CURRICULUM VITAE

- **Name**
  Tomas Georg Björk
- **Birth data**
  January 8, 1947, Västanfors, Sweden.
- **Address**
  Department of Finance, Stockholm School of Economics
  Box 6501
  SE-113 83 Stockholm, SWEDEN
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- **Home Address**
  Vattugatan 3B,
  SE-172 73 Sundbyberg, SWEDEN
  tel: +46-8-283976
- **Present appointments**
  Professor Emeritus of Mathematical Finance, SSE.
  Affiliated Professor in Mathematics, KTH.
  Affiliated Professor in Mathematics, Århus University.
- **ACADEMIC DEGREES:**
  - BA (Fil. kand) at Stockholm University, 1966-1972.
  - Ph. D. (Fil. Dr) in Optimization Theory at KTH, 1975-1981.
  - Docent (Fellow) in Optimization Theory at KTH.

- **POSITIONS:**
  - Teaching assistant (tredje amanuens) at the Department of Mathematics, Stockholm University 1969-1970.
  - Consultant to the Research Institute of National Defence (FOA) 1970-1975.
  - Research associate at FOA 1975-1976.
  - Teaching assistant at the Department of Mathematics, KTH, 1970-1975.
  - Assistant at the division of Optimization and Systems Theory, KTH, 1975-1981.
  - Research assistant at the division of Optimization and Systems Theory, KTH, 1981-1987.
  - Senior lecturer at the division of Mathematical Statistics, Spring term 1986.
  - Senior lecturer at the division of Optimization and Systems Theory, KTH, 1987-1995.
  - Associate Professor at the Department of Finance, Stockholm School of Economics. 1995-1997.
  - Guest professor at the Laboratory of Actuarial Sciences, Copenhagen University. September-October 1996.
  - Acting Professor at the Department of Finance, Stockholm School of Economics. July 1997- June 1998.
  - Professor of Mathematical Finance at the Department of Finance, Stockholm School of Economics. 1998 - 2014.
  - Visiting Professor at the University of Technology, Sydney. Fall term 2008.
  - Affiliated professor in mathematics at KTH. 2010 -
  - Affiliated professor in mathematics at Århus university. 2010 -
  - Professor Emeritus at the Department of Finance, Stockholm School of Economics, from 2014.

- **Refereed Publications**

1. "Finite Dimensional Filters for a Class of Ito-processes with Jumping Parameters", *Stochastics*, **4**, No 2. (1980)
2. "Finite Optimal Filters For a Class of Nonlinear Diffusions with Jumping Parameters", *Stochastics*, **6**, (1982)
3. (with J. Grandell) "An insensitivity Result of the Ruin Probability", *Scandinavian Actuarial Journal*, (1985), 148-156.
4. (with M.Persson an J. Myhrman) "Optimal Consumption with Stochastc Prices in Continuous time". *Journal of Applied Probability*, **24**, (1987), 35-47.
5. (with J. Grandell) "Exponential Inequalities for Ruin Probabilities in the Cox Case", *Scandinavian Actuarial Journal* (1988), 77-111.
6. (with B. Johansson) "Adaptive Prediction and Reversed Martingales". *Stochastic Processes and Their Applications.* **43** (1992) 191-222.
7. (with B. Johansson) "On Theorems of de Finetti Type for Continuous Time Stochastic Processes". *Scandinavian Journal of Statistics.* **20**, 289-312 (1993).
8. "On the term structure of discontinuous interest rates". *Obozrenie Prikladnoi i Promyshlennoi Matematiki* (*Surveys in applied and industrial mathematics* In Russian.) 2, (1995) 627-657.
9. (with B. Johansson) "Parameter Estimation and Reverse Martingales". *Stochastic Processes and their Applications* **63** (1996), 235-263
10. "Interest Rate Theory". In *Financial Mathematics,* Springer Lecture Notes in Mathematics, Vol. 1656. **Springer Verlag**, (1997).
11. (with A. Gombani) "On the reduction of multiplicity in systems modeling", In: *Operators, Systems and Linear Algebra: Three Decades of Algebraic Systems Theory.* **Teubner Verlag**, (1997)
12. (with Y.Kabanov and W. Runggaldier) "Bond Market Structure in the Presence of Marked Point Processes". *Mathematical Finance,* **7**, 211-239, (1997).

