Junida Mulla

Saïd Business School

University of Oxford

Oxford, OX1 1HP

Email: Junida.Mulla.DPHIL@said.oxford.edu

Phone: +44 7949703394

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National Bureau of Economics Research

Cambridge, Massachusetts

1050 Massachusetts Avenue

Cambridge, MA 02138

COVER LETTER FOR THE NBER ENTREPRENEURSHIP RESEARCH BOOT CAMP

Dear Professor Bloom, Dear Professor Lerner, Dear Professor Robinson, Dear Professor Schoar, Dear Professor Stern,

I am writing because I would like to apply for the NBER Entrepreneurship Research Boot Camp 2022. Please find attached a CV including the PhD level courses I have completed and an essay describing my current research as well as future scholarly aspirations. A letter of recommendation has been separately sent to Mr. Brett Maranjian by my PhD supervisor, Prof. Thomas Hellmann.

Kind regards,

Junida

JUNIDA MULLA

Address Saïd Business School, University of Oxford, Park End Street, Oxford, OX1 1HP, UK

E-mail: Junida.Mulla.DPHIL@said.oxford.edu **Phone:** +44 7949703394

EDUCATION

Since 10/2020 **University of Oxford**

DPhil in Finance

- Supervisors: Prof. Thomas Hellmann, Prof. Thomas Noe

09/2017 – 07/2019 **University of Oxford**

MPhil in Economics

- Dissertation: 'Analysis of Outlier Detection Algorithms for non-stationary time series processes', supervised by Prof. Bent Nielsen
- Top 10% in Econometrics

09/2014 – 07/2017 **University of Warwick**

Bachelor of Science (Honours) in Economics

- Received the Department of Economics Examiners Prize 2016 for Best second year performance
- Overall rank: Top 3 out of 303 students

10/2013 – 06/2014 **Lancaster University**

International Business and Management Foundation Programme

- Grade Awarded: First Class Honours

FIELDS OF INTEREST

Entrepreneurial Finance, Machine Learning

WORK IN PROGRESS

Go Big or Stay Lean: The Determinants of Start-Ups Fundraising Strategies (Jointly with Prof. Thomas Hellmann, Prof. Alan Morrison, Dr. Matthias Qian)

The Allocation of Equity Stakes in University Spin-offs: Theory and Evidence (Jointly with Prof. Thomas Hellmann and Dr. Matthias Qian)

OTHER RESEARCH EXPERIENCE

07/2019 – 09/2019 **University of Oxford**

Research Assistant

- Assisted Prof. Tim Jenkinson in data gathering and analysis. Contributed towards methodology by suggesting an instrument for the main endogenous variable in the regression analysis

08/2016 – 10/2016 **University of Tirana, Branch of Saranda, Albania**

Research Assistant

- Was part of the research in the topics of speculative bubbles in stock, housing and commodity markets. Worked in demonstrating how high frequency data contributes to real time detection of speculative bubbles

NON-ACADEMIC EXPERIENCE

12/ 2019 – 09/2020 **ALBACOSMETIC, New York (USA)/ Tirana (Albania)**

Market Research Analyst and Strategic Advisor

07/2016 **BKT (National Commercial Bank), Sarande, Albania**

Credit Analyst Intern

AWARDS AND SCHOLARSHIPS

10/2020 – 10/2024 **Green Templeton College Scholarship and Saïd Business School Foundation Dphil Scholarship**

- Covers tuition fees and living expenses during my DPhil studies

12/ 2017 – 06/2019 **'Excellence Funding' Scholarship**

- Awarded by the Albanian Ministry of Education and Sports to cover tuition fees and living expenses during my MPhil studies at Oxford

07/ 2016 **Department of Economics Examiners' Prize For Best Second Year Performance, University of Warwick**

COMPUTING AND LANGUAGE SKILLS

IT: Python, Stata, Ox, OxMetrics

Languages: Albanian (Native proficiency), English (Full professional proficiency)

PHD LEVEL COURSES

Completed Courses: Microeconomics, Econometrics, Macroeconomics, Maths, Advanced Econometrics 1, Empirical Microeconomics, Financial Economics 1, International Trade 1, Public Economics

I have completed the aforementioned courses during the MPhil in Economics degree. Since Finance DPhil students would normally be required to take courses from the MPhil Economics degree, I was granted an exemption from further coursework examinations during my DPhil studies. Nonetheless, I audited several other courses offered at the Saïd Business School during the first year of my DPhil (e.g. Corporate Finance 1/2, Asset Pricing 1/2)

