Marta Prato
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March 18, 2020

To the selection committee of NBER Entrepreneurship Research Boot Camp,

My name is Marta Prato and I am a fourth year PhD student in Economics at the University of Chicago. I am thrilled to submit my application for the NBER Entrepreneurship Research Boot Camp (ERBC).

My research interests include Innovation, Entrepreneurship and Economic Growth. Thus, I believe that my area of research would be a great fit for the ERBC. I believe that attending the Boot Camp would be a unique opportunity for my development as a researcher, because it would allow me to meet prominent scholars in the field, deepen my knowledge and sharpen my research skills.

I attach my Curriculum Vitae and a list of my PhD courses. I also include an essay which details my motivation to attend the boot camp, as well as a brief description of my research. My recommendation letter was separately sent by my current PhD advisor, Professor Ufuk Akcigit, to Brett Maranjian.

Thank you for considering my application.

Yours Sincerely,
Marta Prato

# MARTA PRATO

mprato@uchicago.edu

## Office Contact Information

1126 E. $59^{th}$ Street - Saieh Hall for Economics
Chicago, IL 60637
203 809 1293

## Education

The University of Chicago *2016 - Present*
Ph.D. Student in Economics

M.Sc Economics, Bocconi University, *cum laude* *2016*
B.Sc Economics, Bocconi University, *cum laude* *2014*

## Teaching Experience

*The University of Chicago*:

| | | |
|---|---|---|
| Winter 2020 | Firm Dynamics and Economic Growth (Graduate) | TA for Prof. Akcigit |
| Spring 2019 | Macroeconomics (MBA) | TA for Prof. Guerrieri |
| Winter, Spring 2019 | Thesis Writing (Master) | Preceptor |
| Winter 2019 | Creativity (Undergraduate) | TA for Prof. Galenson |
| Fall 2018 | American Economic History (Undergraduate) | TA for Prof. Galenson |
| Winter 2018 | Economic Growth (Undergraduate) | TA for Prof. Akcigit |
| Fall 2017 | Econometrics (Graduate) | TA for Prof. Shaikh |

## Research Experience and Other Employment

| | |
|---|---|
| 2017-2019 | University of Chicago, Research Assistant to Prof. Akcigit |
| 2019 | University of Chicago, Research Assistant to Prof. Guerrieri |
| 2015 | Bocconi University, IGIER Field Research, Research Assistant to Prof. Pavoni |
| 2014 | Compass Lexecon, London, Summer Intern |
| 2013 | J.P. Morgan, Investment Banking, London, Summer Intern |

## Honors, Scholarships and Fellowships

Lee Prize for best First Year Core Exam in Quantitative Methods, University of Chicago *2017*
Social Science Department Scholarship, University of Chicago *2016-2021*
Graduate Merit Award, Bocconi University *2014-2016*

## Language Skills

Italian (Native), English (Fluent), Spanish (Fair), French (Fair)

## Research Papers

- *"Inventors' Migration and International Knowledge Diffusion"*
- *"Tapping into Talent: Coupling Education and Innovation Policies for Economic Growth"*, w/ Ufuk Akcigit and Jeremy Pearce

THE UNIVERSITY OF CHICAGO

**Name:** Marta Prato
**Student ID:** 12148118

## Graduate

### Academic Program History

Program: Social Sciences Division
Start Quarter: Autumn 2016
Current Status: Active in Program
Ph.D. in Economics

### External Education

Universita Commerciale 'Luigi Bocconi'
Milan, Italy
Magister 2016

Universita Commerciale 'Luigi Bocconi'
Milan, Italy
Laurea 2014

### Beginning of Graduate Record

Autumn 2016

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 30100 | Price Theory-1 | 100 | 100 | B+ |
| ECON | 31000 | Empirical Analysis-1 | 100 | 100 | A |
| ECON | 33000 | Theory of Income-1 | 100 | 100 | A |

Winter 2017

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 30200 | Price Theory 2 | 100 | 100 | A |
| ECON | 31100 | Empirical Analysis II | 100 | 100 | A |
| ECON | 33100 | Theory of Income II | 100 | 100 | A |

Spring 2017

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 30300 | Price Theory-3 | 100 | 100 | A |
| ECON | 31200 | Empirical Analysis-3 | 100 | 100 | A |
| ECON | 33200 | Theory of Income-3 | 100 | 100 | A |