13. (with G. di Masi, Y.Kabanov and W. Runggaldier) “Toward a general theory of bond markets”. *Finance and Stochastics,* **1**, 141-174, (1997).
14. (with B. Näslund) “Diversified portfolios in continuous time”. *European Finance Review,* **1**, 361-387. (1998)
15. (with A. Gombani and B. Christenssen) “Some system theoretic aspects of interest rate theory”. *Insurance, Mathematics and Economics,* **22**, 17-23. (1998).
16. (with B. Christenssen) “Interest rate dynamics and consistent forward rate curves”. (1999). *Mathematical Finance,* **9**:4, 323-348.
17. (with A. Gombani) “Minimal realizations of interest rate models”. *Finance and Stochastics,* **3**, 413-432. (1999)
18. (with L. Svensson) “On the existence of finite dimensional realizations for nonlinear forward rate models”. *Mathematical Finance*, **11**, 205-243. (2001).
19. “A Geometric View of Interest Rate Theory”. In *Option Pricing, Interest Rates and Risk Management,* (eds Jouini *et al*, **Cambridge University Press**, (2001).
20. (with B. Christensen) “Interest rate dynamics and consistent forward rate curves”. In *The New Interest Rate Models.* (ed. L.Hughston), **RISK Publications**, (2001).
21. (with C. Landén) “On the construction of finite dimensional realizations for nonlinear forward rate models”. *Finance and Stochastics*, **6**, 303-331 (2002).
22. (with E. Clapham) “On the pricing of real estate index linked swaps”. *Journal of Housing Economics* **11**, 418-432, (2002).
23. (with C. Landén) “On the Term Structure of Forward and Futures Prices”. In *Mathematical Finance–Bachelier Congress 2000,* **Springer Verlag**, (2002).
24. (with S. Benninga & Z. Wiener) “On the use of numeraires in option pricing”. *Journal of Derivatives* **2**, 43-58, (2002).
25. (with C. Landén and L. Svensson) “Finite dimensional Markovian realizations for stochastic volatility forward rate models”. *Proceedings of the Royal Society, Series A*, **460**, 53-83, (2004).

26. (with H. Hult) “A Note on Wick Products and the Fractional Black-Scholes Model”. *Finance and Stochastics*, **9**, 197-209, (2005)
27. “On the Geometry of Interest Rate Models.” In *Paris-Princeton lectures on Mathematical Finance, 2002.* Springer Lecture Notes in Mathematics, Vol 1814, (2004)
28. (with M. Blix and C. Landen) “Finite dimensional Markovian realizations for futures price term structure models”. *International Journal of Theoretical and Applied Finance*, Vol, 9, No 3, 281-314. (2006)
29. (with I. Slinko) “Towards a general theory of good deal bounds”. *Review of Finance*, **10**, 221-260, (2006).
30. (with F. Biagini) “On the Timing Option in a Futures Contract”. *Mathematical Finance* **17**, 267-283. (2007)
31. (with B.A. Jensen and F. Armerin) “Term Structure Models with parallel and Proportional Shifts. *Applied Mathematical Finance*, **14**, 243-260, (2007)
32. “Topics in Interest Rate Theory”. *Handbooks in Operations Research and Management Science: Financial Engineering,* Eds. Birge, J. & Linetsky, V. Elsevier. (2008)
33. “An Overview of Interest Rate Theory”. *Handbook of Financial Time Series.* Eds. Davis, R. *et al.* Springer Verlag. (2009)
34. “Change of Numeraire”. Forthcoming in *Encyclopedia of Mathematical Finance.* Wiley.
35. “The Heath-Jarrow-Morton Approach.” *Encyclopedia of Mathematical Finance.* Wiley.
36. (with R.M. Gaspar) “Interest rate theory and geometry”. *Portugaliae Mathematica*, **67**, No 3, 321-367, (2010).
37. (with M.H.A. Davis and C. Landen) “Optimal Investment under Partial Information”. *Mathematical Methods of Operations Research*, **71**, No 2, 371-399, (2010).
38. (with A. Szepessy, R.Tempone & G. Zouraris) “Monte Carlo Euler approximations of HJM term structure financial models” *BIT Numerical Mathematics.* **53**, No 2, 341-383, (2013)

39. (with A. Murgoci) “A theory of Markovian time inconsistent stochastic control in discrete time”. *Finance and Stochastics*, **18**, No 3, 545–592, (2013).
40. (with A. Murgoci and X.Zhou) “Mean–Variance Portfolio Optimization with State Dependent Risk Aversion”. *Mathematical Finance*, **24**, No 1, 1-24, (2014).
41. “The Pedestrian’s Guide to Local Time”. Forthcoming in *Festschrift for Ragnar Norberg*, **World Scientific Press**.