Details on the syllabus of completed courses

Microeconomics

Consumer/Producer Theory, Theory of the Firm , Choice under Uncertainty, General Equilibrium, Game Theory, Contracts, Bargaining, Auctions, Welfare Economics

Econometrics

Probability Theory, Asymptotic Theory of OLS, IV, GMM, ML estimation, Time Series Econometrics : Stationary Autoregressions; Stationary vector Autoregressions; Autoregressive Distributed Lag Model; Unit roots and Cointegration; Panel Data Analysis

Macroeconomics

Models of economic growth, Real Business Cycle models, New Keynesian models, Fiscal and monetary policy, Unconventional policies

Maths

Multivariate Calculus, Constrained Optimisation, Differential/ Difference Equations, Optimal Control Theory & Dynamic Programming, Stability of non-linear systems and phase plane analysis, Numerical Methods

Advanced Econometrics 1

Numerical Optimization and Algorithms, Markov-Switching models (likelihood evaluation, estimation), Dynamic Panel Data, Non-parametric estimation, LASSO (properties and asymptotics)

Empirical Microeconomics

Static Discrete Choice Models, Dynamic Discrete Choice, Identification (models and structures, complete and coherent models, set and point identification); Sufficient statistics approach; Structural estimation

(simulated method of moments), Identification and estimation of production functions (Olley-Pakes Method, Levinsohn- Petrin Method, Dynamic Panel Data Methods, Ackerberg, Caves and Frazer Method etc), Market Power and price cost mark-up

Financial Economics 1

Complete and incomplete asset markets, options pricing, CAPM/ APT, default, financial crisis and systemic risk, prices and rational expectations equilibrium, strategic trading.

International Trade 1

Comparative advantage- classical and Heckscher-Ohlin trade theory; monopolistic competition & firm heterogeneity

Public Economics

Health and Inequality, theory of taxes and transfers, income transfers and optimal taxation, empirical estimation of incentive effects of taxes and welfare program

Entrepreneurial Finance is at the center of my current research and future academic aspirations. I believe that being exposed to a wealth of literature in this field, as well as exchanging ideas with peers and prominent scholars at the NBER Entrepreneurship Bootcamp would greatly help me solidify my current research ideas and create a network of potential collaborators. My ultimate goal is to become a leading scholar in the field.

The first paper I am currently working on (jointly with Prof. Thomas Hellmann, Prof. Alan Morrison and Dr. Matthias Qian) uses data from Oxford's largest startup accelerator, the Creative Destruction Lab (CDL), to study the determinants of startups' fundraising strategies. One strategy is to "stay lean", aiming to initially raise the minimum amount of money needed and to delay subsequent fundraising rounds until the company has established itself in the market. The alternative strategy would be to "go big" by raising large sums of money upfront, enabling the startup to be stronger and more secure financially. The bigger the size of the round, the more the founders' equity share will be diluted. Hence, by "going big" instead of "going lean" the founders would aim for a smaller share of a potentially larger pie. The underlying economic trade-off can be thought of, in part, as a choice between maximizing company value (go big) versus maximizing founder value (stay lean). Although the choice of fundraising strategy is crucial because it could potentially affect the path of development of startups, the lack of data has prevented researchers from studying the determinants of fundraising strategies and their implications. With the CDL data on mentor-founder deliberations and venture objective-setting, we now have a unique opportunity to fill this gap in the literature. For each venture we construct two types of outcome variables. The first level of analysis is a characterization of the fundraising strategy, as well as potential factors that determine the type of strategy that ventures choose. In order to do so, we have built a rich taxonomy and make use of advanced Natural Language Processing (NLP) Techniques to characterize multiple dimensions of venture objectives such as the amount of funding sought, type of funding sought, type of investor to lead the round etc. The richness of CDL data allows us to explore several factors that could impact the fundraising strategy adopted such as: venture characteristics (age, sector, financial situation etc), founding team composition as well as CDL mentor characteristics. The second level of analysis and our main research question focuses on the effect that fundraising strategy has on multiple measures of venture performance including amount raised, when the funding was raised, survival of the venture, growth in the number of employees etc.

