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UNIVERSITY OF AMSTERDAM

JUSTICE: GREATER ACCESS, LOWER COSTS

Margherita Saraceno

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Justice: Greater Access, Lower Costs

Margherita Saraceno*

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Abstract

Litigation imposes large costs on society; this justifies settlement considerations. In any case, access to justice is critical to socioeconomic development; as such, it needs to be balanced with litigation minimization. This study examines the tradeoff between litigation and access to justice and explicitly elucidates their relationship. In considering access issues, this study finds that the outcomes of policies that affect parties' litigation decisions partially depart from those in the standard literature. For instance, increasing parties' litigation costs does not necessarily promote settlement in the shadow of the court. Rather, effects depend on the elasticity of the demand for legal remedies. Furthermore, even while pushing litigation, enhancing access to justice is efficient as long as the claimant's marginal propensity to litigate is smaller than the social opportunity-cost of access to justice. This finding offers further insight into the suitability of litigation subsidization through legal aid.

JEL classification: K41.

Keywords: access to justice, litigation, settlement, elasticity.

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1. Introduction

Disputes naturally emerge in every complex society. All of the parties to a dispute are directly affected by the events that gave rise to such dispute, and thus, they all tend to be interested in resolving them. However, disputes and their resolution are not purely private problems; they also constitute a social problem, as unresolved disputes produce negative externalities for the whole of society.

In fact, when claimants simply “give up” because legal remedies are for some reason inaccessible, major social consequences emerge, including a sense of impunity, a lack of trust in institutions, underdeterrence, and increased uncertainty within the legal system. In extreme situations, when legal remedies are missing or inaccessible, conflicts can lead to severe consequences for the parties involved; widespread disorder and even violence can arise. Conversely, when access to justice is guaranteed, justiciable problems can be resolved through legal remedies such as in-court litigation or settlement (in a broad sense). For these reasons, effective and full access to justice is considered a crucial element in socioeconomic development and social security.

Even the most developed legal systems struggle with ensuring citizens access to justice, since a significant number of claimants continue to be systematically excluded from legal remedies. (See, for example, the Access to Justice Initiative by the U.S. Department of Justice, the Initiative in Support of Access to Justice by the Department of Justice of Canada, the Australian Government Strategic Framework for Access to Justice, and the Access to Justice Agenda by the European Union Agency for Fundamental Rights.)

Besides access to justice, policymakers have highlighted a further problem related to dispute resolution. In-court litigation is extremely costly for society, and excessive amounts of litigation result in judicial diseconomies and increased court workloads, eventually exacerbating inefficiencies. Despite the dearth of internationally comparable indicators concerning public expenditure vis-à-vis the judiciary, the public budget allocated to the various justice systems remains relevant.¹

Policymakers are acutely aware of the need to ensure, and in some cases enhance, access to justice while keeping judiciary costs low. This problem is aggravated by the need to curb public spending in a time of financial crisis, since litigation accounts for most of the judicial spending. The academic literature usually analyzes these two problems—namely, obstacles to access to justice, and excessive litigation—separately, despite their evident interconnections. This study attempts to overcome this shortcoming in the literature by taking a unitary approach to the relationship between litigation and access to justice.

¹ For instance, in 2010, the annual approved budget allocated to the judiciary in the United States was USD 6.8 billion; across the European Union, the per-country average was EUR 2.8 billion, with a maximum of EUR 14.2 billion in the United Kingdom and a minimum of EUR 0.08 billion in Cyprus. Data are not directly comparable, since budgets can include a variety of statements depending on the country. See the Administrative Office of the U.S. Courts (2012) and CEPEJ (2012).

Starting from a standard law and economics setting (Bebchuk 1984; Nalebuff 1987), the problem of dispute resolution is modeled from both the micro perspective (i.e., parties' choices) and the aggregated perspective of the social planner. The resulting framework allows us to analyze how policies—including administrative fees related to going to court, additional penalties and punitive damages, and legal aid—affect access to justice, litigation, and finally, the social costs of dispute resolution.

The main results of this study can be summarized as follows.

Dispute selection for trial. Taking into account the dimension of access to justice, the model used herein reconsiders some of the usual results found in the law and economics literature on litigation and the settlement rate. In particular, we find that higher claimant litigation costs discourage *both* settlement and litigation. Actually, every claimant who “gives up” because of excessive litigation cost neither settles nor litigates. Increasing the value at stake ambiguously affects settlement because of two combined effects: some claims shift from the sample of those settled to the sample of those litigated; others start to be settled, rather than remain unresolved. Finally, in some circumstances, the defendant costs play no role in determining the type of legal solution that is actually adopted. In particular, when the claimant must bear litigation costs that are relatively higher than those of the defendant, the selection of the preferred legal solution is driven mainly by the former. For claims in the shadow of the court, the model shows that changes in costs and amounts at stake affect settlement and litigation rates, depending on the elasticity of the demand for legal remedies.

Litigation and access to justice. Improving access to justice will necessarily increase the number of litigation instances; this raises a relevant policy tradeoff. However, guaranteeing the access to justice of socially meritorious claims, even at the cost of pushing litigation, is always efficient. Intuitively, thanks to settlement, one additional claim's access to justice results in less than one additional claim in litigation. Therefore, it is efficient to improve access to justice, as long as the claimant's marginal propensity to litigate remains smaller than the social opportunity-cost of access to justice.

Policy implications. The model used herein illustrates the tradeoff between promoting access to justice and discouraging litigation, through policies that result in larger litigation costs for claimants or an increased amount at stake (e.g., punitive damages). Additional penalties and fees levied on the defendant can be either wholly effective or ineffective, depending on the economic involvement of the defendant in the lawsuit. In particular, such policies can discourage litigation without affecting access to justice, except when the defendant must bear litigation costs that are so low that the decision to litigate or settle is in fact driven by the claimant. With respect to legal aid, the model shows that it is efficient to subsidize litigation as long as the standardized rate of litigation is lower than the social opportunity-costs of access to justice.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of the literature. Section 3 presents the model and its policy implications, with particular attention being devoted to legal aid. Section 4 provides concluding remarks.

2. Background and related literature

This section attempts to summarize briefly the main literature contributions, an understanding of which can be useful in framing the potential tradeoff between litigation and access to justice. Most studies generally focus either on litigation dynamics or on access to justice. The former topic constitutes a broad strand of law and economics literature, while the latter has mainly been investigated from either a comparative law or a political economy perspective.

2.1. Litigation versus settlement (in the shadow of the court)

The traditional literature on litigation and settlement bargaining is vast and mainly based on a game-theory approach. A more recent and comprehensive survey of this topic is provided by Daughety and Reinganum (2012), who systematize a large number of contributions ranging from *axiomatic* models to those based on a *strategic* approach.² Mainly, this kind of literature analyzes the reasons why parties in conflict fail in their negotiations and, subsequently, their cases go in trial. In fact, settlement acts as a sort of filter by selecting some of the cases for the court while resolving the others. Although litigation is able to produce positive externalities in terms of deterrence and reductions in law-uncertainty through precedent,³ it is generally considered wasteful, both for the parties involved and for society. For this reason, the literature mainly focuses on the capacity of bargaining to reduce the litigation rate.⁴

Pretrial bargaining has been modeled both as a *sequential* game (with *one*, *multiple*, or *infinite rounds*) and, less frequently, as a *simultaneous* game.⁵ According to the literature, the main source of settlement breakdown and consequent litigation is the persistence of the differential expectations of the parties on trial outcomes, even after bargaining interaction.⁶ This persistence has been explained while

² Axiomatic models usually assume perfect or imperfect but symmetric information. Solutions are typically cooperative. Strategic models emphasize the strategic interaction of parties, the Bayesian updating of their beliefs, and noncooperative solutions. See Cooter and Rubinfeld (1989).

³ See Che and Yi (1993); Dari-Mattiacci and Daffeins (2007); Landes (1971); Polinsky and Rubinfeld (1988); Posner (1973); and Shavell (1982), (1997), and (1999).

⁴ Besides the literature on settlement, see also contributions vis-à-vis alternative dispute resolution (e.g., Shavell 1995).

⁵ Settlement is often designed as an ultimatum game in one round, as seen in, for example, Bebchuk (1984), P'ng (1983), and Reinganum and Wilde (1986). On multiple-round settlement, see Spier (1992) and Wang et al. (1994). On infinite rounds, see Rubinstein (1982) and Yildiz (2003). On simultaneous games, see Daughety and Reinganum (1993) and Friedman and Wittman (2006).

⁶ In her extensive survey, Spier (2007) summarizes further explanations of settlement failure, including indivisible claims, nonpecuniary gains from going to trial, friction in the liability system, and the existence of multiple claimants.

assuming either different and inconsistent priors (typically in axiomatic models), or asymmetric information between litigants (in strategic models).⁷

A common lesson can be drawn from the broad array of specific models on settlement: both asymmetries between parties in terms of information or beliefs and low litigation costs give rise to a positive rate of litigation, and then a certain level of inefficiency owing to some use of a costly trial. From this perspective, any model that is designed as a one-sided, asymmetric-information ultimatum game seems to provide sufficiently robust and general insights (Daughety and Reinganum 2012, section 12.4).

Although the theoretical literature on settlement is immense, a great proportion of the studies therein assume that the claimant has a *credible threat* to litigate against the defendant. This means that the claimant *can* and *wants* to go to trial if settlement fails. In modeling, the capacity and will to proceed to court usually correspond to the fact that the claimant is, somehow, always able to pay for litigation and expects to obtain a positive expected value (PEV) from it. This common assumption is perhaps related to the fact that there is little consensus on how to distinguish *socially* meritorious lawsuits from those that are frivolous. Although resolving claims with negative expected value (NEV) may be socially valuable, the literature tends not to distinguish NEV cases and frivolous suits.⁸

Relatively few contributions relax the PEV hypothesis, and Schwartz and Wickelgren (2009) show that the game design strongly affects the possibility of settling NEV cases that will typically remain neither settled nor litigated.⁹

In a nutshell, the principal interest of the theoretical literature on litigation dynamics seems to be explaining failures of settlement in the shadow of the court—namely, when claimants can at least accomplish a legal remedy through a trial. This approach has generated a rich body of literature on procedural rules and settlement protocols that can influence case selection and hence the settlement rate.¹⁰ However, the standard literature seems to place little emphasis on the fact that in the real world many people cannot achieve *any* legal remedy, because they are unable to be in the shadow of the court.

