Teodor Duevski
1 Rue de la Liberation, Jouy en Josas, France, 78350 · +33749124150 · teodor.duevski@hec.edu

January 17, 2022

Dear application committee,

I am writing this letter in support for my application to the NBER Entrepreneurship Research Boot Camp 2022.

I am currently a second year PhD student in finance at the Department of Finance at HEC Paris. Prior to my PhD studies, I worked as a quantitative researcher for a US based hedge fund. I hold a bachelor's degree in physics and a master's degree in mathematical physics.

After having completed my first-year PhD coursework including courses in Microeconomics, Corporate Finance and Econometrics I realized that my main research interest lies broadly in the filed of Corporate Finance, Entrepreneurship and Private Equity. I am interested in both theoretical and empirical work in these areas.

Given my research interests this boot camp will provide me with an excellent opportunity to kick-start the dissertation phase of my PhD by helping me to generate new ideas, learn new methodologies at the frontier of research, and interact with top minds in the field.

I've included my CV and my list of coursework for your review. My current PhD advisor and recommendation letter writer is Prof. Bruno Biais. Thank you for your consideration.

Sincerely,

Teodor Duevski

Teodor DUEVSKI

HEC Paris
1 rue de la Liberation, 1,78350 Jouy-en-Josas, France

teodor.duevski@hec.edu
Phone: +33 7 49 12 41 50

Education

HEC Paris 2020 –
Ph.D. Candidate in Finance

Department of Mathematics, University of Helsinki, 2019
M.Sc. in Theoretical and Computational Methods; GPA: 5.00/5.00
Thesis: *Modeling the Term Structure of Zero-Coupon Bonds*

Amsterdam University College, 2017
B.Sc. in Mathematics and Physics, *summa cum laude*; GPA: 3.97/4.00
Thesis: *Charge Carrier Recombination Mechanisms in* $CH_3NH_3PbBr_3$ *Thin Films*

Publications

Adhyaksa, G.W., Brittman, S., Āboliņš, H., Lof, A., Li, X., Keelor, J.D., Luo, Y., Duevski, T., Heeren, R.M., Ellis, S.R. and Fenning, D.P., 2018. Understanding Detrimental and Beneficial Grain Boundary Effects in Halide Perovskites. Advanced Materials, 30(52): 1804792.

Working papers

Dreber, A., Menkveld, A. J., Holzmeister, F., Johannesson, M., Huber, J., Michael Kirchler, Michael Razen et al. "Non-Standard Errors." (2021).

Work in progress

Exploration - exploitation and agency problems in private equity

Teaching

HEC Paris, France, 10/2020 – 11/2021
Teaching Assistant, Financial Economics (MSc in Finance)
Teaching Assistant, Financial Markets (MSc in Finance)
Teaching Assistant, LBOs in Practise (MSc in Finance)

Grants

HEC Paris Foundation Scholarship for Excellence (2020–)
University of Helsinki Scholarship (2017–2019)
Amsterdam University College Excellence Scholarship (2014–2017)
Ministry of Education and Science of North Macedonia (2011–2014)

References

Prof. Thierry Foucault
Department of Finance
HEC Paris
foucault@hec.fr

Prof. Bruno Biais
Department of Finance
HEC Paris
biaisb@hec.fr

Experience

Trexquant LP, Unitied States, 09/2020 – 08/2021
Alpha Researcher. Developed quantitative trading strategies to find optimal combination of alphas for creating market neutral portfolios using machine learning techniques.

Aalto University, Finland, 03/2019 – 06/2020
Project Employee. Worked on understanding the effects of health on corporate governance.

University of Helsinki, Finland, 06/2018 – 09/2018
Summer Intern in the Mathematical Physics Group.

AMOLF, The Netherlands 09/2016 – 06/2017
Research Intern in the Nanoscale Solar Cells Group. Worked on modeling and empirically measuring the recombination lifetime in perovskite thin films.

