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Legal coordination in pluralism: Three essays from a law and economics perspective

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Contents

Introduction

Law is an important institution of coordination in the contemporary globalized world. It helps to anchor and structure social interactions across different spheres of activity, cultures, and locations. At the same time, one of the most important features of contemporary legal landscape is pluralism – subsequent coexistence of and overlap between multiple legal systems. These interrelations are so prevalent that some legal scholars propose *conflict of laws* as a most adequate analytical perspective in law and a crucial matter for political economy (Michaels 2019; Dodge 1998; Watt 2002; Riles 2014). Still, legal pluralism, also beyond traditional state law, does not undermine the stability of law as an institution in a broad sense. Despite predictions of legal convergence and deliberate attempts of legal harmonization, pluralism of laws prevails. Law lasts, within and across many jurisdictions and semi-private orderings, often with inconsistent and conflicting rules.

In the law's fragmentation and hybridization, and with multiple conflicts about its content and applicability, and compromised efficacy of different rules and reforms – how does law-based coordination prevail? The main curiosity driving this research and defining its main questions regards the internal tensions – inherent to law at all levels – and their dynamic in the pluralist context. How does the latter shape the law's role and functioning within and across complexities of modern world? How does it affect the (possibility of) applying economic analysis to study legal problems? What are the criteria for delineation and comparison between intertwined legal systems? Is legal reform compromised by law's complexities? What are the available channels for social change via law? Can law and economics framework accommodate a more nuanced, pluralist view of law? This thesis explores several aspects of law as a complex institution to address some of these questions.

1. Defining the scope of law: pluralist-institutionalist perspective

In navigating global legal pluralism and fragmentation of law, legal scholars and practitioners challenge the traditional categorizations for public and private law. Socio-legal theorists propose new definitions of law and new methodologies to study legal problems beyond a single, state-law jurisdictional perspective (Michaels 2019; Watt 2011; Calliess and Zumbansen 2012; Teubner and Beckers 2013). Demarcation lines between law and social norms or official and unofficial law are disputed in social sciences and vary across different disciplinary conceptions of law and authors' analytical purposes (von Benda-Beckmann 2002). One of the most important points of those debates – and one without the definitive answer either – is the role of traditional, official state law.

Some attribute to the state law the power to recognize and legitimize unofficial laws; other point to its constitutive role in contemporary capitalist social order (Deakin et al. 2017; MacCormick 2007) or its decisive function in the situation of the conflict of different orders and norms (Michaels 2007; Teubner 1998).

Throughout this thesis, law is understood and referred to as a complex institution. The basic notions correspond with the institutional theory of law of Neil MacCormick (1982; 1998; 2007) and are related to the views of legal institutionalism (Deakin et al. 2017). Importantly, I refer to law primarily in the sense of official law, issued or recognized within legal-political apparatuses of nation-states. It does not, however, preclude a broader, functional interpretation, where applicable. In particular, it is inclusive of the pluralist understanding of law. I share the view that "[A] pluralistic conception of law and legal order is fully compatible with a recognition that any account of the character of law must start, even if it does not finish, with the law of the contemporary constitutional state" (MacCormick 2007, 331) – if only because it came to be a dominant mode of social organization in the modern world of nation-states. Law is by no means the only possible, nor the only existent normative-institutional system. However, law provided by nation-state apparatuses has distinct features and role in contemporary society and globalized world. Some of these include the open-ended, durable, and relational aspects of legal rights, the sequential character of law-based coordination and the role of courts in institutional reinforcement or change. They will be analyzed in greater detail in the subsequent chapters of the thesis.

Enabling coordination and stable social order is considered one of the fundamental functions of law across legal systems and throughout socio-legal and institutionalist-economic scholarship. On the one hand, law is believed to coordinate expectations and social organization, providing conditions for stability and a platform for change. On the other hand, the efficacy of law varies across jurisdictions and time, depending on many factors and context characteristics. Yet both comparative legal studies and law and economics have been at times criticized for insufficient account of historical and social differences, important for local (and general) legal dynamic. Law and economics is frequently accused not only of that, but also of ignoring more basic information about legal systems and their workings. Arguably, some of these problems lie deeper. The theoretical framework of the discipline builds on certain simplifying assumptions about functioning of legal systems and applies it to study legal rules with respect to rather narrowly defined criteria.

The presented thesis focuses on the role of legal institutions in social coordination in the context of legal pluralism – the multitude of coexisting and overlapping legal systems. It explores three aspects of the law's coordinating role from a law and economics perspective: the concept of legal rights in the efficiency analysis context, the role of beliefs in the dynamics of the conflict of laws interaction, and the role of social movements in legal reform before courts, in strategic litigation. Before examining those issues in greater detail, let me take a step back to situate the law-as-an-institution within the broader economic institutional theory.

2. Institutions: rules vs equilibria

The two approaches to institutions dominant in economic literature define them either as systems of rules or as correlated equilibria (Greif and Kingston 2011; Hindriks and Guala 2015). The former presents institutions as stable, abstract and impersonal rules of normative (behavior constraining) character (importantly North 1986; 1991; see Ménard 1995). Institutions, in this sense, set limits to available choices. The underlying assumption is that of an external enforcement: the rules must be followed, and there should be a mechanism or authority that prevents or punishes the breach. This need not be limited to law only; unofficial social norms have been effectively secured by other channels – be it reputation effects, ostracism, or other forms of centralized and decentralized enforcement. However, legal rules are applicable and enforced on a greater societal scale, irrespective of the local social setting with its possible relations and interdependencies, like group- or personal ties. In that view, law is a collection of rules that incentivize certain (efficient) behaviors and not others, thanks to its enforcement characteristics. This definition is important for the vast part of traditional law and economics scholarship.

The second approach derives from the game-theoretical analyses of social coordination. From that perspective, institutions are equilibria – (stable) states in which individuals operate in a synchronized or cooperative manner. Beliefs and expectations, leading to a concerted behavior, play a central role (Schelling 1960; 1971, 71; Guala 2016). Importantly, such an equilibrium is self-enforcing: if an expectation is fulfilled sufficient number of times, beliefs are reinforced, and an institution prevails. This also implies that some institutions last despite the attempts to change them, and even though the alternative would make the society better off. Undermining the beliefs leads to institutional change, or to disruption of order. The coordination of expectations requires shared cognitive categories – which depend, among others, on culture and history (Aoki 2010;

Greif and Kingston 2011, 27, 31; Hindriks and Guala 2015, 11). An effective introduction of new rules is only a part of institutional change and is on its own not sufficient.

The relation between the two analytical frameworks is that of complementarity rather than competition. If rules are clearly observable and not contested, and the assumption of enforcement or legal efficacy is not problematic, the institutions-as-rules approach would suffice. Otherwise, one must consider beliefs and incentives of individuals as endogenous factors in institutional analysis. "The key to institutional change, from this perspective, is not just changing rules, but changing players motivations and patterns of behavior in a self-enforcing way" (Greif and Kingston 2011, 40–41). Institutional change depends on the updating of beliefs. I explore the relation between law, beliefs, and law-based interactions in the subsequent chapters of the thesis.

3. Legal rules, rights, and coordination

Where is law-as-an-institution situated against that background? In neoclassical law and economics, both institutional theories are represented. The important aspect that differs between the two frameworks is time horizon. The rules-view applies more easily to instant interactions. Rules are seen as an exogenous incentive framework, restricting the set of possible choices and the prices of available behaviors. This is their appeal for mainstream law and economics, where it looks at isolated choices and exchanges in the efficiency context – and with the (timeless) general-market-equilibrium model as a background. Thus, the concept of law as a set of rules, applicable to allocation of legal (property) rights – seen as a bundle of separable (even if not necessarily alienable, or exchangeable) entitlements – is widespread in the discipline.

From another angle, the expressive effects theory of law, or the coordination models of law more broadly, employ the institutions-as-equilibria approach. They are focused on a wider context and long-term perspective. In that view, the law – by the content of its rules, or by expressions of meaning provided by legal officials – sends messages. These are signals of social (dis)approval of certain behaviors, allowing people to form expectations and engage in strategic interactions (McAdams 2000; 2005; 2015). Centralized enforcement is not always necessary. The efficacy of law may depend on credibility of the signal and decentralized enforcement. For example, a third-party – a "correlating device" – sends a signal indicating the applicable rule, while every deviation by an individual is punished by other participants (Hadfield and Weingast 2012). Further, the efficacy of law and its expressive effect can be compromised by the credibility of legal system and

its officials: if people do not see that a policeman or a judge respects the official law, they would not render the changes in official law binding (Basu 2018). Importantly, the stability of such a legal ordering regime relies on the presence of a credible choreographer – a "correlating device".

In the presented thesis, I draw on both approaches. The important aspects that differ between the two frameworks is time horizon and contextual factors. I combine their insights, building my analysis from a short-term perspective, but within an extended framework. In this sense, the presented thesis has also a methodological angle. I propose to introduce a more nuanced categorization of legal rights, based on rivalry criterion (Chapter 1). I then examine how beliefs about law and legal rights affect coordination in the context of legal pluralism in a game-theoretical model. To account for the latter with more accuracy, I relax the assumption on common beliefs distribution among participants of legal interaction (Chapter 2). An important and distinct assumption throughout is the sequential character of law-based coordination. It relates to the role of courts as the ex-post signaling institutions – providing enforcement, but also interpretation. It is relevant for how law-based interactions play out – (a belief about) access to court is a significant determinant of strategy choices (Chapter 2). It also means that there are several points of potential change and reinforcement within a legal system – the process of legal change has several stages. To reflect this sequentiality further, in Chapter 3, I introduce an informal model of intermediary expressive effects of law. I focus on litigation as one of the (optional) stages in such a process.

4. Institutional legal rights

The concept of rules as (perfectly) enforceable incentives is popular in the efficiency-oriented neoclassical economic analysis. To a large extent, people continue to coordinate around rules across legal regimes – and in law, rules structure the respective rights. Perfect knowledge of rules and their perfect enforcement is often a tacit assumption in the economic analysis of instant, commodifiable (property) rights. Of course, there are some problems with this approach – importantly, with the very concept of Pareto-efficiency and the notion of property rights used in those analyses (Calabresi 1991; Samuels 1974; Arruñada 2016; Merrill and Smith 2001; 2011). It has been argued that a reductionist view on legal institutions is somewhat imposed by the limitations of neoclassical framework (Solari 2019). However, overlooking some relevant aspects of legal rights have consequences for the explanatory power of the analysis. In the opening chapter of the thesis, I discuss the open-endedness, relational character, and durability of rights. These

qualities of legal rights are directly related and visible in the long-term analysis context. However, they cannot be entirely removed from sight in the short-term framework.

To address this problem, I propose to introduce a category of enabling rights in law and economics. They are qualitatively different from property rights, as distinguished by the rivalry criterion, related to scarcity. Enabling rights attach to persons and are non-scarce; property rights attach to things (material and immaterial objects) and are scarce. I show that this category is relevant for efficiency analysis even in the context of instant exchange, and even more importantly – beyond it, in the dynamic context. The allocation of enabling rights preconditions participation and determines respective positions in a legal interaction, e.g., law-based economic exchange. Without determining the parties' enabling rights, one cannot infer about efficiency of any transaction. What is more, the inter-jurisdictional or inter-systemic comparative analysis of legal rules as to their economic efficiency effects, without taking into account the scope and distribution of enabling rights – is incomplete and may lead to false conclusions.

The concept of legal rights and the importance of acknowledging their constitutive features in economic-institutional analyses relate directly to the time horizon of institutional analysis. The mechanisms of institutional stability and change rely on beliefs regarding the institution – and all its building elements. Those remain stable in short-term but may evolve in the longer perspective. A partial change in a more complex institution can lead to its reinforcement, or disrupt the stable pattern – because it undermines the beliefs of agents and their behavior (Greif and Laitin 2004, 638–39).

Institutions of law are not an exception to the dynamics of stability and change; the efficacy of legal rules as coordinating (equilibria-inducing) devices rests on the social beliefs regarding them as well.[1] Actors continue to devise their strategies based on what they believe they have a legal right to do (and what the others have the right to do, what the others believe they have the right to do, and so on). Coordination takes place "in the shadow of the law" (Mnookin and Kornhauser 1979), based on the beliefs regarding the legal rights and the functioning of legal system as a whole.

[1] The source of those beliefs can differ; the threat of enforcement, the authority and rule-following propensity of humans, the internalization of social control and other factors can all play a role – to different extent in different legal systems (e.g., in the sociology of law, the classical distinction is between repressive and restitutive system). The survey of those theories is beyond the scope of the present work.

Arguably, relational legal rights, characterized by their duration over time and open-endedness, are central to the interplay between institutional *stasis* and shift. The first feature makes them a basis for stable, long-term coordination. The second allows for introduction of novelty, and a space for non-disruptive conflict. Law is an institution, and a complex one. The general legal system framework, with potential judicial conflict resolution, provides the ground not only for enforcement of some well-known legal rule, but also for interpretation and negotiation of contested boundaries between legal rights. It allows for institutional adjustments that do not undermine the general stability of order. Conflict and coordination in law are intimately related, and legal rights are central in this nexus.

5. Conflict and coordination in legal pluralism

Once the open-endedness of legal rights is acknowledged, it becomes clear that within a legal system it is possible to have different beliefs about what exactly the legal rights are, how do they situate the respective positions of their holders, and which actions would be protected by the law. From there, the mechanisms of conflict resolution inherent to legal systems – judicial adjudication and other forms – emerge as their institutional "test-points".

In a legal system, a conflict eventually finds its solution before the court. This allows beliefs to converge and coordination to be established around one rule and not the other. In the multiplicity of laws, issued and developed by many governance bodies, the role of legal interpretation and conflict resolution by valid court decisions is increasingly important. Even if the parties do not necessarily end up before the court, there is always the possibility that they might find themselves there. That is the long shadow of the law mechanism at work (Mnookin and Kornhauser 1979).

Much of successful legal coordination rests on the shared understanding on the content and scope of legal rules – there are many cases when there is lack of a common understanding on what is the exact interpretation of a legal rule, or which legal rule is applicable. There is an important distinction between legal conflict and conflict of law. The former is more of an interpretation conflict about legality of respective actions in some situation of interdependence, i.e., the exact boundaries of respective rights at their intersection. The latter is rather the applicability conflict, regarding the understanding of which legal rules should determine the legality of actions in that situation, i.e., what kind of respective legal rights parties have in the first place. "Following a legal rule" is, in that sense, carrying out actions that are presumed to be within the scope of someone's

legal right – if legally challenged, it would be declared legal by the court. Parties can also carry out their activities and not agree upon which legal rule is, in fact, applicable in their interrelation situation, or they can hold different beliefs about it. Legal pluralism – a situation where more than one legal system may govern the same relation – is the context where such a conflict of laws is likely to occur. Of course, there are collision rules and hierarchies to structure such situations in the interjurisdictional interactions. However, there are many spheres where such meta-rules are not known, and several different legal (and quasi-legal) regimes may be applicable. It is the latter situation I analyze in Chapter 2 of the thesis.

I am interested in relation between conflict and coordination in legal pluralism. I focus on conflict of laws defined as an interaction situation in a legal-pluralist context, where there is no clear meta-rule indicating the legal rule that governs that relation, and where participants have different preferences over the alternative rules. I model the conflict of laws interaction as a sequential process in a dynamic Bayesian game. Central to the game are private beliefs about the structure of legal rights, represented by an endogenous parameter defined as a subjective probability of winning in case of litigation. To include legal diversity considerations fully, I relax the usual assumption of common prior probability distribution.

The role of judiciary in the model is that of an ex-post correlating device – the last resort instance of conflict of laws resolution. A perfect availability of legal conflict resolution is the underlying assumption on which large part of law and economics analyses rest: even if legal rights are not perfectly defined, or some private incentives to breach socially beneficial contracts exist, and so on – the potential enforcement of rules sustains legal coordination in large societies. However, it may not always be the case, or the (perceived or factual) access to legal system may be non-symmetric between the participants. I include a parameter to proxy for the perceive access to justice in the model. I find that respective beliefs about legal rights determine the outcomes of the interaction to a significant extent – irrespective of whether they are objectively true or not. However, legal coordination prevails to a large extent, even in the condition of the conflict of laws and with only minimum shared beliefs about law ("There is a legal system with a court-based conflict resolution"). Perceived access to justice is another important factor of that dynamic. The model explains legal divergence – the prevalence of legal pluralism despite interactions across systems and harmonization attempts.

6. Law, legal context, and reform

Courts are the "test-points" of coordination based on legal rights. As the last-resort conflict resolution and interpretation instance in the sequential legal coordination process, they also provide a platform for contestation of the legal *status quo*. While most court cases and decisions regard only the parties involved in the lawsuit, sometimes the court's verdict, or the legal proceeding only, they may also have a broader reach – and wider consequences.

Due to the courts' place in legal systems, they may function as signaling devices: if a court case and decision gain significant public attention, it may lead to the belief update on a sufficient scale and result in a shift of institutional equilibrium. The focal point potential of adjudication has been used by social movements and promoters of legal change in strategic (or "public interest") litigation (Ramsden and Gledhill 2019; Freeman and Farris 1991; Cummings and Rhode 2009). The defining features of strategic litigation, as opposed to regular litigation, are that they are aimed at advancing legal change with an effect applicable beyond a single case and extend over many available legal dispute resolution instances (Ramsden and Gledhill 2019).

In the third chapter of the thesis, I introduce an informal model of intermediary expressive effect of law as a basic framework to study the dynamic of strategic litigation. This effect includes a response of social movements to an early-stage legal reform: they aim to use the courts signaling potential as a platform to promote belief and prompt an effective legal reform. I test this informal model in an empirical quantitative case study, in the domain of climate change law and in the international context. In the case study, I focus on strategic litigation as a response to the introduction the Paris Agreement of 2015, an international treaty on climate change. I am interested in examining whether such an effect exists, and what are the determinants of the response. To address the latter, and to proxy for the legal system's overall efficacy, I include among others the legal system adoption context data, as well as representative democracy indexes. Using the data on 270 climate change-related lawsuits from 36 countries, I find that the introduction of recent international treaty regarding climate change, the Paris Agreement of 2015, had an intermediary expressive effect on climate change litigation across jurisdictions. The results indicate also that the effects vary across jurisdictions and that the legal system adoption context is a significant predictor of those differences.

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Chapter 1

The double function of legal rights: Introducing the concept of enabling rights in law and economics

Abstract. *Law and economics' concept of legal rights is problematic. The predominant focus on property rights and their understanding in the discipline downplays crucial aspects of legal rights, such as durability, open-endedness, and relational character. Moreover, inadequate attention is paid to legal rights other than property rights in general. This underlies some of the problems with efficiency analysis within the mainstream framework. To tackle some of those challenges, the essay proposes a new category, an enabling right, distinct from property right along a rivalry criterion. It is argued that indiscriminatory assignment of enabling rights preconditions efficiency of a law-based economic coordination system.*

1. Introduction

Law is an important coordination device. It makes social interactions predictable and conflicts solvable. The patterns of behavior that the law strengthens or promotes can have different effects in terms of justice, welfare, distribution of resources and other goals societies may value. This is what is of interest for scholars studying law from various disciplinary perspectives, even as they differ greatly in the normative goals and criteria they propose. In law and economics, legal systems are analyzed primarily with respect to their efficiency function – even if not defined so uniformly within the discipline.

My focus in this essay is the concept of legal rights and its relation to efficiency analysis. I aim to critically discuss the notion of legal rights used in the mainstream law and economics framework, preoccupied with their efficiency-enhancing assignment. Multiple criticisms in the literature were focused on the problematic applications of the notion of property rights or the analytical limitations of the neoclassical microeconomic framework to the study of legal interactions or the normative inadequacy of efficiency-based theories. The present argument relates to those criticisms but focuses primarily on the inadequate attention to legal rights beyond, or other than, property rights. I introduce a category of an enabling right, distinct from a property right according to rivalry criterion. I then argue that indiscriminatory assignment of enabling rights precondition efficiency of a law-based economic coordination system.

The concept of law within law and economics is often adapted to fit its analytical framework. On the one hand, law is seen as a set of legal rules, constraints under which people make choices, where (a threat of) enforcement supposedly strengthens the constraint's effect. By modifying a rule, one can change cost-benefit incentives structure under which people make their choices, the relative prices of individual behaviors that generate social costs (Becker 1968; Calabresi 1961; Posner 2011). Introducing or changing a legal rule is understood as a tool of immediate socio-economic change in that view. Much of economic analysis of law operates on this instrumentalist premise, trying to find the optimal (social cost minimizing) liability rule in torts (Calabresi 1961), the optimal severity of punishment in criminal law (Becker 1968) and many other areas of law (Posner 2011), or picturing property and liability rules as two alternative pricing systems (Calabresi and Melamed 1972). Both plausibility of these behavioral assumptions and an existence of such optima have been questioned and they will not be discussed here. However, importantly for the present analysis, legal rights are largely absent in those proposals.

On the other hand, one type of legal rights is central to a vast part of the literature. The term "property rights" is often used as a capacious shorthand for more complex institutions of private law, and at times it is called in without any definition or reference to specific legal institutions. Much has already been said about property rights in law and economics literature, and perhaps even more to point out the multiple problems with those conceptualizations. I will not repeat nor discuss in detail all the important arguments but relate to some of them in here. Arguably, there is a category of rights that is conflated or assumed out in most of the law and economics literature: individual enabling rights. Yet the capacity to coordinate within a legal system rests upon efficacious enabling rights – importantly so within the private property rights-based markets.

Throughout the chapter, legal rights are functionally defined as legally secured positions of exclusive control over some sphere of one's activity - granted and secured within a legal system. The concern is with complex legal rights: durable, relational, and open-ended to a certain extent. Law, as referred to in here, is primarily understood as state law, issued (or recognized) and enforced within a state legal-political apparatus.[2] The basic assumptions adopted here build largely on the

[2] It is not to say that the law must necessarily be limited to formal state law – however, I share the view that state law is an important basis and point of reference for contemporary pluralist legal systems.

institutional theory of law of Neil MacCormick (2007) and are close, though not equal to the views of legal institutionalism (Deakin et al. 2017).