⁷ See Bar-Gill (2005), Cooter and Rubinfeld (1994), Gould (1973), Landes (1971), Priest and Klein (1984), and Posner (1973). See Chung (1996) about inconsistent priors. See also Gertner and Miller (1995), who provide a settlement protocol where divergent priors cannot be perfectly communicated and thus remain private information. Starting with P'ng (1983), a strategic approach involving the updating of consistent beliefs has been preferred in analyses of the strategies of rational agents.

⁸ On the distinction between PEV and NEV cases and meritorious and frivolous cases, see Bebchuk and Chang (1996, p. 372), Katz (1990, p. 3), Nalebuff (1987, FN 3), Polinsky and Rubinfeld (1993, p. 404), Shavell (1982), and Spier (2007).

⁹ They show that claimants with NEV cases are unable to settle their claims. Conversely, defendants can also resist litigation when they have an NEV defense. Other studies show that NEV claims can be settled in very specific cases: i) in screening models with uninformed defendants (Bebchuk 1988), ii) by making particular assumptions concerning legal costs (Bebchuk 1996, Katz 1990, and Rosemberg and Shavell 1985); and iii) by assuming a claimant's commitment to proceed, even if his or her updated expected value is negative (Nalebuff 1987).

¹⁰ Reviewing this literature is beyond the scope of the current study. Some extensive surveys are available, including those of Daughety and Reinganum (2012), Hay and Spier (2002), and Spier (2007).

Besides the theoretical literature, several empirical contributions analyze dispute selection for trial. While theory helps us recognize that the cases that go to trial are filtered by settlement, the empirical literature provides evidence of this phenomenon. However, econometrics offers a very multifaceted picture of the determinants of settlement rate. On the other hand—and probably for data-reliability reasons—the empirical literature on settlement and trial also focuses on cases in the shadow of the court—namely, those that are typically already filed and then legally resolved, by either settlement or trial.¹¹

Finally, the literature on dispute selection for trial apparently does not address the fact that some disputes are not resolved at all, by litigation or by settlement. Since cases where claimants surrender are simply excluded from the analysis, litigation represents a failure because settlement is almost always cheaper (for both the parties involved and for society) and more expeditious than a trial.

2.2. Access to justice

The interest in settlement (and in other pre- or extra-judicial solutions) is overriding, especially in developed countries where the primary impression is that the average citizen has too much access to justice.¹² In such cases, litigation is perceived as excessive, and the judiciary is costly for taxpayers, the courts are overloaded by an increasing backlog, and consequently the length of proceedings is often too long to be accounted for in the quality of sentencing. For instance, among European Union countries, the average public budget allocated to courts in 2010 was EUR 66 per capita (including public prosecution and legal aid) (CEPEJ 2012). Even though the productivity and efficiency of the courts has improved in some cases, in some countries, the length of proceedings remains impressively protracted. (In Italy, the average duration of a litigious divorce at the first-instance court was 538 days; in Spain, robbery cases have an average duration of 826 days.)¹³ In 2010, in the United States, the per-capita budget for the judiciary was about USD 22 (without including several items, such as legal aid). In the United States in that year, the problem of heavy caseloads is relevant, as the median of the duration of *complex* civil proceedings exceeded 687 days.¹⁴

Nonetheless, as has been asserted by several institutional contributions to the literature—including the most recent of FRA (2011) and CFCJ (2012)—and by the U.S. Department of Justice (2013), in the most advanced judicial systems, access to justice is critical. The U.S. Department of Justice, in fact, “established the Access to Justice Initiative (ATJ) in March 2010 to address the access-to-justice crisis

¹¹ See Cooter et al. (1982), Hylton and Lin (2010), and Priest and Klein (1984). See also Eisenbergh (1990) and Fournier and Zuehlke (1989), each of whom suggest some testable models of settlement and case selection. On the possible determinants of settlement rates and success rates in trials, see Boyd and Hoffman (2012), Farber and White (1991), Gross and Syverud (1991), Huang et al. (2010), and Kessler et al. (1996).

¹² See the extensive work of Rhode (2004), and also that of Ramseyer and Rasmusen (2010) and Silver (2002).

¹³ See CEPEJ (2012); the data refer to first-instance noncriminal courts.

¹⁴ Statistics are provided by the Administrative Office of the U.S. Courts on the institutional website. Duration refers to the median time interval in 2010 among civil cases, from filing to trial.

in the [American] criminal and civil justice system” (quoted from the ATJ). Many common people are unable to access the judiciary, often for financial reasons, but there are also other barriers. Some of them decide to seek out unconventional solutions, while others simply give up.¹⁵

Despite awareness that access to justice is problematic, information about the extent of the problem, its determinants, and possible solutions remains fragmented. Although financial obstacles do not constitute the sole cause of unmet legal needs, academic contributions have mainly focused on the private costs of litigation.¹⁶ Not surprisingly, the most frequently debated of the policies used to address limited access to justice is that pertaining to litigation through legal aid. Recently, new actions like third-party litigation-funding and legal services deregulation have been suggested as ways of making litigation more affordable.¹⁷

From a socioeconomic perspective, access to justice has become a fundamental issue, and not only for reasons of fairness.¹⁸ Effective access to the judiciary is a leading component of a democratic society.¹⁹ Political economics has widely demonstrated—mainly empirically—the positive interdependence of economic and legal institutions. In particular, both adjudication and law enforcement through the courts and well-functioning legal institutions are critical to social and economic growth, since inequalities in terms of rights protections can cause institutional breakdowns and slow growth.²⁰

In general, a lack of access to legal remedies should be a concern not only for those individuals who are unable to pursue their claims; it should be the concern of all citizens, as it affects the health and economic and social well-being of all. The tendency among unresolved disputes (especially in some areas of law) is for there to be an escalation in conflicts, which make resolution more and more difficult. Legal issues such as family matters, injuries from accident and crime, housing and

¹⁵ See Coumarelos et al. (2006); Currie (2006), (2009a), and (2009b); Genn (1999); Kritzer (2008); and Rohde (2004). See also the following surveys: AM. BAR ASS’N (1994) and LEGAL SERVS. CORP. (2005) and (2009), with regard to the United States; Genn (1999), with regard to the United Kingdom; and Genn and Paterson (2001), with regard to Scotland.

¹⁶ On the obstacles to access to justice, see Genn (1999); Yates et al. (2001); and Kritzer (2008) and (2010). For a development perspective, see UNDP (2004) and (2010) and World Bank (2006). For a theoretical perspective, see also Galanter (2010), Fennel (2010), and Mnookin (1993). On the role of costs, see Buck et al. (2009); Hadfield (2000), (2009), and (2010); and Kritzer (2008) and (2010).

¹⁷ See Hodges et al. (2009). On legal aid, see Buchko et al. (2002), Garoupa and Stephen (2004), and Varano and De Luca (2007). Statistics on legal aid in European countries are found in CEPEJ (2012). On third-party litigation funding, see Daffein and Desrieux (2011), Fenn and Rickman (2010), Garber (2010), Molot (2010), and Rodak (2006). On the debate on the market organization of legal services, see Garupa (2013) and Hadfield (2000), (2008), and (2013).

¹⁸ Legal scholars have extensively debated the relevance of access to justice as a right that underpins all other rights. See Cappelletti et al. (1979) and Schlesinger (1988), each of whom provide seminal contributions on this topic. See also Alcock (1976), Mattei (2006), and Sommerlad (2004).

¹⁹ See Friedman (2006), Marshall (1950), UNDP (2010), and World Bank (2006).

²⁰ See Acemoglu and Johnson (2005), Ellickson (1991), and North (1989). See also Glaeser et al. (2003) and UNDP (2010).

employment, fundamental rights like nondiscrimination and health, and disputes with public administrations can exacerbate both social exclusion and overall social costs.²¹

Scholars have recognized the potential tensions between effective access to justice for all, and the social and private costs related to litigation (Posner 1998; Shavell 1982). However, the theoretical law and economics literature barely works to disentangle the emerging tradeoff between favoring access to justice and curbing expensive litigation. Societies could reduce litigation costs dramatically by discouraging the use of the courts, but if this gives rise to numerous unresolved justiciable problems, its burden on socioeconomic development may be substantial.

3. The Model

Given the relevance of the potential tradeoff between litigation and access to justice, the model below addresses the question of dispute resolution, from both private and social perspectives.

3.1. *The social planner's problem*

From an aggregated perspective, the “social planner’s problem” can be defined as follows. Disputes are assumed to be exogenously determined and can be resolved *legally* by litigation in court, or by settlement.²² Otherwise, disputes remain unresolved because claimants give up—or, they are resolved by unconventional means, including violence.

- Litigation (l) is costly for society. Assume that, on average, resolving a dispute by litigation costs the taxpayers λ . This references the idea that litigation involves a transfer from litigants to the public administration and also that a net negative externality arises.
- Alternatively, disputes can be resolved by settlement (s). This system of dispute resolution is assumed not to be costly for society. Otherwise, since settlement is simply less costly than litigation, the social cost of settlement is normalized to zero.
- Finally, if disputes remain unresolved or are resolved by unconventional means ($\not\mathcal{L}$), the society bears a social cost that relates to the lack of legal solutions. The social cost of $\not\mathcal{L}$ includes costs related to reduced social cohesion, diminished security, lower trust, a reduced sense of justice, underdeterrence, social exclusion, morbidity, and violence. On average, an unresolved/unconventionally resolved dispute costs society γ .

²¹ See Genn (1999); Pleasence et al. (2004), (2006), (2007), and (2008); and Stratton and Anderson (2008).

²² Considerations of endogenous disputes would complicate our analysis, without being overly useful.