Summer 2017

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|

CORE EXAM: ECONOMICS-PHD LEVEL PASS

Honors/Awards
THE MARTIN C. AND MARGARET M LEE PRIZE: BEST QUANT CORE

Autumn 2017

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 34701 | Labor Market Dynamics | 100 | 100 | A- |
| ECON | 37601 | Topics in Economic Growth | 100 | 100 | B+ |
| ECON | 38301 | Applied Macroeconomics II | 100 | 100 | A |
| ECON | 40101 | Advanced Industrial Organization I | 100 | 100 | A- |

Winter 2018

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 33530 | Firm Dynamics and Economic Growth | 100 | 100 | A |
| ECON | 38001 | Applied Macroeconomics: Micro Data for Macro Models | 100 | 100 | A- |
| ECON | 40201 | Advanced Industrial Organization II | 100 | 100 | A |
| SPAN | 10200 | Beginning Elementary Spanish-2 | 100 | 100 | A |

Spring 2018

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 35570 | Political Economy of Development | 100 | 100 | B+ |
| ECON | 38102 | Applied Macroeconomics: Heterogeneity and Macro | 100 | 100 | A |
| ECON | 39400 | Theory of Financial Decisions III | 100 | 100 | A- |
| SPAN | 10300 | Beginning Elementary Spanish-3 | 100 | 100 | A |

Honors/Awards
THE MARTIN C. AND MARGARET M LEE PRIZE: BEST QUANT CORE

Summer 2018

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|

Specialized Field: Macroeconomics - Ph.D. Pass
Specialized Field: Economic Growth, Firm Dynamics, and Productivity - GPA Pass

Autumn 2018

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 33820 | Advanced Macro Reading Group | 100 | 0 | |
| ECON | 49700 | Research Seminar | 100 | 0 | |
| ECON | 53000 | Workshop: Money and Banking | 100 | 0 | |

Winter 2019

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 33820 | Advanced Macro Reading Group | 100 | 0 | |
| ECON | 49800 | Research Seminar | 100 | 0 | |
| SPAN | 20100 | Language History Culture-1 | 100 | 100 | A |

Spring 2019

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 33820 | Advanced Macro Reading Group | 100 | 0 | |
| ECON | 49900 | Required Research Paper | 100 | 0 | |
| SPAN | 20200 | Language, History, and Culture II | 100 | 100 | A |

Autumn 2019

| Course | | Description | Attempted | Earned | Grade |
|---|---|---|---|---|---|
| ECON | 33820 | Advanced Macro Reading Group | 100 | 100 | A |
| ECON | 53000 | Workshop: Money and Banking | 100 | 0 | |
| ECON | 57000 | Workshop in Macro and International Economics | 100 | 0 | |

UNOFFICIAL TRANSCRIPT

THE UNIVERSITY OF CHICAGO

**Name:** Marta Prato
**Student ID:** 12148118

## Graduate

**End of Graduate**

UNOFFICIAL TRANSCRIPT

## Essay

Entrepreneurship is the engine that propels modern economies. The rise of new firms reallocates resources through the creation and destruction of jobs and the reshuffling of means of production towards the most prominent enterprises. I am particularly interested in the "creative destruction" process associated with entrepreneurship, and how it spurs productivity growth. I thus believe that the NBER Entrepreneurship Research Boot Camp is great match for my interests, and it would be an invaluable experience to improve my knowledge and research in the field.

I am a fourth year PhD student in Economics at the University of Chicago. My main research fields are Innovation and Economic Growth. Thus, I am most interested in the branch of Entrepreneurship that studies the creation of innovative firms, that is, those firms that bring new products or services to the market. Given my interests, I believe that the NBER Entrepreneurship Boot Camp would be a unique opportunity for my professional development as a young researcher, for a number of reasons. On the one hand, it would allow me to deepen my knowledge in the field of Entrepreneurship and to explore topics I am less familiar with, such as the management and corporate finance aspects of research in this field. On the other hand, it would allow me to meet leading researchers and professors in the field. I think that interacting with them would be a great opportunity to gain insight and research wisdom from their experience. Additionally, the Boot Camp camp would give me the chance to get to know and exchange ideas with PhD students from other Universities with similar research interests as mine.

