Agnès Tourin Ph.D.
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Education

1992 *Ph.D in Sciences*, Université Paris Dauphine-PSL, France. Thesis advisor: P.-L. Lions.

1989 *Diplôme d'ingénieur civil des mines*, Ecole des Mines ParisTech, France.

1989 *Diplôme d'Etudes Approfondies Mathématiques et Automatique*, Université Paris Dauphine-PSL, France.

1987 *Maîtrise de mathématique*, mention Ingénierie Mathématique, Université Paris Dauphine-PSL, France.

1982 *Baccalaureate*, série C, Paris, France.

Employment and visiting appointments

September 1 2024-Present Industry (full) Professor of Finance and Risk Engineering, New York University Tandon School of Engineering.

January16 2023-May 31 2023 Interim Chair, Department of Finance and Risk Engineering, New York University Tandon School of Engineering.

September 2018-August 2024 Industry Associate Professor, Department of Finance and Risk Engineering, New York University Tandon School of Engineering.

October 2010-August 2018 Industry Assistant Professor, Department of Finance and Risk Engineering, New York University Tandon School of Engineering.

January-June 2010 Research Immersion Fellowship, Fields Institute, Thematic Program on Quantitative Finance, Toronto, Canada.

September 2002-June 2005 Associate Professor (tenure track), Department of Mathematics and Statistics, McMaster University, Canada.

July 2003-June 2004 Visiting member of the Fields Institute, Toronto, Canada.

July 2000-August 2002 Limited Term Assistant Professorship, Department of Mathematics, University of Toronto, Canada.

1992-1999 *Maître de Conférences* , Université de Paris-Dauphine, France.

New York University Service

December 2023-June 2024 NYU Provost search committee member.

July 2023-July 2024 NYU Tandon School of Engineering Dean search committee member.

July 2022-February 2023 NYU President search committee member.

September 2024-August 2025 Full-time Continuing Contract Faculty Senate Council (C-FSC) Steering Committee member

September 2024-August 2027 Alternate Faculty Senator.

September 2024-August 2026 C-FSC Finance and Policy Planning committee member.

September 2020-August 2021 and September 2023-August 2024 Secretary, Full-time Continuing Contract Faculty Senate Council (C-FSC).

September 2019-August 2024 Faculty Senator.

September 2018-August 2019 Alternate Faculty Senator.

September 2018-August 2024 C-FSC Diversity, Equity and Inclusion committee member, New York University.

January 2024-present University-wide Experiential Learning group.

Research support and awards

January 2022-August 2025 Anonymous gift, $\$8,624$.

June 2019-November 2020 New York University Research Challenge Fund, in collaboration with PI Andrew Papanicolaou, $\$13,000$.

2004-2005 Leadership Support initiative group grant on *Partial Differential Equations and their applications*, Canada.

2002-2005 NSERC Individual Research Grant, *Several applications in stochastic control*, Canada.

2002-2005 University Faculty Award, NSERC, Canada.

2001-2002 Connaught new staff matching grant, University of Toronto,

Nonlinear Partial Differential Equations arising in Mathematical Finance, Canada.

2000-2002 NSERC Individual Research Grant, *Numerical methods for Finance and Economics*, Canada.

1998-1999 European Union Group Grant, Training and Mobility of Researchers program, *The theory of viscosity solutions and its applications*, France.

Articles published in refereed publications

[1] E. Rouy and A. Tourin (1992). *A viscosity solutions approach to shape-from-shading*, Siam J. Numer. Anal., 29, 3, pp 867-884.
[2] A. Tourin (1992). *A comparison theorem for a piecewise Lipschitz continuous Hamiltonian and Application to Shape-from-Shading problems*, Numer. Math., 62, pp 75-85.
[3] P.-L. Lions, E. Rouy and A. Tourin (1993). *Shape-from-Shading, viscosity solutions and edges*, Numer. Math., 64, 3, pp 323-353.
[4] A. Tourin and T. Zariphopoulou (1994). *Numerical schemes for investment Models with singular transactions*, Computational Economics, 7,4, pp 287-307.
[5] O. Alvarez and A. Tourin (1996). *Viscosity solutions of nonlinear integro-differential equations.* Ann. Inst. Henri Poincaré, 13, 3, pp 293-317.
[6] M. Arisawa and A. Tourin (1997). *Regularizing effects for a class of first-order Hamilton-Jacobi equations.* Nonlinear Analysis, Theory, Methods and Applications, 29, 12, pp 1405-1419.
[7] A. Tourin and T. Zariphopoulou (1997). *Viscosity solutions and numerical schemes for Investment/Consumption models with transaction costs.* Numerical Methods in Financial Mathematics, L.C.G. Rogers and D. Talay, Cambridge University Press, pp 245-269.
[8] J.E. Hodder, A. Tourin and T. Zariphopoulou (2001). *Numerical schemes for Variational Inequalities arising in international asset pricing.* Computational Economics,17,1, pp43-80.
[9] G. Barles and A. Tourin (2001). *Commutation properties of semigroups for first-order Hamilton-Jacobi equations and application to multi-time equations.* Indiana University Mathematics Journal, 50, pp1523–1544.
[10] M. Cara and A. Tourin (2005). *A Direct method for computing the effective Hamiltonian in the Majda-Souganidis model of turbulent combustion.* Canadian Applied Mathematics Quaterly,13(1),pp127–141.
[11] A. Tourin (2005). *Splitting methods for Hamilton-Jacobi equations.* Nu-

