Research Statement

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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.