Federica Zeni

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Personal Information:
Date of Birth: Nov 28 1989
Place of Birth: Milan, Italy
Sex: Female

Placement Director: Professor Harjoat Bhamra (h.bhamra@imperial.ac.uk)
Placement Administrator: Humayra Jones (humayra.ahmed@imperial.ac.uk)

Education:

Imperial College London, 2017 to present
Ph.D. Candidate in Finance program
Thesis Title: "Essays in Climate Finance"
Expected Completion Date: December 2021

References:

Professor **Tarun Ramadorai** (1st supervisor)
London, SW72AZ
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Professor **Ansgar Walther** (2nd supervisor)
London, SW72AZ
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Professor **Franklin Allen**
London, SW72AZ
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Professor **Marcin T. Kacperczyk**
London, SW72AZ
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Professor **Patrick Bolton**
New York, NY 10027
pb2208@columbia.edu

Previous Education:

2019	**Columbia University**, Visiting Graduate Student.	
2014-2015	**Pierre et Marie Curie and École Politechnique**, Msc in Quantitative Finance.	
2012-2014	**Politecnico di Milano**, Msc in Mathematical Engineering.	
2009-2012	**University of Rome Tor Vergata**, Bsc in Mathematical Engineering	

Research Fields:

Corporate Finance, Firm Behaviour: Theory and Empirical Analys
Environmental Economics, Corporate Sustainability

Teaching Experience:

Spring, 2020	Big Data in Finance I, Imperial College London, Prof. Tarun Ramadorai
Spring, 2021	Big Data in Finance I, Imperial College London, Prof. Tarun Ramadorai

Research Experience and Other Employment:

2014-2016 — British Petroleum, London, quantitative analyst.
Pricing and hedging of exotic derivatives on energy commodities.

2017-2018 — Imperial College London, London, research assistant.
Non-Authored paper "*Sources of Inaction in Household Finance: Evidence from the Danish Mortgage Market*", with Steffen Andersen, John Y. Campbell, Kasper Meisner Nielsen, and Tarun Ramadorai, *American Economic Review 110(10), 3184-3230.*

2018-2019 — Bank of Italy, Rome, economic researcher.
Emerging Markets and Commodity Market Division of the Economics, Statistics, and Research Department. Focus on energy markets.

2019-2020 — Columbia University in the City of New York, New York, visiting student.
Financial Economics Department. Faculty sponsor Professor Harrison Hong.

2021-present — Bank of Italy, Rome, economic researcher.
Firms and Regional Analysis Division of the Economics, Statistics, and Research Department. Focus on corporate environmental policies.

Honors, Scholarships, and Fellowships:

2016-2017	Giorgio Mortara Scholarship, Bank of Italy.
2016-2017	Dean's award for academic excellence, Imperial College London.

Conferences:

2021: Seventh Annual Volatility Institute at NYU Shanghai (VINS) Conference- "Climate Risk-Modeling, Financial and Economic Impacts, and Response", 4th joint research conference on firm financing, organization and dynamics: "New challenges facing firms in the post-Covid world", New Zealand Finance Meeting, 2020: Western Finance Association (WFA) 2020 Annual Meetings, HEC Paris Spring Finance Conference, UZH Young Researcher Workshop on Climate Finance, 2019: Southwestern Finance Association (SWFA) 2019 Annual Meetings, 2018: Irish Academy of Finance.

Research Papers in Progress:

"*Optimal Design of Green Securities*", with Adelina Barbalau

We develop a model of green project financing which incorporates investors with green preferences into an otherwise standard framework of corporate financing with asymmetric information. Firms seek to finance green projects whose outcomes embed an uncertain, non-measurable component that is revealed only to the firm and which can be manipulated. Firms can raise funds using project-based non-contingent green debt contracts, such as green bonds, that restrict the set of projects to be financed using the proceeds, but make no commitment to green outcomes. Alternatively, they can use outcome-based contingent green debt contracts, such as

sustainability-linked loans and bonds, that do not impose restrictions on the use of proceeds but embed contingencies which ensure commitment to outcomes. The model predicts that contingent contracts are optimal when green outcomes are perfectly measurable and cannot be manipulated. However, when the measurement systems on which contingencies are based are manipulable and firms differ in their ability to manipulate, the result is a mixed equilibrium whereby issuance choices vary with firm and project type. In presence of asymmetric information about firm's type, green bonds can be used as an expensive signalling device, and we find empirically that contingent green debt securities have lower green premium and are issued by more emissions intensive firms.

"*Climate Regulation and Emissions Abatement: Theory and Evidence from Firms' Discosures*", with Tarun Ramadorai, r&r Management Science, 2021

We construct measures of firms' beliefs about climate regulation, plans for future abatement, and current actions on emissions mitigation, using Carbon Disclosure Project data. These measures vary significantly around the Paris climate change agreement an- nouncement. A dynamic model of a representative firm exposed to a future carbon levy, trading-off emissions reduction against capital growth, and facing convex emissions abatement adjustment costs cannot explain these patterns. A two-firm model with cross-firm information asymmetry and reputational externalities does far better. Our findings imply that abatement is strongly affected by firms' beliefs about climate regulation, with cross-firm interactions amplifying the effectiveness of regulation.

"*Mitigating Leakage Risk under Information Asymmetry: Evidence from the United Kingdom*"

This paper uses a model and data from a large-scale corporate climate regulation in the United Kingdom to study the cost-effectiveness of carbon tax policies subject to carbon leakage risk and asymmetric information. The model shows that when regulated firms can relocate to unregulated jurisdictions, a standard carbon tax is sub-optimal in that it generates carbon leakage losses that can be alleviated by subsidizing firms at risk of relocation. However, in presence of a binding budget constraint on the pollution subsidies, cost-efficiency requires the regulator's knowledge of carbon leakage propensities across firms. In line with evidence collected from the UK climate policy, the model shows that when the regulator is asymmetrically informed about firms' emissions abatement cost, subsidies are most likely to favour emissions intensive industries. A quantitative exercise suggests that, under the same government budget allocated for the actual policy, counterfactual cost-efficient subsidies that include financial constrains and a latent factor in firms' emissions abatement could have improved welfare of 20% in expectation.

"*Risk Premium in the Era of Shale Oil*", with Fabrizio Ferriani, Filippo Natoli, and Giovanni Veronese

The boom in the production of shale oil in the United States has triggered a structural transformation of the oil market. We show, both theoretically and empirically, that this process has significant consequences for oil risk premium. We construct a model based on shale producers interacting with financial speculators in the futures market. Compared to conventional oil, shale oil technology is more flexible, but producers have higher risk aversion and face additional costs due to their reliance on external finance. Our model helps to explain the observed pattern of aggregate hedging by US oil companies in the last decade. The empirical analysis shows that the hedging pressure of shale producers has become more important than that of conventional producers in explaining the oil futures risk premium.

Earlier Published Papers:

"Representation of non-Markovian Optimal Stopping Problems by BSDEs with a Single Jump", with Marco Furhman and Huyên Pham, *Electronic Communications in Probability*, 2016.

Programming Skills: Python, C++, Fortran, Matlab, Stata

Languages: Italian (native) English (proficient) French (intermediate)