

# NAILA HAYEK ABOU CHAHINE

Professor of Applied Mathematics

Professional address: Panthéon-Assas University, Paris 2, 12 place du Panthéon ◊ Paris, 75005  
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## EDUCATION

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*Habilitation à Diriger des Recherches* in Applied Mathematics.  
Paris 1, Panthéon-Sorbonne University

*Doctorat* in Applied Mathematics.  
Paris-Dauphine University

## ADMINISTRATIVE ACTIVITIES

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Co-director of the Magistère Banque Finance and of the Master 2 Techniques Financières et Bancaires since 2015.

Member of the Council of the Department of Economics since 2010.

Member of the Academic Council (CEVU) 2012-2017.

Member of the Council of the UFR of Economics 2013-2017.

Member of the Faculty Disciplinary Section 2016-2017.

## PUBLICATIONS

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### Papers

N. Hayek, *Infinite-dimensional Infinite-horizon Multiobjective Optimal Control in Discrete Time*, Pure and Applied Functional Analysis, Special issue on Control, Optimization and Variational Analysis. To appear 2018.

N. Hayek, *Infinite-horizon Multiobjective Optimal Control Problems for Bounded Processes*. Discrete and Continuous Dynamical Systems - Series S DCDS-Special issue on Control and Optimization. vol 11, Number 6, December 2018, pp 1121-1141. DOI:10.3934/dcdss.2018064

B. Crettez, N. Hayek et G. Zaccour, *Brand Imitation: A Dynamic-Game Approach*, International Journal of Production Economics. online: 15-Sep-2018, DOI : 10.1016/j.ijpe.2018.09.010

B. Crettez, N. Hayek et G. Zaccour, *Existence and Uniqueness of Optimal Dynamic Pricing and Advertising Controls without Concavity*, Operation Research Letters. vol. 46 Issue 2, March 2018, pp 199-204.

B. Crettez, N. Hayek and Lisa Morhaim, *Optimal Growth with Investment Enhancing Labor*. Mathematical Social Sciences, vol. 86, March 2017, pp 23–36.

Thoi-Nhan Ngo and N. Hayek, *Necessary Conditions of Pareto Optimality for Multiobjective Optimal Control Problems under Constraints*. Optimization, vol. 66, Issue 2, 2017, pp 149–177.

B. Crettez and N. Hayek, *Terrorists' Eradication versus Perpetual Terror War*. Journal of Optimization Theory and Applications, vol. 160, Issue 2, 2014, pp 679–702.

J.M. Courtault, B. Crettez and N. Hayek, *Irrationalité et Aléa dans la Théorie des Surplus*. Penser et Agir 2, under the direction of Victor Alexandre. Publication de la Maison des Sciences de l'Homme, ISBN 978-2-304-03182-9, EAN 9782304031829, 2011.

N. Hayek, *A Generalization of Mixed Problems with an Application to Multiobjective Optimal Control*.

Journal of Optimization Theory and Applications, vol. 150, Issue 3, 2011, pp. 498–515.

N. Hayek, *Infinite Horizon Multiobjective Optimal Control Problems in the Discrete Time case*. Optimization, vol. 60, Issue 4, 2011, pp. 509–529.

J.M. Courtault, N. Hayek, E. Rimbau and Tong Zhu, *Research in Economics and Management in France: A bibliometric study using the h-index*.

The Journal of Socio-Economics, vol. 39, 2010, pp. 329–337.

J. Blot and N. Hayek, *Infinite Horizon Discrete Time Control Problems for Bounded Processes*. Advances in Difference equations, vol. 2008, Article ID 654267, 2008, 14 pages.

J.M. Courtault and N. Hayek, *On the Robustness of the h-index: a Mathematical Approach*. Economics Bulletin, vol. 3, Issue 78, 2008 pp. 1–9.

J.M. Courtault, B. Crettez and N. Hayek, *A Note on Boiteux' Surplus Function and Dual Pareto Efficiency*.

Mathematical Social Sciences, vol. 56, Issue 3, 2008, pp. 439–447.

J. Blot and N. Hayek, *Infinite-Horizon Pontryagin Principles with Constraints*.

Communications of the Laufen colloquium on science, Laufen, Austria, April 1–5, 2007. Ruffing, A. (ed.) et al., Aachen: Shaker Verlag. Berichte aus der Mathematik, 2. 2007, pp. 1–14, Zbl 1134.49012.

J.M. Courtault, B. Crettez and N. Hayek, *A Note on Luenberger's Zero-Maximum Principle for Core Allocations*.

International Game Theory Review, vol. 9, Issue 3, 2007, pp. 453–460.

J.M. Courtault, B. Crettez and N. Hayek, *Allais' Trading Process and the Dynamic Evolution of an OLG Markets Economy*.

Focus on Macroeconomics Research, under the direction of Lawrence Z. Pelzer Nova Science Publishers, 2005, pp. 111–132.

J.M. Courtault, B. Crettez and N. Hayek, *On the Differentiability of the Benefit Function*. Economics Bulletin, vol. 4, Issue 5, 2004, pp. 1–6.

J. Blot and N. Hayek, *Conjugate Points in Infinite-Horizon Control Problems*.

Automatica, vol. 37, 2001, pp. 523–526.

J. Blot and N. Hayek, *Sufficient Conditions for Infinite-Horizon Calculus of Variations Problems*.

ESAIM: Control, Optimisation and Calculus of Variations, vol. 5, 2000, pp. 279–292.