The chapter is organized as follows. The first section reviews some of the criticisms of the property rights' conceptualizations within law and economics. Section 2 outlines the concept of complex legal rights applied in further analysis. Section 3 introduces the rivalry-based distinction between property rights and individual enabling rights. Section 4 revisits the law and economics efficiency analysis in the light of legal rights analysis and proposed typology. Section 5 presents some implications for legal coordination more broadly. Last section concludes.

2. Problematic property rights in law and economics

The role of legal rights in economic dynamics was brought to the discipline's attention in the foundational article of law and economics, Coase's "The Problem of Social Cost" (1960). "The reasoning employed by the courts in determining legal rights will often seem strange to an economist because many of the factors on which decision turns are, to an economist, irrelevant… the immediate question faced by the courts is *not* what shall be done by whom *but* who has the legal right to do what" (1960, 15, emphasis original). Economists should therefore be interested in law in terms of how the "who has the legal right to do what" affects the efficiency of economy. However, the expositional framework used by Coase has gained much more attention than the complete argument put forward in the paper (Coase 1998; Frischmann and Marciano 2015; Hodgson 2015b).[3]

In what later came to be known as the invariance theorem, Coase has pictured the economic interrelations in a zero-transaction-cost world. Using various examples of externalities, he put forward a claim that in these hypothetical markets, where transactions are costless, allocation of rights does not matter for the optimal allocation of resources.[4] If someone's activity inflicts

[3] It has come to be widely known as Coase theorem after referred to as such in a textbook by Stigler (Marciano 2018; Medema 2014, 248; Stigler 1966, 113).

[4] Interestingly, Coase has not used an expression "property rights" at all in "The Problem of Social Cost" paper. He used the word "property" to refer to a piece of land/physical resource and referred there to the "delimitation of legal rights" more broadly. How he saw the role of the assignment of property rights, however, can be understood from Coase's proposal on the "Federal Communications Commission" article (Coase 1959). A more accurate interpretation accounts for the link between allocation and production; the economic importance of (use-)rights to resources being

harmful effects on others, parties could simply trade their rights among each other towards the optimal allocation point. The assignment of rights would be irrelevant. The point was, of course, that real markets are not costless, and that legal rights affect how the economic interrelations play out within them (Medema 2014).[5] The demonstration of a bargain between a cattle-raiser and a farmer was widely discussed and criticized, among others for the limited of the explanatory power of two-party framework (Arruñada, 2016; Buchanan, 1973; Samuels, 1974); for ignoring the aspect of initial wealth distribution (Samuels 1974); and for the mistaken or incomplete interpretation of property rights (Arruñada 2016; Cole and Grossman 2002; Hodgson 2015b; Merrill and Smith 2001; 2011). However, that particular understanding of the institution of property rights – the "bundle of use-rights" theory that Coase employed in his works (1959; 1960) was carried over and widely employed within law and economics.[6] Two problems with the conceptualization of property rights in the discipline are particularly relevant for further analysis: the "in rem" character of rights and their relation to other institutions of private law in the context of markets.

First, one of the important criticisms regards the ignorance towards the "in rem" character of property rights – the quality of them being "attached to things" (Arruñada 2016; Merrill and Smith 2001; 2011). Merrill and Smith argue that the economic rationale lies in the possibility to create new "use-rights", putting resources to their more productive applications, instead of trading some rights that have been prescribed upfront. Property rights holders would have incentives to put effort and bear risks related with innovations only if provided with a guarantee that the benefits of an investment would belong to them – as investments are often costly in the beginning and profitable only over time (Merrill and Smith 2011). "Each new set of uses that improves the utility of the owner of the private good necessarily leads to Pareto improvements… the main quality of private property [is] the possibility of taking decisions without incurring the costs of transacting with other people" (Pagano 2007, 19–20).

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easily transferrable between different right-holders so that they can be easily employed to their most productive uses – as the process itself will allow to reveal and find them. See sections 4 and 5 below.

[5] Neither are other institutions; therefore comparative institutional analysis should be developed to find the (relatively) least costly allocation mechanism (Aslanbeigui and Medema 1998; Komesar 1997).

[6] The "bundle" concept was adopted in law and economics (from American legal realism) first by Coase (1959) and then in the economic analysis of property rights stream (Alchian and Demsetz 1972; Demsetz 1967). The literature discussing problems with that adaptation is vast and an exhaustive review is beyond the scope of the present essay.

These features of property rights – exclusive control and its extension in time (what (Pistor 2019) labels "duration") – rest on the state provision and protection of law.[7] Prohibitive transaction costs and durable protection of private property are not the only arguments in favor of that view. As Arruñada put forward, a framework limited only to use-rights does not allow to see beyond the isolated exchanges (2016). He argues that, besides use-externalities – consequent of individual activity of a property right holder - there are exchange-externalities generated from bilateral exchanges of rights to property. They lie at the core of the necessary relation between market and state institutions: the economic logic beyond the "in rem" quality of property rights that makes them necessarily reliant on the state is that they are durable and subject to "subsequent exchanges" of both entire right and partial rights grounded in it.[8] At the core there is an information problem related to the durability of property rights – the object of those rights undergo innovation processes and are transferred in a world of information asymmetry. "The governance of in rem enforcers must therefore guarantee information and impartiality with respect to parties involved in all transactions: not only transacting parties in each private transaction but also all parties holding rights on the asset or potentially acquiring rights in assets of the same type" (Arruñada 2016, 17). Similar explanation was provided to the *numerus clausus* principle in property law doctrine: the number of forms that property rights can assume is limited so that their transfer can be transparent (Merrill and Smith 2000).

While alienable use-rights are an important element of the institution of property rights, their transferability is only a part of a bigger picture. Open-endedness, allowing for novel uses and combinations are another element. Still, the limits of those rights are often delineated by the rights of others play a crucial role. And not only for "use-rights: to be bought and sold, but also for the

[7] Some authors, especially in the economic analysis of property rights sub-stream, offer a competing view of property rights as an institution emergent independently of the state (Barzel 1997; Demsetz 1967) or prior to it (Barzel 2003). However, the insistence of the role of the state in securing property rights is widely, even if not universally recognized in the discipline - the many arguments supporting that view will not be repeated here (Arruñada 2016; Hodgson 2015b; 2015a).

[8] They claim that property rights cannot be successfully defined in terms of rights in personam as they are always in rem. Arguably this is an imprecise use of these terms. Delimiting a closed catalog of corporeal property rights in many contemporary legal systems indeed allows for their protection against everyone (erga omnes), and importantly so, but it is not a feature only of "in rem" rights in contemporary legal systems. The "in rem" ("in a thing") expression should, at first, lead to the recognition that the right "attach" to a certain, excludable object or resource – but not necessarily in the sense of the narrow corporeal property rights catalogue. And the distinction originated in ancient Roman law was between two types of legal actions. "It is bad grammar and bad Latin to wrench these terms out of context" (MacCormick 2007, 136).

entirety of the exclusive property rights to be transferred, there necessarily need to be a whole institutional structure that precedes and preconditions the markets.[9]

This points us to the second problem. The law and economics concept of property rights is both too simplified and too broad at the same time. On the one hand, the literature focuses on possession rather than ownership and downplays other relevant aspects (Hodgson 2015a; 2015b). On the other hand, the term "property rights" is often used within the discipline as a capacious shorthand for more complex institutions of private law, that "includes commercial law in respect of the private sector of the economy" (MacCormick 2007, 225). While much of law and economics centers on efficient allocation of resources – the concept of property rights underpinning its theoretical framework ignores other necessary legal rights or conflates them with property rights. Perhaps limitations of standard individual choice theory play a role – unfit to accommodate the profoundly relational concept of rights in law, it forces the use of a reductionist concept of property rights in the discipline (Solari 2019). However, when the analysis centers on transactions and transferability of (rights to) resources within the market context, or their allocation within alternative institutions, even well-defined property rights are not sufficient.

One of the crucial legal institutions of private law, often simply taken for granted in the discipline, is contractual capacity: "the principal juridical mechanism by which individuals and entities are empowered to enter into legally binding agreements and, more generally, to arrange their affairs using the instruments of private law" (Deakin 2009, 3). It includes, e.g., the capacity to contract, trade, take upon obligations, bear responsibility for the actions taken, to sue and be sued, and many more. It is ascribed to individuals ("human persons"), but also in some regards to other legal persons, like organizations or companies. It is a condition that enables participation in the legal-economic system – to be a subject of property rights and a side of a contract in the first place. Civil law distinguishes between passive and active legal capacity: the former is an ability to be subject to legal rights, the latter to willingly exercise them in different ways provided by the law (Hesselink 2005). Assignment of property rights is not synonymous with contractual capacity and is qualitatively different from it. Moreover, the proper functioning of the market – the precondition of efficiency-enhancing transfers – falls upon other legal rights. Despite that fact, there is not much discussion of legal rights other than the specifically understood property rights.

[9] Similarly (MacCormick 2007, 226), arguing that the state public and criminal law is the foundation of contemporary capitalist market economies before private property rights are.

It is a gap to be filled. In what follows, I argue that the relevant distinction should be made referring to scarcity and rivalry. Assignment of rights matters – but that there are different categories of rights to be assigned is no less important. In the essay, I propose a distinction between property rights and enabling rights based on their rivalry-related features and show its implications for efficiency considerations. Before doing that, I provide a brief functional perspective on legal rights and their features, important for the purposes of the present analysis.

3. Complex and relational legal rights

Three issues arise from the discussion above that will be relevant for further considerations: complex and durable character of legal rights, their relational aspect and qualitative distinction between different categories of them. This section discusses the first two characteristics, relying on the institutional theory of law of Neil MacCormick for the functional explanations. The functional definition assumed here is that legal rights are legally secured positions, exclusive control over some sphere of one's activity, granted and secured within the legal system. Being "positions of benefit or advantage secured to persons by law" (MacCormick 2007, 120), they provide an individual with protected sphere of (in)action, grounds for having their actions recognized as lawful and protected from interference.[10]

3.1. Complex legal rights

The significance of complex legal rights lies in how they relate to identity over time. They are vested in concrete persons, attached to concretely identifiable things and last for long periods of time – for a span of a person's life, and often beyond that, in cases of property rights and legal personhood rights assigned to organizations. This implies open-endedness, as well as securing those rights within state legal system, backed by its enforcement apparatus. While it is commonly recognized in the legal literature and also by authors in law and economics with respect to property rights and, to a lesser extent, in the case of a firm-as-legal-entity (Arruñada 2016; Hodgson 2015a; Merrill and Smith 2001; Pistor 2019), this aspect is also important for the basic individual rights. "While individuals may possess some <natural rights>, in a philosophical sense, a right is only a

[10] To be sure, legal rights are not defined uniformly, and the jurisprudential debates regarding the competing theories are ongoing (for an overview of these discussions, see Campbell 2017; Frydrych 2018). This essay remains agnostic towards the many arguments offered by legal theorists in that matter and focus solely on the functional role of legal rights.

right in actual practice if it is protected by the government. That is, rights are not protected because they are rights; rather, they are rights because they are protected" (Medema 1993, 143). This relates, in turn, to the question of legal personhood and legal capacity: the law needs to guarantee that the identity of a person, and the identification of a resource or thing as an object of property right, persists over time. "Recognition of a person's active capacity is a precondition of anything's being deemed any sort of a legally cognizable act of a person" (MacCormick 2007, 126).

The complex rights are not reducible to single and concrete entitlements that can be exchanged between individual actors. They are basis for claim-rights, providing right-holders with the possibility to act and decide and to have these acts and decisions protected from interference from others – within the limit specified by the law. What, then, are the necessary aspects of a right, or its minimum constitutive elements? „That there is a realm of secured normative liberty is what is essential to there being rights to act or refrain from acting" (MacCormick 1982, 339). That falls back upon, first, the recognition of a person's identity in law, and, second, on what is often referred to as legal personhood, or legal capacity – the ability to have any of their acts (or acts in their favor[11]) considered as legally valid and having legal effect on other people (S. Deakin 2009; Kurki 2019; MacCormick 2007, 126–29). The temporal aspect is crucial here. Individual legal rights issued and guaranteed within a state legal system are attached to identifiable persons over time and prevail only given continuous recognition of that identity by law. This is a prerequisite for entering any legally valid transactions, including contractual exchanges.[12] And the stability of assigned complex rights – their protection over time – is what legal coordination rests on.

From that understanding of complex legal rights it follows those singular legal positions, e.g., entitlements, are derived from and can be valid only given their basis in a complex right. Instances of rights (use-rights, claim-rights or the like) are concretized within a specific legal relation.

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[11] The example typically used to illustrate passive capacity, or a passive right, is that of inheritance: in many legal systems, a child can legally inherit property even if they are not yet capacious of making informed decisions and taking up any actions regarding it. It is also referred to as a difference between 'enjoyment' of legal rights (la capacité de jouissance) versus their 'exercise' (la capacité d'exercice) (Kurki 2019, 96). While passive legal capacity can stand alone without active legal capacity (though it often is supported by other tools, e.g. assigning agency to other people or institutions to guarantee efficacy of the right), active legal capacity (capacity-responsibility) needs to be preconditioned by passive one. Namely, to act in the law one needs to be able to be a subject of passive rights first.

[12] This is not to say that economic exchanges cannot exist without or outside legal framework - of course, such transactions have existed and continue to exist, and rest on other social norms and enforcement mechanisms. In this sense, economy is not confined to the "lawful" sphere. However, acknowledging the dynamic of legal rights changes our understanding of the relation between law and efficiency.

Entitlement in this sense can stem from a right directly or depend on it taken together with other rights. As we can think of many ways of exercising or violating the rights, all potential claim- or use-rights cannot be enumerated. All the "juridical" elements are in this sense instances or aspects of a complex right, but such a right does not "consist of" entitlements in the sense of a closed set.

3.2. Relational character of rights: Jural positions and legal remedies

This moves the analysis to the next issue, the relational character of rights. The very basic notion in legal analysis is that of a right-duty pair: someone's being endowed with a right means that there is someone else obliged to act in the right-holder benefit or according to her decision. These notions were famously criticized for imprecision in the important for analytical jurisprudence work of Hohfeld (1917; 1923). He distinguished eight jural (i.e., legal) positions instead to describe different legal relations more precisely. Half of them were supposed to specify the different statuses referred to under the ambiguous term "right" (claim-right, power, liberty [privilege[13]], immunity) and the other half to disambiguate "duty" (duty, no-right, liability and disability); the pairs formed between them were supposed to suffice as "lowest common denominators" to explain all possible legal relations (correlates or opposites). For example, a claim-right and a duty form one correlative pair, and a liberty and a no-right another one.[14] They can also be grouped in jural opposites, i.e. the positions that cannot be held together by one person, like one of power and disability (if a person has a legal power to carry a certain act within law, it is logically impossible that a person is at the same time prevented from carrying out that act by the same law).[15]

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[13] The original term used in Hohfeldian framework was privilege, defined with a double negation as "no duty not to". Most contemporary authors, however, use the term liberty instead (Duarte d'Almeida 2016, 556). I follow their lead here as ordinary meanings of the word liberty corresponds better with the function of that legal position.

[14] A no-right is a name of a position that is a denial of a claim-right, as expressed in the following negation: *It is not true that a person holds a claim-right against the person with liberty.* (Duarte d'Almeida 2016, 557). The remaining two correlate pairs are: power-liability and immunity-disability.

[15] The opposition relation is between right and no-right, privilege and duty, immunity and liability. Further, Hohfeld distinguished also between first- and second order legal relations. In the first-order legal relation respective legal positions of the two parties are clearly specified and unchangeable; in the second-order relation one person has some discretion over another person's legal position. An example of that is one of binding offers in private law: when an offer is officially issued, the response of the recipient determines whether the contract is concluded or not, i.e. whether the offeree acquires the position of duty or no-right is decided independently of him after the offer is received. In the time between the offer was made and the acceptance or rejection was communicated, it is in one person's power to decide, and the other is liable to conform with it (Duarte d'Almeida 2016). Vatiero suggests that second-order legal relation is therefore a situation of endogeneity in definition and enforcement of the legal position – unlike those that

What is more important for our purposes here is that the singular legal positions in Hohfeldian framework are better understood as different functional aspects of what I earlier referred to as a complex right. Hohfeld himself gave an example of the ownership right as an "aggregate" of different legal positions (Duarte d'Almeida 2016, 560; W.N. Hohfeld and Cook 1923, 28, 30). Some authors dispute the ubiquitous pretense of the correlativity framework, pointing to the duties or liberties that are not directed at anyone; others criticize the imprecision of the very terms that were supposed to be clear-cut (Duarte d'Almeida 2016). For the purposes of the present analysis, however, one needs to bear in mind that it is a microscopic view of a legal right. Any singular liberty concerning some activity, or a singular claim-right, immunity and so on – they are parts of bigger complexes of these different positions that are referred to as (complex or aggregate) rights. While the "anatomy of legal positions" can be a useful conceptual tool to analyze some concrete legal problems between parties, they are not necessarily sufficient to look from their perspective at broader socio-economic context over time. These two conceptualizations are not contradictory; the difference is more like one between form and function of a right (Webb 2018, 252).

From this perspective, however, it would be misleading to treat rights as a simple sum of predefined, specific positions, a closed set: a certain open-endedness in the content of a right is its undeniable feature – as both a right-holder and the whole context can change over time. Arguably, while corresponding (correlative or opposite) legal positions can be named in a concretized legal relation and such analysis can be useful for understanding a concrete legal relationship, defining the whole legal universe in those terms is hardly possible. At the same time, legal rights necessarily are relational in the sense that their structure relations within a society (MacCormick 1982, 337).

For a legal right to be efficacious, a remedy has to be available.[16] Law provides remedy for right-holders in case of a concretely defined right's violation (e.g., a purchased good was not delivered, or an injury was inflicted) – a framework for resolving conflict under the law. Importantly, legal remedy is only applicable when violation has taken place, the sides of the conflict are determined,

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are determined exogenously in the first order relationship (2010, 848). However, this kind of legal relation is already a concretized one, with some limits predefined within the scope of the original complex rights.

[16] "To have a right is to have a basis for a justified imperative claim: (a) against people who infringe, reject, ignore, flout, dispute, or fail in appropriate cases to implement, that right; and (b) against the courts and suchlike institutions, that they award an appropriate remedy where a claim of the former is sort is rejected or ignored" (MacCormick 1982, 354). "For although rights may be of different kinds or manifest different aspects… all may give rise to justified claims for appropriate remedies in certain circumstances" (MacCormick 1982, 354–55).

and concrete claims generated. „Having rights entails having justified claims, which claims are however appropriately issuable only given infringement … of a right" (MacCormick 1982, 355). By the same token, without a remedy, a right is incomplete – as its violation is neither prevented nor compensated after it has occurred. Availability of remedy, however, depends not only on the generic legal rule regarding a certain sphere of legal relations, but on personal legal capacity of the persons involved. This brings us to the last of the three issues set out above: the qualitative distinction between different categories of legal rights and its potential importance for law and economics framework.

4. Property rights and enabling rights

Complex legal rights concern identities of both persons and objects. This distinction is especially significant for the problem of efficient allocation of scarce resources. In this section I introduce the category of enabling rights, distinct from property rights on the ground of their rivalry characteristics and relation to scarcity.

The most profound difference between the two categories of rights falls upon the legal identities they primarily relate to. Enabling rights are attached to legally recognized individual persons – while property rights attach to legally identifiable things. Of course, both types of rights are vested in persons – property right is a right of a person that holds a legal title to certain object (property). There is no property right without a property object, though. And the same property can be transferred between persons: the "identity" depends first on the identification of property, a thing, and only then of a person who holds a legal title (right) to it. Enabling rights attach to persons of a specified and legally recognized identity (MacCormick 2007, 130 nn.).

Property rights, crucially, are linked to the object of the right: even if the particular use-rights can be delineated and transferred between persons, and only persons can hold and exchange that rights, the entirety of property rights cannot be established or assigned without a reference to the asset in question (Pistor 2019). "Things are conceived as durable objects existing separately from and independently of other objects and of persons, subject to being used, possessed, and enjoyed by persons, and capable of being transferred from one person to another without loss of identity as that very thing" (MacCormick 2007, 136). The basic characteristic of the "in a thing" quality of property right, is that it "attaches" to a certain, excludable object or resource. The broadly

conceived "thingness" is the quality that relates unmistakably with the scarcity of resources and the efficient allocation problem.

The feature that lies at the core of the distinction between enabling rights and property rights is rivalry: while enabling rights are non-rivalrous, i.e., the same scope and the same kind of right may be assigned to different persons, property rights are attached to scarce "things" (resources, pieces of information and so on) – and therefore are rivalrous. The crucial distinctive features of enabling rights and property rights are summarized in Table 1 and discussed below.

Table 1. Individual enabling rights vs. property rights

Category of right	**Function**	**Defining feature**	**Assignment characteristics**
(Individual) enabling right (preliminary legal capacity)	Preconditions individual agency in law (legally enforceable)	Non-rivalrous individual right of a person	Assignment to (classes of) persons Can be discriminatory and indiscriminatory
Property right	Provides exclusive control over scarce resources	Rivalrous individual right attached to specified, excludable resource or good	Assignment to a specified person/group of persons Exclusive (thus discriminatory) Can be allocated via different mechanisms (market or centralized assignment) to persons with legal capacity to hold ownership rights

4.1. Enabling right

Enabling legal right is a category that covers the different legal rights that are assigned to individual persons. Legal rights to bodily integrity, political rights, a right (legal capacity) to contract all fit into this broad category. This is a right *that is non-rivalrous, in the sense that the same kind of right can be assigned to many individuals without depriving others of the possibility to hold the right of the same type*. Enabling right is, by definition, exclusive in the sense that only a right-holder can invoke the right or act upon it, and they have full autonomy over their decisions within that range. This sphere of exclusive control is protected by legal system – whenever someone is interfering with one's right, e.g., by limiting its scope – the right-holder can turn to legal system and seek enforcement of their right. The "non-rivalry" quality means that the same type of right can be assigned to many individuals. In fact, enabling rights are usually assigned to classes of individuals (e.g., adults, children, workers, etc.). Assignment can be *indiscriminatory*, when the same type of right is assigned to all the members of the same class, or *discriminatory*, when only some members of the same class are assigned the right. Enabling rights are preliminary in the sense that that they precondition the forms of institutional organization under the law. For instance, voting rights precondition representative democracy, or the right to enter contracts (contractual legal capacity) preconditions markets.