The total number of disputes is normalized to 1, without a loss of generality. Assuming that each “resolution” occurs with a certain probability, the social planner’s problem may correspond to the minimization of the following social loss function:

$$\Sigma = \Pr(l)\lambda + \Pr(s)0 + \Pr(\mathcal{J})\gamma$$

It is evident that the first-best solution for the social planner would be that all disputes be resolved by settlement, with zero social costs.

Nonetheless, two main points need to be noted. First of all, even if every dispute were settled (or in general, legally resolved out of court), a court-based system nonetheless needs to be guaranteed. Settlement can exist only as a complement to litigation, since the latter represents the last-resort mechanism in making bargaining agreements enforceable. Conversely, litigation requires no party’s agreement to work, since the winning party achieves an enforceable solution against the other party.

Second, by setting procedural rules and the judiciary, the social planner can define the supply for legal solutions (both l and s). Note that in developed legal systems, the supply of legal remedies may be seen as perfectly elastic, at least in the short term. In fact, legal systems do not admit to rationing the supply of legal solutions to justiciable problems. Actually, for a given level of quality or fairness, a less-efficient judiciary can provide legal remedies at a higher cost and with longer delays, while efficient courts can provide solutions at a lower cost and more quickly.

However, the social planner cannot directly determine how disputes are actually resolved. This choice in fact rests on how the parties in a conflict decide to resolve their justiciable conflicts. Therefore, to analyze the social planner’s problem, it is necessary to disentangle how the parties work to resolve it.

3.2. *The parties’ problem*

From a micro perspective, the analysis focuses on a representative claimant–defendant pair that is involved in a (monetary) dispute. Both claimant K and defendant Δ are rational and risk-neutral.

- The claim amount at stake is A ; it is common and public knowledge.

This is also the value that is awarded by the court in favor of K , and paid by Δ , if the former prevails in trial because the latter is recognized as liable by the judge. No judicial error can occur over both the magnitude of the claim *and* the liability of the defendant.

- To litigate before the court, K bears a litigation cost $C_K = c_K A$, where $c_K \in (0,1)$. Actually, rational K never proceeds to trial for $c_K \geq 1$. If called before the court for trial, Δ must pay a litigation cost equal to $C_\Delta = c_\Delta A$, where $c_\Delta \in (0,1)$.

Each party bears his/ her own litigation cost. Litigation costs are public and common knowledge; they include lawyers’ and court fees, taxes, and all the other costs that are privately borne by parties to

litigate in court. As commonly assumed in the literature, settlement allows parties to save on litigation costs.

The assumption that costs are proportional to the amount at stake is without loss of generality. Furthermore, litigation costs relate largely to the amount at stake rather than, for instance, the actual liability of the defendant (Trubek et al. 1983). In this subsection, no budget constraint restricts the parties' choices; in subsection 3.4., a budget constraint is introduced for the claimant.

- The interaction between the parties is characterized by one-sided asymmetric information concerning the liability of the defendant.²³ In particular, K is the *uninformed* party, while Δ is the *informed* party. K does not know if Δ is of a type that will be considered actually liable (type 1) or not (type 0); she only knows that the probability of facing a liable defendant (Δ_1) and prevailing in trial is p , while the probability of facing a nonliable defendant (Δ_0) and losing the case is $(1 - p)$. Δ knows his own type. Note that p can be interpreted as the *legal merit* of the case.

For the sake of simplicity, we assume that the defendant is either fully liable or not liable. This facilitates the interpretation of results, without loss of generality. As explained in subsection 2.1., one-sided asymmetric information models provide a litigation-settlement framework that is sufficiently robust to catch the many insights concerning the parties' behavior. Since the study focuses on the access-to-justice problem for claimants, the preferred option is to assume that K is the uninformed party.

3.2.1. Access to justice and settlement bargaining

Once the dispute arises, if K simply gives up and the dispute remains unresolved, she will not obtain any kind of relief, and both parties will have a null payoff.²⁴ If K expects a positive outcome from litigation, she will access the judiciary and file a case against Δ . However, before the actual trial commences, it is appropriate to attempt a settlement, to avoid litigation costs.

Consistent with some of the literature and without any original contribution from the perspective of the settlement process, bargaining is designed as an ultimatum-screening game (Bebchuk 1984; Nalebuff 1987). This allows for understanding several features of trial selection while being functional with regard to the analysis. In particular, the uninformed party—in this case, K —proposes a take-or-leave-it agreement to the informed party—namely, Δ .

The take-or-leave-it bid for settlement implies that K commits to going in trial in the case of settlement failure—even if, after bargaining, the expected value of litigation becomes negative.²⁵

²³ Saraceno (2008) provides a similar analysis that assumes inconsistent priors.

²⁴ In the case of an unconventional solution, the payoff may differ from zero. However, for the sake of simplicity, this analysis focuses on cases where claimants give up and do not legally proceed.

²⁵ Note that this is consistent with the literature on credible threat and settlement. See, among others, Nalebuff (1987), who investigates both the problem of credible threat and the commitment to go to court of a claimant who has a PEV suit.

Therefore, although parties can avoid a trial by settling the case, K wants to access the judiciary to legally resolve the dispute, but only if she has a positive prior on litigation outcome. This explains well the complementarity between litigation and settlement: the latter can be an alternative solution to the former only when litigation is feasible and represents a credible threat. In summary, K accesses justice iff her expected litigation outcome $(p - c_K)A$ is positive, such that:

$$p > c_K. \quad (1)$$

When the access to justice condition (1) holds, K can make a credible proposal of settlement to the defendant. She prefers settlement only when she can bargain a settlement amount (S) greater than (or equal to) her expected litigation outcome—thus, when $S \geq (p - c_K)A$.

Obviously, the defendant (Δ) accepts the settlement agreement only if S is smaller than (or equal to) his expected litigation outcome—thus, when:

$$\begin{aligned} S &\leq c_\Delta A && \text{if } \Delta = \Delta_0 \\ S &\leq (1 + c_\Delta)A && \text{if } \Delta = \Delta_1 \end{aligned}$$

However, the claimant—who naturally wants to maximize her overall payoff—does not know the defendant's type. Therefore, she faces the usual tradeoff between demanding a high amount that is more easily rejected, and being satisfied with a lower amount that is sure to be accepted.

Two equilibrium solutions arise: a pooling strategy equilibrium, and a screening strategy equilibrium. If K demands $S_0 = c_\Delta A$ (pooling strategy), the probability of rejection is null and the case is sure to be settled. Asking for less would be irrational for the claimant. If K demands $S_1 = (1 + c_\Delta)A$ (screening strategy), the proposal is accepted only by a type-1 defendant (liable)—therefore, with a probability p . Asking for more would be irrational, since the demand would be surely rejected.

In the case of a pooling strategy, K obtains a payoff equal to S_0 ; otherwise, with a screening strategy, she expects to obtain $pS_1 - (1 - p)c_K A$.

K 's optimal strategy derives from a comparison of the two possible payoffs. In particular, K opts for a screening strategy when the probability of facing a liable defendant is sufficiently high—that is, when:

$$p > \frac{c_\Delta + c_K}{(1 + c_\Delta + c_K)} \quad (2)$$

Two relevant thresholds can be identified with respect to p . The first, the access-to-justice threshold (c_K), concerns the possibility K accessing justice. The second, the trial-selection threshold—namely, $(c_\Delta + c_K)(1 + c_\Delta + c_K)^{-1}$ —concerns the possible legal solutions (i.e. litigation, screening settlement, or pooling settlement) that can be adopted by the parties.

In analyzing the thresholds, one must note that the former lies to the left of the latter iff $(c_K + c_\Delta) < c_\Delta/c_K$. Therefore, two cases depending on the relative size of the parameters can be distinguished.

Case I. $c_K + c_\Delta \leq \frac{c_\Delta}{c_K} \implies c_\Delta \geq c_K^2 (1 - c_K)^{-1}$

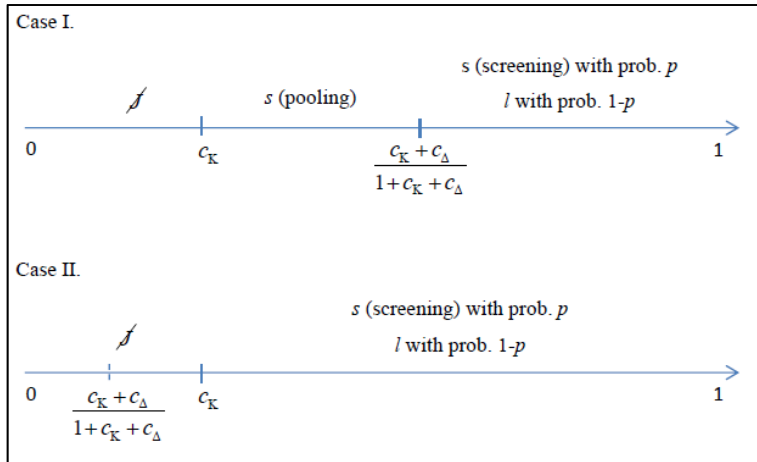
- For $p \leq c_K$, no access to justice
- For $c_K < p \leq \frac{c_K + c_\Delta}{1 + c_K + c_\Delta}$, pooling settlement;
- For $p > \frac{c_K + c_\Delta}{1 + c_K + c_\Delta}$, screening settlement with prob. p , litigation with prob. $(1-p)$.

Case II. $c_K + c_\Delta > \frac{c_\Delta}{c_K} \implies c_\Delta < c_K^2 (1 - c_K)^{-1}$

- For $p \leq c_K$, no access to justice
- For $p > c_K$, screening settlement with prob. p , litigation with prob. $(1-p)$.

The two cases are illustrated in Figure 1. Cases with greater legal merit access justice more frequently than those with lower legal merit. As described in the literature, lower-merit claims accessing the judiciary are settled via pooling settlements (as in case I); those of “intermediate” merit are likely to be litigated, while those of high merit are probably settled via screening settlements.

Figure 1. Dispute resolution: parameter thresholds (p).