merical Methods for Partial Differential Equations,22(2),pp381–396.
[12] A. Tourin (2006). *Numerical solutions for the Cheridito-Soner-Touzi model of super-replication under gamma constraints*. International Journal of Theoretical and Applied Finance, 9(3),pp1–14.
[13] A. Tourin and R. Yan (2013). *Dynamic Pairs Trading using the stochastic control approach*, Journal of Economic Dynamics and Control, 37(10), pp. 1972–1981.
[14] F. Astic and A. Tourin (2014), *Optimal bank management under capital and liquidity constraints*, Journal of Financial Engineering, 1(3), 1450022 (21 pages); DOI: 10.1142/S2345768614500226.
[15] F. Astic and A. Tourin (2014). *On the credit risk of secured loans with maximum loan-to-value covenant*, International Journal of Theoretical and Applied Finance, 17(8); DOI: 10.1142/S0219024914500551.
[16] R. Almgren and A. Tourin (2015). *Optimal soaring via Hamilton-Jacobi-Bellman equations*, Optimal Control, Applications and Methods, 36(4) pp. 475–495. First published online in Wiley Online Library (wileyonlinelibrary.com). DOI: 10.1002/oca.2122.
[17] T. Nanfeng Li, A. Tourin (2016). *Optimal Pairs Trading with Time-Varying Volatility*, International Journal of Financial Engineering, 3(03), pp. 1-29.
[18] P. Sopher Lintilhac, A. Tourin (2017). *Model-based pairs trading in the bitcoin markets*, Quantitative Finance, 17(5), pp.703-716.
[19] A. Tourin (2020), *Measuring the diversification of a loan portfolio*, International Journal of Bonds and Derivatives, 4(20), pp. 104–113.
[20] Zequn Li, A. Tourin (2022), *A Finite Difference Scheme for Pairs Trading with Transaction Costs*, Computational Economics, 60(2), pp. 601-632.
[21] A. Lefevre, A. Tourin (2023), *Incorporating Climate Risk into Credit Risk Modeling: An Application in Housing Finance*, Fintech, 2(3), pp. 614-640.

Book chapter

[22] A. Tourin (2013), *Monotone Finite Difference schemes*, in N. Touzi, *Optimal Stochastic Control Stochastic target problems and Backward SDE*, The Fields Institute Monographs,29, Springer, pp. 201–212.

Conference papers

[23] E. Rouy, A. Tourin (1993) , *Some results on the shape-from-shading problems*, 14eme colloque sur le traitement d'image, France, GRETSI, Groupe d'Etudes du Traitement du Signal et des Images.

[24] A. Tourin and T. Zariphopoulou (1995). *Portfolio selection with transaction costs*, in: Bolthausen E., Dozzi M., Russo F. (eds) Seminar on Stochastic Analysis, Random Fields and Applications, Progress in Probability, 36, Birkhäuser, Basel, pp 385-39.

Unpublished manuscript

Yingjing He, A. Tourin, *Pairs trading with bounds on the gross market exposure*, 2019.