4.2. Property right

Property right can be held by (defined, closed groups of) individuals and legal entities (persons). It is *attached to a concretely identified resource or good* that is excludable from other's access. This determines the *rivalrous character* of a property right: assigning the ownership or other right to a certain "thing" to some individuals precludes everyone else's holding a right to it. Of course, what can be an object of property have evolved over time and, in turn, largely depends on legal institutions built upon original land and movables laws (Pistor 2019). "Things", then, are not necessarily physical objects, as "incorporeal things are things that completely depend for their existence on human rules and conventions" (MacCormick 2007, 137). Clearly, identification of a corporeal object as a separate thing, an object of property right, depend on them in the same way. Property right implies the exclusive control over that resource in the sense of autonomy regarding decisions on what to do with it. This autonomy includes all partial or derivative use-rights that can be also potentially transferred to others. However, importantly, ownership right makes the owner the default decision-maker. This exclusive control is not absolute, in the sense of unlimited

sovereignty (Webb 2018). As with all types of rights, there are legal rules that delineate their limits – to compromise them with the rights of others.

At this point, it is important to underline that these are two broad conceptual categories, distinguished along their functional criteria. They are not the only two that can be delineated, and they are *not* equivalent to *different kinds* of rights. The latter are distinguished along specific domains and issues they address; for instance, a right to free speech and the right to enter contract are of different kind, but both belong to the enabling rights category, while e.g., priority right attached to a certain type of financial instrument in bankruptcy law or an ownership right to a bike are different kinds of rights from the property rights category.

Conflating the two categories of legal rights or failing to distinguish between them and their different characteristics has potentially important implications for law and economics scholarship. In the remainder of the chapter, I will explore the distinction of individual enabling rights and property rights further.

5. Beyond property: Enabling rights and efficiency

Arguably, enabling rights and property rights are often conflated in law and economics writings. While much attention was devoted to property rights and their transferability in markets – it should be only the second step in the analysis. The first one should engage with the underlying structure of enabling rights. As already mentioned, the characteristics and features of the two categories of rights point to that distinction. Property rights regard actions over excludable goods and resources; enabling rights regard individual pursuits of persons. Both can and do function outside the market context. But importantly, they cannot function without each other in the market: exclusive property rights and inclusive, indiscriminatory assignment of enabling rights together precondition efficacy of competitive markets.

5.1. Enabling rights, markets and Pareto-efficiency

In law and economics, one of the primary concepts is efficiency in the Pareto sense: an ideal optimum where no-one's situation can be improved without worsening someone else's situation makes the frontier of economy. Each reallocation that would move society closer to this hypothetical ideal under the no-harm condition makes a Pareto-improvement. The criterion was originally devised for the perfect market equilibrium model and it is inherently static (Berthonnet

2016; Bruni and Guala 2001). Its application to institutional analysis was rendered problematic, especially in the context of the first Coase theorem (the invariance theorem). The concept of Pareto-efficiency itself was accused of inherent "tautology": if (transaction-costless) markets were to allocate resources efficiently, they would always put economy at the Pareto frontier in no-time, so there would be no space for efficiency improvement (Samuels 1974; Calabresi 1991). Whatever is the observed outcome, it is presumed to be efficient: whether a transaction takes place or not, the specific arrangements of transactions, and so on, are assumed to reflect the (revealed) preferences of the exchange participants. This, however, rests on the implicit assumption of indiscriminately assigned enabling rights. They also provide a possible way out of the Pareto tautology problem.

In the setting of general equilibrium theory where perfect market stands for the whole institutional setting, property rights are perfectly defined (if only implicitly). As there are no information asymmetries, transaction costs and other problems hampering the functioning of the market – an externality is "…synonymous with 'missing' markets or 'missing' property rights… Once property rights have been defined for a good, the externality ceases to be" (Papandreou 2003, 284–85).[17] At least no relevant externality – as even in the perfect equilibrium setting, not every externality is relevant and some of the inframarginal externalities would not be eliminated (Buchanan and Stubblebine 1962). Needless to say, the presence of externality is indicative of friction in the markets. Definition and assignment of property rights does not yet remedy other problems inherent to the workings of real markets, as Coase has famously shown (1960). How to assess which externalities are relevant in costly and generally imperfect markets, within a broader institutional context? And under what conditions can the Pareto-efficiency criterion be useful? All that has to do with the relationship between markets and legal rights beyond, or prior to, property rights.

[17] In the context of production in frictionless Arrow-Debreu markets, Papandreou redefines externality as an effect of incongruence between the physical production processes and institutional framework imposed over them (2003, 281). If institutional framework was defined so as to perfectly correspond with the intertwined physical production processes, then externality would not exist. The challenge about defining efficiency-enhancing institutional framework, however, is not that of modeling (or establishing) a market over one good taken out of its broader physical context. The challenge for institutional analysis and policy that remains unresolved is one of multiple overlapping effects in the sphere of physical production. It is the challenge of identifying and defining scarcity within the broad institutional framework.

Consider the Coasean bargain example again, within the same framework: two persons with equal initial wealth allocation, in a frictionless market and a perfect contract enforcement world. What if the rancher owns the property and the cattle raiser has enough money, yet one of them has no legal capacity to enter a contract under the law? The other party's incentives to participate in the – otherwise beneficial, Pareto-efficient – exchange shrink as contract that will be deemed invalid or inexistent before the court thus unenforceable. Only a universal assignment of a right to transact and to enter contracts would allow reaching the efficiency frontier (or, for economists, to infer about efficiency dynamics at all). The core question is whether *both* the farmer and the cattle-owner have legal capacity to hold and exercise enabling as well as property rights. Enabling rights precondition their participation in any lawful transaction. If one of them does not hold necessary enabling rights, e.g., contractual capacity, there can be no other institutional nor economic obstacle, and yet the efficiency-enhancing transaction will not be secured. It can be also put in terms of transferability: it is not enough to introduce the rule that property rights are transferable *per se* or formally – in the market context, the transferability depends on whether everyone holds an effective right to purchase and hold them. Certain types of enabling rights, assigned without discrimination, are a condition of competitiveness of markets. That does not address the transaction costs problem but precedes it.

It would be also mistaken to say that the assignment of property rights implies automatically that enabling rights have been assigned. Property rights are not synonymous with markets (perfect or imperfect), nor do they equal to a market form of organization. Crucially, efficacy of markets as an institutional allocation device depends on the assignment of enabling rights prior to the assignment of property rights. Perfect markets rest on the implicit assumption that its participants are exactly the same in everything but their consumption preferences (and ideas for use of resources). In a legal setting, then, efficacious markets must be inclusive, i.e., to allow individuals indiscriminately to engage in trade and exchange. Of course, indiscriminatory assignment of enabling rights is not a sufficient condition for the markets to fulfill the demand of efficient allocation of resources; it does not allow to overcome the transaction costs problems and information asymmetries.[18] But in a decentralized market economy it is a necessary condition.

[18] While the latter could be decreased with the assignment of enabling rights, as people could more easily reveal their preferences within decentralized market interactions, it still can have an adverse effect on transaction costs levels. Detailed considerations are, however, beyond the scope of the present essay.

5.2. Property rights and dynamic efficiency

Including enabling rights into the law and economics framework can be also consequential in dynamic analytical context. The presumed role of property rights here relates to the value of production considerations – that indeed have been a core of Coase's analysis (Coase 1959; 1960; 2012; Medema 2014). The underlying assumption that associates private property rights and productive value is that of a link between subjective use-value and exclusive control. Securing property rights, by guaranteeing the non-interference of others and granting freedom of usage to its holder is supposed to provide incentives for utility maximization. This, in the long-term perspective and under competitive markets, should lead to the maximization of production value, as anyone foreseeing a higher-productivity application of such resource could buy out the property or some use-rights from original owner. Of course, this holds as long as the novel uses do not come with use-externalities (Coase 1960). As we have seen, that is a serious problem in law and economics Pareto-based transaction framework ignorant of enabling rights. Of course, certain level of use-externalities resulting from exclusive uses of property employed by its owner (or legitimate right-holder) may well be lower than transaction costs involved in exchanges of novel use-rights. However, it cannot be determined without an indiscriminatory assignment of enabling rights to all potentially affected third parties.

Focusing solely on use-rights to resources, viewed in the context of potential two-party exchanges, keeps one more efficiency-related problem, that of preservation of resources, outside the picture. In the use-rights view, the objects of property rights – scarce resources – can be put to any usages their owner wishes – an irreversible destruction included, if such was their preference. Therefore, the exclusive control of the property owner cannot be unlimited if the efficiency is a criterion. Absolute private property rights – rights in things, tangible or indirectly dependent on physical and scarce resources – outside the broader context that limits their wasteful uses (of market competition, or of rules of access and use, as in case of common resources) – are by no means a guarantee of efficiency. Efficient allocation of resources within markets falls upon the indiscriminatory assignment of enabling rights, and when necessary – legal rules putting limit to those harmful uses. Again, such indiscriminatory assignment of enabling rights is not yet a sufficient efficiency condition, but it is a necessary one.

6. Relational rights, rivalry and the "positionality effect"

Acknowledgement of rivalry as a criterion for distinguishing between different categories of rights has some important implications for understanding legal coordination dynamics in the broader legal-institutional context as well. The role of legal rights clearly extends in time beyond an instant exchange, structuring legal coordination within a society.

Two authors rely on the Hohfeld's classification of legal positions, discussed before, interpreted as positional goods to develop a model of a legal system (Pagano 2007; Pagano and Vatiero 2017; Vatiero 2010). Positional goods are goods that are "socially scarce". The definition refers to people's tendency to compare themselves to others, and preferring to have more (or better) than others rather than simply more (or better) in absolute terms (Frank 2005; Hirsch 2005)[19]. By the same token, Pagano (2007) argues that from the Hohfeldian correlativity assumption, i.e. that to every legal position of one person there is one of an opposite sign for someone else's, it follows that they are in a positional relation. In that reading, "consumption" of a legal position by one party requires that the other party bears a cost of non-consuming it. If the respective scopes of the correlates differ, i.e., the sum of the correlate positions is different from zero (Pagano), imprecise or impossible to assess due to transaction costs (Vatiero), it leads to a situation of what they dub "legal disequilibrium". Distinguishing between enabling rights and property rights, and the rivalry-based difference allows for devising more specific criteria for that theory.

The question that arises is whether relational legal rights can indeed be interpreted as positional goods, and whether this positionality feature can be modified by the assignment of rights. In the context of the relationship of legal rights and scarcity, and the distinction between property- and enabling rights, it is not straightforward. From the two categories discussed before, it is only property rights that relate to things and – in turn – are related to physical scarcity.

Eliminating the "positionality effect" in property rights assignment would require perfectly equal distribution of all kinds of property rights to all the resources. This, even in zero transaction cost and perfect information environment would be possible under very strict assumptions of uniform

[19] For example, if B is facing a choice between two scenarios: (1) A has four pairs of shoes and B three pairs of shoes, and (B) A has one pair of shoes and B has two pairs of shoes, chooses scenario 2 – where she has more pairs of shoes than A, even though it is clearly less in absolute terms than in scenario 1 – shoes are considered a positional good.

preferences or the measure of their intensity. In the context of legal rights analysis, however, such perfect legal equality would then not depend on the perfect correlativity between "consumption" of Hohfeldian legal positions[20] – but rather on the respective symmetry of assigned rights-positions and duty-positions between all persons. However, in the context of property rights, with certain level of open-endedness and control over the object of property, it is not possible to eradicate that effect completely: the new uses, transformations and innovations would affect such an equilibrium instantaneously. Given the definitional criteria for complex property rights, as set out above, the actual reduction of property rights scope to the bundle of pre-defined and uniform use-rights is impossible – and this is what would be required in a perfect legal equality world. Physically scarce resources can be at the same time positional goods, and so are the rights in them (and even if not all of them are positional, all can potentially become so).

It is, however, not necessarily the case when non-scarce, enabling rights are concerned. My holding of a right to be treated with dignity does not preclude anyone else to hold such a right, while my holding of an ownership right to my bike precludes all other people from holding that right (and my bike can be unique and a positional good). Of course, it is possible to grant a special dignity right to one person and not others, or one social group can have more expansive citizen's rights than another group. However, it does not stem from the inherent characteristics of those rights – they attach to individual persons and therefore can be assigned indiscriminately.

Even though enabling rights are not inherently positional goods, their assignment can work to this effect. It depends on whether it is non-discriminatory or not: for example, if everyone has all the same right of personal expression, safeguarded by symmetric remedies, that right would not be of positional character. If, however, some persons or groups enjoy wider scope of that right, while other persons or groups do not, then the ground for positional externalities exists. From there it follows that systemic legal discrimination of certain groups, and political support for it, can be read as an institutionalized social scarcity. While it may lead to social crisis, legal coordination may also remain stable in a non-optimal equilibrium for long periods on time. However, while it is not possible to completely eradicate by legal design the positional externalities effect in case of

[20] The "correlativity" assumption of Hohfeldian framework is also contested in the legal theory literature (Duarte d'Almeida 2016).

property rights – in case of enabling rights, their indiscriminatory assignment can have a corrective effect.

7. Conclusions

This chapter's focus was on the concept of legal rights in law and economics framework. It puts forward the argument that the understanding of property rights in the discipline downplays an important role of other legal rights. Moreover, some of those conceptual problems discussed previously in the literature are related to a more general misconceptions about characteristics of legal rights. Importantly, complex and durable character of rights and their relational aspect are underappreciated, despite their crucial role in legal coordination. I propose to apply a criterion of rivalry to distinguish another type of legal rights – individual enabling rights – distinct from property rights. Enabling rights are, in its nature, non-rivalrous: the same kind and scope of right can be assigned to every individual. Property rights, as "rights in things" – attach to and depend on scarce resources and are therefore rivalrous.

The category of enabling right proposed here is useful as an analytical category for the mainstream law and economic framework. There is a foundational relation between the two types of rights in the context of efficiency considerations. Competitive markets as an allocation institution are not synonymous with defined property rights only – and indiscriminatory assignment of certain kinds of enabling rights is a precondition to the efficient (re)allocation of resources. Moreover, the market solution to the problem of externalities also falls back upon the assignment of individual enabling rights. Importantly, the distinction is relevant for the long-term analysis as well. The definition and protection of durable and exclusive private property rights over time has its important economic rationale from the perspective of innovation and production value maximization. However, innovations in the exercise of property rights may come with novel use-externalities – and only durable enabling rights, assigned indiscriminately, may allow for efficient adjustments.

Arguably, much of law and economics with its focus on the assignment of property rights, or different kinds of rules, simply presumes that necessary enabling rights are already in place. This is the case – and perhaps even a justifiable one from the perspective of the economy of the model – when the discussion regards a problem set within a context of a certain jurisdiction, as indeed was the case in the pioneering law and economics works. However, one needs to bear in mind that

the two kinds of rights are conceptually different, and their distinctive characteristics are grounded in the rivalry criterion. Therefore, it directly relates to scarcity, the central notion in economic analysis. Not accounting for this important distinction and, for most part, ignoring the enabling rights, leads to some conceptual confusion and perpetuating mistakes. As we have seen, assigned and protected property rights are not on their own sufficient as an institutional structure for functioning markets. When other legal institutions are taken into account but enabling rights are ignored, the basis for efficiency-based comparisons does not always exist.

The distinction between different categories of rights and interrelation between them has important implications for legal coordination more broadly conceived. Three characteristics of legal rights: their complex and open-ended character, duration in time and their relational aspect make them central to the patterns of stability and change in law. The rivalry-based distinction between enabling- and property rights improves our understanding of the relationship between law and efficiency, and legal coordination more broadly. While physical scarcity and related positionality problem cannot be fully eradicated by institutional design – and can only be improved by technological progress – the non-physical social scarcity can be addressed by means of institutional design. The indiscriminatory assignment of the broadest possible scope of individual rights enhances efficiency.

The interrelations of the two types of rights should be thought of within their broader institutional context. Acknowledging the non-scarce character of enabling rights and the importance of their indiscriminatory assignment is not equal with saying that there are no conflicts between different kinds of enabling rights. There are oppositions and trade-offs between different rights, grounded in conflicting interests as much as in moral and political preferences – and those need to be balanced and compromised by law. This is of particular importance for the comparative domain of study: the differences between jurisdictions in terms of efficiency outcomes (and in other respects as well) rest not only on a particular legal rule within some specific domain of law, but on the respective scope of enabling rights as well. Legal institutions across jurisdictions should be looked at from this perspective. The category of enabling rights and their correspondence is significant for the analysis of markets that are disembedded from, or stretching beyond, a single jurisdiction setting. From an evolutionary perspective, the differences in definition, scope and efficacy of legal rights between legal systems affect the interactions between them and the resulting legal pluralist landscape.

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Chapter 2

Between coordination and conflict of laws: Modeling legal pluralism in a Bayesian game with uncommon priors

Abstract. *This essay proposes a game-theoretical model of legal pluralism. In a dynamic Bayesian conflict of laws game with uncommon priors, I analyze the effect of diverse beliefs regarding applicable law and access to justice on law-based coordination. The results of the model indicate that neither shared beliefs nor their common prior probability distribution are necessary for legal coordination to persist. At the same time, it predicts prevalence of legal pluralism – legal convergence does not occur. The analysis offers new insights regarding the role of perceived access to justice and litigation costs as important factors for legal harmonization reforms.*

1. Introduction

In the coordination theory view, law helps to solve problems in social games by providing focal points. Legal rules convey messages, orchestrating individual expectations and behavior into a uniform social order. In contrast to that, the characteristic of contemporary law is pluralism. Many legal systems coexist and overlap – locally and globally, in the transnational plane, across blurred lines between public and private governance, hard- and soft laws, official and unofficial law. There are multiple signals and multiple choreographers, so to say.

How, then, is coordination possible? Why legal systems have not converged, despite harmonization attempts and many repeated bottom-up interactions? The existing models of law in economic literature do not explain the persistence of legal pluralism. This essay aims to fill in this gap. It offers a game-theoretic model of pluralist law, providing a missing link between legal pluralism and law and economics.

The proposed model builds on earlier contributions within law and economics, in particular the coordination models of expressive law, and relates to legal convergence and harmonization literature. Similarly to Basu (2018), Hadfield and Weingast (2012) and McAdams (2000; 2015), I focus on beliefs as central for law-based coordination. However, drawing from legal pluralism theory (Michaels 2009; 2019; Teubner 1997; F. von Benda-Beckmann 2002; K. von Benda-Beckmann and Turner 2018), I introduce legal pluralism and conflict of laws into modeling. Legal pluralism throughout the text is defined as the simultaneous coexistence of more than one legal system potentially governing the same interrelation situation (adapted with modifications from Michaels 2009, 3). Conflict of laws is understood for the purposes of the present analysis as an

interaction situation in a legal-pluralist context, where there is no clear meta-rule indicating the legal rule that governs that relation, and where participants have different preferences over the alternative rules.[21]

I model the conflict of laws interaction as a sequential process in a dynamic Bayesian game with subjective beliefs. I am interested in coordination in the legal pluralism context. The role of judiciary in the model is that of an ex-post correlating device – the last resort instance of conflict of laws resolution. Central to the game are private beliefs about the structure of legal rights, represented by an endogenous parameter defined as a subjective probability of winning in case of litigation. To include legal diversity considerations fully, I relax the usual assumption of common prior probability distribution.

The remainder of the chapter is organized as follows. In section 2, I discuss the aspects of legal pluralism relevant for the analysis, I review the previous coordination theory literature and provide a complementary interpretation of the two. In sections 3 and 4, I introduce the assumptions and specification of the model, and solve it. In section 5, I discuss the model results in the context of relation between legal convergence and perceived access to justice. In section 6, I develop the model further, including the social cost case and its implications for legal policymaking. Section 7 concludes.

2. Integrating legal pluralism with a law and economics approach

The present analysis builds on and combines insights from two literature streams: the legal pluralism theory, originating in socio-legal scholarship, and the game-theoretical coordination models of law from law and economics literature. In the present section, I review the relevant contributions from both domains and propose a complementary analysis.

2.1. Legal pluralism and conflict of laws

Legal pluralism is a well-established concept in socio-legal scholarship. Understood as "a situation in which two or more laws (or legal systems) coexist in (or are obeyed by) one social field (or a population or an individual)" (Michaels 2009, 3), the term was originally used in the study the relation between official and unofficial law in colonized territories, and later applied more broadly

[21] It is then distinct from the "conflict of laws" term as used in the private international law literature to a range of collision rules governing trans-jurisdictional legal interactions (Michaels 2019).

in the context of globalization of law (Riles 2014; Wai 2008; Knop, Michaels, and Riles 2012; Michaels 2019; F. von Benda-Beckmann 2002; K. von Benda-Beckmann and Turner 2018).

The focus of legal pluralism is on the many coexisting laws and interactions between them. Legal rules of official law systems are embedded in "constellations" beyond single jurisdictions or legal domains (Michaels 2017). This multiplicity is to some extent ordered by the legal collision rules. The hierarchical order of legal acts and structuring trans-jurisdictional legal interactions are introduced at the level of international law treaties, by partial harmonization of private international law and choice of law rules, as well as via bottom-up coordination of private actors in domain-specific areas of law. However, well-theorized phenomena of legal convergence and harmonization occur scarcely in the complex legal reality (Ogus 1999; Trachtman 1993; 2000; Carbonara and Parisi 2007; 2009). Regulatory and jurisdictional races bring about mixed results and novel local variations of some rules rather than uniform regulations (Carruthers and Lamoreaux 2016; Murphy 2005). The same is true for deliberate legal harmonization projects: often the result diverges from the intended one (Schauer 2000). Copying rules between different regimes "irritates" changes, but hardly ever leads to a complete harmonization (Teubner 1998; Deakin 2015; Armour et al. 2009). Some explanations of this diversified picture include specific patterns of legal change within national systems of law (Teubner 1998; Deakin 2015) and the law's reflexive mechanism and embeddedness in a network of complementary rules (Deakin 2011).

