

# Research Statement

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I am a microeconomic theorist. In my research, I use advance methods to answer questions of policy and practical relevance. The type of questions and topics I am interested in are broad, but mainly related to law, innovation, industrial organization, and organizations. I take the applications seriously. However, I also find value in generality when it helps understand the underlying forces that drive the phenomenon of interest.

In this statement, I provide a summary of my current research agenda and future plans.

Information shapes decision-making by shedding light on the relationship between actions and outcomes. When constructing laws, patent rights, and institutions that align private incentives with a given objective, information can also be used *directly* by making outcomes a function of information held by the participants. 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 though their actions were).

A common theme in my research is that information is use by agents to make decisions (whether and how to continue doing research, whether to launch a product) and it is also used directly as an input to affect incentives (patents and liability). I'm interested in how this dual role of information, and the interplay with actions affects the way firms are organized, how research and development is conducted, and the legal and economic institutions that prevail. Next, I describe my research projects categorized according to their broad topics.

## **Information acquisition from multiple sources**

In this first category, I study dynamic problems of information acquisition. These problems feature agents that decide, at each point in time, what to learn from a given set of information sources.

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 an agent's 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 actions**

In the previous papers information is acquired. With Quitzé Valenzuela-Stookey we look at a stationary setting where information is desegregated in the economy. The principal would like to use the information to inform, but observes market aggregate outcomes that, in equilibrium, might reveal the aggregate information. The principal commits to a decision rule that maps the market outcome to an action. We characterize the set of distributions of states, actions and outcomes that is implementable.

Looking forward, I plan to continue working on the implications of information on the design of laws and policies that produce more efficient societies and profitable organizations. For instance, I'm interested in pursuing several research avenues related to my job market paper. 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 achieved in each of the units? In which contexts is transparency optimal?