I thus believe that the NBER Entrepreneurship Boot Camp is an excellent fit for my research, which focuses on the innovative side of entrepreneurial activities. What is the connection between Innovation, Economic Growth, and Entrepreneurship? Innovative entrepreneurs bring new products and services to the market, or introduce new processes of production. To do so, they must come up with new ideas, or hire inventors who create new ideas and technologies. Studying innovation thus means investigating the process of creation of new ideas and technologies. In turn, new ideas and technologies lead to productivity growth and improvements in welfare and standard of living, which together fall under the umbrella of Economic Growth.

While most existing literature on this topic focuses on firm dynamics, my current research focuses on the individuals behind the process of innovation, highlighting the importance of human capital for innovative activities. In particular, I investigate the acquisition of education, skills and knowledge, and career choice of inventors and entrepreneurs as fundamental building blocks of the innovation process. My research is characterized by two important components. First, I use micro-data to document relevant empirical patterns in the data about innovative firms, entrepreneurs and inventors. Much of my research exploits patent data as a source of information on innovative activities. While not all innovations and new products are patented, patent data is a rich source of information on innovative activity, which is otherwise quite difficult to measure. Second, I use theoretical models to derive and quantify aggregate implications of the patterns observed in micro-data. This micro-to-macro approach allows to highlight the importance of micro-level heterogeneity for aggregate productivity growth.

In my current intended dissertation project, I study the impact of international migration of inventors on knowledge diffusion and productivity growth. Knowledge diffusion is a key pillar in the process of innovation and growth, because it spreads the benefits of new ideas and technology from the agents who created them to the wider economy. However, there is little empirical literature on knowledge diffusion, because it is hard to measure in the data. Although anecdotal evidence documents an important role of international migrants in the exchange of best business practices, novel ideas and business opportunities between their home and destination country (Kerr (2018)), systematic studies are scarce. In this project, I use data on inventors and their patents from the European Patent Office (EPO) to build a new dataset on international migrations of inventors. I study citations patterns to provide evidence on the body of knowledge on which an invention is built. Preliminary findings show that after an inventor migrates, her co-inventors in the country of origin start to cite more patents created in the country of destination of the migrant. I interpret this change in citation flows as evidence of knowledge diffusion triggered by migration. Additionally, co-inventors of international migrants become relatively more productive than co-inventors of regional migrants after the migration of their co-inventor. I interpret this increase in productivity as the result of learning about foreign technologies thanks to the personal connection with an international migrant. As next steps in this project, I will build a novel theory to interpret the empirical findings and quantify the importance of knowledge diffusion for productivity growth.

In another project, joint with Ufuk Akcigit and Jeremy Pearce (Akcigit, Pearce and Prato, 2020), we study how innovation and education policy affect the allocation of talent in the economy and, in turn, innovation and aggregate productivity. Using micro-data from Denmark we highlight a host of facts about the links between higher education and innovation, highlighting the importance of i) financial frictions, ii) talent heterogeneity, iii) time-to-build human capital, iv) limited supply of higher education. We incorporate these facts into a new model of endogenous growth. We use our calibrated model to study counterfactual policy exercises. First, we find that the introduction of a subsidy to innovation is less effective than in standard models due to an imperfect elasticity of skill supply. Yet, the impact of R&D subsidies can be strengthened when combined with higher education policy that sorts talented but credit-constrained individuals into research. Second, education and innovation policies are tapping into a different part of the talent distribution depending on the types of frictions individuals face. Third, R&D and education policies impact innovation at different horizons which makes the optimal policy design a function of the time horizon of the policymaker. Finally, in more unequal societies, education subsidies are more effective for innovation.

While this project focuses on inventors, the entrepreneur and the inventor behind an innovative firm are not always the same person. In future research, I intend to bridge this gap by studying successful entrepreneurs and the teams of talented people that hire.

**References**

Akcigit, Ufuk, Jeremy Pearce and Marta Prato."Tapping into Talent: Coupling Education and Innovation Policies for Economic Growth ", 2020.

Kerr, William R. *The Gift of Global Talent: How Migration Shapes Business, Economy & Society.* Stanford, CA: Stanford Business Books, 2018.

**Ufuk Akcigit**
*Arnold C. Harberger Professor of Economics*
*Director of Graduate Studies*
*Co-Director of Graduate Placement*
*Research Associate: NBER, CEPR, CESifo, Brookings*

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March 14, 2020

**Re: Letter of Recommendation for Ms. Marta Prato**

Dear Committee Members,

It is my greatest pleasure to write this letter in the strongest support of Ms. Marta Prato, who is applying for the *13$^{th}$ Entrepreneurship Research Boot Camp (ERBC)*. Marta is a **star** Ph.D. student in the Economics Department of the University of Chicago. She has been working in the field of macroeconomics, with a special emphasis on knowledge diffusion, firm dynamics and migration, and under my supervision.