Importantly, the multiplicity of state jurisdictions and private orderings that allow people to coordinate their behavior within and across boundaries, domains of social activity, and cultures coexist and overlap without ruling each other out (K. von Benda-Beckmann and Turner 2018; F. von Benda-Beckmann 2002; Teubner 1997; 1991; Michaels 2019). Yet, no complete meta-rule exists that solves the many conflict of laws situations in a unified manner (Watt 2002; Michaels 2019). How, then, is coordination possible in legal pluralism?

This essay offers a possible explanation. I will focus on the analysis of legal pluralism and develop a model of economic interaction in a conflict of laws situation – an interaction in a legal-pluralist context, where there is no clear meta-rule indicating which legal rule governs that relation and participants have different preferences over the alternative rules. This definition can be interpreted more narrowly, as referring to traditional transnational law (Jessup 1956; Nourse and Shaffer 2009; Shaffer and Coye 2020; Zumbansen 2020) i.e. when two or more jurisdictions or international law regimes are involved and without a clear meta-rule deciding the primacy between them (Michaels 2007; 2006). It can also be related to broader legal pluralism approach, inclusive of systems that

are preceding or superseding the law of the modern state, like the laws of non-state communities (F. von Benda-Beckmann 2002; K. von Benda-Beckmann and Turner 2018) or fragmented systems of rules that are not directly provided by the traditional state legislative apparatuses, but functionally and organizationally work as law (Calliess and Zumbansen 2012; Fischer-Lescano and Teubner 2004; Teubner 1997). In the next subsection, I review the modeling literature that I build on.

2.2. Coordination models of law

Game theoretical approach to institutions links their prevalence and change with social beliefs. Institutions are thus seen as correlation devices, salient strategies for coordinated interactions (Schelling 1960; 1971, 71; Guala 2016; Greif and Kingston 2011). By shaping expectations regarding the behavior of others, "those [belief] mechanisms … translate unorganized individual behavior into collective results" (Schelling 1971, 145). Some authors have argued that it is an important function of the law (Bohnet and Cooter 2003; Cooter 1998; McAdams 2000; 2015) or its feature (Hadfield and Weingast 2012; Basu 2018). Law is understood as an expressive coordination device, signaling the behavior pattern to be followed.

Cooter (1998) has proposed an expressive economic theory of law related to sociological view. Arguing that in the context of unstable equilibrium and if sufficiently many people respect the law, a new rule would prompt people to internalize a new norm enacted by its means.[22] The law would therefore affect their individual preferences without imposing a sanction, but merely by an expression of a new socially desirable rule. In the later paper with Bohnet (Bohnet and Cooter 2003), however, they find experimental evidence indicating that probabilistic penalty (their laboratory approximation of law) enhances coordination by affecting beliefs rather than preferences[23]. Other authors focus consistently on beliefs and not preferences. McAdams (McAdams 2000; 2015) argues that one channel in which the law affects behavior is by signaling the underlying social approval and disapproval of certain behaviors. The role of legal officials is to send a unique signal around which the parties can form their strategic interactions (McAdams 2005). From another angle, Hadfield and Weingast (2012) provide a model of legal coordination

[22] It is related to a distinct stream of sociological expressive law theories, focusing on the relation between law and social morality (Sunstein 1996; 1999; Nadler 2017). That literature is not directly relevant to the present analysis, that focuses on the expressive effects of law on beliefs and behavior.

[23] The „expressive effect" of law is visible only in coordination games and is not present in cooperation games.

with decentralized enforcement, where individual agents enforce the rules by punishing deviations. The stability of such a private ordering regime relies on the presence of a choreographer – a third party that signals the rule.

While these approaches in general deviate from the more traditional assumption that people follow legal rules because of the threat of enforcement (in economic literature often translated into expected cost of illegal behavior), the credibility of legal system or its actors still plays an important role. The publicity, uniqueness and reputation of government officials strengthen the law's saliency effect (McAdams 2015). Similarly, Basu (2018) points out that the expressive effect of the law, and thus its efficacy, rests on the credibility of legal system and its enforcement characteristics. The government and legal officials must obey the law themselves; only then the society would follow. Moreover, the participants need to share the belief that the choreographer – be it a legislator, a judge or a private third-party – sends a credible signal and that all others would comply with what it says.

At the same time, law-based coordination often takes place in "the shadow of the law" (Mnookin and Kornhauser 1979). The law's reinforcement happens in a legal conflict situation: a failure to follow the law, or to interpret it correctly, leads to a dispute that eventually finds its resolution before the court. Importantly, it need not to involve punishment but only a binding interpretation. This allows for beliefs convergence, and coordination is established around one rule and not the other. The parties often do not arrive at that stage. However, they always must consider that their decisions might be legally challenged if they are not compliant with the law. The possibility of seeking a conflict resolution and obtaining a final judicial decision regarding legality of certain actions is inherent to the functioning of legal systems. To represent this aspect, I model legal interaction as a dynamic, sequential process, not a simultaneous one. It involves interaction between players potentially all the way up to adjudication.

Similarly to the literature discussed in this section, I focus on law's expressive effect on beliefs and their role in coordination. I develop a dynamic Bayesian coordination model. However, to include legal pluralism aspect in the modeling, I introduce subjective beliefs about law and abandon the common priors assumption. Assuming common prior beliefs when modeling institutional intersections may keep some important factors out. "In many cases, forcing the agents to have common priors is an unnatural imposition on the model. Why would they have a common prior if they have different subjective beliefs about how the world works, or the space of possible strategies?" (Antos and Pfeffer 2010). In the context of legal pluralism, with multiple legal systems

and actors coming from potentially diverse backgrounds, such an assumption seems overly strict. In the next section, I discuss the assumptions and introduce the conflict of laws model.

3. Model assumptions and setup

The proposed conflict of laws model is placed in a hypothetical economic interdependence setting, where the activity of one individual affects the situation of the other one and there is space for gains from coordination. The interaction is set in a legal pluralist context – in the model there are two legal rules that potentially govern the relation between players, and there is no certainty as to which legal rule is applicable. The players hold subjective beliefs about which legal rule applies. Suppose, for example, that the parties are in a classic externality situation, but they belong to two different legal jurisdictions, both regulating their respective rights differently, and there are no clear collision rules as it comes to the precedence of one rule over another. The next sections describe the assumptions and setup of the model in detail.

3.1. Assumptions

I model a conflict of laws situation as a two-person, two-stage sequential game. The players are both aware of the interrelation situation. The law, however, does not provide a direct indication as to which rule-induced equilibrium the players should choose. There are two different legal rules, A and B, and there is no clarity as to which of the rules govern their interaction (legal pluralism). Players are assumed to be boundedly rational, i.e., they maximize the expected profits based on the limited knowledge that they have (*Assumption 1. Bounded rationality*). I assume that these beliefs are stable over the course of the game, so the players do not update their beliefs during the two-stage game short-term (*Assumption 2. Stable beliefs - no Bayesian learning*). I also assume that the existence of the legal system is a common knowledge, i.e., all players know (and know that the others know it) that there is a legal apparatus that they can revert to in case of conflict – represented in the model by a court. However, unlike in the models of expressive law set in a single legal system, the players do not have common knowledge nor shared belief regarding the binding rule.

Players choose which of the two rules to follow. They choose their strategies based on two factors: their subjective expectation of the other player's strategy choice and the subjective probability of winning the case before the court in case of conflict. The two legal rules determine the parties' respective rights, and thus their bargaining sets, differently. Player 1 prefers rule A to rule B; Player 2 the contrary. The players calculate the expected payoffs from coordination with rule A or rule B, choosing the best-response strategy between playing rule A and playing rule B. The parameters

of the game are as follows: a and b are coordination payoffs of Player 1 and Player 2, respectively, where $a, b > 0$. However, for both players coordination with the unpreferred rule is costly: in case of coordination with rule A, Player 2 bears cost of b_0, and in case of coordination with rule B, Player 1 bears cost a_0, and $a_0, b_0 > 0$, $a_0 < a$, $b_0 < b$. I also assume that litigation is costly and that the entire cost of litigation l is borne by the losing party.

The decisions of the players depend on their respective chances of winning the case before the court, conditional on whether the other player decides to litigate in later stages. Both assign a subjective probability of rule A vs rule B winning the case before the court (*Assumption 3. Private beliefs*). Litigation is introduced as the final stage option that will only be realized if the players do not coordinate around one or the other rule. The mechanics of the game is as follows. Player 1 moves first, choosing her move between 'play rule A' and 'play rule B'. Then, Player 2 can respond by playing either A or B. If Player 2 responds by playing the same rule as Player 1 did (*Strategy: Concede*), the players coordinate according to that rule (*Strategy: A if A, B if B*). However, if Player 2 chooses a rule different that the one set out by Player 1, she must challenge the rule A legally (*Strategy: Litigate*) by design of the game. Each player therefore decides their strategy considering the possibility of litigation – as represented by the parameters l, litigation cost, and β, the subjective probability for rule A $(1 - \beta)$ vs rule B (β) winning should they end up before the court. Those parameters are relevant for decision-making even if the parties do not eventually litigate; it is the very possibility that enters the expected payoff calculation.

Private beliefs in a litigation success affect the expected payoffs of the players, and therefore their strategy choices. The players are boundedly rational, so their strategy choices maximize the payoffs given their beliefs. Importantly, the players do not need to share beliefs on what the decision of the court would be should they end up in litigation; they hold private beliefs about it. It is represented in the game by parameter β – defined as the subjective probability of the court ruling in favor of rule B and assumed to be uniformly distributed in both populations of P1 and P2. The probability distributions β in the two populations P1 and P2 are independent (*Assumption 4. Independent probability distributions*). I will refer to them as β_{P1} and β_{P2} whenever the precise distinction is needed.

Private beliefs, by Assumptions 3 and 4, are not shared between players. It means that the players do not necessarily believe their counterpart to hold the same beliefs as they do about law, except for the general existence of a legal system with adjudication. Therefore, the parties can also model their counterpart as being of a certain type – but those types are not objective in the model. It

means that P1 and P2, rather than agreeing on the "Nature's moves", create models of each other between two types: *litigator* and *conceder*. The litigator type chooses her strategy based on the expected payoff, depending on the probability β of the court's decision in favor of rule B and analogously, $1-\beta$ in favor of rule A, as well as other parameters of the game. The conceder type will always play the rule preferred by the other player, as that type is litigation-averse. (Note that the conceder type in the game may stand for various legal diversity considerations. For example, P1 may believe that P2 is a conceder because she has no knowledge of legal process, or that P2 has no access to court that would allow P2 to challenge actions of P1.) In the game, both players are litigators and know their own type – but they hold private beliefs about the other player potentially being one of the two types. In particular, Player 1 takes into account the type of Player 2, that in P1's view can be either a litigator, with subjective probability $1-\alpha$, or a conceder, with subjective probability α. In the Player 1's model, if P2 is a litigator, their strategy choice will depend only on their belief β. However, if a conceder, P2 never litigates. Therefore, if P1 believes to be playing with P2 of a conceder type, P1 does not have to consider the probability β. P1 could decide to play rule A irrespective of the probability $1-\beta$ that P1 assigns to rule A being declared applicable by the court – even if it was very small. Then, the players do not need to agree about the distribution of each other's type – nor do they need to agree on what their respective types are – here I assume uncommon priors *(Assumption 5. Uncommon prior probabilities distributions)*.

What I look for in the model is correlated equilibria in the context of uncommon priors. Broadly conceived legal system with judiciary is the game's correlating device: the court, only potentially and ex-post, sends the signal regarding the binding rule. Having this broad point of reference in common – despite not having the same understanding nor the same belief regarding the content of the signal – is sufficient for establishing the equilibrium solution between the players. However, as will become evident further on, it is not sufficient for inducing convergence towards one of the rules.

3.2. Model specification

Abandoning the common priors' assumption may cause several types of problems in modeling. The most serious is, perhaps, when the uncommon priors are completely unrelated – the players unaware that they are playing the same game may be solving it for completely subjective and unrelated equilibria (Morris 1995). I have assumed that, minimally, both players are aware of the interrelation situation and, at least vaguely, of the legal system with judiciary. By this, I rule out that risk for the present model – even though few other of the game's parameters are commonly

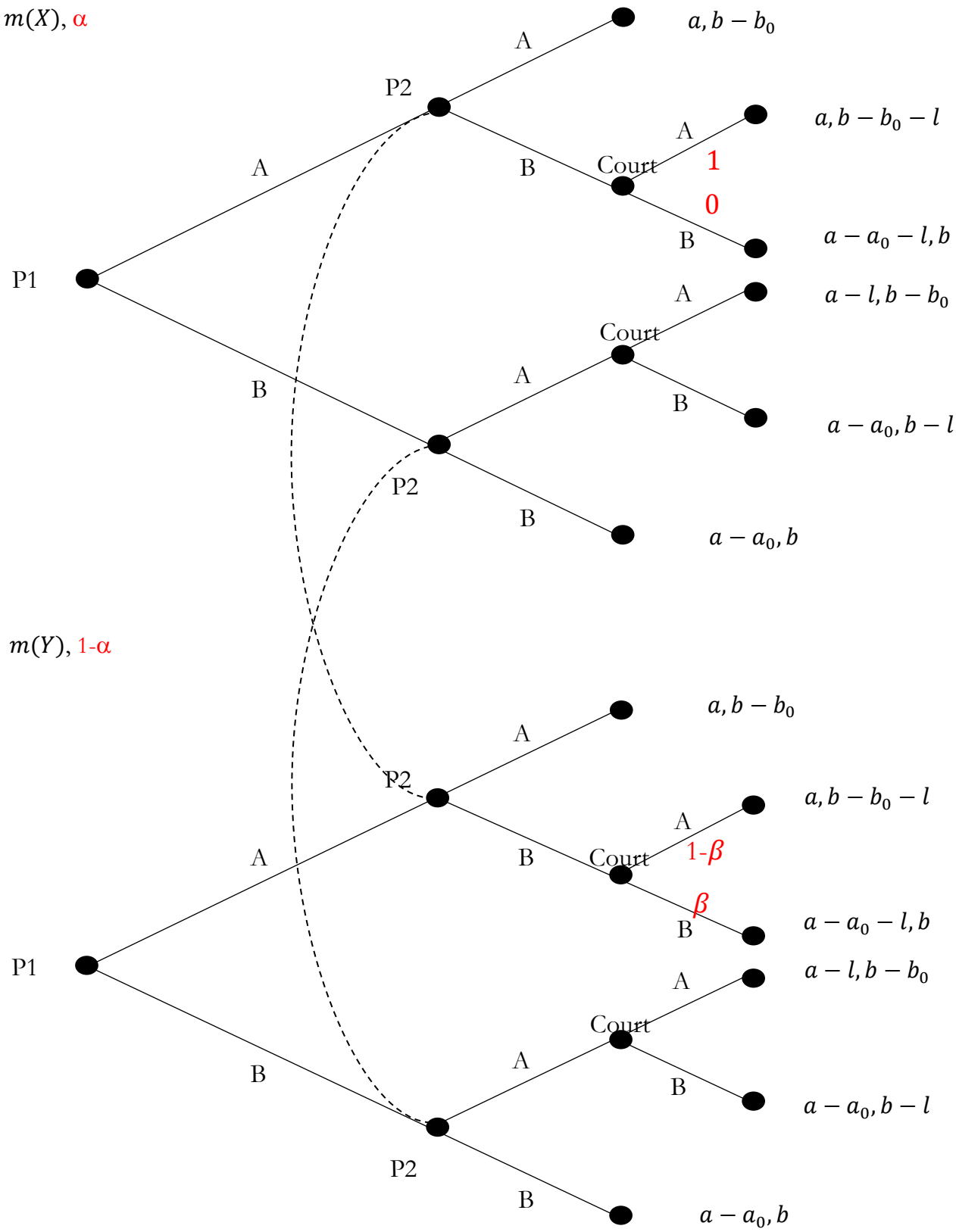
known or shared between the players. Assuming that the players' beliefs are stable (no Bayesian learning) and independent permits to keep the model simple.[24] The only remaining problem facing the model is the one of infinitely nested beliefs, which may still cause a great difficulty in modeling. In the current example, does Player 2 know and consider that Player 1 can model her as a conceder, and does she account for the deception by Player 1 in her play of the game? Namely, how do players model each other in the game?

To tackle this issue, I turn to a solution proposed by Antos and Pfeffer (2010). They suggest this can be done by defining the game as a collection of blocks, with a separate block for each model of the world an agent has, including beliefs that she holds and believes others to hold (Antos and Pfeffer 2010, 1458). Each block, then, contains $n(n-1)$ probability distributions that all the players hold about the overall game – including the beliefs about the other player's beliefs. Players assign also subjective probability as to which block others may be using. A single block, therefore, corresponds with a type of the player in our Bayesian game, but does not require us to assume common priors. It is possible to calculate the posterior probability distribution over the beliefs of all other players given a player's type in that block (which is given by the product of the probability distributions a player assumes in a block – see Graph 2 for a graphic representation). The unique assumption needed to find Bayes-Nash equilibria solutions is that all players play, and assume each other to play, best response strategies given their beliefs *(Assumption 6. Best-response strategy based on relevant beliefs*).

This method allows to break down the model into relatively simple belief blocks and find solutions of the game by using a graphic representation and a mapping method. In the present case, it is possible to rule out the problem of infinitely nested beliefs by determining which of the private beliefs of one player are relevant for the decision-making of the other one. The game is defined as a sequential-dynamic one, with two blocks in it, representing two models of the world that Player 1 uses, X and Y. I will use an extensive form for an accurate description. Each model of the world that the players have is represented in separate but corresponding game trees – as depicted in the Graph 1.

[24] Not only that: whether learning leads to convergence of beliefs is also a matter of controversy in the literature.

Graph 1. Game trees

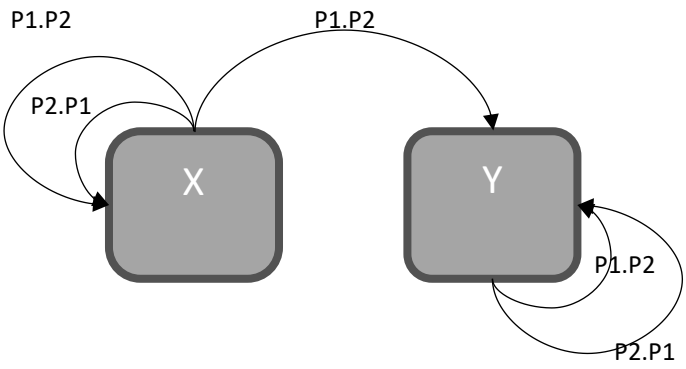


By assumption, $a, b > 0, a_0, b_0 > 0, l > 0$. Player 1 movers first, choosing her behavior strategy between following rule A that she prefers and following rule B that is preferred by Player 2. The aggregate profit is higher when the players end up in an equilibrium than when they are in a conflict of laws situation. However, the players have conflicting motivations, as their individual payoffs differ in the two equilibria.

The upper game tree represents model X, and the lower game tree – model Y of the world that the Player 1 holds, denoted respectively $m(X)$ and $m(Y)$. In $m(X)$, P1 believes P2 to be a conceder and models P2 as such. That is depicted in the Graph 1 as the probability 0 that P1 assigns to the court ruling in favor of rule B – simply because she believes that P2 would never litigate in response to her playing rule A. In $m(Y)$, P1 believes that P2 is a litigator – i.e., decides her strategy based on the calculation involving the non-zero probability β of rule B being declared legal by the court – and best-responds to the expected choice of P2. By assumption, the players know their own type and their own block.

Note that the only difference between the two blocks is the value assigned to the probability of a judicial decision being in favor of B or A $(\beta, 1-\beta)$, that equals 0 in $m(X)$ and takes on non-zero values in $m(Y)$. Importantly, it is Player 1's classification of the types of Player 2 that itself determines the typeset of Player 1. P1 assigns the subjective probability α to that $m(X)$ is the correct model of the world, and $1-\alpha$ that $m(Y)$ is such. The sentence *P1 believes P2 to be a conceder type*, in fact, describes a type of P1 – it can be called *P1 of type X*. Analogously, *P1 of type Y* believes P2 to be a litigator type. It stems from the fact that P2 does not need to take that belief of P1 into account while calculating her best response. P2 observes the history of the game, i.e., the choice of P1, and chooses her strategy according to the expected payoffs. It depends only on her subjective probability β, a matter of P2's private belief. While P2 can still hold beliefs about the type of P1, or about P1's belief about her, they simply do not enter the calculus. It can be illustrated, following the Antos and Pfeffer's formalism further, by a simple beliefs graph (Graph 2).

Graph 2. The beliefs graph



The graph represents the kind of beliefs of the other player is important for the players' decision-making. In the block X, P1 assumes that P2 is of certain type. If $m(X)$ was true, both players would just need to consider their own beliefs in $m(X)$ that P2 has no chance of winning before the court (two upper-left arrows pointing to the block X). Similarly, if $m(Y)$ was true, it is only the subjective probability of winning that is relevant – which both players believe is *the* probability, so they also assume their counterpart to assign the exact same probability values (two lower-right arrows, pointing to the block Y). However, the two blocks of X and Y represent two models of the world of P1, and not necessarily of P2. Therefore, P1 needs to consider in her decision-making the probability (which is also her subjective belief) that the blocks X and Y are also P2's model of the world. She assigns the probability α that P2's beliefs are as in block X, and $1-\alpha$ that they are as in block Y (the upper arrow connecting the two blocks). This is the only belief relevant for solving the model.

The game, consisting of two interrelated game trees (Graph 1), can therefore be described by a function that maps information sets between them according to the beliefs of the players. Player 1 models Player 2 as having two types, and she assigns the probability to P2 being either one or the other type. It is equivalent to P1 modeling P2 as a mix of those two types, choosing strategies at the corresponding information sets (the dotted lines in Graph 1)[25]. Denoting $X.P1$ as the

[25] That rests on the assumption that "for each information set I in each tree there exist another information set in every other tree that is indistinguishable from I with respect to the set of histories leading up to it, as well as the set of available moves to the agent at I; this is the *corresponding* information set of I" (Antos and Pfeffer 2010, 6). As the only differences between the trees are the probabilities of the court's decision (which is the Nature move in our game setting), this condition is met.

information set of Player 1 in tree $m(X)$, $X.P2A$ as the upmost information set of Player 2 in tree $m(X)$ (one with the history *Player 1 chose rule A*), $X.P2B$ as the downmost information set of Player 2 in tree $m(X)$ (history *Player 1 chose rule B*) – and $Y.P1$, $Y.P2A$ and $Y.P2B$ analogously for information sets in tree $m(Y)$, I define the mapping function as follows:

$F(P2, X.P1) =< 1: X.P1 >$

$F(P1, X.P2A) =< \alpha: X.P2A, (1-\alpha): Y.P2A >$

$F(P1, X.P2B) =< \alpha: X.P2B, (1-\alpha): Y.P2B >$

$F(P2, Y.P1) =< 1: Y.P1 >$

$F(P1, Y.P2A) =< 1: Y.P2A >$

$F(P1, Y.P2B) =< 1: Y.P2B >$.

