Research Statement

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I am a microeconomic theorist. The topics I am interested in are broad, but the questions I find more exciting are mostly related to law, innovation, industrial organization, and organizations. I take applications seriously. I also find value in more abstract constructions when these help understand the underlying forces that drive the phenomena of interest.

In this statement, I provide a summary of my current research agenda. First, I introduce an element that is common to a large subset of my projects. Second, I present my projects categorized by the main literatures that they contribute to. At last, I 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, titled "the timing of complementary innovations", I study the dynamic allocation of costly and scarce resources across different R&D projects. There is uncertainty about the projects' feasibility and difficulty, but this uncertainty is gradually resolved while 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. To do so, 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 solution to the equilibrium allocation with many agents in the context of patent races.

In an ongoing project, titled "optimal publication bias", I analyze the trade-off between learning about the underlying feasibility of projects and their development. It might be efficient to first learn about the feasibility of a project before start developing it. With competition in development, 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 should these discoveries be optimally rewarded and how results should be diffused to restore efficiency.

Tort Law and liability rules

Liability rules make agents internalize the potential consequences of their actions. With unlimited liability, making agents liable for all damages perfectly aligns the incentives of the agent with social welfare. Bounded liability induces agents not only to 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 injurer can be used as a part of the mechanism. The setting is as follows. An agent decides whether to launch a risky product. The agent has private information about the risks and can acquire information before the launch decision. If the product is launched it may harm a third party and trigger an intervention by the principal. The principal decides how much to make the agent liable when damage occurs, subject to a maximal liability ceiling.

The intervention of the principal, however, is only triggered if and when there is a damage: there is no contracting ex-ante, but the principal can commit ex ante to a liability rule with the objective to maximize expected social welfare. We characterize the efficient policy under different scenarios, in particular depending on what can be observed ex-post about the information held by the injurer at the time of their decision.

There is a more general question of whether the ability to contract ex ante improves efficiency. In a companion paper we look at this question in a more general setting and we provide 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 price. Rather than studying the choice of decision rules, we focus on the induced mappings from states to actions and prices and ask which action and price 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 of them looks at resources within organizations. Organizations are sometimes composed by different units working towards a joint goal. What is the optimal information scheme for a manager that oversees different units? In particular, what information should be shared about the progress that has been made or the outcomes achived in each of the units? In which contexts is transparency optimal?

I also aim to develop 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.