- **Books and monographs**
  - *Arbitrage Theory in Continuous Time.* **Oxford University Press,** (1998). Second Revised Edition (2004). Third revised edition (2009). Translated into Japanese and Russian.
  - *A Geometric View of the Term Structure of Interest Rates: the Cattedra Galileiana Lectures.* **Pubblicazioni della Classe di Cienze della Scuola Normale Superiore**, (2000).

- **Proceedings Articles**
  - (with B. Rapp) “Optimal Maintenance due to Service Life Uncertainty”. In *OR - 78*, **North Holland**, (1979)

- **Lecture Notes and other papers in Swedish**
  - “Stokastisk Kalkyl och Ickelinjär Filtrering” (”Stochastic calculus and Nonlinerar Filtering”, 110 pp).
  - “Finansiella Derivat och Arbitrageteori” In *Från Optionsprissättning till Konkurslagstiftning.* (1997), EFI, Stockholm.
  - “Linjär Filtrering” (“Linear Filtering”, 40 pp)
  - “Stokastisk Kalkyl och Kapitalmarknadsteori” Vols I-II. (“Stochastic Calculus and the Theory of Capital Markets”, 350 pp)

- **Conference presentations since 1994**
  - Second Nordic Symposium on Contingent Claims. Bergen, 1994.
  - Symposium on Mathematical Finance. Helsinki University. 1995. (Invited speaker).

– Symposium on Interest Rate Theory. Odense 1995. (Invited speaker).

– Annual Meeting of the European Finance Association. Milano 1996.

– Symposium on Interest Rate Theory. Swedish Central Bank, 1996. (Invited speaker).

– Mathematical Finance. Aarhus University, 1996.

– Workshop on Mathematical Economics. Oslo University, 1996. (Invited key note speaker).

– The Interplay Between Finance, Insurance and Control. Aarhus University, 1997. (Invited key note speaker).

– The third Italian Conference on Matehmatical Finance. Trento, Italy, 1997. (Invited speaker)

– Oberwolfach Meeting on Mathematical Finance. September 1997. (Invited speaker)

– Stochastic Methods in Finance. Mexico, 1998. (Invited speaker)

– Nordic Symposium on Contingent Claims and Insurance, Copenhagen 1998.

– Banach Center Symposium on Mathematical Finance, Warzaw, Poland 1998. (Invited speaker).

– The Interplay Between Finance, Insurance and Statistics, Cortona, Italy 1998. (Invited speaker).

– Mathematical Theory of Networks and Systems, Padova, Italy 1998.

– Annual Meeting of the European Finance Association. Fontainebleau, 1998.

– ECMI. Gothenburg, 1998, (Invited speaker).

– Infinite Dimensional Stochastic Systems, Jena, Germany 1998 (Invited speaker).

– Quantitative Methods in Finance. Sydney, 1999. (Invited speaker)

– Annual Meeting of the European Finance Association. Helsinki, 1999.