This allows me to analyze separately the players' optimal choices in the two blocks. P1 chooses her action between two pure strategies, *play rule A* and *play rule B*; she can also randomize between them. P2 can reply by litigating or conceding, so she can either challenge P1's play in court or follow the rule that P1 played. P2 has four available strategies: *litigate if A and concede if B*, *concede if A and litigate if B, always concede*, and *always litigate*. Note that both strategies *concede if A and litigate if B* and *always litigate*, are strictly dominated in both blocks. Moreover, from the mapping function it follows that P2 does not need to be aware of the type of P1 in any block ($F(P2, X.P1) =< 1: X.P1 >$, $F(P2, Y.P1) =< 1: Y.P1 >$). In both cases, P2 observes the history of play of P1 and decides her best-response strategy, maximizing her expected profit. In $m(X)$, P2's strictly dominant strategy is *always concede* (as $b - b_0 > b - b_0 - l, b > b - l$). In $m(Y)$, P2 chooses her strategy between *always concede* and *litigate if A and concede if B,* depending on the β probability value. Therefore, in $m(X)$ P1 has only one pure strategy: *play rule A*, as P2's best-response is to *always concede*. In $m(Y)$, P1's choice of strategy is between *play rule A* and *play rule B* and depends on the β probability value that she assumes – and believes P2 to assume.

Recall that blocks X and Y are two models of the world that P1 can hold, i.e., two ways in which P1 models P2. This modeling does not have to be objectively true; and from the perspective of P2, $m(Y)$ is the only necessary and sufficient representation of the world, she is of only one type. However, P1 believes that P2 can be of two types and uses the models X and Y to choose her

strategy. She believes that $m(X)$ is correct – in the sense that it is the model of the world that P2 also assumes – with probability α and that $m(Y)$ is correct with probability $1-\alpha$. The model is then defined without assuming common priors – but the mapping of information sets in P1's function allows the equilibria solutions to be found.

4. Results

In this section, I solve the model using backward induction and analyze the outcomes.

4.1. The decision of P2

By design, P2 is only of one type – what P1 models as a litigator in $m(Y)$. Therefore, P2 must choose her strategy between *always concede* and l*itigate if A and concede if B*, depending on the value she assigns to β. As the exact value of that probability is a matter of her private belief, I will write it with the subscript, β_{P2}. P2's profit function, depending on the history of play of P1, is the following:

$$(1)\ \pi_{P2} = \begin{cases} \max\begin{cases} b - b_0 \\ \beta_{P2} b + (1-\beta_{P2})(b - b_0 - l) \end{cases} if\ rule\ A \\ b\ if\ rule\ B \end{cases}.$$

From there it follows that P2 is indifferent between the two strategies for $\hat{\beta}_{P2} = \frac{l}{b_0 + l}$. By assumption, $b_0, l > 0$, so $\hat{\beta}_{P2} \in (0,1)$. It is possible to find probability densities of the population of P2 litigating against rule A and that of conceding to rule A. All P2 with $0 < \beta_i < \hat{\beta}_{P2}$ will concede to rule A, while all P2 with $\hat{\beta}_{P2} < \beta_i < 1$ will litigate. By assumption, β is distributed uniformly over $(0,1)$, thus the probability densities of P2 conceding and P2 litigating in response to P1 playing rule A, $\gamma_{P2}^{A(A)}$ and $\gamma_{P2}^{B(A)}$ respectively, are given by:

$$(2)\ \gamma_{P2}^{A(A)} = \int_0^{\hat{\beta}_{P2}} f(\beta_{P2}) d\beta_{P2} = \hat{\beta}_{P2}$$

$$(3)\ \gamma_{P2}^{B(A)} = \int_{\hat{\beta}_{P2}}^1 f(\beta_{P2}) d\beta_{P2} = 1 - \hat{\beta}_{P2}.$$

Substituting both with $\hat{\beta}_{P2} = \frac{l}{b_0+l}$, I obtain $\gamma_{P2}^{A(A)} = \frac{l}{b_0+l}$, and $\gamma_{P2}^{B(A)} = \frac{b_0}{b_0+l}$. The probability density of P2 always conceding to rule B is simply $\gamma_{P2}^{B(B)} = 1$, as P2 always concedes when P1 plays rule B.

4.2. The decision of P1

P1 has two models of P2's reaction to her play, X and Y, and she believes they are correct with the probabilities α and $1-\alpha$, respectively. This is expressed by the mapping function in subsection 3.2. where, at the information set of $m(X)$, P1 assumes that P2 is a mix of types X and Y in proportion $\alpha:(1-\alpha)$. The profit function of P1 in blocks X and Y, respectively, is the following:

$$(4)\quad \pi_{P1}^{X} = \max \begin{cases} a \\ a - a_0 \end{cases} = a$$

$$(5)\quad \pi_{P1}^{Y} = \max \begin{cases} (1-\beta_{P1})a + \beta_{P1}(a - a_0 - l)] \\ a - a_0 \end{cases} .$$

By assumption, α, β_{P1} and β_{P2} are independent. Note that β_{P1} is a subjective probability that P1 assigns to parameter β, which I denote by using a subscript P1. Its value does not need to coincide with the value assigned to parameter β by P2, β_{P2}. However, let me assume that P1 believes P2 to assign the same probability value to β as she does (*Assumption 7. No deception and common probability distribution within blocks).* It is a reasonable assumption to make at this point: recall that, by defining the two blocks X and Y, I have already addressed both situations when that difference is potentially relevant and when it is not, so such an assumption does not constrain the analysis. Simply, model $m(X)$ captures all the cases when it matters. For P1's decision-making, the relevant distinction falls upon the probability β assuming zero and non-zero values in her model of P2. In all cases when she believes $\beta_{P2} = 0$, irrespective of the value she may be assigning to β herself, she ignores her own beliefs about β in her calculus and accounts for P2's beliefs instead. In P1's model $m(Y)$, where she believes $\beta_{P2} \neq 0$, she ignores the possible difference between β_{P1} and β_{P2}. P1 believes that β_{P1} is true, so even if P2 had a different estimate, P1 believes that she would be proven right in court. The difference in priors of the players, represented by their respective models of each other, affects the play and outcomes of the game. It depends on the parameter α, which will be

discussed in the generalized analysis below. Let me first investigate the choices of P1 in both blocks $m(X)$ and $m(Y)$ separately.

P1 chooses between strategies *play rule A* and *play rule B*. In $m(X)$, P1 assumes that at the information set X.P2A, P2 always concedes to rule A, and at the information set X.P2B P2 always plays rule B. As $a > a - a_0$, P1 will always choose rule A. Thus, the density probability of P1 playing rule A in $m(X)$ is $\gamma_{P1}^{A(X)} = 1$. Her choice in $m(Y)$, however, depends on the probability value that she assigns to rule A winning against rule B in court, $1 - \beta_{P1}$. P1 is indifferent between the two strategies in $m(Y)$ when $\hat{\beta}_{P1} = \frac{a_0}{a_0 + l}$. As it is assumed that both $a_0, l > 0$, it follows that $\hat{\beta}_{P1} \in (0,1)$. Now, the probability densities of the population of P1 playing rule A and that of playing rule B in $m(Y)$ can be found. All P1 with $0 < \beta_j < \hat{\beta}_{P1}$ will play rule A, while all P1 with $\hat{\beta}_{P1} < \beta_j < 1$ will play rule B. As by assumption β is distributed uniformly over $(0,1)$, the probability densities of P1 playing rule A and B in $m(Y)$, $\gamma_{P1}^{A(Y)}$ and $\gamma_{P1}^{B(Y)}$ respectively, are given by:

$$(6)\ \gamma_{P1}^{A(Y)} = \int_0^{\hat{\beta}_{P1}} f(\beta_{P1}) d\beta_{P1} = \hat{\beta}_{P1}$$

$$(7)\ \gamma_{P1}^{B(Y)} = \int_{\hat{\beta}_{P1}}^{1} f(\beta_{P1}) d\beta_{P1} = 1 - \hat{\beta}_{P1}.$$

Substituting both with $\hat{\beta}_{P1} = \frac{a_0}{a_0 + l}$, I obtain that $\gamma_{P1}^{A(Y)} = \frac{a_0}{a_0 + l}$, and $\gamma_{P1}^{B(Y)} = \frac{l}{a_0 + l}$.

Recall that X and Y, essentially, are types of P1 in the model – they indicate P1's beliefs about P2's priors. Parameter α denotes a subjective probability that P1 assigns to P2's model of the world being $m(X)$, and $1 - \alpha$ that it is $m(Y)$. This is what enters her payoff calculus. The profit function of P1, dependent on her belief parameters and capturing both models of the world X and Y, is the following:

$$(8)\ \pi_{P1} = \max \begin{cases} \alpha a + (1 - \alpha)[(1 - \beta_{P1})a + \beta_{P1}(a - a_0 - l)] \ if\ A \\ (1 - \alpha)(a - a_0) \ if\ B \end{cases}.$$

Recall that α, β_{P1} are independent, and β_{P1} is uniformly distributed over $(0,1)$. For the sake of simplicity, let me assume that among the population of P1, there is a shared belief about α – so

that all the population assumes $m(X)$ to be true with α probability, and $m(Y)$ to be true with $1-\alpha$ probability (*Assumption 8. Shared belief about models of the world among P1 population).* Given the equilibrium density functions (e.d.f.) calculated for both blocks X and Y separately, it is now possible to calculate the equilibria densities in the population of Player 1's choice between strategies *play rule A* and *play rule B* given her type – which is equivalent to the posterior probability of the strategy choice given her type (a product of those equilibrium densities and the type probability). First, note that, given the uniform distribution assumption:

$$(9)\quad \gamma_{P1}^{A} = \alpha \times \gamma_{P1}^{A(X)} + (1-\alpha)\gamma_{P1}^{A(Y)} = \frac{\alpha l + a_0}{a_0 + l}$$

$$(10)\quad \gamma_{P1}^{B} = (1-\alpha)\gamma_{P1}^{B(Y)} = \frac{(1-\alpha)l}{a_0 + l}.$$

Note further that, for $\alpha \neq 0$, $\gamma_{P1}^{A} > \gamma_{P1}^{A(Y)}$ and $\gamma_{P1}^{B} < \gamma_{P1}^{B(Y)}$, so if P1 believes that P2 is of two types with non-zero probability will choose to play rule A more often, and rule B less often. Any positive belief in a population P1 that Player 2 can be of a conceder type will then increase the equilibrium density of P1's choosing to play rule A.

5. Relation between legal convergence and access to justice

In the present section, I analyze the outcomes of the model with respect to potential legal convergence and legal harmonization reform effects, given the different beliefs of the players β_{P1}, β_{P2} and litigation costs l. I begin with calculating the equilibria densities of the game's outcomes, distinguishing between the situations when players coordinate with rule A or rule B, and when they litigate.

5.1. Litigation costs and legal convergence

First, the densities are calculated in both blocks separately. Given that β_{P1}, β_{P2} are uniformly distributed over $(0,1) \times (0,1)$ it follows that:

For $m(X)$:

$$(11)\quad \gamma_{P1P2}^{X.AA}(b_0, l) = \gamma_{P1}^{A(X)} \times \gamma_{P2}^{A(A)} = 1 \times \frac{l}{b_0 + l} = \frac{l}{b_0 + l}$$

$$(12)\quad \gamma_{P1P2}^{X.AB}(b_0, l) = \gamma_{P1}^{A(X)} \times \gamma_{P2}^{B(A)} = 1 \times \frac{b_0}{b_0 + l} = \frac{b_0}{b_0 + l}$$

$$\gamma_{P1P2}^{X.BB} = 0$$

For $m(Y)$:

$$(13) \quad \gamma_{P1P2}^{Y.AA}(a_0, b_0, l) = \gamma_{P1}^{A(Y)} \times \gamma_{P2}^{A(A)} = \frac{a_0}{a_0+l} \times \frac{l}{b_0+l} = \frac{a_0 l}{(a_0+l)(b_0+l)}$$

$$(14) \quad \gamma_{P1P2}^{Y.AB}(a_0, b_0, l) = \gamma_{P1}^{A(Y)} \times \gamma_{P2}^{B(A)} = \frac{a_0}{a_0+l} \times \frac{b_0}{b_0+l} = \frac{a_0 b_0}{(a_0+l)(b_0+l)}$$

$$(15) \quad \gamma_{P1P2}^{Y.BB}(a_0, l) = \gamma_{P1}^{B(Y)} \times \gamma_{P2}^{B(B)} = \frac{l}{a_0+l} \times 1 = \frac{l}{a_0+l}.$$

Those partial results of the model, so far without taking the uncommon priors assumptions into account, allow me to formulate the following two propositions.

> **Proposition 1.** In a conflict of laws situation and when litigation is costly, legal convergence does not occur.

Proof: $\gamma_{P1P2}^{Y.AA}, \gamma_{P1P2}^{Y.AB}, \gamma_{P1P2}^{Y.BB} > 0$. Players in both populations make decisions based on their private beliefs. This leads some part of the entire population to coordinate in rule A equilibrium, the other part in rule B equilibrium, and still another part to end up in conflict of laws. Until now, I have not discussed the litigation itself, as I was mainly interested in the coordination processes between the players given the *possibility of litigation*. According to the assumptions elaborated on before, the conflict of laws group will not necessarily be subjected to uniform rules by courts in all the cases. There is no assumption on neither of the rules being binding within the official legal system, nor courts ruling consistently in favor of one or the other rule. If there are no harmonized and universally applicable meta-rules for judges, it may happen that the courts will not issue consistent rulings even if a legal action is taken. I will get back to discuss a possibility of legal harmonization in subsections 5.2. and 6.1.

> **Proposition 2**. A decrease in litigation costs is not on its own sufficient to facilitate legal convergence.

Proof: $\frac{\partial \gamma_{P1}^{A(Y)}}{\partial l} < 0$, $\frac{\partial \gamma_{P1}^{B(Y)}}{\partial l} > 0$, $\frac{\partial \gamma_{P2}^{A(A)}}{\partial l} > 0$, $\frac{\partial \gamma_{P2}^{B(A)}}{\partial l} > 0$, $\frac{\partial \gamma_{P1P2}^{Y.AB}}{\partial l} < 0$, $\frac{\partial \gamma_{P1P2}^{Y.BB}}{\partial l} > 0$, and the sign of $\frac{\partial \gamma_{P1P2}^{Y.AA}}{\partial l}$ is not determined. Lowering litigation costs will induce players from both populations to more often play strategies oriented at establishing their preferred rule. Straightforwardly, P1 would decide more often to follow rule A rather than B – but P2 will decide to litigate instead of

conceding to it more often as well. Therefore, the lower l, the more often the players end up in litigation, and the less often they coordinate with rule B. The direction of change for the rule A equilibrium density, however, depends on the relative values of the other game parameters.[26]

5.2. Uncommon priors: legal diversity and harmonization challenge

Given the density functions in both blocks, now it is possible to find joint equilibria density functions. It is done by summing the equilibria densities in blocks, weighted by the probability of each state of the world represented by them:[27]

$$(16) \quad \gamma_{P1P2}^{AA}(\alpha, a_0, b_0, l) = \alpha\gamma_{P1P2}^{X.AA} + (1-\alpha)\gamma_{P1P2}^{Y.AA} = \frac{\alpha l^2 + a_0 l}{(a_0+l)(b_0+l)}$$

$$(17) \quad \gamma_{P1P2}^{AB}(\alpha, a_0, b_0, l) = \alpha\gamma_{P1P2}^{X.AB} + (1-\alpha)\gamma_{P1P2}^{Y.AB} = \frac{\alpha b_0 l + a_0 b_0}{(a_0+l)(b_0+l)}$$

$$(18) \quad \gamma_{P1P2}^{BB}(\alpha, a_0, b_0, l) = \alpha\gamma_{P1P2}^{X.BB} + (1-\alpha)\gamma_{P1P2}^{Y.BB} = \frac{(1-\alpha)l}{a_0+l}.$$

These joint distributions allow to formulate the following prepositions.

> **Proposition 3.** When litigation is costly, private beliefs of the parties with uncommon prior probability distributions affect the conflict of laws dynamics, even if they are not objectively true.

Proof: $\gamma_{P1P2}^{AA} > \gamma_{P1P2}^{Y.AA}, \gamma_{P1P2}^{AB} > \gamma_{P1P2}^{Y.AB}, \gamma_{P1P2}^{BB} < \gamma_{P1P2}^{Y.BB}; \frac{\partial\gamma_{P1P2}^{AA}}{\partial\alpha} > 0, \frac{\partial\gamma_{P1P2}^{AB}}{\partial\alpha} > 0, \frac{\partial\gamma_{P1P2}^{BB}}{\partial\alpha} < 0.$

This is rather straightforward in the context of the game: for $l > 0, \alpha \in (0,1)$, Player 1 would always play rule A more often when she assigns a positive probability to $m(X)$ as a possible model of the world. Player 2 observes and reacts to her choices, and the equilibria densities change respective to parameter α: both coordination equilibrium with rule A and conflict of laws increase,

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[26] $\frac{\partial\gamma_{P1P2}^{Y.AA}}{\partial l} = \frac{a_0(a_0b_0 - l^2)}{(a_0+l)^2(b_0+l)^2}$, so that density function with respect to l is increasing for $l < \sqrt{a_0b_0}$, and decreasing for $l > \sqrt{a_0b_0}$. Up to $l = \sqrt{a_0b_0}$, the higher the costs of litigation, the more often the parties would coordinate around rule A. Beyond that point, this effect goes in the opposite direction.

[27] Graphically, we could illustrate the complete model as a cube of dimensions $1 \times 1 \times 1$, where the length is a distribution of $\hat{\beta}_{P2}$ over $(0,1)$, the depth a distribution of $\hat{\beta}_{P1}$ over $(0,1)$, and the height of 1 marked at point α. The volume of cuboids separated by the walls indicated by $\hat{\beta}_{P1}$, $\hat{\beta}_{P2}$ and α are equal to partial equilibrium densities.

while the coordination equilibrium with rule B becomes less frequent. There are no non-zero levels of α, l for which increased litigation from P2's side mitigates the effect of P1's priors.

> **Proposition 4.** In the world with imperfect information and diverse beliefs, perfect legal harmonization is impossible when there is costly litigation. If litigation was costless and unlimitedly available, legal convergence would occur even without perfect convergence of beliefs of the players - but only given that all courts would decide uniformly in all cases.

Proof: For $l = 0, \gamma_{P1P2}^{AB}(\alpha, a_0, b_0, l) = 1$. In the situation of conflict of laws, if the access to court was unlimited and costless for all parties, they would litigate their way through to legal coordination. However, recall that we assumed that in the legal system there is no clear meta-rule that indicates which of the two is applicable, so some courts can still decide in favor of rule A, while others – rule B. Therefore, even if litigation always occurred in conflict of laws contexts, it would not necessarily lead to legal convergence. Moreover, as we know from Proposition 3., if the litigation is costly and players do not share all beliefs, some population share will always coordinate with rule A or rule B without litigating $(\gamma_{P1P2}^{AA}, \gamma_{P1P2}^{BB} > 0)$. Therefore, even if all cases γ_{P1P2}^{AB} brought to court result in a harmonized judicial decision-making in favor of one rule or the other – the harmonization is not complete. Effective legal harmonization requires both coordinated legal reform and indiscriminative access to justice.

6. Social cost case and implications for reform in legal pluralism

The lack of legal convergence is not a problem *per se*, as long as the parties find their way to coordinate with one of the rules or resolve their conflict before the court. However, it might be of bigger concern if one of the rules causes an uninternalized social cost. In this section I analyze the implications of the model for legal reform. I develop an optimization model for a government that aims to maximize social benefit (welfare) and ensure harmonization with the more efficient rule by means of legal reform.

6.1. Legal reform in pluralism of laws

So far, the relative values of payoff parameters were not precisely defined. Let me now introduce more rigorous assumptions: $b > a > 0, b_0 > a_0 > 0$. It means that rule A is less beneficial than rule B ($a + b - b_0 < a + b - a_0$). If P1 and P2 could bargain about which rule should govern their interrelation situation, the bargaining set between P1 and P2 would amount to $b_0 - a_0$.

However, note that the contractual solution itself rests on the assumption of legal certainty and perfect access to litigation: in legal pluralism, when parties cannot be sure whether their contract would be deemed legal and enforced by the court, bargaining is not a solution. Let $k > 0$ be an additional unit social cost caused by the parties for each case i when two players of populations P1 and P2 end up coordinating around rule A. Let me assume also that $k > l$.

The government wants to maximize social benefit (welfare) by its legal policies; however, it does not have a perfect knowledge about the private beliefs of citizens and assumes them to be as in $m(Y)$. It legislates a meta-rule indicating rule B as always applicable, so that the courts will rule in favor of rule B in all cases. Apart from legislating a meta-rule, the government can also decrease litigation costs for the parties to encourage litigation, that would ensure the harmonization with rule B and it wants to find the optimal level of litigation costs l^*. The decrease in costs, $\Delta l = l - l^*$, is borne by the government and funded from taxes.