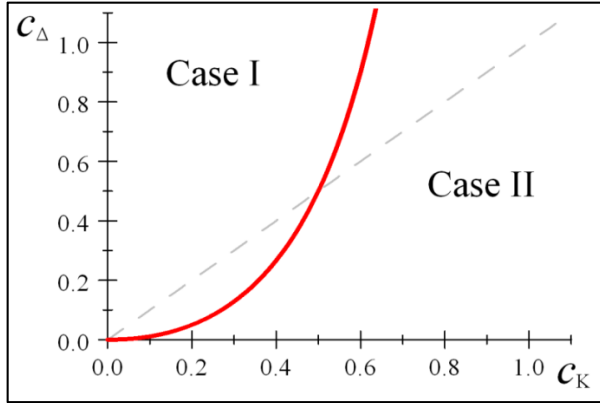


Concerning the parameter restrictions that determine the case I or case II typology, note that $(c_K + c_\Delta)$ measures the overall litigation costs (for an amount-at-stake unit), while the ratio c_Δ/c_K can be interpreted as a measure of economic-power asymmetry between the parties.

When parties are symmetric in terms of economic power (i.e., bear the same litigation costs), case I will include cases that are characterized by lower overall litigation ($c_K = c_\Delta \leq 1/2$). On the other hand, when costs are relatively high ($c_K = c_\Delta > 1/2$), disputes fall into the case II category.

For a given level of total litigation costs, case I corresponds to a relatively more powerful claimant who can litigate by paying a low share of the overall costs. Conversely, case II corresponds to a more powerful defendant who is able to stay in trial by paying a lower share of overall litigation costs. Figure 2 shows how the two cases are determined, for different litigation cost levels.²⁶ Appendix A.1. further discusses how changes in the parameters shift the analysis from case I to case II, and vice versa.

Figure 2. Litigation costs and analytical cases



3.2.2. Rates of access to justice, settlement, and litigation: Comparative statics

The analysis below illustrates how changes in the relevant parameters affect litigation and access to justice for an overall unitary amount of disputes emerging within a society. The following exercise in comparative statics is carried out while assuming that each claimant–defendant pair has a dispute characterized by a certain *legal merit* p i.i.d. as a standard uniform distribution: $p \sim u(0,1)$.²⁷

We define a number of measures that are relevant to policy implications:

- J is the rate of access to justice. This is a measure of demand for legal remedies. Its complement to 1 measures the rate of disputes remaining unresolved (or unconventionally resolved).
- l , s_0 , and s_1 are the absolute rates of litigation, pooling settlement, and screening settlement, respectively. They naturally sum to J .

As seen previously, two cases must be distinguished in line with the parameter restrictions. Table 1 provides the absolute rates for the two cases. All rates can be easily rewritten as a function of A . In addition, since the literature usually analyzes litigation and settlement rates by focusing on claims in the shadow of the court—namely, those that can actually access the judiciary—we define:

- l/J and s/J as the standardized rates of litigation and settlement, respectively. They naturally sum to 1. Standardized rates can be calculated simply by dividing the corresponding absolute rates by J .

²⁶ The red curve corresponding to equation $c_\Delta = c_K^2 (1 - c_K)^{-1}$ represents the frontier along which the two thresholds overlap perfectly. Along the 45-degree line, the costs are symmetric.

²⁷ The use of the uniform distribution allows us to obtain very tractable results. For other symmetric probability distributions of p , the uniform distribution provides robust insights. Asymmetric distributions complicate the analysis without substantially jeopardizing general results.

Table 1. Absolute rates of access to justice, settlement, and litigation

Case I. $c_\Delta \geq c_K^2(1-c_K)^{-1}$	Case II. $c_\Delta < c_K^2(1-c_K)^{-1}$
$J = \int_{c_K}^1 dp = 1 - c_K$	$J = \int_{c_K}^1 dp = 1 - c_K$
$s_0 = \int_{c_K}^{\frac{c_K+c_\Delta}{1+c_K+c_\Delta}} dp = \frac{c_K+c_\Delta}{1+c_K+c_\Delta} - c_K$	$s_0 = 0$
$s_1 = \int_{\frac{c_K+c_\Delta}{1+c_K+c_\Delta}}^1 pdp = \frac{1/2+c_K+c_\Delta}{(1+c_K+c_\Delta)^2} - c_K$	$s = s_1 = \int_{c_K}^1 pdp = \frac{1}{2}(1-c_K^2)$
$s = s_0 + s_1 = 1 - c_K - \frac{1}{2(1+c_K+c_\Delta)^2}$	$l = \int_{c_K}^1 (1-p) dp = \frac{1}{2}(1-c_K)^2$
$l = \int_{\frac{c_K+c_\Delta}{1+c_K+c_\Delta}}^1 (1-p) dp = \frac{1}{2(1+c_K+c_\Delta)^2}$	

Tables 2 and 3 summarize the signs of the partial derivatives of the rates with respect to the model parameters. Uncertain signs are discussed in the text, as their analysis offers useful insights. Details are provided in Appendix A.2. Results of the comparative statics both support a number of Propositions (1–4) and allow us to discuss a number of policies.

Case I

Regarding access to justice, it is easy to understand that access to justice positively depends on the amount at stake, while depending negatively on the claimant's litigation costs. Given the allocation of litigation costs, the defendant costs do not influence access to justice. Comparative statics on the defendant's litigation costs provides standard and intuitive results: high costs discourage (screening) settlement against litigation, in both absolute and standardized terms.

Table 2. Case I: Effects of parameter changes on absolute and standardized rates

	c_K	c_Δ	A
J	-	0	+
s_0	-	+	- if $\varepsilon_{J,c_K}^{\hat{\varepsilon}} < \hat{\varepsilon} \ll 1 \forall c_K$
s_1	-	-	+
s	-	+	- if $\varepsilon_{J,c_K}^{\hat{\varepsilon}} \ll \hat{\varepsilon} \ll 1 \forall c_K$
l	-	-	+
s/J	+ if $\varepsilon_{J,c_K}^{\hat{\varepsilon}} < \hat{\varepsilon} \ll 1 \forall c_K$	+	- if $\varepsilon_{J,c_K}^{\tilde{\varepsilon}} < \tilde{\varepsilon} \geq 1$
l/J	- if $\varepsilon_{J,c_K}^{\hat{\varepsilon}} < \hat{\varepsilon} \ll 1 \forall c_K$	-	+ if $\varepsilon_{J,c_K}^{\tilde{\varepsilon}} < \tilde{\varepsilon} \geq 1$
$\varepsilon_{J,c_K} = \left \frac{\partial J}{\partial c_K} \frac{c_K}{J} \right $ is the elasticity of J with respect to c_K .			

Analysis of the claimant costs and the amount at stake shows less-than-standard but fairly sound insights. Increasing the claimant costs reduces both settlement (pooling and screening) and litigation

because then fewer claims can access justice. Increasing the amount at stake unambiguously increases both screening settlement and litigation; in fact, in such cases, more claims can access justice, and those characterized by a higher probability of success are settled for a screening amount. Litigation increases through two drivers: augmented access to justice, and a partial shift of some claims from pooling settlement to litigation.

The remaining effects are ambiguous. Only under some parameter restrictions are the effects as expected. To discuss these restrictions, we also resort to the (absolute value of the) elasticity of the demand for legal remedies $\varepsilon_{J,c_K} = \left| \frac{\partial J}{\partial c_K} \frac{c_K}{J} \right| = c_K (1 - c_K)^{-1}$. This is a monotonically increasing function of c_K , defined over the interval $(0, \infty)$.

Concerning the effects of changes in c_K on the standardized rate of litigation (settlement), it is evident that increasing the claimant cost reduces both the proportion of disputes that go to trial and the proportion of disputes that can access justice. This combined action can increase or decrease the standardized rate of litigation (settlement). The standardized rates of litigation and settlement behave as usual—namely, the former decreases, while the latter increases by the same amount in c_K —only when $c_\Delta < 1 - 3c_K$ corresponding to $\varepsilon_{J,c_K}(c_K) < \frac{1 - c_\Delta}{2 - c_\Delta} \equiv \hat{\varepsilon}(c_\Delta) < 1, \forall c_\Delta, c_K$ (details in Appendix A.2).

Figure 3 (left) illustrates the parameter restriction in terms of costs. The dashed dark line in the graph represents the elasticity $\varepsilon_{J,c_K}(c_K)$, which can be measured along the y-axis.

Figure 3. Effects of changes in c_K on the standardized rates of litigation and settlement: Case I

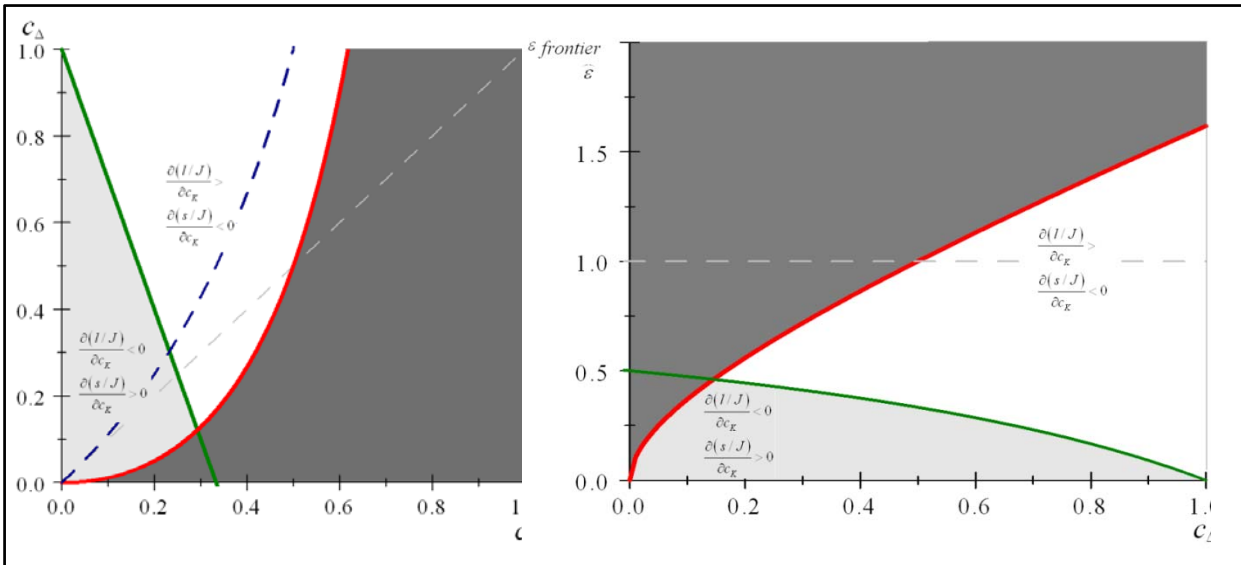


Figure 3 (right) shows the parameter restriction in terms of elasticity. In particular, the increasing curve represents the elasticity of the demand for legal remedies, along the frontier between case I and

case II; it is also the upper limit of the elasticity for case I.²⁸ The decreasing curve corresponds to the threshold $\hat{\varepsilon}(c_\Delta)$, which is always (significantly) smaller than 1. The standardized rate of litigation (settlement) decreases (increases) with an increase in the claimant's litigation cost, as usually described in the literature—but only if the demand for legal remedies is sufficiently inelastic (light-grey areas in both figures). It is evident that when $\varepsilon_{J,c_K}(c_K) \geq 1$, the effect of reduced access to justice prevails, and the standardized rate of litigation increases (settlement decreases).