- Workshop on Mathematical Finance. Strobl-Vienna. Austria, 1999. (Invited speaker).
- Workshop on Finance. University of Oulu. Finland, 1999. (Key note speaker).
- First World Congress of the Bachelier Finance Society. Paris, 2000.
- Third European Congress on Mathematics. Barcelona, 2000. (Invited speaker).
- Mathematical and Statistical Applications in Economics. Västerås, Sweden, 2001. (Invited speaker).
- Global Derivatives. Juan les Pins, France, 2001. (Invited speaker)
- Workshop on Finance and Insurance. Bergen, France, 2001. (Key note speaker)
- Workshop on the mathematics of finance. Bedlewo, Poland. 2001. (Invited speaker).
- First Joint Mathematical International meeting AMS-FMS. Lyon, 2001. (Invited speaker).
- 14:th Annual Options Conference. University of Warwick, 2001. (Invited speaker)
- XXX Euro Working Group for Financial Modelling. Capri, 2002. (Plenary speaker)
- Recent Developments in Securities Valuation and Risk Mangement. London School of Economics, 2002. (Invited speaker)
- 2:nd World Congress of the Bachelier Finance Society. Crete, 2002.
- Mathematics in Finance. Berg-En-Dal, South Africa. 2002 (Key note speaker).
- Workshop on Random Processes and Financial Applications. Bologna, 2002. (Invited speaker).
- Stochastic analysis in Finance and Insurance. Oberwolfach, 2003. (Invited speaker).
- 8:th Anniversary CEMAF/ISCTE Finance Meeting. Lisbon, 2003. (Invited Speaker).

- Finance Models and Simulations, Berlin 2003. (Invited speaker)
- Workshop on Mathematical Finance. Rome, 2004. (Invited speaker)
- 3:rd Bachelier World Congress, Chicago, 2004.
- Stochastic Finance, Lisbon, 2004. (Plenary Speaker)
- Mathematical Finance, Cambridge 2005. (Invited Speaker)
- Nonlinear PDEs and Financial Mathematics, Halmstad 2005. (Invited Speaker)
- PDE and Mathematical Finance, Stockholm 2005. (Invited speaker)
- European Finance Association, Moscow 2005.
- Workship on New Developments in Finance. Bergen, 2005 (Invited speaker).
- Workshop on Mathematical Finance. Cottbus 2006. (Invited speaker).
- Bachelier World Congress. Chicago 2006.
- Mathematical Finance. Oberwolfach 2006. (Invited speaker).
- Workshop on Mathematical Finance. Kent University, 2006. (Invited speaker).
- Conference on Mathematical Finance, Ann Arbor. 2006. (Invited speaker).
- PDE and Mathematical Finance. KTH, 2007.
- Workshop on Mathematical Finance. Vienna, 2007. (Invited speaker).
- Mathematical Finance. Oberwolfach, 2008. (Invited speaker).
- Finance and Insurance. Dresden 2008. (Invited speaker).
- Bachelier World Congress. London 2008 (plenary speaker).
- Monash Symposium on Mathematical Finance. Melbourne, 2008. (Invited speaker).
- PDE and Finance, KTH 2009.
- Field Institute thematic semester on matheamtical finance. Toronto 2010.

- Analysis, Stochastics, and Applications: A Conference in Honour of Walter Schachermayer, Wien 2010.
- Stochastic analysis and applications: Workshop in Honor of Mark Davis. London 2010.
- Swissquote Conference on Interest Rate and Credit Risk. Lausanne 2010.

- **Invited Seminar talks since 1995**
  - Padova University, 1995
  - Helsinki University, 1995
  - ETH, Zurich, 1995
  - Lund University, 1996
  - Aarhus University, 1996
  - ESSEC, Paris, 1996.
  - Copenhagen University, 1996
  - University of Padova, 1996
  - Humboldt University, 1996
  - Mainz University, 1996
  - Lund University, 1997
  - Copenhagen University, 1997.
  - University of Twente. 1997.
  - University of Freiburg. 1997.
  - ETH, Zurich. 1997.
  - Bachelier Seminar, Paris, 1998.
  - ESSEC, Paris, 1998.
  - University of Firenze, 1998.
  - University of Uppsala, 1998.
  - Tecnical University of Vienna, 1998.
  - LADSEB, Padova, 1999.
  - HEC, Lausanne, 1999.

- Humboldt University, Berlin, 1999.
- Uppsala University, 1999.
- University of Vienna, 2000.
- University of Oxford, 2000.
- Kings College. London, 2000.
- Universita Pompeu Fabra. Barcelona, 2000.
- University of Umeå, 2000.
- University of Gothenburg, 2000.
- Technical University of Vienna, 2001.
- Ecole Polytechnicque, Paris. 2001.
- Scuola Normale Superiore, Pisa. 2001.
- Technische Universität, Munich. 2002.
- Aarhus University. 2002.
- University of Pretoria, 2002.
- University of Bonn & CAESAR, Bonn, 2002.
- Princeton University, 2003.
- University of Aarhus, 2003.
- ETH. Zurich, 2004.
- University of Aarhus, 2004.
- Università della Svizzeria Italiana. Lugano, 2004.
- University of Southern Denmark. Odense, 2004.
- University of Texas at Austin. USA, 2005.
- Isaac Newton Institute. Cambridge, 2005.
- University of Sevilla. Spain, 2005.
- University of Edinburgh. Scotland, 2005.
- Tanaka Business School, Imperial College. London, 2005.
- University of Munich, 2005.
- University of Bilkent, Turkey 2005.
- Columbia University, New York 2006.