Conference Talks

ICPS 2018, Helsinki, Finland
Title: Understanding Detrimental and Beneficial Grain Boundary Effects in Halide Perovskites

12th Conference of the Society of Physicists, 2018, Ohrid, Macedonia
Title: Modeling Charge Carrier Recombination Mechanisms in Halide Perovskites

Achievements and Awards

Mathematics Competitions:
Regional level: 1^{st} prize 2012, 2013; 3^{rd} prize 2011, 2014
National level: 1^{st} prize 2012, 2013; 3^{rd} prize 2011, 2014
National Olympiad: silver medal 2012; bronze medal 2013, 2014
European Mathematics Cup participant 2012

Physics Competitions:
Regional level: 1^{st} prize 2012; 2^{nd} prize 2011, 2013, 2014
National level: 1^{st} prize 2012, 2013, 2014; 3^{rd} prize 2011
National Olympiad: gold medal 2012, 2014; bronze medal 2013
Participant at the 44^{th} International Physics Olympiad, Astana, Kazakhstan 2014

Languages

English (fluent), Serbian (fluent), Macedonian (native)

Computing

Python, Mathematica, MATLAB, SQL, Stata

TRANSCRIPT

Printed on 01/10/2022

Research Master in Management Science

Global average : 3.99 / 4

DUEVSKI Teodor

Research Master in Management Science

(Average : 3.98 / 4)

SPE

		Grade	Retak	Credit earned	Grade value
THE PSYCHOLOGY OF RISK		A		4	
MICROECONOMICS		A		5	
SOCIAL PSYCHOLOGY IN ORGANIZATIONS		A		5	
RESEARCH METHODS		A		5	
DECISION MAKING UNDER UNCERTAINTY		A		4	
MARKET MICROSTRUCTURE		A		3	
BLOCKCHAIN AND CRYPTOCURRENCIES		A		2	
CORPORATE FINANCE THEORY		A		4	
BANKING AND FINANCIAL INTERMEDIATION		A		4	
STATISTICAL PROGRAMMING WITH R		B		2	
Advanced Econometrics I	**	A		6	
Macroeconomics I		A		8	
Microeconomics II		A		8	

Total ECTS Credits **60**

Total credits earned **60**

Johan HOMBERT, Associate Dean, Director of the PhD Program

Grade not approved

** : Grade not included in average

ECTS Grading Scale= A: Excellent, B: Very good, C: Good, D: Satisfactory, E: Adequate, Fx: Unsatisfactory, F: Very Unsatisfactory or Incomplete, P: Pass, NR: No grade reported, K: Exemption, M:Illness

Average grade calculation: A=4 ; B=3.5 ; C=3 ; D=2.5 ; E=2 ; FX=1 ; F=0

TRANSCRIPT

Printed on 01/10/2022

Research Master in Management Science

Global average : 3.99 / 4

DUEVSKI Teodor

Research Master in Management Science

(Average : 4.00 / 4)

SPE

		Grade	Retak	Credit earned	Grade value
MODELS OF BOUNDED RATIONALITY		X		0	
RESEARCH TUTORIAL	**	P		5	
SUMMER PAPER		A		10	
FRENCH LEVEL 1	**	X		0	
EPISTEMOLOGY		X		0	
ENTREPRENEURSHIP		A		3	
SUMMER SCHOOL ON MARKET MICROSTRUCTURE		P		3	
REVERSE-ENGINEERING AN ACADEMIC CAREER	**	P		0,5	
PEDAGOGY (2ND YEAR)	**	X		0	
LIBRARY LITERACY	**	X		0	
PUBLISHING WORKSHOP	**	X		0	
WRITING WORKSHOP	**	X		0	

Total ECTS Credits **21,5**

Total credits earned **22**

Johan HOMBERT, Associate Dean, Director of the PhD Program

Grade not approved

** : Grade not included in average

ECTS Grading Scale= A: Excellent, B: Very good, C: Good, D: Satisfactory, E: Adequate, Fx: Unsatisfactory, F: Very Unsatisfactory or Incomplete, P: Pass, NR: No grade reported, K: Exemption, M:Illness

Average grade calculation: A=4 ; B=3.5 ; C=3 ; D=2.5 ; E=2 ; FX=1 ; F=0

NBER Entrepreneurship Research Boot Camp 2022 Application Essay

Dear Application committee,

I am currently a second year PhD student in finance at HEC Paris. My main research areas of interest are corporate finance and private equity.

Unlike the public market, where all companies are ex-ante available to all investors; the private equity market is characterized by two-sided matching. The phenomenon that different private equity firms may ex-ante have access to investment pools of differential quality is termed proprietary deal sourcing. The overall agenda for my thesis is to examine the effects of proprietary deal sourcing on 1) private equity returns, 2) private equity market structure, 3) investor welfare and 4) the labour market for private equity employees.