The second project I am working on (jointly with Prof. Thomas Hellmann and Dr. Matthias Qian) aims to provide a systematic study of ownership in university spinouts and venture outcomes, based on UK data. The quantity and quality of university spinouts produced across the UK, the US and Europe during the recent years has reinforced the role of universities in encouraging both valuable scientific discoveries, and successful entrepreneurial activities (Hvide and Jones, 2018, pg.1860; Ulrichsen, 2019; Siegel and Wright, 2015). The increase in the number of university spinouts has been accompanied by an ongoing debate about the equity stake taken by the university as part of its IP ownership as well as the assistance university staff provides to spinouts. This debate stems from a friction between the university side (departments, technology transfer offices) and the business side (firm entrepreneurs/managers and investors). From the perspective of entrepreneurs and investors, university stakes may be viewed as non-productive since they could reduce entrepreneurial incentives, venture value and make it harder to fund spinouts. Technology transfer offices (TTOs), on the other hand, aim to protect the university's intellectual property while also leveraging it as source of revenue (Siegel and Wright, 2015). Thus, from their perspective, equity stakes may serve to recoup infrastructure costs. This debate, however, lacks facts and data. We aim to fill this gap in the literature by analyzing how the size of the university stake negotiated at the spin-out event influences subsequent venture outcomes such as fundraising success and the scale of the company (as measured by number of employees or assets). To answer our research

questions, we leverage several data sources including Beauhurst, Company House and other publicly available information. One important empirical challenge is causality and identification: the relationship between university equity stakes and venture success could be endogenous since higher stakes could be taken from more promising ventures. To address this concern we use an instrumental variable approach. We create a "precedent stakes instrument" that measures equity taken from comparable companies which have spun out from the university before the focal venture did. Different universities have different policies, but practices change slowly over time within a given university. As such, we would expect the university to offer similar deals to comparable spinouts. The exclusion restriction holds in principle because precedent deals concern other spinouts and, therefore, do not affect the performance of the focal firm directly. We plan to control for systematic differences across universities regarding the quality of spinouts they produce by using university fixed; we will also control for time-varying university characteristics such as grant funding the university receives over time and in particular funding received for improving university entrepreneurship. Our main hypothesis is that a higher university stake is detrimental to a spinout's fundraising success due to reduced entrepreneurial incentives.

For my job market paper, I would like to delve deeper into the various aspects of the entrepreneurial climate within the universities which affect the success of their spinouts and startups. The main aspect I intend to focus on is how the different type of networks that universities have with investors impact the success of university startups and spinouts. Of special interest is the role that university-affiliated funds (such as Oxford Sciences Innovation) play both in the commercialization process of these companies and their subsequent fundraising success. The nature of these funds is quite complex, since they could serve two purposes: 1) Add to the effort put in by the university's technology transfer office (TTO) in helping spinouts commercialize their research. When this happens, the stake taken at the spinout event is shared between the university and the fund. 2) Invest in subsequent rounds after the spinout event. In our current research we have noticed that these funds hold a considerable ownership stake at the spinout event; as such it is important to study how their presence affects the development of the spinouts. The main research questions are both qualitative and quantitative in nature. In particular, I would like to examine the following: 1) In what ways do these funds assist the spinouts during their commercialization process? 2) Is the help provided by these funds a complement or a substitute to the involvement by the university TTOs? 3) Does the involvement of these funds affect the probability of the spinout receiving subsequent outside/VC investment? 4) How does the equity stake taken by these funds at the spinout event affect subsequent spinout valuation? This topic is currently under-researched due to a lack of data. In order to infer the role that university-affiliated funds play in the commercialization process, I intend to utilize NLP Tools to extract various characteristics about their nature of involvement mentioned in university websites, fund websites, spinout booklets as well as other publicly available information. I intend to complement these data with interviews conducted both with TTOs as well as representatives of the funds and spinout founders. Based on the aforementioned data sources, I aim to quantify the nature of involvement of these funds in the commercialization process through constructing measures such as: whether the funds assist the spinout in various aspects of business development, the duration in time over which this help is offered etc. For the quantitative research questions we already have available data on the fundraising outcomes of the spinouts, as well as on their valuation at different fundraising rounds. My ultimate goal is to study the value these funds add to various aspects of spinout development.

I believe that gaining a deeper understanding of the existing literature and being able to share my ideas with professors and fellow students at the NBER bootcamp will be a great opportunity for me to refine these research questions even further. Moreover, the bootcamp would offer an excellent opportunity to expand my network by meeting scholars who share my enthusiasm for the field and with whom I can potentially collaborate in the future.

References

Beauhurst. (2021). Beauhurst boosts spinouts coverage with acquisition of Spinouts UK. Available at: https://www.beauhurst.com/blog/spinouts-uk-acquisition/ (Accessed 31 November 2021)

Hvide, H. K., & Jones, B. F. (2018). University innovation and the professor's privilege. *American Economic Review*, 108 (7), 1860-98.

Siegel, D.S. and Wright, M., 2015. Chapter One. University Technology Transfer Offices, Licensing, and Start-Ups. *In The Chicago handbook of university technology transfer and academic entrepreneurship* (pp. 1-40). University of Chicago Press.