- University of South Africa, Pretoria 2006.
- Humboldt University, Berlin 2007.
- Bonn University, 2008.
- Warwick University, 2008.
- University of Vienna. 2008.
- University of Coimbra, 2008.
- ISCTE 2008.
- Oxford University, 2009.
- Aarhus University, 2009
- University of Vienna, 2009.
- London School of Economics, 2010.
- Pompeu Fabra, 2010.
- ISEG. Lisbon 2010.
- University of Växjö, 2010.
- Oxford University, 2010.
- KTH, Stockholm 2010.
- Uppsala University 2010.

• **Longer Lecture Series**
  - Summer School on Nonlinear Filtering, Linköping. 1981.
  - Swiss Summer School of Mathematical Finance. Ascona, 1995
  - CIME Summer School on Mathematical Finance. Bressanone, Italy, 1996.
  - Summer school on Probability Theory and Applications. Lahtis, Finland 1997.
  - Doctoral Course on Mathematical Finance. CCEFM, Vienna, 1998.
  - Mathematical Finance. Budapest 1998.
  - Mathematical Finance. Lisbon 1999.

- Doctoral Course on Mathematical Finance. CCEFM, Vienna, 1999.
- EURANDOM course on Mathematical Finance. Eindhoven 1999.
- Doctoral Course on Mathematical Finance, University of Vienna, 2000.
- Ph.D. Course on Stochastic Analysis and Applications. Oxford University, 2000.
- Ph.D. Course on Mathematical Finance. Lisbon 2000.
- Doctoral Course on Mathematical Finance, CCEFM, Vienna, 2001.
- Summer school on Mathematical Finance. Dubrovnik. 2001.
- Winter school of Mathematical Finance. Amsterdam. 2001.
- Doctoral Course on Geometrical Interest Rate Theory. Aarhus, Denmark, 2002.
- Doctoral Course on Mathematical Finance, CCEFM, Vienna, 2002.
- Lecture series on Interest Rate Theory. Kaiserslautern, 2002.
- Doctoral Course on Mathematical Finance, CCEFM, Vienna, 2002.
- Lecture series on Interest Rate Theory. Barcelona, 2002.
- Geometric Interest Rate Theory. Princeton, 2003.
- Doctoral Course on Mathematical Finance, CCEFM, Vienna, 2003.
- Lecture series on Interest Rate Theory. Oxford, 2004.
- Doctoral Course on Mathematical Finance, CCEFM, Vienna, 2004.
- PhD Course on Stochstic Control with Applications in Finance. Aarhus, Denmark, 2004.
- Lecture Series on Arbitrage Theory. Coimbra, Portugal, 2004.
- Lecture Series on Stochastic Control with Finance Applications. Spring School, Bologna 2005.
- Lecture series on interest rate theory. University of Texas, Austin. 2005.
- Doctoral Course on Mathematical Finance. VGSF, Vienna, 2005.
- Lecture Series on Interest Rate Theory. Kyoto University, 2005.

- Lecture Series on Mathematical Finance, Lisbon 2005.
- Lecture Series on Interest Rate Theory. Columbia, New York 2006.
- Doctoral Course on Mathematical Finance. VGSF, Vienna, 2007.
- Lecture Series on Interest Rate Theory. Marrakesh 2007.
- Lecture Series on Mathematical Finance, Lisbon 2007.
- Doctoral Course on Mathematical Finance. VGSF, Vienna, 2008.
- Lecture Series on Mathematical Finance, Lisbon 2008.
- Lecture Series on Functional Analysis, UTS, Sydney 2008.
- Lecture Series on Arbitrage Theory. Pompeu Fabra, 2009.
- Lecture Series on Mathematical Finance, Aarhus 2009.
- Lecture Series on Mathematical Finance, Lisbon 2009.
- Lecture Series on Interest Rate Theory. Pompeu Fabra, 2010.
- Lecture Series on Point Process Theory. Aarhus, 2010.
- PhD course on Arbitrage Theory. VGSF, Vienna 2010.
- Lecture Series on Arbitrage Theory. ISEG Lisbon, 2010.