Increasing the amount at stake ambiguously affects both the absolute rate of pooling settlement and the absolute rate of total settlement. In fact, a higher amount at stake both favors access to justice and shifts some claims from pooling to screening settlement and litigation. This happens because the claimant is asking for more to settle. On the other hand, a larger amount at stake spurs the defendant to settle. The combined effects can increase or decrease the absolute rates of pooling and total settlement. The absolute rate of pooling settlement decreases in A under the following parameter restriction: $c_K < (c_\Delta + c_K)(1 + c_\Delta + c_K)^{-2}$. The parameter restriction to have an absolute rate of settlement decreasing in A is stricter: $c_K < (c_\Delta + c_K)(1 + c_\Delta + c_K)^{-3}$. Analysis of these restrictions is not straightforward; details are discussed in Appendix A.2. These parameter restrictions on parties' costs correspond to the elasticity threshold $\hat{\varepsilon}(c_\Delta) \ll 1 \forall c_K, c_\Delta$; this implies that an increase in the amount at stake reduces the rate of pooling settlement only when a claimant's litigation cost is sufficiently low—or, in other words, when the demand for legal remedies is inelastic.

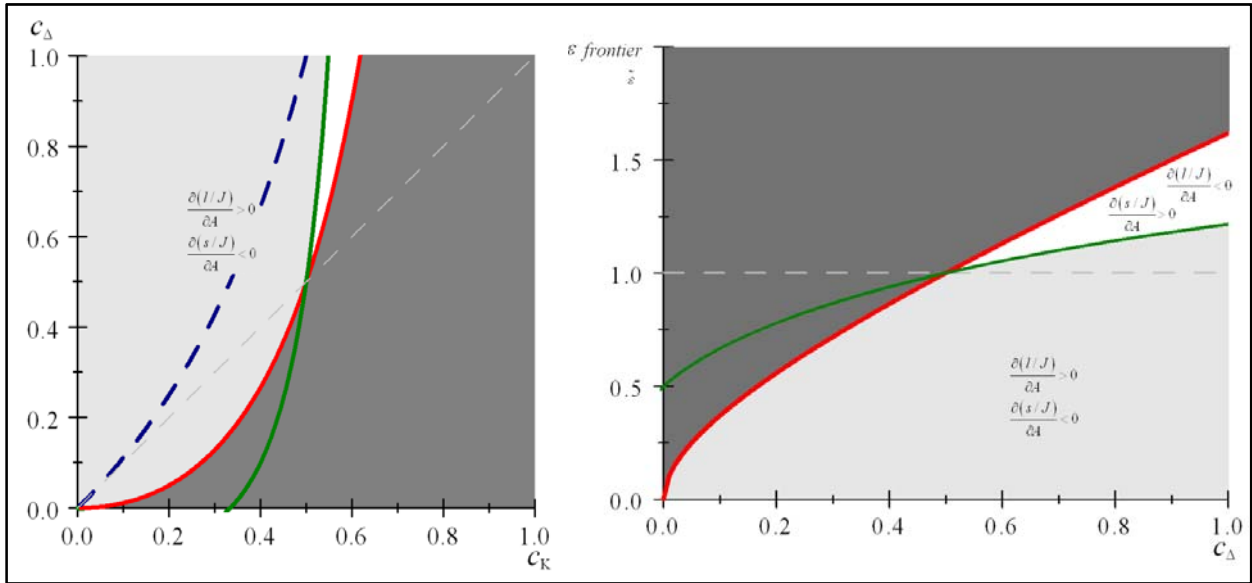
Therefore, when the demand is elastic (or there is unitary elasticity), an increase in the amount at stake enlarges the rate of pooling settlement. Note that the second parameter restriction is more binding than the first one; we can conclude that, when the demand for legal remedies is elastic (or there is unitary elasticity), the absolute rate of settlement is increasing in A . The intuition is clear: when the demand for legal remedies is elastic, the effect of augmented access to justice owing to a greater amount at stake prevails on the partial shifting from settlement to litigation.

Concerning the standardized rate of litigation, note that a higher amount at stake enlarges both the proportion of disputes that go in trial and the proportion of disputes that access justice. This combined action can increase or decrease the standardized rate of litigation. The latter increases in A only when $c_\Delta > c_K(3c_K - 1)(1 - (3c_K - 1))^{-1}$. In terms of elasticity, this restriction corresponds to $\varepsilon_{J,c_K} < \frac{1}{2c_\Delta + 4} \left(c_\Delta + \sqrt{18c_\Delta + 9c_\Delta^2 + 1} + 1 \right) \equiv \tilde{\varepsilon}(c_\Delta) \leq 1$ (details in Appendix A.2.). Figure 4 (left) illustrates the parameter restriction in terms of costs. As usual, the dashed dark line in the graph

²⁸ Elasticity along the frontier has the equation $\varepsilon = 0.5c_\Delta + 0.5\sqrt{c_\Delta(c_\Delta + 4)}$.

represents $\varepsilon_{J,c_K}(c_K)$, which can be measured along the y-axis. Figure 4 (right) shows the parameter restriction in terms of elasticity.

Figure 4. Effects of changes in A on the standardized rates of litigation and settlement: Case I



The thinner line corresponds to the threshold $\tilde{\varepsilon}$. The standardized rate of litigation (settlement) is increasing (decreasing) in the amount at stake, only if the elasticity of the demand for legal remedies is sufficiently low (light grey areas in both figures). In particular, for case I, when $\varepsilon_{J,c_K}(c_K) \leq 1$, then $\varepsilon_{J,c_K}(c_K) \leq \tilde{\varepsilon}(c_\Delta)$, $\forall c_K, c_\Delta$. Therefore, when the demand for legal remedies is inelastic, the standardized rate of litigation (settlement) is increasing (decreasing) in A . When the elasticity is high and the defendant cost is sufficiently large (therefore, for values that are close to the frontier and between case I and case II), the standardized rate of settlement can be decreasing in A . The insight is intuitive: when the defendant incurs a high cost to stay in trial, he has a strong incentive to settle. Therefore, the augmented access to justice stemming from a higher amount at stake results in more settlement and less litigation.

Case II

Analysis concerning case II is simpler, since the effects of parameter changes on the relevant rates are unambiguous. As usual, low claimant costs and a high amount at stake increase access to justice.

Table 3. Effects of parameter changes on absolute and standardized rates: Case II

	c_K	c_Δ	A
J	-	0	+
$s=s_l$	-	0	+
l	-	0	+
s/J	+	0	-
l/J	-	0	+

Nonetheless, even in this case, some of the current results depart from those in the standard literature. In particular, it is evident that defendant costs do not affect both absolute and standardized rates. Conversely, as in the standard literature, higher claimant costs and a lower amount at stake favor settlement against litigation for claims in the shadow of the court (standardized rates). On the other hand, higher claimant costs and a lower amount at stake discourage both settlement and litigation.

3.2.3. Propositions and remarks

Given the results of the analysis in the previous subsection, it is possible to summarize the most relevant results through a number of propositions.

Proposition 1. *Claims characterized by a higher legal merit can access the judiciary more easily. The rate of access to justice is decreasing in the claimant cost and increasing in the amount at stake. It is not influenced by the defendant cost.*

Proposition 2. *The absolute rate of litigation is decreasing in the claimant cost, increasing in the amount at stake, and negatively or not at all affected by the defendant cost (case I and case II, respectively).*

Propositions 1 and 2 illustrate the potential tradeoff between favoring access to justice and discouraging litigation through the enactment of policies, resulting in larger litigation costs among claimants. Furthermore, even if able to encourage access to justice, procedures that inflate the amount at stake of lawsuits must be carefully appraised, since they ultimately promote litigation.

However, the aforementioned propositions also show that the tradeoff does not necessarily emerge. In particular, and different from the standard literature, the model used herein shows that the parties' costs asymmetrically affect dispute selection for trial. First, higher defendant costs do not discourage access to justice, even as they potentially curtail litigation. In particular, larger defendant costs will reduce the litigation rate, provided the defendant is "sufficiently exposed" to the costs of going to trial (case I). On the other hand, when the defendant bears litigation costs that are low relative to the overall litigation costs (case II), marginal enlargements in his costs will not affect the litigation rates, since the rate of access to justice will remain the same and the selection of claims between (screening) settlement and trial will be driven only by the probability of claimant success.

Proposition 3. *Given $c_A \geq c_K^2(1 - c_K)^{-1}$ (case I), the standardized rate of litigation (settlement) is decreasing (increasing) in the claimant cost and increasing (decreasing) in the amount at stake, only if the demand for legal remedies is sufficiently inelastic. The standardized rate of litigation (settlement) is always decreasing (increasing) in the defendant cost.*

Given $c_\Delta < c_K^2(1 - c_K)^{-1}$ (case II), the standardized rate of litigation (settlement) is decreasing in the claimant cost, increasing in the amount at stake, and not affected by the defendant cost.

