHIDASAN UNIVERSITY – TIRUCHIRAPPALLI, Tamil Nadu, Title **- Economic and Financial Crisis in Saudi Arabia - Early Warning System.**

8. Research Paper accepted at an International Finance Conference 2015, American Academy of Financial Management held in PRIME Business School, Universidad Sergio Arboleda, Bogota, Colombia on November 26 – 27, 2015, Title **- Description of Colombian Economy Over the Foreign Exchange Rate Fluctuation'.**

9. Research Paper presented at World Finance Conference held at St John's University, New York, United States on July 29-31, 2016, Title **- Description of Carnot Cycle in The Financial Market.**

10. Research Paper presented (Invited Speaker) at 13TH NATIONAL AND 10TH INTERNATIONAL FINANCE SYMPOSIUM, Building Edificio Jorge Hoyos Vásquez, SJ. Pontificia Universidad Javeriana - Bogotá, Colombia. Held on October 28, 2016, Title- **How Should We Use the Concept of Entropy In Financial Markets? – PHYNANCE Approach.**

11. Research Paper presented at WORLD FINANCE & BANKING SYMPOSIUM, University of Dubai (DU) the United Arab Emirates, December 14th-15th, 2016, Title - **Description of Brownian Motion in Capital Market.**

12. Research Paper presented at International Conference on Applied Economics (ICOAE), ICOAE 2017: Coventry, England, 6th-8th July 2017, Coventry University Technology Park, Puma Way, Coventry, West Midlands CV1 2TT, England with Title **Application of Thermodynamics Entropy Concept in Financial Markets.**

13. Research Paper presented (Invited Speaker) at XIV National Symposium and XI International Experts in Finance, Building Edificio Jorge Hoyos Vásquez, SJ. Pontificia Universidad Javeriana - Bogotá, Colombia. Held on September 8, 2017, Title - **Temperature Stochastic Modeling for Pricing of Weather Derivatives Market.**

14. Research Paper presented (Invited Speaker) and session of the chair for session titled ¨Smart Power & Energy Systems¨ at World Summit on Advances in Science, Engineering and Technology (Cambridge Summit 2018): Cambridge University 4 - 6 January 2018, Murray Edwards College, Cambridge, UK., with Title - **Construction of Option Pricing Model for Energy Derivative Markets.**

15. Research Paper presented as a Guest Speaker and conference organizer at International Symposium on Financial Modeling and Phenotyping (ISFMP) on July 4, 2018, at Pontificia Universidad Javeriana – Cali, Colombia with titled - **Application of Mathematical Models to Plant Phenotyping: How the Equations Are Derived, Assembled in Plant Science.**

16. Research Paper presented (Invited Speaker) at 14TH NATIONAL AND 11TH INTERNATIONAL FINANCE SYMPOSIUM, Pontificia Universidad Javeriana – Cali, Colombia. Held on September 13 – 14 28, 2018, Title - **A New Vision of Economics – A Thermodynamic Approach to Economics (THERMOECONOMICS).**

17. Research Paper poster presentation at the meeting of the 2nd International Conference on Energy Research and Social Science at 28-31 May 2019, Arizona State University, Tempe, USA titled - **Construction of Temperature Stochastic Model for Option Pricing And Its Impact On Electricity Market.**

18. Research Paper presented at the meeting of the World Finance Conference – Santiago de Chile, July 24th-26th, 2019 with titled - **Stochastic Option Pricing Model for Insurance Derivative Markets.**

19. Research Paper accepted for oral presentation at the meeting of the 6th International Symposium on Research in Economics, Management and Accounting Sciences - Society and Development, and 2nd International Meeting of Students of Economics, Management, and Accounting by University of LIBRE, Bogota. This conference will take place on 12, 13 & 14th September 2019 with titled - **Methodical Approach to Pricing and Valuation of Weather Derivatives in Nariño Coffee Market.**

20. Research Paper presented at the meeting of the WORLD FINANCE & BANKING SYMPOSIUM, New Delhi, India from 19th December to 21st December 2019 with titled - **Implementation of Derivative Accounting to Estimate the Credit Risk by Using of Option Pricing Model – Case Study of Colombian Financial Institutions.**

21. Research Paper presented at the meeting of the 2020 Cross Country Perspective in Finance (CCPF) Symposium, ASPER School of Business, University of Manitoba. Canada, on August 20-22, 2020, titled **- A Foreign Currency Option Pricing Model for The Colombian Exchange Market.**

22. Research paper presented at the meeting 2020, 10th International **Conference on Power and Energy Systems on December 25-27, 2020, at the University of Electronic Science and Technology of China, Chengdu, China titled - Volatility Modeling for EMCALI Electricity Prices.**

23. Research Paper accepted for Oral presentation at Global Conference on Agriculture and Horticulture" AGRI 2021 scheduled on September 30 to October 2, 2021, at Paris, France with the theme "To Accomplish over the Global Challenges of Agriculture" with the titled - **Stochastic Option Pricing Model for Rainfall Derivatives - A Case Study of Sugarcane Production in Valle Del Cauca, Colombia.**

24. Research Paper accepted for Oral presentation at International Conference on Innovations in Energy Engineering & Cleaner Production (IEECP'21) scheduled on during July 29-30, 2021, in Silicon Valley, California – USA with the titled - **Description of Colombian Electricity Pricing Derivatives.**

25. Research Paper presented at the meeting of **World Finance & Banking Symposium**, December 16th-17th 2022, Florida International University, College of Business, Miami, USA with the theme " **PYTHON BLACK-SCHOLES MODEL AND THE BASICS OF OPTION PRICING - CASE STUDY OF STOCK MARKET.**

CONTRIBUTIONS TO PRACTICE

Prabakaran S, and S Ravishankar, **'Psychological Implication of VRS In Banks: An Indian Perspective',** in Behavioral Dynamics-Research Insights (ed. by H.L. Kaila et. al). Himalaya Publication House, 1st Edition, pp No 128-140 (2009).

BOOK PUBLISHED

1. **Prabakaran S, "Statistical Mechanics of Financial Markets",** VDM Verlag Dr. Müller Aktiengesellschaft & Co. KG, ISBN 978-3-639-24533-2, 2010.
2. **Prabakaran.S,** K Ravichandran, Financial Management: Text Problems and Cases, VDM Verlag Dr. Müller Aktiengesellschaft & Co. KG, ISBN 978-3-639-24565-3, 2010.