Academically, Marta is one of the strongest students of her cohort in the Economics Department. And her uncommon ability to identify interesting research questions, combined with intelligent modeling skills, a deep understanding of micro data, and strong computational knowledge, make her an outstanding researcher. Her thesis is evidence of her great ability, and I will describe her research agenda later in my letter.

I was introduced to Marta in her first year as a PhD student when she took my second-year class on Economic Growth (impressively, she took the course one year earlier than her cohort). Even then, she was exceptional and stood out among her classmates. She was the most active student, and most of the time the lectures evolved into a stimulating dialogue between Marta and me. Her critical thinking and economic reasoning were remarkably apparent. In her third year, when Marta asked me to supervise her thesis, I accepted with great enthusiasm because I knew I was going to supervise a brilliant student. Marta did not prove me wrong. As I am going to elaborate on next, she has been working on a very innovative dissertation.

In her first project, "Inventors' Migration and International Knowledge Diffusion," Marta studies the contribution of international inventors' migration to the diffusion of knowledge and technologies across countries. On the empirical side, the project explores patents' citations patterns to study how innovations build on local and foreign bodies of knowledge. Her results show that inventors who migrate generate a process of knowledge diffusion through their network: when an inventor migrates, the co-authors, both at origin and at destination, start to give more citations to foreign patents.

On the theoretical side, Marta's project introduces a new model of endogenous growth where inventors are mobile, learn about local and foreign technologies through interactions, and use their knowledge to create ideas, which ultimately contribute to productivity growth. Marta is currently working on estimating her model, which will allow quantification of how much different countries rely on foreign knowledge to create innovation and, in turn, how much migrants contribute to the exchange of knowledge across countries. Additionally, the model will also allow the discovery and quantification of new implications of immigration policies. In fact, policies that affect migration decisions can impact not only migrants, but local non-migrant inventors as well, because they affect their opportunities to learn about foreign technologies, and such knowledge is a fundamental ingredient in the innovation process.

In a second project, entitled "Tapping into Talent: Coupling Education and Innovation Policies for Economic Growth" (co-authored with Jeremy Pearce and myself), Marta asks the following important question: How do innovation and education policy affect individual career choice and aggregate productivity? To answer this question, we analyze the various layers that connect R&D subsidies and higher education policy to productivity growth. This includes i) individual educational choice with financial frictions, ii) talent heterogeneity, iii) time-to-build human capital, and iv) the production of innovation in research teams. We address these channels through the use of micro-level data from Denmark. We highlight a host of facts about the links between PhD education and innovation. In order to connect education and R&D policy to productivity growth, we build a new model of endogenous growth with talent heterogeneity and financial frictions. We calibrate our model to capture features present in the data and study counterfactual policy exercises. We find that the introduction of a subsidy to innovation is less effective than in standard models. However, even though R&D policy has limited effectiveness, education policy can potentially sort high quality credit-constrained individuals into a PhD, and hence, can have a bigger impact on the overall innovation.

It is important to note that Marta is also a very effective teacher and presenter. She has taught various courses during her time at Chicago and students enjoyed her classes. She has been my TA in my PhD class, Firm Dynamics and Economic Growth (Econ 33530), and the undergraduate Economic Growth course (Econ 23410), and she has done an excellent job in that capacity as well.

I was very pleased with her teaching. In addition, I am running a growth reading group where students present their work-in- progress in front of their peers and me, and Marta is an outstanding contributor to that group. She always asks good questions and gives insightful and meaningful feedback to her peers. These meetings have been great opportunities for me to observe her skills as a potential future advisor and colleague. I have been very impressed with her performance.

In conclusion, Marta is an excellent researcher and I am convinced that Marta has the potential of becoming a prolific and renowned economist. She is bright, hardworking, and a deep and clear thinker. And in addition, it is important to emphasize that Marta has an extremely pleasant personality and is exceedingly amiable and collegial. I can already see very clearly how much Marta would benefit from the 13th NBER Entrepreneurship Research Boot Camp and also contribute to the research environment there. Hence, I support her application with great enthusiasm.

Marta has my strongest support without any reservation.

Please feel free to contact me if you need any further information.

Best regards,

Ufuk Akcigit
*Arnold C. Harberger Professor of Economics*