Proposition 3 shows that reductions in litigation costs and/or increases in the amount at stake do not necessarily promote the standardized rate of litigation. These results—which extend beyond those usually seen in the standard literature—are driven by the fact that here we take into account both litigation and access to justice. In particular, case I illustrates that the elasticity of the demand for legal remedies plays a key role in determining the effects of changes in parties’ costs and the benefit of trial on the standardized rate of litigation (settlement).

Finally, policymakers with an interest in addressing the double issue of favoring access to justice while discouraging litigation should put additional effort into investigating the elasticity of the demand for legal remedies in different systems and for different legal matters.

3.3. Revising the social problem

Given the model of the parties’ behavior presented in the previous subsection, we return to the social problem. Recalling that the overall amount of disputes emerging within society is standardized to 1, the representative dispute is assumed to be characterized as that between Δ and K . Note that parties’ private litigation costs are transfers (in favor of their lawyers, to pay litigation fees, etc.), but that from a social perspective, the average net externality stemming from the resolution of a dispute by litigation is λ . If the dispute is not legally resolved, society bears a net negative externality γ . Now, the social loss function (1) needs to be rewritten as:

$$\Sigma = J\lambda + (1 - J)\gamma \quad (3)$$

It is straightforward that, for a given rate of access to justice, policies that are able to reduce the absolute litigation rate can unambiguously moderate the social costs of dispute resolution. More caution is required with policies that affect both rates.

3.3.1. Socially meritorious claims

Recalling that $J = 1 - c_K$ and distinguishing between cases I and II, (3) can be rewritten as:

$$\Sigma = \frac{1}{2(2 - J + c_\Delta)^2} \lambda + (1 - J)\gamma \quad \text{in Case I}$$

$$\Sigma = \frac{1}{2} J^2 \lambda + (1 - J)\gamma \quad \text{in Case II}$$

In both cases, the first term of the sum represents the social cost of dispute resolution owing to litigation, while the second term is the social cost owing to the lack of legal resolution for justiciable problems. Since the first term is increasing in J and the second one is decreasing, favoring access to justice involves a tradeoff because of the increase in litigation.

A simple condition is necessary (and sufficient) to having the social costs of dispute resolution decrease in J for both cases (see Appendix A.3.):

$$\frac{\partial \Sigma}{\partial J} < 0 \text{ iff } \left| \frac{\partial l}{\partial c_K} \right| < \frac{\gamma}{\lambda} \quad (4)$$

This condition provides some insights that are valuable from a policy perspective. First, when the social cost stemming from a lack of legal remedies is greater than or even equal to that borne by society for litigation, improving access to justice moderates the social costs of dispute resolution (note that $\left| \frac{\partial l}{\partial c_K} \right|$ is always smaller than 1).

The intuition is simple: since not every justiciable problem shifted from the sample of those unresolved to the sample of those accessing the judiciary is resolved through litigation, improving access to justice unambiguously reduces the social cost of dispute resolution. Thanks to settlement, this is true even when the social cost stemming from a lack of legal remedies is equal to the social cost of litigation.

Condition (4) also suggests that, in the debate on the concept of *meritorious* claims, it would be useful to distinguish between *socially* meritorious claims and *privately* meritorious claims. Socially meritorious claims can be identified as those disputes that are characterized by the claimants' marginal propensity to litigate being smaller than the social opportunity-cost of access to justice ($\left| \frac{\partial l}{\partial c_K} \right| < \gamma/\lambda$). Privately meritorious claims continue to be identifiable as those characterized by a PEV ($p > c_K$). Naturally, the two concepts do not necessarily overlap.

3.3.2. Propositions and policy analysis

Given the aforementioned analysis, it is possible to summarize the most relevant results of the model with respect to the social perspective, through a number of propositions and policy remarks.

Proposition 4. *Discouraging litigation without affecting access to justice is socially efficient.*

Note that this statement specifically concerns PEV lawsuits that are in the shadow of the court, since they can be actually litigated in the event of settlement failure.

Proposition 5. *Favoring access to justice always increases litigation; this can result in ambiguous social effects. It is always efficient to improve access to justice for socially meritorious claims, which are defined as those claims characterized by the claimant's marginal propensity to litigate being*

smaller than the social opportunity-cost of access to justice. At least, this implies that it is always efficient to improve access to justice when the social cost stemming from a lack of legal remedies is greater than or even equal to the cost of litigation.

By combining the results of this subsection with those derived in the previous one, one can draw some policy implications. In particular, making litigation expensive for parties by charging claimants high litigation fees ambiguously affects the social cost of dispute resolution. Since this kind of policy discourages both litigation and access to justice, it exacerbates the tradeoff between the two policy goals. This sort of intervention could be useful only in a context of legal matters that involve very low social costs owing to a lack of resolutions and relatively high litigation costs.

Conversely, higher litigation fees charged to defendants may reduce the expected social cost of dispute resolution by discouraging litigation, but while not affecting access to justice. However, this policy would also come with some limitations. The first limitation is of procedural fairness: it could be unfair to impose particularly high litigation costs on a defendant, who has in fact been forced into the process of defending him or herself. Discussions of fairness, however, extend beyond the present analysis. The second limitation stems from the fact that making litigation more expensive for defendants is ineffective when a pooling settlement is not feasible (case II). On the other hand, significant increases in defendant costs can make a pooling settlement feasible, finally resulting in less litigation. (On the shift from case II to case I, see Appendix A.1.)

Concerning policies that affect the amount at stake, we mention only punitive damages and forms of civil or additional penalties. Punitive damages are paid by the defendant in favor of the winning claimant, with the aim of acting as a deterrent. They can be seen as an increase in A (perhaps they are also able to reduce γ). Punitive damages ambiguously affect the expected social costs of dispute resolution, given the usual tradeoff between the augmented rate of access to justice and the rising absolute rate of litigation. From a social perspective, such policies should be implemented only for socially meritorious claims.

Penalties that are paid to the state—like civil or additional penalties—typically increase the amount at stake only for the defendant, without affecting the claimant's amount at stake. They can be seen as an additional litigation cost paid by the defendant, but only in the case of the claimant's success. They can discourage litigation without influencing access to justice. In addition, they might also be beneficial in terms of improved deterrence, perhaps reducing γ .

3.4. Claimants under budget constraints

The above analysis completely ignores the possibility that the parties cannot pay their litigation costs. Since this study focuses on access-to-justice issues, the analysis below introduces a budget constraint for the claimant. On the other hand, the defendant continues to be assumed always solvent

(e.g., a large and professional defendant, or someone covered by insurance), and we choose not to consider “judgment proof” problems.²⁹

Define $w \in (0, \infty)$ as K 's wealth normalized by A . In such a case, condition (1) is not enough to guarantee access to justice. An additional condition must be verified: the claimant's wealth must be sufficient to cover the litigation cost ($w \geq c_K$). No information asymmetry exists between the parties concerning their wealth.³⁰

In summary, under the claimant's budget constraint, the condition to access justice is:

$$\begin{cases} p > c_K \\ w \geq c_K \end{cases} \quad (5)$$

Assume that normalized wealth among the population of potential claimants is a random variable distributed according to the density function h , with cumulative function H and independent of p . Note that the probability that the claimant is able to cover her litigation costs is $\Pr(w \geq c_K) = 1 - H(c_K)$, which is monotonically decreasing in c_K and, recalling that $c_K = C_K/A$, monotonically increasing in A .

The rate of access to justice under a budget constraint— $(1 - c_K)(1 - H(c_K))$ —is always smaller than that lacking a budget constraint. It is trivial to note that for a given probability of success, an unconstrained population of claimants can more readily access justice than a constrained one.

Additionally, the absolute rate of litigation under a budget constraint— $2^{-1}(1 + c_K + c_A)^{-2}(1 - H(c_K))$ in case I and $2^{-1}(1 - c_K)^2(1 - H(c_K))$ in case II—is always smaller than that without a budget constraint. On the other hand, the standardized rates of litigation (settlement) with or without a budget constraint are the same. These findings can be summarized by the following proposition.

Proposition 6. *The standardized rate of litigation (settlement) is not affected by the fact that the access to justice of some claimants is hampered by their budget constraints. Conversely, both the absolute rate of litigation and the rate of access to justice are smaller when there is a budget constraint for claimants.*

²⁹ A judgment proof problem occurs when a defendant does not pay the appropriate damage award—for instance, because he or she goes bankrupt. See, for instance, Shavell (1986) and Summer (1983).

³⁰ The capacity of the claimant to pay for litigation costs is obviously a further element that plays a role in the credibility of the threat to go to trial. Relaxing the hypothesis that the defendant knows the wealth of the claimant complicates the dynamics of settlement bargaining, without adding any insight useful to the aims of this study. Moreover, it seems sound to assume that the defendant can infer or even know the claimant's wealth since in the real world, for instance, relations between parties are mediated by legal firms and lawyers that work as (costly) signals of claimant wealth.

Again, analysis of the absolute rates highlights the potential tradeoff between litigation and access to justice: less-stringent budget constraints result in more access to justice, but also in more litigation. On the other hand, since we consider exogenous litigation costs, once in the shadow of the court, “poorer” claimants are no different from “richer” ones, in terms of litigation rate.

3.5. *Social tradeoff and legal aid*

Given the model of the parties’ behavior with budget constraints, the social loss function becomes:

$$\Sigma_{b.c.} = l(1 - H(c_K))\lambda + [(1 - J)(1 - H(c_K)) + H(c_K)]\gamma. \quad (6)$$

The social cost of dispute resolution when claimants’ behavior is restricted by budget constraints (6) is not necessarily larger than that lacking budget constraints (3). Actually, under budget constraints, there is less litigation—but also, fewer disputes are legally resolved.

However, in comparing (3) and (6), it is easy to see that $\Sigma_{b.c.} > \Sigma$ if $\gamma/\lambda > l/J$ (6.1.). This condition bears several implications. First, since the standardized rate of litigation is always smaller than 1, when the social cost stemming from a lack of legal remedies is greater than or even equal to the social cost of litigation, the inability of a part of the population to access the judiciary (owing to budget constraints) relates not only to a fairness problem but also to a degradation of social conditions because the social costs of dispute resolution are higher. This suggests that reforms and policies that aim to improve access to justice should focus on legal matters that when unresolved relate to high social costs (i.e., family law matters).