The total profit function that government wants to maximize is as follows:

$$(19)\quad \prod_{max}(l^*) = \sum n \times \gamma''^{Y.AA}_{P1P2}(a + b - b_0 - k) + \sum n \times \gamma''^{Y.AB}_{P1P2}(a - a_0 + b - l^* - \Delta l) + \sum n \times \gamma''^{Y.BB}_{P1P2}(a - a_0 + b).$$

Recall that in $m(Y)$, $\gamma^{Y.AA}_{P1P2}(a_0, b_0, l) = \frac{a_0 l}{(a_0+l)(b_0+l)}$, $\gamma^{Y.AB}_{P1P2}(a_0, b_0, l) = \frac{a_0 b_0}{(a_0+l)(b_0+l)}$, $\gamma^{Y.BB}_{P1P2}(a_0, l) = \frac{l}{a_0+l}$.[28]

The maximization problem the government is facing is then given as:

$$(20)\quad \prod_{max}(l^*) = n(a + b) + n \times \frac{a_0 l^*(-b_0-k)+a_0 b_0(-a_0-l^*-\Delta l)-a_0 l^*(a_0+l^*)}{(a_0+l^*)(b_0+l^*)}.$$

[28] $\prod_{max}(l^*) = n(a + b) + n \times [\gamma''^{Y.AA}_{P1P2}(-b_0 - k) + \gamma''^{Y.AB}_{P1P2}(-a_0 - l^*) + \gamma''^{Y.BB}_{P1P2}(-a_0)] - n \times \gamma''^{Y.AB}_{P1P2} \times \Delta l.$

However, the first order necessary maximization condition is not met; as $\frac{d\Pi}{dl^*}$ yields no solution, the social benefit function is not continuously differentiable.[29] The government, therefore, does not have necessary tools to ensure the optimal solution even for only a part of the model represented by the block $m(Y)$.

6.2. Further considerations

Even though a simple and unique solution is not available, the outcomes of the model allow us to draw some further conclusions. Recall that $\frac{\partial \gamma_{P1P2}^{Y.AB}}{\partial l} < 0$, $\frac{\partial \gamma_{P1P2}^{Y.BB}}{\partial l} > 0$, and the sign of $\frac{\partial \gamma_{P1P2}^{Y.AA}}{\partial l}$ is not determined: $\frac{\partial \gamma_{P1P2}^{Y.AA}}{\partial l} = \frac{a_0(a_0 b_0 - l^2)}{(a_0+l)^2(b_0+l)^2}$, so that density function with respect to l is increasing for $l < \sqrt{a_0 b_0}$, and decreasing for $l > \sqrt{a_0 b_0}$. Up to $l = \sqrt{a_0 b_0}$, the lower the costs of litigation, the less often the parties would coordinate with rule A. Beyond that point, the effect goes in the opposite direction: the higher the costs of litigation, the less often parties would end up in the rule A equilibrium. The interpretation is rather intuitive. Below a certain litigation costs level in relation to her costs of conceding, Player 1 would be willing to play rule A more often. This, however, will be mitigated by the fact that Player 2 will be more willing to litigate against it as well, so that the equilibrium density of the conflict of laws increases at the expense of A-rule coordination. Beyond that threshold, P1 would decide to concede more often to avoid excess litigation cost. P2 would concede to that too, so that the B-rule coordination equilibrium density will increase as well. Yet, by the same token, P2 would likely litigate rule A less often, so the litigation equilibrium density would diminish. The effects of the changes in litigation cost on the choices of the players work in different directions, and the overall outcomes are not straightforward.

It is known by Proposition 4. that setting litigation costs to zero, together with legislated harmonization, will eventually lead to legal convergence to rule B. Moreover, costless litigation also mitigates the effects of uncommon prior beliefs among the players, as for $l = 0$, α becomes irrelevant: all times P1 plays rule A, she is challenged before court by P2. In reality though, litigation is not free and decreasing litigation costs for the players is not equivalent with decreasing them

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[29] $\frac{d\Pi}{dl^*} = \frac{-a_0^2 b_0^2 + a_0 b_0^2 \Delta l + a_0 b_0 l^{*2} - a_0^2 b_0 k + 2 a_0 b_0 l^* \Delta l + a_0^2 b_0^2 \Delta l + a_0 l^{*2} k}{(a_0+l^*)^2(b_0+l)^2}$.

globally; it shifts their burden on the public and puts pressure on courts. From the perspective of our model, that decision might be justified when total litigation costs, nl, would be exceeded by the overall social benefit (minimization of social cost). We assumed $k > l$; on its own, it is not an assumption specific enough to allow for a precise assessment. However, for a sufficiently big k, the cost-free litigation may well be economically justified.

What about the less obvious solution, i.e. increasing litigation costs for the parties to a high level? It could incentivize P1 to play rule B instead of A in the first place – and allow to cut litigation expenses from the public budget. This solution, however, should not be encouraged, since they are not directly captured by the model. First, it simply would also prevent much of legal action from the P2 side. Second, such a solution does not take into account other factors that may also have an effect on P1's decision-making – which, depending on the value of parameter α from our model, make the potential outcomes of such a policy even more dubious. Third, and most important, limiting access to justice based on the *de facto* income criterion is a questionable legal policy from a broader perspective – and in longer term, might have adverse effects on the very beliefs regarding the law and access to justice that, as the model shows, are a foundation of legal coordination. The model setup assumed the minimal shared belief in broadly defined legal system. In the long term, that shared belief is foundational to the persistence of coordination in the shadow of the law. Thus, it could obstruct the law's functioning.

Clearly, even though a straightforward optimization cannot be performed, the government may still introduce other available tools, both legislative and regulatory, in a complementary manner. It can mix solutions directed at the different sides of the social costs problem: from the standard taxation solution to alter P1's incentives, to creating public office that would support the litigation efforts of P2 population, to administrative regulation, to other forms of public law control, e.g. criminalizing the harms stemming from rule A. The bottom line is that legal pluralism requires solutions beyond a simple binary choice between private and public law.

Some additional remarks regarding the role of beliefs and belief dynamics are suitable here, even if they do not follow directly from the model. First of all, even though for the purposes of modeling I assumed out Bayesian learning, this aspect should not be entirely ignored in the broader picture. Litigation, especially in controversial cases, or in significant numbers, may gain public attention and facilitate the belief update. If it reaches the critical mass, the further legal convergence may follow without the case-by-case litigation. Second, as the present uncommon priors example

indicates, access to justice – or even the mere belief regarding it, asymmetry in legal knowledge and awareness of one's legal rights – may affect the real-life legal dynamics and hamper well-intended reform efforts. This points to the need of more careful scrutiny of rights and access to justice, as well as their perceptions, and their relation to economic efficiency.

7. Conclusions

In this chapter, I presented a model of conflict of laws, understood as a situation where two players do not share beliefs nor preferences about which rule is applicable to govern their relation. Combining insights from two streams of literature broadly conceived – legal pluralism theory and coordination theory of law – I analyzed the dynamics of law-based coordination in pluralist legal context.

I model legal coordination as a dynamic, sequential process "in the shadow of the law" – where potential litigation, the last resort solution to the conflict between players, is a correlating device of the pluralist legal system. The players hold different beliefs regarding their respective legal rights and lawfulness of their respective positions. I relax the common prior probability distribution assumption to account for legal diversity. The reported effects of divergent beliefs on the overall model outcomes bring interesting insights.

I find that legal coordination is possible with only minimum shared beliefs. Namely, even though players do not agree about what the actual law is, the belief in a potential judicial solution to the conflicts is enough for a significant population of players to coordinate – without seeking a court judgement. This confirms the intuitions about the prevalence of coordination despite the multiplicity of legal rules and orderings. That holds also for the cases when players' beliefs about each other differ – though that condition affects the outcomes further.

The second finding is that legal convergence does not occur; some part of the population ends up coordinating with one rule, other part coordinates with another rule; still some parties litigate. An important factor that plays a role here are costs of litigation, affecting the overall outcomes to a significant extent. The causality relation is not straightforward, though. The only case when the model yields the perfect legal convergence prediction is when litigation costs are equal zero and uniform legislation is introduced. Nevertheless, this result should be treated with caution. In particular, the results of the model do *not* support the argument that free adjudication would allow

for legal convergence. Rather, as an access to litigation cannot be provided without limits, the model highlights the need to search for a complementary solution. One potential solution to address the obstacles to the harmonization reforms is that legislative and other policies aimed at harmonization could be complemented by availability of legal conflict resolution to all parties in the reform domain.

Third, completely private beliefs of the players regarding their counterparts' legal beliefs affect their strategy choices and overall outcomes of the game, even if they are not objectively true nor correspond with the self-belief of the other party. I analyzed the situation when some players believe their counterpart to be unable to litigate – and therefore play more often in line with their rule preference irrelevant of whether they believe it is lawful to do so. Even if their belief is neither shared by their counterpart nor true, it still affects the results in favor of those players. This logic extends on the cases when, in fact, pursuing certain actions may depend less upon the legality assessment and more on the probability of facing adjudication. This points to the need of more careful scrutiny of indiscriminatory access to justice and potential relevance of that area of study for the comparative law and economics field.

Fourth, the model indicates that the patterns of legal coordination are not as much related to the aggregate benefits as much as they are determined by players' private calculation. This goes in line with findings of some contributions in jurisdictional competition literature pointing to the potential harmful third-party effects against the efficiency hypothesis (Carbonara and Parisi 2007; Trachtman 1993; Guzman 2002). The analysis of belief parameters suggests that the trajectory of legal dynamics is largely a matter of perception of relative rights and of the legal apparatus by the system's participants.

Fifth, the model does not provide a simple take-away policy recommendation. Different policy reforms considered in the chapter do not yield conclusive results, often leading to effects that are only partial or offsetting. However, these results point to the need of shifting attention from only the reform content to the content and implementation context. Since legal pluralism allows for different rules to prevail along one another, the tailored policy might be necessary to tackle involved problems – and the latter, ideally, should always consider beliefs.

8. References

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Chapter 3

Strategic litigation and reform in global legal pluralism. An (exploratory) empirical study of climate litigation cases in comparative perspective

Abstract. *Introducing social change via law faces challenges in the global context when multiple legal systems are involved. Thus, social movements increasingly use strategic litigation to promote legal reform domestically and transnationally. To study the dynamic of strategic litigation in the domain of climate change law and in the international context, an informal model of intermediary expressive effects of law is introduced here as a basic framework. The empirical comparative study of climate change-related lawsuits shows that strategic litigation increased in an aftermath of the introduction if the Paris Agreement across 36 jurisdictions. The results indicate also that the effects vary across jurisdictions and that the legal system adoption context is a significant predictor of those differences.*

1. Introduction

Among many competing definitions and theories of institutions, one characterizes them primarily as social equilibria. Sociological as well as game-theoretical approaches suggest that the core function of institutions is shaping expectations and coordinating patterns of behavior among individuals. Stability of beliefs about others' beliefs makes institutions last over time (Guala 2016; Greif and Kingston 2011; Schelling 1971). Reforming institutions can be challenging for that very reason: beliefs and institutions reinforce each other (Schelling 1960; Greif and Laitin 2004; Greif and Kingston 2011). Institutions are "sticky" and path-dependent (Boettke, Coyne, and Leeson 2008). Institutional change depends, however, on adjustment of beliefs (Greif and Laitin 2004). People do not easily update their beliefs, and often tend to follow the already known patterns – unless they perceive changes in the behavior of others. Therefore, the successful institutional change occurs only when a big enough number of individuals updates their expectations. The critical mass needs to be reached for a large-scale effect on the patterns of behavior (Granovetter 1978; Greif and Laitin 2004; Kuran and Sunstein 1998; Witt 1989).

Expressive effects theory of law asserts that it is an important focal point and signaling device.[30] Legal reform can be a tool of social change because, by communicating a new rule, it affects beliefs of people and prompts a shift of their expectations and behavior to new social equilibrium (McAdams 2000a; 2000b; 2015). On the other hand, law is itself an institution and, as such, is also largely dependent on beliefs. This is why legal reform is not always successful – if it fails to inform people or even convince them that a new rule applies, the "law in books" and "law in action" diverge. Sometimes it is sanction that facilitates change by means of legal reform (McAdams 2015, 96–97). Other times, the need of legal-institutional activism emerges, as the critical mass is needed for the social change to occur (Guala 2016).

In the present essay, I focus on strategic litigation as a step in a sequential process of legal-social change in the context of legal pluralism. Courts play an increasingly important role in overlapping and interrelated systems of law (McAdams 2005; O'Connell and White 2019; Shaffer 2012). Due to their status, they may function as signaling devices: if a court case and decision gain significant public attention, it may lead to the belief update on a sufficient scale and result in a shift of institutional equilibrium. The focal point potential of adjudication has been used by social movements and promoters of legal change in strategic (or "public interest") litigation (Ramsden and Gledhill 2019; Freeman and Farris 1991; Cummings and Rhode 2009). The defining features of strategic litigation, as opposed to regular litigation, are that they are aimed at advancing legal change with an effect applicable beyond a single case and extend over many available legal dispute resolution instances (Ramsden and Gledhill 2019).

Strategic litigation is initiated all over the world – across jurisdictions, legal families, political systems and governance levels. Strategic litigation "…concept is anchored in a globalized legal order, where there are many ways in which activists can seek to pursue legal and social change, be it in domestic, regional or international courts. Similarly, implicit in the broadly-applicable terminology of strategic litigation is that the technique transcends jurisdictions and frontiers, remaining relevant in common law and civil law systems, and in regional and international courts" (Ramsden and Gledhill 2019, 31). "Social movement" is defined, broadly, as individuals and groups that have a strong preference for certain legal reform or institutional change and are involved in

[30] I refer here to the expressive *effects* theory of law (McAdams 2000b; 2015) that is focused on the role of law in social coordination and its ability to convey new information affecting the expectations and choices – and *not* on the other expressive theory of law that focuses on different (even if related) phenomenon – law as an important platform of communicating moral attitudes and social values (Sunstein 1996; 1999; Nadler 2017).

some activities aimed at pursuing that change. Throughout the essay, it is used interchangeably with "agents of legal reform". Importantly, this category is not limited to organized groups and institutionalized organizations; an individual person that engages in promoting new social attitudes also counts as a "social movement" in that sense (similarly to McAdams 2015, 100–110).

I introduce the concept of "an intermediary expressive effect of law", defined as a response of social movements to an early-stage legal reform, by pursuing strategic litigation aimed at promoting legal change. An informal model of intermediary expressive effects of law will be applied here as a basic framework to study the dynamic of strategic litigation in the domain of climate change law and in international context. In the case study, I focus on strategic litigation as a response to the introduction the Paris Agreement of 2015, an international treaty on climate change. Using the data on 270 climate change-related lawsuits from 36 non-US countries, I find that the introduction of recent international treaty regarding climate change, the Paris Agreement of 2015, had an intermediary expressive effect on climate change litigation across jurisdictions. The results indicate also that the effects vary across jurisdictions and that the legal system adoption context is a significant predictor of those differences.

The first section introduces an informal model of intermediary expressive effects of law in legal pluralism. Section 2 reviews the literature on climate change law and strategic litigation against the framework of the model and develops hypotheses for the study. Section 3 introduces the formal model, data and methodology. Section 4 reports the results, and section 5 provides the discussion. Last section concludes.

2. Informal model of intermediary effects of law

Efficacy of legal reform depends on the expressive power of law, understood as its ability to affect people's beliefs, decisions and choices (McAdams 2015). Legislative change may have an immediate expressive effect. However, it depends on the power of legislative expression. If the new law or policy is not perceived by the society or does not affect the beliefs of a significant part of the population (the critical mass needed to change the overall expectations) – it fails to shift society to a new institutional equilibrium.

Legal reform takes place not only at the legislation stage, but also at following stages of law application and at different levels of a complex legal system. The expressive effect of legislated law may be strengthened by the expressive effect of adjudication (McAdams 2000a; 2005). The courts play a significant role in the legal system not only by enforcing the rules, applying the law to

ordinary legal disputes – but also by resolving conceptual disputes about the content and interpretation of law (McAdams 2005, 109). *Strategic litigation is a tool aimed at using that expressive power of adjudication to advance legal reform* – and it is of particular interest in the present study.[31]

McAdams suggests another angle to look at the expressive function of law and legal change: "[i]f legal change follows a certain amount of social change, then it will often be plausible that law can work as a focal point to refocus expectations about how to coordinate" (2015, 100). A new legal rule, even if it does not bring about the immediate massive shift of beliefs, *may change the relative costs of coordination for people that have strong preferences over or stakes in the legal change*. Therefore, new law – or even a policy declaration – may create a focal point for social movements and enhance their activity.

Social movement actors play part in legal reform's pursue and diffusion at different stages of legal process. Those legal reform agents aim to maximize the initial expressive effect of the new law, i.e., the belief update and following behavioral change in the population, given the expected costs of strategic litigation. *Therefore, the higher expected benefit from the strategic litigation the more the share of strategic litigation will increase in response to a new law*. By the same token, the higher the costs of litigation relative to other tools of legal reform diffusion the lower the share of strategic litigation.

Issuing a new law or policy sends an informative signal[32] that is first received by a social movement – an *intermediary expressive effect* of interest. As the new law undermines the beliefs of some part of population, making the existing social equilibrium less stable, the expected expressive effect from strategic litigation increases. However, I expect this effect to vary across jurisdictions, depending on their institutional characteristics.

How big both the initial and intermediary expressive effect of the law will be may depend on various factors. Information asymmetry and divergent beliefs about the law's content are reasons for which legal reform may fail – the law cannot bring about any effect if people are not aware of the change (Guala 2016, 120–31). However, it may also fail to bring about the social change for other reasons. Some scholars point to the link between perceived legitimacy of law and its

[31] While I rely on McAdams' expressive theory of law to a great extent, the strategic litigation definition adopted here is not compatible with what McAdams defines as "strategic dispute" ("A strategic dispute exists when the parties actually have consistent expectations, but one party pretends otherwise in an effort to gain some advantage from disputing." (McAdams 2005, 1090).

[32] Not to be confused with the information-asymmetry game-theoretic signaling.

expressive power: if the law is not widely seen as legitimate and internalized, the changes in law may not reflect on the change of behavior (Nadler 2017). Similarly, if the new law does not correspond with public values, it may not have any effect (McAdams 2000a). The behavioral deterrence effect of sanctions depends also on the credibility of legal system and its officials (Basu 2018; Eisenberg 2014). In different instances, expressive power of law, sanctions and legitimacy may reinforce each other, or one of them may be a unique force at work (McAdams 2015, 119–35). Legal pluralism poses yet another challenge to expressive legal reform. Law and its expressive power varies across different jurisdictions, which may depend on the historical contexts, types of legal systems and their inherent path-dependencies (Berkowitz, Pistor, and Richard 2003b, 178; Teubner 1998; Deakin 2011).

Expressive power of law may – at least indirectly – depend on the efficacy of legal system. Some authors suggested the link between law's efficacy and type of legal system (LaPorta et al. 1998; LaPorta, Lopez-de-Silanes, and Shleifer 2008).[33] The so-called legal origins theory has been criticized on several grounds from comparative lawyers and institutional scholars. Berkowitz, Pistor, and Richard (2003b) rejected that theory, and showed that the adoption context of the law explains its efficacy better than the legal family. Along similar lines (Boettke, Coyne, and Leeson 2008) relate the institutional success or failure to their legitimization in adoption process rather than merely to their origin.

Berkowitz et al. show that the way the legal system has been historically introduced – whether it developed within the country (origin), was voluntarily adopted (receptive transplant) or imposed (unreceptive transplant) – determine its overall performance (Berkowitz, Pistor, and Richard 2003b). The historical contingencies of the context of adoption affect the attitudes of society towards law and result in an overall lower efficacy of legal institutions. The authors suggest that, even though legal pluralism is a feature of all societies, the disparity between "law in books" and "law in action" is bigger in the countries with legal transplants, and the more so – unreceptive ones (Berkowitz, Pistor, and Richard 2003a, 175). I aim to verify whether the "transplant effect" is visible also in the domain of strategic litigation – and if so, how the intermediary expressive effects of the introduction of the new law differ between the "origin" and "transplant" jurisdictions. In the model, I hypothesize that the expected benefit of strategic litigation is higher in the legal system

[33] They demonstrated the correlation between the legal family origin of financial law as a factor of development of capital markets and economic growth; however, they went on to suggest a much broader causal relation between common law origin of legal rules selected domains and overall performance of legal system.

with higher perceived legality. In the next sections, I test this conceptual framework in the context of climate law and strategic legislation.

3. Global legal reform to tackle climate change: Paris Agreement and strategic climate litigation

Climate change is one of the biggest policy challenges of our time. International efforts to mitigate climate change are paralleled with country level laws and executive policies. Recent research on legal and policy reforms in that domain points to several trends. One is the universal recognition of the problem – there is no country that has not issued at least one law regarding climate change, and climate litigation is on the rise globally as well (Eskander, Fankhauser, and Setzer 2020). Second is the expected role of the Paris Agreement – the international treaty signed in 2015, obliging all its signatories to take part in global climate change response (Bodansky 2016; Carlarne and Colavecchio 2019). Third, it suggests that the patterns of legal climate reform, both in terms of legislative measures and litigation, differ across jurisdictions (Peel and Lin 2019; Setzer and Vanhala 2019).

The Paris Agreement was signed on 13 December 2015 and came into force on 4 November 2016 (UNFCCC 2016). It is a legally binding international treaty with currently 191 countries being an active party to it.[34] It imposes obligations on all parties to contribute to the global climate change response. Countries-signatories are obliged to determine their climate change reduction targets but are allowed to develop the implementation tools from the national bottom-up, rather than global top-down. However, the Agreement came into effect only in 2020, with countries submitting their Nationally Determined Contributions pledges.

While five years after its approval there are not many signs of the reversal of the climate change trends nor substantive effects of the new policies (Roelfsema et al. 2020), a new dynamics in law on climate change emerges. On the one hand, states and international organizations are submitting their environmental targets and enacting new laws aimed at enhancing the transition. On the other hand, citizens seek to hold the governments accountable and demand more decisive actions, in the increasingly widespread climate litigation. It is that legal dynamics that is of primary interest in this chapter.

