Teaching Statement

Francisco Poggi

I have had a rich, fulfilling teaching experience as a graduate student at Northwestern. I have served as a teaching assistant in undergraduate classes, Ph.D.-level classes, MBA classes, and executive MBA classes. I really enjoy teaching and think it richly complements with, mentoring, research, and all other aspects of being a scholar.

Below, I describe my most rewarding experiences as a teaching assistant, and my role in each of these. I also present my teaching principles, and I conclude by analyzing where and how I feel I can best contribute as a teacher.

Ph.D. Program - Microeconomics I was an assistant in Professor Eddie Dekel's class for three years. This was the first in the micro sequence of the Ph.D. program. Besides the usual roles of grading, holding problem-solving sessions, and holding office hours, I help overhaul the class notes to make them more useful to the students. I also helped produce exam questions that were uniquely tailored for this class. This was a challenging task: though I was a student in this class, it was not trivial to anticipate how a question would be interpreted by students and then how to adjust the difficulty. Once you know the answer, it is difficult to see a question with fresh eyes again.

MBA Program - Decision Making and Modeling Initially, my role was only grading assignments and holding office hours, but with time my responsabilities broadened to include incorporating new material into the class, helping Professor Nabil Al-Najjar write cases, and adding and updating topics. I learned the importance of keeping the material fresh, and how the time and effort invested in adding material is worthwhile, not only in terms of stimulating the interest of students but also in terms of keeping oneself motivated to teach the same class for many consecutive years.

EMBA Program - Analytical Approach to Uncertainty This was the first quantitative class in a carefully curated program based in Miami. I was summoned to assist in seven consecutive biannual cohorts. My main role was to complement the theoretical class with in-person assistance to help students learn and apply the material. I learned from this experience how to communicate with an extremely heterogeneous crowd (MDs, lawyers, military and government

personnel, and so on). I also had a lot of fun, and I met very interesting, deeply curious people.

Over the years, I received excellent feedback, in large part, I believe, because **I think actively and continuously about how to improve my communication and teaching skills**. Over time, I learned how to adapt my techniques to the format of the class, the audience, and the topics. My teaching philosophy, however, is based on the following general principles:

- **Relevance:** Engaging the student is fundamental to effective learning. Transmitting the relevance of the contents of the class is an investment that usually pays off in terms of increasing engagement.
- **Question clarity:** If the question is not clear, it is hard to motivate an answer. Good questions trigger intrigue in the student, but there should be no suspense with respect to what the question is.
- **No magic shows:** It is tempting to present, for example, the most elegant or clever version of a proof. This might generate awe among students but, usually, is not the most instructive method. The class should follow a logic that is natural to solving the targeted problem.
- **Class could be just the start:** Students interested in continued learning about topics that interest them should be ably guided, especially in advanced classes.

At the graduate level, my ideal class would cover applied topics with a theoretical approach. For instance, I would thrive teaching a class on the economics of innovation. I would also be excited to teach a more fundamental class, either in information economics or microeconomic theory. I would also be a good fit to design and teach an undergraduate-level class on behavioral economics.

These are, of course, classes where I think I have an edge and where my contribution would be most valuable. However, I am excited to contribute to teaching in any way that I can be useful.

Research Statement

Francisco Poggi

I am a microeconomic theorist. My interests are broad, but the questions I find most exciting are related to law, innovation, industrial organization, and organizations. I take applications seriously. I find value in more abstract constructions when they help explain the underlying forces driving the phenomena of interest.

In this statement, I summarize my current research agenda, introducing an element that is common to most of my projects, then presenting my projects according to the literatures that they contribute to. I also discuss potential research avenues and future plans.

Information shapes decision-making in different ways. When designing laws, patent rights, and other institutions, information can be used to affect the incentives of participants *directly*, by making outcomes depend on the information held by them. For example, patent rights can be granted as a function of information acquired; liability can, in principle, depend on the information that the injurer had before the damage occurred (how safe the injurer thought their actions were). In my research, I explore how this use of information shapes the way research and development is conducted, the legal and economic institutions that prevail, and the way firms are organized.

Research and Development

In my job-market paper, "*The Timing of Complementary Innovations*," I study the dynamic allocation of costly and scarce resources across different R&D projects. The projects' feasibility and difficulty are uncertain, but this uncertainty is gradually resolved as the agents work on the projects. I analyze the efficient allocation of resources for complementary projects and characterize the situations where it is optimal to work on the projects in sequence and simultaneously. I exploit a simplifying feature of working with complements, that makes the problem of dynamic allocation equivalent to a static problem. I compare the efficient allocation to an allocation that is the

equilibrium allocation with many agents in the context of patent races.

In an ongoing project, "*Optimal Publication Bias*," I analyze the trade-off between learning about the underlying feasibility and the development of projects. It might be efficient to first learn about the feasibility of a project before start developing it. When development is competitive, firms might jump to the development stage too early. A way to compensate for this is to reward discoveries about the feasibility of projects. I analyze how these discoveries should be optimally rewarded and how results should be diffused to restore efficiency.

Tort Law and Liability Rules

Liability rules cause agents to internalize the potential consequences of their actions. With unlimited liability, making agents liable for all damages perfectly aligns agent incentives with social welfare. When liability is capped, agents not only take socially inefficient actions but also to acquire less information than what is socially optimal.

In joint work with Bruno Strulovici, we consider the design of liability schemes when part of the information acquired by the potential injurer can be used as a part of the mechanism. A firm acquires evidence about the riskiness of a product before launching it to the market. We characterize the optimal liability rule when the firm has private information, the regulator can penalize the firm only when damage occurs, the liability amount is capped and can depend on the likelihood ratio of the evidence collected by the firm.

In this problem, the intervention of the principal is triggered only if and when a damage occurs: there is no contracting ex ante, but the principal can commit ex ante to a liability rule. A more general question is whether the ability to contract ex ante improves efficiency. We examine this question in a companion paper, providing sufficient conditions under which ex ante contracting does not improve efficiency.

Mechanisms Based on Aggregate Outcomes

In joint work with Quitzé Valenzuela-Stookey, we look at the possibility of using aggregate data to inform a decision when the data itself might me affected by the expectations of such decision. The problem of decision making in the presence of these feedback effects appears in a wide range of economic environments.

In our model, a principal commits to a decision rule (a map from the market outcomes to the set of actions). There is a payoff relevant state that is unknown to the principal, and we require the agents' belief about the principal's action to be consistent with the principal's announced decision rule, given the realized equilibrium outcome. Rather than studying the choice of decision rules, we focus on the induced mappings from states to actions and outcomes and ask which action and outcome functions are implementable. This approach greatly simplifies the study of optimal policies.

Looking Forward

I am interested in pursuing several research avenues related to my job-market paper. One in particular looks at resources within organizations. Organizations are sometimes composed of different units working toward a joint goal. What is the optimal information scheme for a manager who oversees different units? In particular, what information should be shared about the progress to date or the outcomes achieved in each of the units? In which contexts is transparency optimal?

I also aim to advance the study of law and economics, for example by applying the tools of mechanism design to the analysis of tort law with bilateral care.