From this perspective, legal aid as a form of litigation subsidization is an important issue. Legal aid is the main policy tool to arise in discussions concerning the issue of access to justice. Legal aid—as the provision of assistance to people who are otherwise unable to afford legal representation and access the court system—is specifically regulated in each country, and can differ widely in terms of coverage, amounts, and delivery models. Here, legal aid is assumed to take the form of a state fund that covers litigation costs for claimants who would otherwise be unable to access the judiciary. We choose not to consider potential abuses or moral hazard (i.e., legal aid does not determine any enrichment for recipients). In the case of a claimant’s success in trial, the legal aid amount is returned to the state. Thus, legal aid allows all claimants with insufficient wealth to proceed with their PEV claims.

According to the above analysis, since we assume that legal aid is simply a transfer from the state to “poor” claimants, subsidizing litigation is socially efficient as long as the social opportunity-cost of access to justice is greater than the standardized rate of litigation. In particular, we can verify that it is socially efficient in subsidizing both all the socially meritorious claims falling into the case II category, and those included in case I that are characterized by a sufficiently inelastic demand for legal remedies (

$$\mathcal{E}_{J,c_K} \leq \hat{\mathcal{E}}).$$

It can remain efficient in subsidizing socially meritorious claims that fall into the case I category, inasmuch as they are characterized by a higher elasticity of demand for legal remedies ($\varepsilon_{J,c_K} > \hat{\varepsilon}$) and as long as the standardized rate of litigation remains smaller than the social opportunity-cost of access to justice. (Proofs are provided in Appendix A.4.)

Usually, however, legal aid is not a simple transfer; it is also costly for taxpayers. Below, the assumption of legal aid being a pure transfer is relaxed by assuming that legal aid is a net negative externality for taxpayers. The overall cost of legal aid for society is $H(c_K)l(1-p)c_K$, since the cost of legal aid is equal to the claimant's litigation cost, weighted by the probability of being "poor" and "losing in trial."

Therefore, the social cost of dispute resolution by using legal aid becomes:

$$\Sigma_{aid} = l\lambda + H(c_K)l(1-p)c_K + (1-J)\gamma \quad (7)$$

It is straightforward to verify that $\Sigma_{b.c.} > \Sigma_{aid}$ for $\frac{\gamma}{\lambda + (1-p)c_K} > \frac{l}{J}$ (7.1.). Condition (7.1.) is obviously stricter than condition (6.1.). Intuitively, when legal aid is socially costly, subsidizing litigation is efficient under a condition that is stricter than when legal aid is a simple transfer. However, condition (7.1.) can be easily interpreted, and it provides further insights. For a given standardized rate of litigation (which is always smaller than 1), it is efficient to remove financial obstacles to access to justice by providing socially costly legal aid, as long as the standardized rate of litigation remains smaller than the *overall* opportunity cost of access to justice (defined as the ratio of γ to the sum of both social and private litigation costs per dispute).

Note that the left term of the inequality (7.1.) is increasing in p and decreasing in c_K . Since claims that are characterized by a higher p both access justice more frequently and are litigated less frequently, condition (7.1.) is more easily satisfied for high-merit legal claims.

A comparison of (6.1.) and (7.1.) shows that room for the socially efficient subsidization of litigation is reduced when legal aid is socially costly. However, improving access to justice through partial subsidization continues to be a suitable policy, especially if legal aid systems are able to select claims in terms of legal merit. This suggests that a suitable criterion by which to select the claims to be subsidized should work as a sort of legal-merit filter.

Concerning litigation costs, note that lower costs do not necessarily satisfy (7.1.) easily, since the standardized rate of litigation can be either increasing or decreasing in c_K (see subsection 3.2.). Therefore, once again, policies that affect claimant costs should be carefully evaluated.

The following proposition summarizes the main insights of this subsection.

Proposition 7. *When legal aid is a transfer, it is socially efficient in subsidizing socially meritorious claims that fall into case II, or those falling into case I that are characterized by a sufficiently inelastic demand for legal remedies. Socially meritorious claims falling into case I but characterized by a high elasticity of demand for legal remedies must be subsidized as long as the standardized rate of litigation is sufficiently low. When legal aid is a net externality for society, efficient subsidization is lower, but still positive. In general, it is socially efficient to subsidize litigation, as long as the standardized rate of litigation is lower than the social opportunity-costs of access to justice.*

Proposition 7 and the analysis provided in subsection 3.2. together suggest that some policies may be socially effective at best, and seriously detrimental at worst. For instance, for claims characterized by a very inelastic demand for legal remedies (i.e., falling into case I, with $\varepsilon_{J,c_k} \leq \hat{\varepsilon}$), legal aid and increasing litigation costs for claimants represent a policy mix with serious adverse effects, as it would become more difficult to satisfy condition 7.1. Another possible example concerns claims that fall into case I: legal aid could be socially beneficial when defendants' litigation costs are particularly high, since the right term of condition (7.1.) is decreasing in c_Δ , even as the left term remains unaffected.

Finally, any assessment of policies that influence the judiciary should be based on a careful appraisal of both their effects on the social opportunity-cost of access to justice and their influence on private parties' behavior. Several policies determine the nature of complex interactions between litigation and access to justice; these interactions deserve particular attention, if unexpected and adverse social results are to be precluded.

4. Conclusions

The dynamics of settlement and litigation in the shadow of the court have been discussed extensively by law and economics scholars. Although it is beneficial in terms of deterrence and reducing legal uncertainty by defining legal precedent, litigation is usually perceived as socially wasteful. This is certainly true if the alternative to litigation is another legal solution like settlement. However, if the alternative to litigation is that claimants fail to find any legal remedy to their justiciable problems—or even try to resolve their conflicts by unconventional means—then litigation may represent for society a suitable second-best option. This study investigates the social tradeoff that emerges between litigation and access to justice.

While considering access to justice, the results of the current model lead one to question some of the standard insights of the law and economics literature on litigation and settlement rates. In particular, the results indicate that high litigation costs on the part of the claimant discourage both settlement and litigation, that high values at stake ambiguously affect settlement, and that defendant costs possibly have no role in determining the type of legal solution selected by parties. Finally, the effects of changes

in costs and amounts at stake on the rates of settlement and litigation for claims in the shadow of the court depend upon the elasticity of the demand for legal remedies.

The framework that derives from the model helps to clarify the effects of a number of policies, in terms of both litigation and access to justice. Policies that affect claimant behavior—such as those pertaining to litigation fees and punitive damages—often exacerbate the social tradeoff between litigation and access to justice. Policies that increase defendant costs—like high defense fees or additional penalties—can either reduce litigation without hampering access to justice, or be completely ineffective.

Although improving access to justice will necessarily promote litigation, favoring full and effective access to the judiciary can be socially efficient. On this basis, the current study suggests the use of a new criterion by which to define and filter claims as *socially meritorious*. Socially meritorious claims are those where a claimant's marginal propensity to litigate is smaller than the social opportunity-cost of access to justice. Guaranteeing access to justice of socially meritorious claims, even at the cost of promoting litigation, is always efficient.

The current study also analyzed the social tradeoff between litigation and access to justice when claimants are hampered in their access to the judiciary because of budget constraints. Both the absolute rate of litigation and the rate of access to justice are smaller when some claimants are limited by their under budget constraints. From a social perspective, it is efficient to remove budget constraints by subsidizing litigation, as long as the standardized rate of litigation is lower than the social opportunity-costs of access to justice.

In conclusion, although the model presented in this study simplifies assumptions within a setting that involves standard take-it-or-leave-it screening settlement bargaining, it provides a rather general framework. According to this framework, policymakers with an interest in reducing the social costs of dispute resolution should acquire a profound understanding of how policies influence both the rate of access to justice and the absolute and standardized rates of litigation. The same solution could be socially helpful in certain kinds of claims while being socially detrimental in other kinds of cases. In particular, the social opportunity-cost of access to justice, the claimants' marginal propensity to litigate, and the elasticity of the demand for legal remedies become factors that allow us to determine the success or failure of a given policy.

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Appendix

A.1

Changes in the parameters can shift the analysis from case I to case II and vice versa. Note that the access-to justice threshold (hereafter, $\bar{J} \equiv c_K$) changes more sharply than the trial selection threshold

(hereafter, $\bar{T} \equiv \frac{c_\Delta + c_K}{1 + c_\Delta + c_K}$) for a given change in c_K . For changes in c_Δ , the \bar{J} does not change

while \bar{T} moves. In addition, recalling that c_K can be written as $\frac{C_K}{A}$ and $\frac{c_\Delta + c_K}{1 + c_\Delta + c_K}$ as $\frac{C_\Delta + C_K}{A + C_\Delta + C_K}$,

changes in A move both the thresholds (both are decreasing in A). The following observations can be derived:

- Significant increases in c_K shift case I to case II. Significant decreases in c_K shift case II to case I.
- Significant decreases in c_Δ shift case I to case II. Significant increases in c_Δ shift case II to case I.
- With respect to A , \bar{J} generally moves faster than \bar{T} . Actually, \bar{J} moves slower than \bar{T} iff

$$c_\Delta \gg c_K, \left(\left| \frac{\partial \bar{T}}{\partial A} \right| > \left| \frac{\partial \bar{J}}{\partial A} \right| \text{ iff } c_\Delta / c_K > 2(c_\Delta + c_K) + (c_\Delta + c_K)^2 - \text{setting overall costs equal to 1 this} \right.$$

means $c_\Delta > 3c_K$). This implies that significant decreases in A generally shift case I to case II.

- Since case II corresponds to the parameter restriction $c_\Delta / c_K < (c_\Delta + c_K)$, significant increases in A shift case II to case I $\left(\left| \frac{\partial \bar{J}}{\partial A} \right| > \left| \frac{\partial \bar{T}}{\partial A} \right| \right)$.

Intuitively, it is possible understanding how changes in A shift the analysis from a case to the other moving on the Figure 2 from NE to SW for increases in A and from SW to NE for decreases in A .