Invited lectures, seminars, and panels

April 06 2023 Brooklyn Quant Experience Lecture Series, New York University Tandon School of Engineering
May 2022 Lightning talk at the Bloomberg Quant (BBQ) Seminar
September 27 2018 AI in Finance, Finovate Fall, New York City.
September 6 2018 AI in Finance, RE WORK, New York City.
May 26 2018 On a panel to discuss FinTech: robo-advising and cryptocurrencies, NYU Courant Institute.
November 2017 2017 Eastern Conference on Mathematical Finance, NYU Courant Institute.
September 2017 Data Science + FinTech JC-NY Meetup Event, qplum, Jersey City, NJ.
March 2017 Plenary talk at the conference on Financial Mathematics, Farmingdale State College, SUNY.
May 19-21 2016, Conference on Market microstructure and high-frequency data, Stevanovich Center, The University of Chicago.
December 2015 Morgan Stanley, New York.
May 2015 Morton Topfler Lecture, Department of Finance and Risk Engineering, NYU Tandon School of Engineering.
January 2015 *Séminaire de l ´ axe Finance*, University Paris 1 La Sorbonne, Maison des Sciences Economiques, Paris, France, January 21, 2015.
April 2014 Seminar on the credit risk of secured loans at the New York Tandon school of Engineering, Department of Finance and Risk Engineering.
June 2012 IMS workshop on Finance, Probability and Statistics, UC Berkeley.
June 2010 Guest lecture on Finite Difference methods for optimal stochastic control in Quantitative Finance, Fields Institute, Toronto, Canada.
November 2004 Public lecture at the Royal Canadian Institute, Toronto (joint with Robert Almgren), Canada.

June 2004 Workshop on semimartingales in Finance, theory and practice, Banff, Canada.
June 2004 Rencontres mathématiques de Rouen, Rouen, France.
January 2004 Seminar Series on quantitative finance, Fields Institute, Toronto, Canada.
December 2002 CMS Winter meeting, Session on *mathematical finance*, Ottawa, Canada.
December 2001 CMS Winter meeting, Session on *Nonlinear Analysis*, Toronto, Canada.
July 2001 Workshop *Viscosity methods in Partial Differential Equations*, Thematic program of the Pacific Institute for the Mathematical sciences (PIMS), Vancouver, Canada.
April 2001 Workshop on *Partial Differential Equations in Mathematical physics*, Fields Institute, Toronto.
March 2001 2001 AMS spring central Section Meeting, University of Kansas, Lawrence, Kansas.
December 2000 Courant Institute Mathematical Finance Seminar, New York University.
July 2000 International Conference on Viscosity solutions and applications, Bressanone, Italy.
June 1998 Society for Computational Economics Symposium on Computation in Economics, Finance and Engineering, Cambridge, UK.
June 1997 Interdisciplinary Congress on free Boundary problems, Theory and Applications, Heraklion, Greece.
September 1997 Workshop on Nonlinear Partial Differential Equations, Saitama University, Saitama, Japan.

Contributed lectures

May 2015, Conference on Mathematical Finance and Partial Differential Equations at Rutgers University, New Brunswick, May 1 2015.
October 2013 Sectional meeting of the American Mathematical Society, Temple University, Philadelphia, October 12-13 2013.
June 2013 3rd International Conference of the Financial Engineering and Banking Society on Financial regulation and systemic risk, June 6-8 2013, ESCP Europe Campus, Paris, France.
June 2012 Bachelier Finance Society World congress 2012, Hilton Hotel, Sydney, Australia.
June 1999 International Conference on Mathematical Finance, Hammamet, Tunisia.

June 1999 *Nonlinear Partial Differential Equations: an international conference in memory of S.N. Kruzhkov*, Besancon, France.

Postdoctoral and Graduate Supervision

- **Spring 2022-Summer 2022** Alexandra Lefevre, m.s. Thesis, Courant Institute, Brooklyn, NYU Tandon.
- **Spring 2018** Zequn Li, m.s. Thesis, Department of Finance and Risk Engineering, NYU Tandon.
- **Spring 2017** Linqi Wang, Thesis, Department of Finance and Risk Engineering, NYU Tandon.
- **Spring 2016** Andre Fernandes Meirelles, Thesis, Department of Finance and Risk Engineering, NYU Tandon.
- **Spring 2014** Paul Lintilhac, m.s. Thesis, Courant Institute, NYU (co-advisor).
- **2004-2005** Raphaella Boatto, Postdoctoral Fellow, McMaster University.
- **2003-2005** Mirela Cara, m.s. thesis, McMaster University.

Undergraduate Research Advising

- **Summer 2024** Yiran Guo, Joint major in Economics and Mathematics, NYU.

Capstone Curriculum Advising

Summer 2015-present Curriculum advisor for the capstone experience in the m.s. program in Financial Engineering, NYU Tandon School of Engineering.

I advise over 250 students per year and the main responsibilities are

- conducting advising sessions and referrals to appropriate services
- the approval of project proposals

- the approval of internships
- the approval of theses
- the Issuance of permission numbers for course registrations,
- the approval of work authorizations (CPTs)
- being the instructor (or co-instructor) of the internship and project courses in the Fall, Spring and Summer terms.