[34] https://unfccc.int/process/the-paris-agreement/status-of-ratification

3.1. Climate litigation: Strategic and regular cases

Among climate and environmental litigation cases there are both regular cases, aimed at enforcement of existing laws, and strategic ones. The latter's distinctive feature is the *strategic aim of bringing the case before the court*, while particular claims and detailed litigation strategies differ (Peel and Osofsky 2019). The range of the climate litigation cases is wide. The broad definition, proposed by Markell and Ruhl in their pioneering empirical assessment of US cases and applied later in the analysis of cases in other jurisdictions, covers *"any piece of federal, state, tribal, or local administrative or judicial litigation in which the tribunal decisions directly and expressly raise an issue of fact or law regarding the substance or policy of climate change causes and impacts*"(Markell and Ruhl 2012, 9). The authors profile climate litigation cases along different categories. They find that climate change is widely admitted by judges as facts of the case in the proceedings. However, the courts have not developed a separate and systematic climate change jurisprudence, and the climate litigation occurs across different domains of law. A similar study was conducted by Wilensky for the non-US cases sample (Wilensky 2015). She notes that the non-US litigation cases have been of more "tactical" character but finds that the courts tend to avoid the interference with policy in the climate adjudication. However, the qualitative research from more recent years, after the Paris Agreement was signed, indicates reinvigoration of climate litigation, in absolute, geographic and qualitative terms (Peel and Osofsky 2019; Osofsky 2020; Eskander, Fankhauser, and Setzer 2020; Setzer and Benjamin 2020a; Peel and Lin 2019).

In order to verify the existence of an intermediate expressive effect of Paris Agreement on the global climate litigation cases – i.e. whether the signing of the treaty has affected the dynamics of strategic litigation in the overall climate litigation cases, I propose the following hypothesis:

> *H1: The Paris Agreement had an intermediary expressive effect on the share of strategic litigation in the overall climate litigation cases (the intermediary expressive effect hypothesis).*

3.2. Climate litigation and legal pluralism

Climate litigation literature suggests a disparity between countries of the Global North (higher income and human development countries) and South (lower income and human development countries). Climate litigation in the Global North is more common (Peel and Lin 2019)[35]. The

[35] The research is largely focused on the legal case studies of high profile cases, and in vast majority on the Global North litigation – see (Setzer and Vanhala 2019).

literature suggest that it is not only more frequent, but also more bold, adopting novel strategies and bringing in "test-cases" to verify the potential of different new legal arguments (Peel and Osofsky 2019, 312–13). Litigation concerning climate change is less frequent in the Global South, and the claims are less straightforward: claimants more often seek to ground their argument in the existing laws and policies to increase the chances of admitting the case to proceedings. Among reasons for more cautious approach is expected judicial reluctance to the innovative litigation strategies or more stringent budgetary constraints facing the plaintiffs (Peel and Lin 2019, 715). On the other hand, the approaches differ among the countries in the Global South: while some maintain the low climate litigation profile, others witness their social movements trying innovative litigation routs and the courts "filling the gaps" despite the relatively low level of environmental regulation (Setzer and Benjamin 2020a; Rodríguez-Garavito 2020). Qualitatively, the picture of the Global North is not uniform either – for example, Europe has fewer cases but of increasingly progressive content; while Australia is a jurisdiction with relatively high number of cases, but most of them are administrative cases of low profile (Peel and Osofsky 2019; Noonan 2018).

Those findings suggest the qualitative differences between legal routs in climate litigation. However, I am interested in a much broader question, i.e., whether the probability of strategic litigation varies systematically across legal systems, given their overall legality characteristics. I expect a stronger intermediate expressive effect of law in jurisdictions with higher perceived legality. It follows from the previous theoretical considerations that with wider recognition of the law's legality, it has stronger expressive potential; while in the jurisdictions where the perceived legality of the legal system is lower, the expressive effect should be weaker. The lower expressive power of law implies lower expected benefit from strategic litigation from the social movements' perspective. Therefore, the second hypothesis is as follows:

> *H2: The probability of strategic climate litigation is higher in the legal systems with higher legality (the "transplant effect" hypothesis).*

In what follows, I develop a formal model to test the two hypotheses. To verify whether the intermediary expressive effect occurs in the climate law and litigation domain, I aim to see whether the probability that the climate litigation case is of strategic character as opposed to regular varies both with regard to the introduction of the Paris Agreement and across legal systems according to their adoption characteristics.

4. Data and methodology

4.1. Dataset

To identify the trends in climate litigation, I use the data from Climate Laws of the World database of the Grantham Research Institute on Climate Change and the Environment at London School of Economics (the Grantham Research Institute on Climate Change and the Environment and Sabin Center for Climate Change Law, n.d.)[36]. The database, searchable and publicly accessible, contains two datasets, one featuring climate laws and policies, and the other one climate litigation cases. At the end of November 2020, the database covered 2086 laws from 198 jurisdictions, and 412 litigation cases from 41 jurisdictions.

The litigation database contains the range of climate-related cases, inclusive of different types of actors (public, private and NGO) and levels of jurisdiction (local, national and international). Proceedings before administrative bodies other that courts are also included (Burger et al. 2017). The criterion for including the case in the database is that the subject matter "address in direct or meaningful fashion the laws, policies or actions that compel, support or facilitate climate mitigation or adaptation", with keywords "climate change, global warming, global change, greenhouse gas, GHGs, and sea level rise" (Eskander, Fankhauser, and Setzer 2020, 8).

Provided that the focus of the present study is on national-courts litigation and the regressors data are available at a country level, I select from the original database the cases before the court, at national jurisdiction level, where the plaintiff was a private individual or NGO. In effect, the study sample contains 270 climate court litigation cases from 36 countries (see Appendix 1). Similarly to Markell and Ruhl (2012) and Wilensky (2015), I code the cases according to specified characteristics in order to build the categorical variables. However, as the research question differs

[36] Change Laws of the World database (Grantham Research Institute on Climate Change and the Environment and Sabin Center for Climate Change Law, n.d.). Available at climate-laws.org.

The database does not include US, covered by another database. The climate litigation in US is well-established, with the jurisdiction having 1308 registered climate litigation cases alone. Collected by Sabin Center for Climate Change Law at Columbia Law School and Arnold & Porter, available at: http://climatecasechart.com/search/. That database includes very broad range of cases, covering also extra-litigation citizens' interventions under that label, so the two numbers are not directly comparable; nor can the databases be directly integrated. For the analysis of the US climate litigation, see (Markell and Ruhl 2012; McCormick et al. 2018).

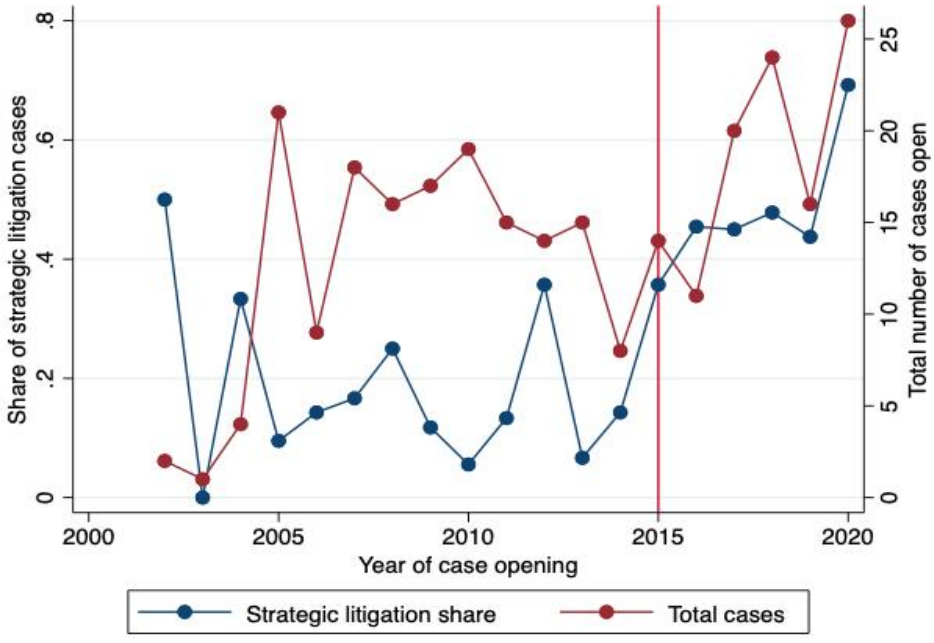
from the previous studies, I define additional categories to distinguish between strategic and regular litigation cases.

4.2. The model

The present study investigates the dynamic of strategic litigation in response to the introduction of a new (international) law. I build the dichotomous dependent variable "strategic litigation", taking on value 1 for all the strategic litigation cases and 0 for regular litigation cases. In order to identify the cases, I review the documentation provided in the cases database and hand-code them, using binary variables, according to the following criteria: climate change claim is directly referred as a relevant fact of the case (fact climate change claim), the case includes novel legal argument or interpretation (novelty), the case directly claims the public interest or relevance character or scope of the case (scope). If one or more of those variables takes on value 1, it is classified as a strategic litigation case.

Graph 1 below illustrates the trends in the climate litigation, regarding the number of new cases per year (right y-axis) and share of strategic litigation claims among the new cases (left y-axis). It can be seen from Graph 1 that the last five years brought about significant increase in both the number of cases as well as in the share of strategic litigation in the overall cases.

Graph 1. Climate litigation trends



Source: Own elaboration on LSE data

As stated in the hypotheses 1 and 2 above, I am interested in the intermediary expressive effect of law in legal pluralism, i.e. *how the probability that the climate litigation case is strategic changes with the introduction of new international agreement* and *how this response varies across different legal systems*.

The independent variables are defined as follows. Using the base climate litigation data, I create a simple Paris Agreement dummy, taking value 1 for all the cases opened after year 2015 and 0 for the cases opened before 2016, to account for the effect of the Paris Agreement (Eskander, Fankhauser, and Setzer 2020). For the characteristics of legal jurisdictions, I use data on legal families from LaPorta et al. (1998) and data on the legal system adoption context from Berkowitz et al. (2003a; 2003b). Based on their codes, I create a dummy variable Legal origin vs unreceptive transplant. The variable takes on value 1 when the legal system originated in the jurisdiction or was voluntarily adopted ("origins" and "receptive transplants" in Berkowitz et al.'s parlance) and 0 when the legal system was adopted involuntarily ("unreceptive transplants").

Further, to account for the other possible determinants of the dynamic of strategic litigation, the following independent variables are introduced. First, to proxy for the relation between the strategic litigation and the overall advancement of climate change legislation in the country, the variable Number of climate laws is defined as the total number of climate change related laws and policies in a given jurisdiction in a given year. I calculate it using the database of laws and policies from "Climate Laws of the World".[37]

Second, covariate Representative Democracy is included as another variable that potentially explains the variation in the share of strategic litigation across jurisdictions. To account for that that specific category rather than more general governance indicators, I use the disaggregated data from The Global State of Democracy Indices published by International Institute for Democracy and Electoral Assistance (2019).[38] The Representative Democracy index accounts for 18 indicators along 4 sub-attributes categories (Skaaning 2017, 11–34).[39]

Third, I include the (logarithm of) GDP per capita as a control variable for the level of economic development at the moment of opening the case. To verify the robustness of the results, I analyze

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[37] Change Laws of the World database (Grantham Research Institute on Climate Change and the Environment and Sabin Center for Climate Change Law, n.d.). Available at climate-laws.org.

[38] Available at: http://www.idea.int/gsod-indices.

[39] Categories include: Clean elections, Inclusive suffrage, Free political parties, Elected government.

the alternative regression models also with other variables: controlling for the Representative Democracy choice with the standard rule of law indicator from the World Bank's governance database (the World Bank, n.d.; Kraay, Kaufmann, and Mastruzzi 2010)[40], and for the "transplant effect" with the data on common and civil law systems as a potential alternative explanation, using data from LaPorta et al. (1998). The dummy characteristics of legal system are stable over time. Other variables used in the study are matched with the year of the case opening, and panel data indices used in the model are 1 year lagged. Table 1. below contains summary statistics for the dependent and independent variables.

Table 1. Summary statistics

Variable	Definition	count	mean	sd	min	max
StLit (d)	Climate litigation case (strategic=1, regular=0)	270	0.29	0.46	0.00	1.00
ParAgr (d)	Paris Agreement (after=1, before=0)	270	0.36	0.48	0.00	1.00
OrigTpl (d)	Legal origin vs. unreceptive transplant (origin=1, unrec. transplant =0)	270	0.80	0.40	0.00	1.00
ClimLaws	Number of climate laws	270	13.07	7.47	0.00	45.00
RepDem	Representative Democracy	270	0.84	0.08	0.38	0.96
LogGDP	Log GDP	270	10.49	0.60	7.59	11.64

The unit of observation is one climate change court case, and the sample contains 270 observations. The dependent variable, Strategic Litigation, and two independent variables, Paris Agreement and Legal origin vs unreceptive transplant, are binary variables.

In the sample, 79 cases (29%) are strategic litigation, and 191 (71%) - regular litigation cases. 173 cases (64%) were initiated before the Paris Agreement, and 97 (36%) – afterwards. 215 cases (80%) belong to the jurisdiction with the legal system that originated or was voluntarily adopted, and 55 (20%) to the jurisdictions with "transplanted" legal systems. The average Number of climate laws

[40] Available at: https://databank.worldbank.org/source/worldwide-governance-indicators

per jurisdiction (at the moment of the case opening) amounts to 13, with the variable taking values between 0 and 45. The average Representative Democracy score is 0.84, with minimum of 0.38 and maximum of 0.96 in the sample (the higher the score, the higher the representative democracy level in the country is assessed, between 0 and 1). Average Logarithm GDP value in the sample is 10.49 and takes values between 7.59 and 11.64. Table 2 below contains the correlation matrix for the independent variables.

Table 2. Correlation matrix

	Paris Agreement	Origin vs transp.	Climate laws	Rep. Democracy	Log GDP
Paris Agreement	1				
Origin vs transp.	-0.158	1			
Climate laws	0.583	-0.192	1		
Rep. democracy	-0.259	0.509	-0.106	1	
Log GDP	-0.103	0.673	-0.0592	0.792	1

4.3. Methodology

For the purposes of the current study, the climate litigation cases sample is treated as cross-sectional data, despite the fact that the cases were filed over the course of 20 years. There are several reasons to do so. First, this follows from the typology and characteristics of the data. The basic unit of observation is a single litigation case. The cases, even filed in the same jurisdiction over the course of years, are qualitatively different. The climate litigation dataset from the Climate Laws database cannot be treated as systematic panel data (Eskander, Fankhauser, and Setzer 2020). Second, for the purposes of definition of the dependent variable, the distinction between strategic and regular litigation is introduced at a very high level of generalization. It is comprehensive of qualitatively diverse legal cases and therefore insensitive to the particular changes that may occur in legal argumentation or other qualitative characteristics of filed cases with time (like e.g. Peel and Osofsky 2018). Third, I am primarily interested in the differences in the response to the Paris Agreement event across jurisdictions. The cases are grouped into country clusters, to verify how different jurisdictional characteristics affect the strength of response.

Given the dichotomous dependent variable, use of the logistic model is appropriate. Indeed, the response values for categorical variable are not continuous, and residuals are not normally distributed as linear regression models assume; results of such a model would be inaccurate here (Wooldridge 2012, 584–96).

The cases data are clustered in 36 country groups to account for the country level heterogeneity and unobserved cluster-level effects. I estimate the likelihood of strategic climate litigation using the following model:

$$(1)\ Log\ \frac{Prob(StLit = 1)}{Prob(StLit = 0)} = \beta_0 + \beta_1 D.ParAgr_i + \beta_2 D.OrigTpl_i + \beta_3 ClimLaws_i + \beta_4 RepDem_i + \beta_5 LogGdp_i + \sum_{i=6}^{i=42} \beta_i Country_i + \eta_i + \mu_i$$

Where all variables are indexed by i for the individual cross-sectional unit $i=(1, 2, ..., n)$. $StLit$ stands for Strategic climate litigation case (as opposed to regular climate litigation case if $StLit = 0$), $ParAgr$ for the Paris Agreement dummy (equal to 1 for all cases opened after 2015 and 0 otherwise), $OrigTpl$ for Legal origins vs unreceptive transplant dummy (equal to 1 if the legal system of the country is legal origin or receptive transplant and 0 otherwise), $ClimLaws$ for the Number of climate laws variable, $RepDem$ for Representative Democracy indicator for the jurisdiction, $LogGDP$ for logarithm of GDP per capita, and $Country$ for 36 country clusters. The error term is decomposed for the part accounting for the combined individual cases and country effects μ_i, and another one, capturing the inter-group country effects η_i.

As a robustness check, I estimate the model in equation (1) using the penalized-likelihood logit model. The use of the penalized-likelihood technique improves fit of the model by reducing both the small sample bias and variance of logit coefficients (Firth 1993; Rainey and McCaskey 2015).[41] Further, I verify the significance of estimators by controlling for other potential explanatory variables, always using the penalized-likelihood model.

[41] The use of the technique "offers a substantial improvement in small samples (e.g. 100 observations) and noticeable improvements even in large samples (e.g., 1000 observations)" (Rainey and McCaskey 2015, 2).

Table 3. Logit Coefficients for Strategic Climate Litigation

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Paris Agreement	1.394***		1.390***		1.654***		1.653***	
	(0.476)		(0.366)		(0.398)		(0.386)	
Legal origin vs transplant	1.806*	2.050**	0.919*	0.944*				
	(0.933)	(1.031)	(0.543)	(0.572)				
Number of climate laws	0.0512	0.109***	0.0169	0.0677***	-0.00131	0.0501**	0.0231	0.0735***
	(0.0344)	(0.0312)	(0.0238)	(0.0194)	(0.0248)	(0.0207)	(0.0236)	(0.0200)
Representative Democracy	-9.845**	-14.09***	-6.489**	-9.541***	-5.693	-11.18***	-7.175**	-10.55***
	(4.727)	(4.855)	(3.265)	(3.253)	(3.710)	(3.570)	(3.411)	(3.343)
Civil vs common law					-0.0121	0.277		
					(0.378)	(0.356)		
Rule of law							1.079***	0.665
							(0.412)	(0.410)
Log GDP	-0.149	0.246	-0.159	0.0855	0.340	0.840*	-0.866	-0.112
	(0.658)	(0.669)	(0.440)	(0.454)	(0.452)	(0.446)	(0.559)	(0.535)
Constant	6.313	5.447	4.618	4.467	-0.353	-1.129	11.67**	7.151
	(4.786)	(5.044)	(3.108)	(3.231)	(2.791)	(2.752)	(4.704)	(4.575)
RE Country	1.358	1.590						
	(0.846)	(0.993)						
Observations	270	270	270	270	259	259	268	268
Wald Chi-squared	28.83	19.11	38.88	25.65	40.26	24.18	42.57	27.15
p>Chi-squared	0.0000	0.0007	0.0000	0.0000	0.0000	0.0001	0.0000	0.0000
LR test	18.94	25.02						
p>LR test	0.0000	0.0000						

Standard errors in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (1)-(2) mixed-effects logit model, (3)-(8) penalized-likelihood logit model.

5. Results

Table 3 displays the regression results. The log-likelihood Wald Chi-squared test verifies the statistical significance of the difference between the log-likelihoods of the full model and the one with only the constant. The model is statistically significant at 99% confidence level. The likelihood ratio test, comparing the two-level mixed effect model fit with an ordinary logistic regression, also is highly significant for the analyzed data. Using clustering in this case improves the fit of the model. The reported residual intraclass correlation is 0.291. Moreover, use of the two-level mixed-effects logistic model addresses some shortcomings of the dataset, containing the groups of different sizes, by improving the estimates for the low-number groups (Gelman and Hill 2006, 301–21).[42]

The results obtained show that effect of Paris Agreement on the propensity to strategic litigation is statistically significant at 1% level and has a positive sign. Similarly, the "transplant effect" in strategic litigation can be observed – a fact of jurisdiction belonging to the "Legal origin and receptive transplant" category is a significant predictor (at 10% level) of a higher share of strategic climate litigation cases. Representative democracy score is another statistically significant determinant (at 5% level), but with a negative coefficient. To the contrary, GDP is not a significant explanatory variable.

While the three explanatory variables of interest prove significant across alternative models, the control variables do not show stable significance across different model specifications. As regards the legal system variables, the common law vs civil law classification – included as a control for the Legal origins variable to account between the two competing explanations of legal system's efficacy (LaPorta et al. 1998; Berkowitz, Pistor, and Richard 2003a; 2003b) – it does not show any significance. The same is true for the aggregate rule of law governance indicator. One regularity that can be observed is that the number of climate laws is highly significant regressor in the models excluding the Paris Agreement dummy, but not significant in the models that include it.

[42] In low-sampled groups, the variance can be inflated. As the mixed-effects model automatically uses the partial-pooling of group variances, it corrects the overly high variance estimates in small groups. Overall, the mean variance inflation factor for the model coefficients amounts to 2.4.

The standardized-coefficients representation of models gives a more intuitive picture of the explanatory power of respective regressors – all of them predicting the change in the dependent variable within similar range (see table 4).

Table 4. Standardized mixed-effects logit coefficients for Strategic Climate Litigation

	(1)	(2)
Paris Agreement	1.470***	
	(0.476)	
Legal origin vs transplant	1.599*	1.815**
	(0.933)	(1.031)
Number of climate laws	0.839	1.794***
	(0.0344)	(0.0312)
Representative Democracy	-1.656**	-2.370***
	(4.727)	(4.855)
Log GDP	-0.197	0.324
	(0.658)	(0.669)
RE Country	1.358	1.590
	(0.846)	(0.993)
Observations	270	270
Wald Chi-squared	28.83	19.11
p>Chi-squared	0.0000	0.0007
LR test	18.94	25.02
p>LR test	0.0000	0.0000

Standardized beta coefficients; Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The interpretation of the coefficients of the logit model from a coefficient table is not straightforward: besides the unintuitive log odds metric, the logistic model is not linear – so the effect of the covariates may differ for different values of other variables. To get a better comprehension of how the covariates Paris Agreement and Legal origin vs. transplant affect a social movement's decision to pursue strategic litigation, I calculate the adjusted probability predictions at mean values of other variables of interest (see Table 5 below). The marginal effect

of both variables, conditional on other variables at their mean values, is rather high. For an average case – at mean values of all other variables – the probability of it being strategic climate litigation case is 25.3 p.p. higher if the case takes place after Paris Agreement was signed than before that. The marginal effect of Legal origin vs. transplant variable at the means amounts to 26.9 p.p.