J. Blot and N. Hayek, *Second Order Necessary Conditions for the Infinite Horizon Variational Problems*.

Mathematics of Operations Research, vol. 21, Issue 4, 1996, pp. 979–990.

N. Hayek, *An Existence Theorem for the Scheinkman–Weiss Economic Model*.  
Journal of Optimization Theory and Applications, vol. 88, Issue 2, 1996, pp. 433–451.

N. Hayek, A. Nachaoui and N.R. Nassif, *Existence and Regularity for Van Roosbroeck Systems with General Mixed Boundary Conditions*. Compel, vol.9, Issue 4, 1990, pp. 217–228.

## Working Papers

J.M. Courtault, B. Crettez et N. Hayek, *Complementarity and Substitutability: A Dual Approach Based on Luenberger’s Benefit Function*.  
2008. halshs-00447417, version 1–14, 2010.

J.M. Courtault, B. Crettez et N. Hayek, *Characterization of Stochastic Dominance for Discrete Random Variables*.  
2006. halshs-00446413, version 1–12, 2010.

## Books

J. Blot and N. Hayek, *Infinite–Horizon Optimal Control in the Discrete–Time Framework*.  
SpringerBriefs in Optimization, 2013.

## University Textbooks

N. Hayek and J–P. Leca, *Mathématiques pour l’Economie. Analyse–Algèbre*.  
Dunod Paris, 1st edition 2001, 2nd edition 2004, 3rd edition 2007, 4th edition 2011, 5th edition 2015.

Translated to Portuguese: *Matemáticas para a Economia*.  
Instituto Piaget Lisbonne, 2004.

N. Hayek and J–P. Leca, *Mathématiques pour l’Economie en 27 fiches*.  
Dunod Paris Collection Express, 1st edition 2006, 2nd edition 2011.

J.P. Lecoutre, N. Hayek and P.Pilibossian, *TD. Analyse*.  
Dunod Paris, 6th edition 2017.

J.P. Lecoutre, N. Hayek and P.Pilibossian, *TD. Algèbre*.  
Dunod Paris, 5th edition 2017.

## RECENT CONFERENCES WITH COMMUNICATION

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HEC Montreal Canada.  
Département des sciences de la décision, September 2018.  
The 14th Viennese Workshop on Optimal Control and Dynamic Games.  
Vienna, Austria, 2-6 July 2018.  
HEC Montreal Canada.  
Département des sciences de la décision, June 2017.  
The SIAM Conference on Control and Its Applications (CT15).  
Maison de la Mutualité, Paris, France, 8-10 July 2015.

The 13th Viennese Workshop on Optimal Control and Dynamic Games.  
Vienna, Austria, 12-16 May 2015.

The 20th Conference of the International Federation of Operational Research Societies.  
Barcelona, Spain, 13-18 July 2014.

The 10th AIMS Conference on Dynamical Systems, Differential Equations and Applications.  
Madrid, Spain, 7-11 July 2014.

The 26th European Conference on Operational Research - XXVI EURO INFORMS.  
Rome, Italy, 1-4 July 2013.

## REFERRE REPORTS

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SIAM Journal of Optimization and Control. Economics Bulletin. SpringerBriefs in Optimization  
DCDIS Dynamics of Continuous, Discrete & Impulsive Systems. Series B: Applications & Algorithms  
SIAM (books). Set-Valued and Variational Analysis. Dynamic Games and Applications.  
Special issue of the journal Pure and Applied Functional Analysis on Infinite Horizon Optimal  
Control and Dynamic Games. Special issue of the journal Pure and Applied Functional Analysis  
on Nonlinear Analysis and Optimization. Springer Optimization and its Applications. Proceed-  
ing of the Conference: Control and Optimization of dynamical systems. 11-th International  
Conference on "Large-Scale Scientific Computations", June 5-9, 2017, Sozopol. An International  
Journal of Optimization and Control: Theories and Applications (IJOCTA). Special issue of  
the journal Pure and Applied Functional Analysis on Control, Optimization and Variational  
Analysis.

## CURRENT TEACHING

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Analysis  
Linear Algebra  
Optimization  
Optimal Control and Calculus of Variations  
Mathematics for Finance  
Interest Rate Models

## POSITIONS HELD

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Professor, Panthéon-Assas University, Paris 2, since 2017.  
Associate Professor, Panthéon-Assas University, Paris 2, 2010-2017.  
Associate Professor, Franche-Comté University, 1994-2010.  
A.T.E.R. Paris 1, Panthéon-Sorbonne University, 1992-1994.  
Lecturer, American University of Beirut, Lebanon. 1983-1985.

## OTHER ADMINISTRATIVE ACTIVITIES

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Member of the recruiting committee for an associate professor of Mathematics.  
Panthéon-Assas University, 2017, 2014, 2013, 2012.  
Member of the recruiting committee for a CNRS researcher in Computer Science.  
Ecole Normale Supérieure, 2017.

Member of two recruiting committees for an associate professor of Mathematics  
Antilles University, 2016.

Member of the recruiting committee for an associate professor of Mathematics.  
Panthéon–Sorbonne University, 2000, 1998.

Member of the recruiting committee for an associate professor of Economics.  
Franche-Comté University, 1999, 1997.

Member of the recruiting committee for an 'agrégé' professor of Mathematics.  
Panthéon–Assas University, 2013, 2012.

President of a Baccalauréat Jury.  
Besançon, 2003, 2000, 1997.

## **DISTINCTIONS**

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Palme Académiques 2014.

Medal of the American University of Beirut 2012.