In my first project, I study the exploration – exploitation trade-off faced by a private equity firm raising capital for subsequent funds. Introducing value to learning in the Bolton and Scharfstein (1990) framework, I study the portfolio allocation problem of a private equity firm raising subsequent funds. The firm can either invest in a known technology (primary industry of focus or geographical location) or explore a new market and learn about its returns. To obtain financing for subsequent funds, the private equity firm needs to reach an endogenous threshold return for their first-time fund. This gives rise to a natural trade-off: to reach the threshold and obtain financing for a subsequent fund, certain private equity firms underinvest in learning relative to the first best and forgo second period returns. I test the model predictions empirically. By generating predictions from the model related to returns, fund sequence and fund level diversification, I contribute to the vast literature on studying the sources of private equity returns and return persistence, pioneered in the seminal papers by Kaplan and Schoar (2005), Korteweg and Sorensen (2007), Sorensen and Korteweg and Sorensen (2017).

Given the increased allocation of institutional investors to private equity and the increase in the demand for private equity financing, the allocation of capital by private equity firms is becoming a substantial driver of aggregate economic outcomes. It has been documented that by financing early-stage entrepreneurs the allocation of capital by venture capital firms has a big impact on innovation and development of new technologies (Kortium and Lerner (2000)). Innovation and technological development have been closely linked to macro growth (Aghion and Howitt (1992)). Understanding the extent to which incentive problems between limited partners and general partners limit exploration has important implications for capital allocation. By exploring less, relative to the first best private equity firms may overinvest in certain industrial or regional clusters and may miss out on financing positive net present value projects elsewhere. The idea is closest to Sorensen (2014) who, using the Multi -Armed Bandit framework analyzes the problem of learning by a single venture capital firm and empirically shows that VCs learn from past investments and explorers perform

better in the cross-section. In my model I interact the exploration-exploitation framework with financing frictions and derive novel empirical implications.

In my second project which is at a very preliminary stage, my co-authors and I are trying to examine the link between the recent SPAC boom and private equity returns. Concretely, we are trying to understand the differences between venture capital backed companies who access the public market via the SPAC route versus the traditional IPO route and how this choice interacts with the professional background of the SPAC sponsor searching for targets. The rise of SPACs has provided an additional exit route for many venture capital backed companies. In the future we plan to examine how the recent SPAC boom has affected venture capital fund returns.

Attending the entrepreneurship boot camp would give me the unique opportunity to connect with and learn from top-quality academics and fellow PhD student colleagues interested in entrepreneurial finance. It would allow me to learn from researchers whose ideas and papers have made seminal contributions in the field of private equity and entrepreneurial finance – a work I plan to use and build upon during my research career. The intensive workshop will enable me to think more holistically on a topic of great interest to me, learn about new datasets, empirical and theoretical contributions along with their limitations and discuss with fellow researchers with similar research interests. By attending the boot camp, I hope to get feedback on my own projects as well as generate new research ideas, and perhaps work on some of these ideas with the people I meet. For a PhD student with my research interests this boot camp offers an unparalleled opportunity to meet and interact with the research community in the field of private equity and entrepreneurship.

From: Bruno BIAIS <biaisb@hec.fr>
To: "maranjian@nber.org" <maranjian@nber.org>
Subject: Recommendation for my student Teodod Duevski for the 2022 NBER entrepreneurship boot camp

Dear Brett,

Teodor has a strong quantitative background and a keen interest in corporate finance, entrepeneurship and private equity. His first paper is about the exploration- exploitation tradeoff in private equity. He works on modeling the dynamics of private equity investment at different stages. The idea underlying the project is that fund managers face a tradeoff. On the one hand, to secure funds they must achieve some performance milestones. To reach these milestones it maybe safer to invest in known industries, with established records (Teodor refers to this as exploitation). On the other hand, investors can also try to invest in newer sectors, more risky but with greater potential (Teodor refers to this as exploration). Teodor is developing an analysis of this tradeoff in a model in which the private equity manager acts as an agent for final investors. The problem in this agency relation is that the private equity fund manager may have private information that investors don't have. This may distort the choice between exploitation and exploration. Teodor is currently developing his theoretical analysis of that tradeoff, and also collecting data and conducting preliminary empirical analyses. While this first paper is single authored, Teodor is also working on a second paper, coauthored with fellow phd students, comparing SPACS and PE.

I think very highly of Teodor. He is very smart and creative. He uses me as soundboard and technical consultant, but it's always him who has the ideas and makes the decisions. He feels confident doing so, and I think he is right, because he is very talented and creative.
I think Teodor would greatly benefit from participating in the NBER entrepreneurship bootcamp, and I also thnink his presence would be a plus for all. He is nice, communicates well and has a lot of positive energy.

Please feel free to ask if there is an further infrmation I should provide.

Kind regards and best wishes for the new year ☺
Bruno Biais
Professor of Finance and Economics
HEC