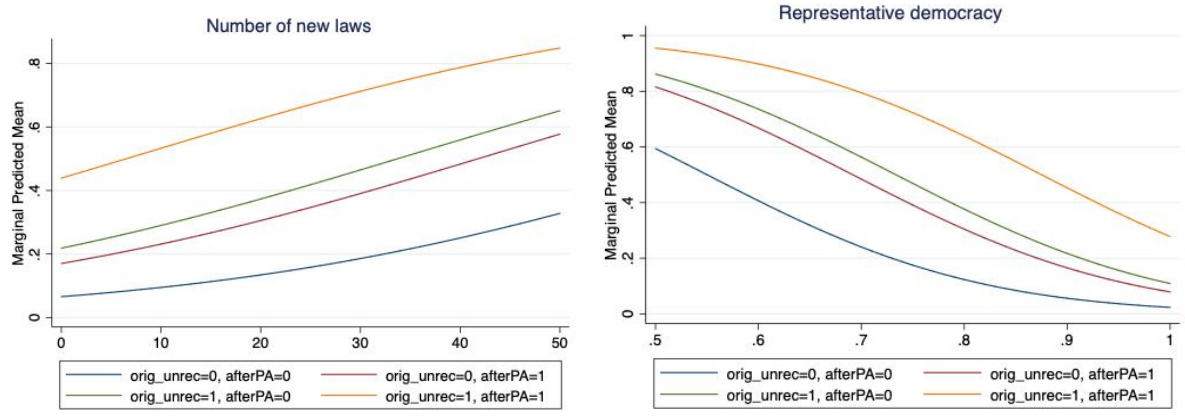
Table 5. Adjusted probability predictions at the means

	Margins
Paris Agreement	
1	0.503***
0	0.250***
Legal origin vs transplant	
1	0.401***
0	0.132*
Observations	270

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Still, the analysis at means value in the dataset may be complemented by more precise information. To get a better comprehension of how the covariates Paris Agreement and Legal origin vs. transplant affect the decision to pursue strategic litigation, adjusted probability predictions at different value points of the Number of climate laws and Representative Democracy variables are calculated (graph 2).

Graph 2. Predictive margins over Number of climate laws and Representative Democracy



Source: Own elaboration on LSE data

The graph shows the marginal effect on probability of the pursue of strategic litigation (y axis) of the two independent variables taking values 1 or 0, from the baseline scenario – "legal transplant" jurisdiction before Paris Agreement (blue line) – along the value range of the two other independent variables (x axes). In the case of the Number of laws (left-hand side of Graph 2), the marginal effects occur along all the value range to a similar extent, with the difference from the baseline scenario slightly bigger when the number of climate laws is higher. The marginal "transplant effect" – i.e., the difference in predicted probability of the pursue of strategic climate litigation between the legal origin and unreceptive transplant country – is higher than the marginal Paris Agreement effect for all the number of climate laws in jurisdiction (green line above the red one). The predicted probability of strategic climate litigation increases with the number of new laws – which is also an effect indicated by a positive coefficient; however, not statistically significant in the model.

As for the marginal effects over Representative Democracy scores, they vary slightly more along the values – the marginal effect of both Legal Transplants and Paris Agreement being bigger in the jurisdictions with the representative democracy score between c. 0.5-0.7 and diminishing for higher scores. Also here, the marginal "transplant effect" remains a somewhat stronger predictor than the Paris Agreement. Representative Democracy variable is an important predictor of strategic climate litigation, statistically significant but of a negative sign: the higher the score, the lower the share of strategic cases in the overall climate litigation.

6. Discussion

Overall, the estimates of the model confirm the hypotheses 1 and 2. Both the introduction of the Paris Agreement and the legal origin jurisdiction are statistically significant predictors of the higher share of strategic litigation in climate litigation cases.

6.1. Number of laws

The explanation of the relation of the share of strategic litigation cases and number of climate laws in the jurisdiction, the proxy for the level of legal protection of climate, may be twofold. On the one hand, a higher number of climate laws may indicate that the laws addressing climate change is better established in the jurisdiction – so that the strategic litigation is not necessary (Peel and Osofsky 2019, 318–19). On the other hand, issuing a new domestic law can also provoke a local intermediate expressive effect, and lead to an increased strategic litigation in the jurisdiction. The results obtained in the current study seems to point to the latter relation. Moreover, earlier research

of the climate change law indicates that new international law act (Kyoto Protocol, in that particular study) has caused the increase in climate legislation around the world (Fankhauser, Gennaioli, and Collins 2016). While the legislative activity accelerated anew several years before the Paris Agreement (Eskander, Fankhauser, and Setzer 2020), the correlation of 0.583 between the two variables may indicate *the mutually-reinforcing intermediate expressive effect of international and national law on strategic climate litigation*.

6.2. Representative Democracy

The effects of Representative Democracy are statistically significant and relatively strong: the higher the score, the less probable strategic climate litigation. The conceptual model of the intermediate expressive effect on law relates the decision regarding strategic litigation to the expected costs of litigation. In real-life considerations, those would comprise also the opportunity costs of alternative social reform activities. The better the access to other political decision-making procedures, the higher the opportunity cost of strategic litigation may be, as engaging in other forms of activism may lead to similar or better results. Another factor could be related with the differing judicial tendencies when it comes to the scope of judicial review.[43] In the countries with high representative democracy scores, judges may be more reluctant towards progressive revision of the statutes (Tufis 2019; Skaaning 2017, 17). Thus, the chances of success of a strategic litigation case, and therefore expected benefits of pursuing strategic litigation might be relatively lower. However, this theoretical prediction still needs to be verified empirically.

6.3. Further considerations

The results of the study indicate that signing of the Paris Agreement has had intermediary expressive effect across jurisdictions, with social movements mobilized to pursue strategic climate litigation cases, on average, more often. The probability of observing strategic litigation cases among those initiated after the Paris Agreement is much higher (25.3 p.p. at the means) than among those started before it – and it is observed along the increase in the absolute number of the overall climate litigation cases. Importantly, the hypothesis of the intermediate character of this effect is supported by the fact that, before the year 2020, no signatory country has begun the implementation of it (Peel and Osofsky 2019). For the analysed sample of cases, the Paris

[43] These considerations are beyond the scope of the present study. The ongoing judicial review legitimacy debate considers the relationship between the appropriate scope of judicial review and democracy. Some authors argue that strong review is an undemocratic interference with other branches of government, others see it as an alternative democratic tool. For the competing views, see e.g. (Waldron 2006; Lever 2009).

Agreement can be treated as a declaratory act of a primarily expressive character. Increases in strategic climate litigation number and share may therefore be interpreted as a correlated response of the social movements to the signal of the international treaty – with an increased effort to promote the legal and social reform in the climate change domain.

That interpretation seems the more plausible when one takes into account that strategic litigation is a legal reform tool of often transnational, or global character. While the social movements response can be decentralized and pursued at the individual level, it does also have an institutionalized dimension – with organizations sharing their knowledge, often across national boundaries (Ramsden and Gledhill 2019). The efforts, however, need not be coordinated transnationally. Some authors point to another evolutionary dimension of strategic climate litigation – a pioneering case, with high publicity, may simply inspire the followers to adopt more progressive strategies (Burger et al. 2017; Noonan 2018).

6.4. Legal transplants and intermediate expressive effect of law

The model's estimates confirm the prevalent "transplant effect" on the strategic climate litigation dynamics. Both the absolute number of cases from the countries with the legacy of badly received legal system and the probability of strategic litigation cases among them is lower with respect to the countries with better-adapt legal system. The explanation builds on the analysis provided by authors of the pioneering legal transplants study: „The context specificity of formal legal order has important implications for the effectiveness of the legal order (legality) in transplant countries. Where the meaning of specific legal rules or legal institutions is not apparent, they will either not be applied or applied in a way that may be inconsistent with the intention of the rule in the context in which it originated" (Berkowitz, Pistor, and Richard 2003a, 178). In the context of the present analysis, it affects the relative costs facing the social movement. The expected benefit of pursuing strategic litigation case is lower, as the expressive effect of adjudication is expectedly lower. Reforming official law, overall, may be a less plausible path to shifting social equilibria.

While both the Paris Agreement and the "transplant effect" predictors add up in explaining the share of strategic litigation, the interaction between them is not statistically significant; the effect of the treaty has not varied greatly between observations from the two groups of countries. For some jurisdictions, the first climate litigation cases were reported only after the introduction of the Paris Agreement – the interrelation that the model may have underestimated. Some caution, however, is necessary in the interpretation of the results regarding the "transplant effect". Due to the potential limitations of the dataset, the representation of the cases from legal origins- and

transplants countries in the sample may be biased. As it comes to the representation of strategic litigation cases against the regular ones, two phenomena of opposing effect may have been unaccounted for in the model. On the one hand, the better publicity of strategic litigation cases may lead to their overrepresentation in the sample relative to regular cases (Setzer and Vanhala 2019). On the other hand, the strategic litigation in the countries of lower legality/efficacy may take less-standard paths. For one, the cases that do not explicitly refer the climate change related problems may be pursued with strategic aim of addressing such a problem – only using more nuanced, context-dependent legal arguments that can be overlooked (Peel and Lin 2019). Moreover, the strategic litigation can be pursued not on the national, but international litigation level (Rodríguez-Garavito 2020; Peel and Osofsky 2018; Setzer and Benjamin 2020b). The overall balance of these effects should be explored in future studies.

7. Conclusions

In this chapter, I proposed an informal model of intermediary expressive effects of law. Issuing a new law does not necessarily result in an immediate social equilibrium shift, as the institutional change occurs only with the change of beliefs and respective expectations in the society. However, enacting a new law may have an intermediate expressive effect among groups of the society that have a strong preference for the actual change – by incentivizing an increased activity to propagate the reform introduced by that law.

To verify empirically the plausibility of the model, I conduct an exploratory quantitative study in the domain of global climate change law. It focuses on the social movements as actors of the intermediate stage of legal reform and on the strategic litigation as an instance of their activity. I hypothesize that the introduction of the Paris Agreement in 2015 has an intermediate expressive effect on climate litigation, visible in an early response of the social movements. Of interest here is the use of strategic litigation aimed at the propagation of the legal reform.

The empirical test, using the data on 270 climate change-related lawsuits from 36 non-US countries confirms this hypothesis. The share of strategic climate litigation is higher in the cases opened after the Paris Agreement was signed. Moreover, I find that the effects vary across jurisdictions. The legal system adoption context is a significant predictor of those differences – with the countries of original or voluntarily adopted legal systems facing the higher share of strategic litigation cases. The democratic political system characteristic, representative democracy, is also a significant

predictor, but with the opposite sign: the better the representative democracy score, the lower the share of strategic litigation cases.

To the best of my knowledge, this is the first study quantitatively analyzing strategic climate litigation data, and the indicated relations, analyzed here from the birds-eye view perspective, should be confirmed by further empirical studies. Especially, the further studies should account for the more nuanced, jurisdiction-dependent legal arguments that constitute examples of climate litigation but have not been included in the current data due to information availability problem. Including the climate litigation from other levels of the legal system – e.g., international cases – could also improve the analysis. Further, this approach can also be used to verify the intermediary expressive effects of law in other legal domains.

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Appendix 1.

Table A.1. Climate litigation by country

Country	Paris Agreement					
	Before (0)		After (1)		Total	
	Freq.	Percent	Freq.	Percent	Freq.	Percent
Argentina	0	0.00	8	2.96	8	2.96
Australia	87	32.22	14	5.19	101	37.41
Austria	0	0.00	2	0.74	2	0.74
Belgium	1	0.37	0	0.00	1	0.37
Brazil	2	0.74	4	1.48	6	2.22
Canada	4	1.48	9	3.33	13	4.81
Chile	0	0.00	2	0.74	2	0.74
Colombia	1	0.37	1	0.37	2	0.74
Estonia	0	0.00	1	0.37	1	0.37
France	2	0.74	6	2.22	8	2.96
Germany	6	2.22	3	1.11	9	3.33
India	3	1.11	1	0.37	4	1.48
Indonesia	0	0.00	1	0.37	1	0.37
Ireland	1	0.37	3	1.11	4	1.48
Japan	0	0.00	4	1.48	4	1.48
Kenya	0	0.00	1	0.37	1	0.37
Luxembourg	0	0.00	1	0.37	1	0.37
Mexico	0	0.00	2	0.74	2	0.74
Nepal	0	0.00	1	0.37	1	0.37
Netherlands	1	0.37	2	0.74	3	1.11
New Zealand	16	5.93	2	0.74	18	6.67
Nigeria	1	0.37	0	0.00	1	0.37
Norway	1	0.37	1	0.37	2	0.74
Pakistan	1	0.37	3	1.11	4	1.48
Peru	0	0.00	1	0.37	1	0.37
Philippines	2	0.74	0	0.00	2	0.74
Poland	0	0.00	4	1.48	4	1.48
Slovenia	0	0.00	1	0.37	1	0.37
South Africa	1	0.37	3	1.11	4	1.48
South Korea	0	0.00	2	0.74	2	0.74
Spain	13	4.81	1	0.37	14	5.19

Sweden	0	0.00	1	0.37	1	0.37
Switzerland	0	0.00	1	0.37	1	0.37
Uganda	1	0.37	0	0.00	1	0.37
Ukraine	2	0.74	0	0.00	2	0.74
United Kingdom	27	10.00	11	4.07	38	14.07
Total	**173**	**64.07**	**97**	**35.93**	**270**	**100.00**

Table A2. Summary statistics – other characteristics of the climate litigation data

Variable	**count**	**mean**	**sd**	**min**	**max**
Defendant type (private =1, government=0)	270	0.16	0.37	0.00	1.00
Climate litigation case (strategic=1, regular=0)	270	0.29	0.46	0.00	1.00
Case status (closed=1, pending=0)	270	0.80	0.40	0.00	1.00
Paris Agreement (after=1, before=0)	270	0.36	0.48	0.00	1.00
Legal system (origin=1, unrec. transplant =0)	270	0.80	0.40	0.00	1.00
Number of climate laws	270	13.07	7.47	0.00	45.00
Representative democracy	270	0.84	0.08	0.38	0.96
Log GDP	270	10.49	0.60	7.59	11.64

Table A3. Paris Agreement and Legal origin vs unreceptive transplant

	Paris Agreement		
Legal origin			
vs unrec. transplant			
	Before	After	Total
Unrec. transplant	27 (10.00%)	28 (10.37%)	55 (77.41%)
Legal origin	146 (54.07%)	69 (25.56%)	215 (22.59%)
Total	173 (64.07 %)	97 (35.93%)	270 (100%)

Conclusions

The literature on institutions links their prevalence and change with social beliefs. Persistence of some beliefs in society underlies its coordination, allowing parties to expect of each other certain behaviors and not others. On the one hand, this guarantees both the persistence and normative effect of law in general. On the other hand, it explains the cases where legal rules are not followed, or do not bring about the effect desired by society or set out by lawmakers. Legal systems prevail even with some of its rules being conflicted, incoherent or inefficacious – as law is a complex institution.

In the presented thesis, I have explored three aspects of the law's coordinating role from a law and economics perspective. The first chapter was devoted to the analysis of some problems with the discipline's concept of legal rights. I introduced a rivalry-based distinction of legal rights and proposed individual enabling rights as a useful concept for study of legal coordination within the mainstream law and economics framework. In the second chapter, I studied legal coordination across jurisdictions, with particular attention to the role of beliefs in the dynamic Bayesian model of conflict of law. The third chapter analyzed the phenomenon of legal change in the context of legal pluralism. I proposed a model of intermediary expressive effects of law, focusing on the role of social movements in legal reform in an empirical study in the global climate law domain.

The first chapter outlines and discusses some problems with the concept of legal rights in law and economics. The discipline's focus on property rights as the predominant legal institution underestimates both important characteristics of legal rights in general and the role of other types of legal rights in law-based coordination. Complex and durable character of rights and their relational aspect are largely absent from the analytical vocabularies. Arguably, some of the problems with understanding property rights and their role, discussed previously in the literature, fall back on these more general misconceptions. Another missing element is a conceptual distinction between property rights and personal rights. I propose to introduce another analytical category, enabling rights, as a solution to that problem. The two are distinct according to rivalry criterion. Enabling rights are, in their nature, non-rivalrous: the same kind and scope of such a right can be assigned to all individuals. Property rights, as rights in things, attach to and depend on scarce resources, and therefore are rivalrous. This distinction has relevant implications for the study of the relation between assignment of rights and efficiency, as well as legal coordination

more broadly. The paper reviews selected literature and applies the enabling rights concept to the analysis of externality problem and productive efficiency considerations.

The distinction between different categories of rights and interrelation between them has important implications for legal coordination more broadly conceived. Three characteristics of legal rights: their complex and open-ended character, duration in time and their relational aspect make them central to the patterns of stability and change in law. The rivalry-based distinction between enabling- and property rights improves our understanding of the relationship between law and efficiency, and legal coordination more broadly. While physical scarcity and related positionality problem cannot be fully eradicated by institutional design – and can only be improved by technological progress – the non-physical social scarcity can be addressed by its means. The indiscriminatory assignment of the broadest possible scope of individual rights enhances efficiency.

The interrelations of the two types of rights should be thought of within their broader institutional context. Acknowledging the non-scarce character of enabling rights and the importance of their indiscriminatory assignment is not equal with saying that there are no conflicts between different kinds of enabling rights. There are oppositions and trade-offs between different rights, grounded in conflicting interests as much as in moral and political preferences – and those need to be balanced and compromised by law. This is of particular importance for the comparative domain of study: the differences between jurisdictions in terms of efficiency outcomes (and in other respects as well) rest not only on a particular legal rule within some specific domain of law, but on the respective scope of enabling rights as well. Legal institutions across jurisdictions should be looked at from this perspective. The category of enabling rights and their correspondence is significant for the analysis of markets that are disembedded from, or stretching beyond, a single jurisdiction setting. From an evolutionary perspective, the differences in definition, scope and efficacy of legal rights between legal systems affect the interactions between them and the resulting legal pluralist landscape. The analysis is the chapter proves significance of enabling rights category for the basic neoclassical law and economics framework. Further research should build on it and apply these concepts in the comparative analysis domain.

In the second chapter, I developed a model of the conflict of law, defined as a situation where two agents have diverging beliefs about the applicable legal rule. In the model, courts play a role of a correlating device indirectly – in so that the expectations regarding potential litigation outcomes

affect strategy choices of the players. I find that legal coordination – a dynamic sequential process happening "in the shadow of the law" – occurs also in the context of divergent beliefs about law, with only minimum shared belief about the position of courts in the legal system. The model advances the understanding of the coordination across different systems of law and jurisdictions. It provides a plausible explanation of the phenomenon of prevailing legal pluralism, even in the domains where legal harmonization projects have been undertaken. Relaxing the common prior beliefs assumption in the model points to the importance of the private beliefs; even if they do not correspond with the "objective truth", they affect the strategy choices and the overall outcomes. Importantly, the modeling results highlight the role of litigation costs and access to adjudication as important determinants of legal coordination dynamics. The indicative relation between indiscriminatory access to justice and efficacy of legal reforms stands out as a potentially interesting object for further research. Moreover, the results of the model indicate the importance of taking into account the implementation context in the legal reform design.

Diverse beliefs underlie divergent laws. The courts are the "test-points" of law. A certain level of uncertainty is inherent to legal systems – it stems from the open-endedness of legal rights and context-dependence of law-based interactions. By the same token, where there is legal uncertainty – there is a window for (coevolutionary) change. The model developed in the second chapter looked at the dynamics of the conflict of law in the short-term interaction. The players, by assumption, had constant beliefs. However, this is not always the case. In real life, it is possible for the players to learn and update their beliefs – either within the interaction, or by learning from the environment. One way of accounting for more complexity would be to include more detailed view of the interaction – more stages can be included to reflect the possible learning opportunities. Moreover, players can learn from courts' decisions in other cases. The ways in which courts are a platform of legal reform remains to be explored in further studies.

The third chapter outlines the informal model of the intermediary expressive effect of law and focuses on the role of social movements as agents of legal reform. The category of social movements is defined broadly and functionally, to include both individuals and organized groups that act strategically with an aim of promoting social change. Divergent beliefs in the society may be an obstacle to such a change and enacting the new law does not always result in a social equilibrium shift. However, I propose that social movements – groups of the society with high preference over the change – act as early respondents to a new law. The intermediary expressive effect of law is therefore visible in an increase in their efforts to promote the change. I apply this

framework to analyze the dynamics in the domain of global climate law. I hypothesize that the Paris Agreement of 2015 had an intermediary expressive effect in that it has led to an increased strategic litigation across jurisdictions. To test the model, I conduct an exploratory quantitative study on climate litigation from 36 countries (270 cases). The results confirm the hypothesis – the share of strategic litigation in the overall climate litigation data is higher for the cases opened after the treaty was signed. Moreover, the results also indicate that the social movements response varies across jurisdictions, and that the legal system adoption context and representative democracy are significant explanatory factors.

The relation between representative democracy and the intermediate expressive effects of law – or social movements' propensity to initiate strategic litigation – is not clear. The conceptual model of the intermediate expressive effect on law relates the decision regarding strategic litigation to the expected costs of litigation. In real-life considerations, those would comprise also the opportunity costs of alternative social reform activities. The better access to other political decision-making procedures, the higher the opportunity cost of strategic litigation may be, as engaging in other forms of activism may lead to similar or better results. Another factor could be related with the differing judicial tendencies when it comes to the scope of judicial review. In the countries with high representative democracy scores judges may be more reluctant towards progressive revision of the statutes. Thus, the chances of success of a strategic litigation case, and therefore expected benefits of pursuing strategic litigation might be relatively lower. However, this theoretical prediction still needs to be verified empirically.

The relations highlighted by the analysis should be confirmed in future research. To the best of my knowledge, this is the first study quantitatively analyzing strategic climate litigation data, and the indicated relations, analyzed here from the birds-eye view perspective, should be confirmed by further empirical studies. Especially, the further studies should account for the more nuanced, jurisdiction dependent legal arguments that constitute examples of climate litigation but have not been included in the current data due to information availability problem. Including the climate litigation from other levels of the legal system – e.g., international cases – could also improve the analysis. The model of intermediary expressive effects of law can be also applied to study the dynamics of reform in other domains of law.