September 2012-August 2019 Academic advisor for the Computational Finance track in the m.s. program in Financial Engineering.

2010-present Coordination of multiple sections of the courses on *quantitative methods in Finance*, and *stochastic calculus and option pricing*, in the m.s. program in Financial Engineering.

Teaching

Since 2010 Courses in the m.s. program in Financial Engineering at New York University Tandon School of Engineering:

- Quantitative methods in Finance

  I wrote a 239-page long set of notes which is the main reference for the course
- Stochastic calculus and option pricing
- Cryptocurrencies
- Dynamic assets and option pricing
- Numerical and simulation techniques in Finance
- Dynamic portfolio management
- Stochastic processes (not listed in the catalog)
- Refresher courses (not listed in the catalog)

2002-2005 Undergraduate courses, Department of Mathematics and Statistics, McMaster University:

- *Numerical Analysis*

- *Advanced Complex Analysis*,

2000-2002 Undergraduate courses, Department of Mathematics, University of Toronto:

- *Real Analysis*
- *Calculus*
- *Linear Programming*
- Cross-listed undergraduate and graduate course: *Applied nonlinear Equations*.

1992-1999 Undergraduate tutorials, University of Paris-Dauphine:

- Mathematics for Economics
- Analysis
- Algebra
- Optimization

Tandon School of Engineering Service

March 2025-present Teaching Innovation Committee, New York University Tandon School of Engineering.
September 2022-August 2024 Faculty Executive Committee member, New York University Tandon School of Engineering.
November 2022-present HPC/IT committee, New York University Tandon School of Engineering.

Recent departmental service

September 2020-Present Department of of Finance and Risk Engineering Faculty search committee member, NYU Tandon School of Engineering.
September 2022-August 2023 Department of Finance and Risk Engineering Chair search committee member, NYU Tandon School of Engineering.

Past service

September 2012-2015 Administrative coordination for the exchange programs between the Department of Finance and Risk Engineering at New York University Tandon School of Engineering and Universities Paris-Dauphine and Paris 1 la Sorbonne, in France, HEM business school and ESCA Ecole de Management in Morocco.
2004-2005 Ph.D. qualifying examination committee member, Department of Mathematics and Statistics, McMaster University, Canada.
2002-2005 Faculty search committee member, Department of Mathematics and Statistics, McMaster University, Canada.
1998-1999 Faculty search committee in Mathematics external member, Université de Paris 6 Jussieu, France.
1998-1999 Faculty search committee in Mathematics external member, Université de Toulouse I, France.

Mentoring activities

November 2020 Women in Quantitative Finance Conference, moderator for the panel on career progression.

September 2014-August 2018 Academic advisor for the student Finance Club of the New York University Tandon School of Engineering.

August 2016 Women in STEM Orientation Lunch, New York University Tandon School of Engineering

March 2016 Luncheon panelist at the Women in STEM Summit, New York University Tandon School of Engineering.
March 2012 and March 2013 Research presentation at the Women's mini summit, New York University Tandon School of Engineering.

2010-2015 Supervision of one or two short term research scholars per Semester (exchange program with University Paris-Dauphine).

2014-2015 Supervision of teams participating to the IAQF modeling competition and the CME trading competition.

2001-2002 Preparation of a small group of students to the Putnam competition, University of Toronto.

Interviews

August 2012 Interview for the magazine *The automated trader*.

August 2011 Filmed interview for the website *Career girls*.

Peer review

August 2017 External examiner, PhD thesis, *Dynamic Trading in a Limit Order Book: Co-Integration, Option Hedging and Queueing Dynamics* by Luhui Gan, advised by Sebastian Jaimungal, Department of Statistical Science, University of Toronto, Canada.

October 2016-present On the Editorial Board of the Journal *AIMS Quantitative Finance and Economics*

January 2015-present, On the Editorial Board of the International Journal of Bonds and Derivatives (Interscience).

October 2010-present Reviewer for the peer reviewed Journals

- Applied Stochastic Models in Business and Industry,
- Journal of Banking and Finance
- Siam Journal on Mathematical Analysis
- Siam Journal on Financial Mathematics
- Journal of the Franklin Institute
- Journal of Dynamic Economics and Control
- International Journal of Theoretical and Applied Finance
- Mathematical Finance
- Quantitative Finance
- Risk and Decision Analysis
- IEEE Intelligent Systems
- Economic Research
- Computational Economics
- Fintech.