Ulrichsen, T. C. (2019). *Developing University Spinouts in the UK: Key trends in Spinout Activity, Investments and Investor Involvement. A technical Note for Research England to support the Independent Advice of Mike Rees on University-Investor Links.* UK Research and Innovation. https://re.ukri.org/documents/2019/developing-university-spinouts-in-the-uk-tomas-coates-ulrichsen-v2-pdf/

Thomas Hellmann
DP World Professor of
Entrepreneurship and Innovation
Saïd Business School
University of Oxford
Park End Street
Oxford OX1 1HP
T: +44 (0)1865 288937
thomas.hellmann@sbs.ox.ac.uk

Saturday, 15 January 2022

Dear David and Team

I would like to give my highest recommendation to Junida Mulla for the NBER Entrepreneurship Research Boot Camp. You may recall my student Alexander Montag from the 2019 cohort, in my opinion Junida Mulla is just as strong. She has the perfect profile for the bootcamp as she is in her second year of her PhD, and she is fully committed to writing a thesis on entrepreneurship and entrepreneurial finance. Junida is exceptionally curious and bright, has a strong background in economics and excellent programming skills, including a deep interest in novel AI techniques. She would benefit enormously from attending the boot camp, both in terms of content (at Oxford we really don't have any courses coming even close to what the boot camp offers) and networks (she will connect well with her peer group).

Junida came to me early in the first year with a keen interest in exploring ideas around the financing in new ventures, as well as the use of AI in finance research. I offered her a RA position and she integrated extremely quickly, devoting herself fully to the research projects. Normally I wait a long time before offering co-authorship, but with Junida the question became obvious within a few months. She is now writing two papers with me and other co-authors.

The first paper tackles a long-standing debate around university technology transfer, namely the appropriate level of equity stakes that university should take in university spin-offs. This debate is full of practitioners making bold claims, but surprisingly devoid of data and analysis. To date, there is no credible academic study that relates the stake taken by universities to the subsequent performance of the spin-off. Such as study would be very difficult in the US where the relevant data is not publicly available. In the UK, however, we can leverage publicly available data on equity stakes. There are two major challenges with developing this paper. First, the data is still very messy, but this is where Junida comes in. She has organized a group of undergraduate RAs to clean and augment the data on UK spin-offs. She is taken extreme care to work through the messy details of the data, such as how to categorize different shareholder types. I would say that thanks to Junida, we are building the first credible database of UK spinoffs. In the process of doing this, Junida also started to investigate some

deeper conceptual issues, such as the role of university-affiliated venture funds. Some of this may well turn into part of her dissertation. The second issue is identification, i.e., the question to what extent university stakes have a causal impact on spinoff performance. We are working on a promising instrument that is based on "precedent", namely variation in the equity stakes of preceding spin-offs in the same university. We expect to have a distributable draft ready before this summer.

The second paper is still at the data collection stage but is exciting both in terms of topic and techniques. We are leveraging data from the Creative Destruction Lab (CDL, not only from Oxford but form the entire network). The unique strength of this data is its detailed company information and the in-depth mentor discussions. The question we are tackling is how start-ups set and revisit their fundraising strategies. The current entrepreneurial finance literature has little to say on fundraising strategies, because normally we only observe the outcome (i.e. the realized funding round) but not process by which the investment comes together (except in the crowdfunding context). Entrepreneurs can choose how much funding to raise. They can be bold and try to raise as much as possible or stay lean and only raise the minimum required. They also need to determine what types of investors they want to approach. Interestingly, they also have to decide on the right timing to launch their campaigns. The CDL data provides a rich setting for examining these issues, but processing it poses its challenges. Together with Matthias Qian, a post-doctoral fellow here at Oxford, Junida embarked on a complex textual analysis that uses start-of-the-art natural language processing techniques to extract fundraising information from unstructured text. Needless to say that this technical step will be the key to generating new insights from the CDL data. In fact, once this natural language processing method is optimized, there will be additional opportunities for Junida to use the CDL data to address novel entrepreneurship research questions. This will almost certainly be the direction of research for her dissertation.

Overall I strongly recommend Junida Mulla for the Boot Camp. She is very bright and deeply committed to becoming a leading entrepreneurship scholar. Junida already achieved a lot on her first 1½ years of her PhD. The timing of the boot camp is perfect, because right now she is in the process of developing her own dissertation papers. Our joint work, and especially the processing of novel research data, means that she is ready to develop these new research projects. Getting the broader overview of the entrepreneurship literature, and insights from the top lecturers at the boot camp, will doubtlessly set her on a path to an excellent doctoral thesis.

Best regards

Thomas Hellmann