• **Invited Visiting Scholar**

- CEMI (Central Institute of Mathematical Economics) Moscow, 1988.
- LADSEB, Padova, Italy. 1995
- Institute for International Economic Studies, Stockholm. 1994.
- Isaac Newton Institute, Cambridge University. 1995.
- LADSEB, Padova, Italy. 1996.
- Laboratory of Actuarial Sciences, Copenhagen University. 1996.
- Holder of the chair: "Cattedra Galileiana", Scuola Normale, Pisa, 2000.
- Princeton University, 2003.
- Isaac Newton Institute. Cambridge 2005.
- Visiting Professor. UTS, Sydney. Fall term 2008.

- **Editorial work etc**
  - President of the *Bachelier Finance Society.* (2009-2011)
  - Vice president of the *Bachelier Finance Society.* (2007-2009)
  - Co-editor of *Mathematical Finance.* (2000-2004)
  - Associate editor of *Finance and Stochastics*
  - Associate editor of *Annals of Applied Probability* (2000-2003)
  - Associate editor of *Finance India*
  - Member of the council of the *Bachelier Finance Society.* (2003-2004)
  - Member of the technical committe on stochastic systems of *IFAC* (International Federation of Automatic Control).
  - Member of the organizing committee of the Nordic Symposium on Contingent Claims. Reykjavik 1996, Copenhagen 1998.
  - Organizer of the "Nordic Symposium on Contingent Claims, Stockholm, 2001.
  - Organizer of the Stockholm Workshop on Finance and Insurance, Stockholm, 2001.
  - Member of the Scientific Organizing Committee of The Third World Congress of the Bachelier Finance Society, Chicago, 2004.
  - Referee for
    * *Review of Financial Studies.*
    * *Econometrica.*
    * *Mathematical Finance*
    * *Finance and Stochastics*
    * *Annals of Applied Probability*
    * *Applied Mathematical Finance*
    * *Computational Finance*
    * *Information Sciences*
    * *European Finance Review*
    * *Journal of Computational Economics*
    * *Scandinaivan Actuarial Journal*

    - *Scandinaivan Journal of Statistics*
    - *Stochastic Processes and Their Applications*
    - *Systems and Control Letters*
    - *SIAM Review*
    - *European Journal of Operational Research*
    - *Acta Geodetica*

- **Supervision, etc.**
  - Former PhD students:
    - Camilla Landen,
    - Magnus Hyll,
    - Magnus Blix,
    - Raquel Gaspar,
    - Irina Slinko,
    - Mia Hinnerich,
    - Mikael Elhouar,
    - Agatha Murgoci,
    - Linus Kaisajuntti,
    - Kristoffer Lindensjö,
    - Mariana Khapko.
  - External supervisor for PhD students at Humboldt Universität, (Berlin), Technische Universität (Berlin), ETH (Zurich), Scuola Normale Superiore (Pisa).
  - Faculty opponent for +20 PhD dissertations.
  - On evaluating committees for +20 PhD dissertations.
  - On evaluating committees for professorial chairs and other faculty positions.
  - Supervised diploma theses at KTH and HHS.

- **Pedagogical honours**
  - Elected as *Teacher of the Year* by the school of Physical Engineering, KTH 1988.

- Elected as *Teacher of the Year* by the school of Aeronutical Engineering, KTH 1994.
- Elected as *KTH Teacher of the Year* 1994.

- **Industrial Contacts**
  - On the advisory board of the Hedge Fund *Nektar*.
  - Designed and given courses on arbitrage theory to
    - Handelsbanken, 1992
    - Nordbanken, 1993
    - National Debt Office, 1994
    - Handelsbanken, 1995
  - On the board of *Research and Trade*. 1990-1991.
  - Member of the steering group of the project *Derivatives* at COMSOL. 1994-1997.