A.2

Partial derivatives of both absolute and standardized rates of access to justice, settlement and litigation are calculated with respect to the parameters of the model for cases I and II in Table A1 and A2, respectively.

Table A1. Comparative statics: Case I

<i>Case I</i>		
$\frac{\partial s_0}{\partial c_K} = -1 + \frac{1}{(1+c_K+c_\Delta)^2} < 0$	$\frac{\partial s_0}{\partial c_\Delta} = \frac{1}{(1+c_K+c_\Delta)^2} > 0$	$\frac{\partial s_0}{\partial A} = \frac{c_K}{A} - \frac{c_K+c_\Delta}{A(1+c_K+c_\Delta)^2} \leq 0$
$\frac{\partial s_1}{\partial c_K} = -\frac{c_K+c_\Delta}{(1+c_K+c_\Delta)^3} < 0$	$\frac{\partial s_1}{\partial c_\Delta} = -\frac{c_K+c_\Delta}{(1+c_K+c_\Delta)^3} < 0$	$\frac{\partial s_1}{\partial A} = \frac{(c_K+c_\Delta)^2}{A(1+c_K+c_\Delta)^3} > 0$
$\frac{\partial s}{\partial c_K} = \frac{\partial s_0}{\partial c_K} + \frac{\partial s_1}{\partial c_K} < 0$	$\frac{\partial s}{\partial c_\Delta} = \frac{\partial s_0}{\partial c_\Delta} + \frac{\partial s_1}{\partial c_\Delta} = \frac{1}{(1+c_K+c_\Delta)^3} > 0$	$\frac{\partial s}{\partial A} = \frac{\partial s_0}{\partial A} + \frac{\partial s_1}{\partial A} = \frac{c_K}{A} - \frac{c_K+c_\Delta}{A(1+c_K+c_\Delta)^3} \leq 0$
$\frac{\partial l}{\partial c_K} = -\frac{1}{(1+c_K+c_\Delta)^3} < 0$	$\frac{\partial l}{\partial c_\Delta} = -\frac{1}{(1+c_K+c_\Delta)^3} < 0$	$\frac{\partial l}{\partial A} = \frac{c_K+c_\Delta}{A(1+c_K+c_\Delta)^3} > 0$
$\frac{\partial (s_0/J)}{\partial c_K} = -\frac{c_\Delta+2c_K}{(1+c_K+c_\Delta)^2(1-c_K)^2} < 0$	$\frac{\partial (s_0/J)}{\partial c_\Delta} = \frac{\partial s_0}{\partial c_\Delta} / J > 0$	$\frac{\partial (s_0/J)}{\partial A} = \frac{\partial s_0}{\partial A} * J^{-1} - s_0 \frac{\partial J}{\partial A} * J^{-2} \leq 0$
$\frac{\partial (s_1/J)}{\partial c_K} = \frac{\left(\frac{1}{2}+2c_K+c_\Delta\right)(c_K+c_\Delta)+\frac{1}{2}}{(1+c_K+c_\Delta)^3(1-c_K)^2} > 0$	$\frac{\partial (s_1/J)}{\partial c_\Delta} = \frac{\partial s_1}{\partial c_\Delta} / J < 0$	$\frac{\partial (s_1/J)}{\partial A} = \frac{\partial s_1}{\partial A} * J^{-1} - s_1 \frac{\partial J}{\partial A} * J^{-2} \leq 0$
$\frac{\partial (s/J)}{\partial c_K} = \frac{\partial (s_0/J)}{\partial c_K} + \frac{\partial (s_1/J)}{\partial c_K} = -\frac{\partial l/J}{\partial c_K} \leq 0$	$\frac{\partial (s/J)}{\partial c_\Delta} = \frac{\partial s}{\partial c_\Delta} / J > 0$	$\frac{\partial (s/J)}{\partial A} = \frac{\partial (s_0/J)}{\partial A} + \frac{\partial (s_1/J)}{\partial A} = -\frac{\partial (l/J)}{\partial A} \leq 0$
$\frac{\partial (l/J)}{\partial c_K} = \frac{(1+c_K+c_\Delta)-2(1-c_K)}{2(1+c_K+c_\Delta)^3(1-c_K)^2} \leq 0$	$\frac{\partial (l/J)}{\partial c_\Delta} = \frac{\partial l}{\partial c_\Delta} / J < 0$	$\frac{\partial (l/J)}{\partial A} = \frac{\partial l}{\partial A} * J^{-1} - l \frac{\partial J}{\partial A} * J^{-2} \leq 0$

Table A2. Comparative statics: Case II

<i>Case II</i>		
$\frac{\partial s}{\partial c_K} = -c_K < 0$	$\frac{\partial s}{\partial c_\Delta} = 0$	$\frac{\partial s}{\partial A} = \frac{c_K^2}{A} \geq 0$
$\frac{\partial l}{\partial c_K} = -(1-c_K) < 0$	$\frac{\partial l}{\partial c_\Delta} = 0$	$\frac{\partial l}{\partial A} = (1-c_K) \frac{c_K}{A} > 0$
$\frac{\partial (s/J)}{\partial c_K} = +\frac{1}{2} > 0$	$\frac{\partial (s/J)}{\partial c_\Delta} = 0$	$\frac{\partial (s/J)}{\partial A} = -\frac{1}{2} \frac{c_K}{A} < 0$
$\frac{\partial (l/J)}{\partial c_K} = -\frac{1}{2} < 0$	$\frac{\partial (l/J)}{\partial c_\Delta} = 0$	$\frac{\partial (l/J)}{\partial A} = \frac{1}{2} \frac{c_K}{A} > 0$

We focus on Table A1. Uncertain signs of case I are discussed below.

First column. Signs of partial derivatives of the standardized rates of settlement and litigation with respect to K's cost are uncertain $\frac{\partial (l/J)}{\partial c_K} = \frac{\partial (s/J)}{\partial c_K} \leq 0$. Focus on $\frac{\partial (l/J)}{\partial c_K}$: denominator is positive and

the sign is driven by the numerator. $\frac{\partial(l/J)}{\partial c_K} < 0$ for $c_\Delta < 1-3c_K$
 $\frac{\partial(l/J)}{\partial c_K} = 0$ for $c_\Delta = 1-3c_K$. Recalling that $J = (1-c_K)$ and defining

the absolute value of the elasticity of the “demand for justice” as $\varepsilon_{J,c_K} = \left| \frac{\partial J}{\partial c_K} \frac{c_K}{J} \right|$, we can rewrite

$$c_K = \varepsilon_{J,c_K} (1 + \varepsilon_{J,c_K})^{-1} \text{ and then } \frac{\partial(l/J)}{\partial c_K} < 0 \text{ for } \varepsilon_{J,c_K} < (1-c_\Delta)(2-c_\Delta)^{-1} \equiv \hat{\varepsilon} < 1$$

$$\frac{\partial(l/J)}{\partial c_K} = 0 \text{ for } \varepsilon_{J,c_K} = (1-c_\Delta)(2-c_\Delta)^{-1} \equiv \hat{\varepsilon} < 1$$

$$\frac{\partial(l/J)}{\partial c_K} > 0 \text{ for } \varepsilon_{J,c_K} > (1-c_\Delta)(2-c_\Delta)^{-1} \equiv \hat{\varepsilon} < 1$$

standardized rate of litigation decreases with an increase in claimant's litigation cost only if the demand for justice is sufficiently inelastic. For an elastic demand for justice, the standardized litigation rate always increases when claimants' costs increase. Actually, increasing claimants' costs reduce both the amount of disputes that go in trial and the amount of disputes that access justice. This combined action can increase the standardized (and observable) rate of litigation. The opposite reasoning is valid for the standardized rate of settlement.

Third column.

$$\frac{\partial s_0}{\partial A} < 0 \text{ for } c_K < (c_K + c_\Delta)(1 + c_K + c_\Delta)^{-2}$$

$$\frac{\partial s_0}{\partial A} = 0 \text{ for } c_K < (c_K + c_\Delta)(1 + c_K + c_\Delta)^{-2} \text{ . Solving for } c_\Delta, \text{ it becomes } \frac{\partial s_0}{\partial A} = 0 \text{ for } c_\Delta = \{f_1(c_K), f_2(c_K)\}$$

$$\frac{\partial s_0}{\partial A} > 0 \text{ for } c_K < (c_K + c_\Delta)(1 + c_K + c_\Delta)^{-2}$$

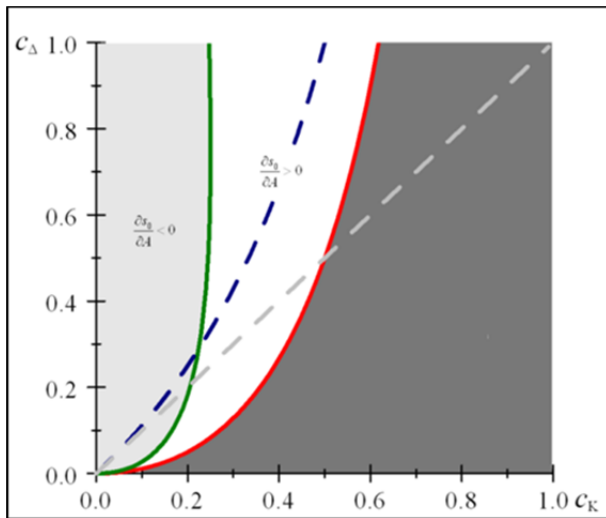
$$\frac{\partial s_0}{\partial A} < 0 \text{ for } c_\Delta > \{f_1(c_K), f_2(c_K)\}$$

$$\frac{\partial s_0}{\partial A} < 0 \text{ for } c_\Delta < \{f_1(c_K), f_2(c_K)\}$$

$$\text{where } f_1(c_K) = \frac{1}{2c_K} (-2c_K + \sqrt{-4c_K + 1} - 2c_K^2 + 1), f_2(c_K) = -\frac{1}{2c_K} (2c_K + \sqrt{-4c_K + 1} + 2c_K^2 - 1).$$

$c_\Delta = \{f_1(c_K), f_2(c_K)\}$ is represented on the $c_K c_\Delta$ -axes in the Figure A1 (green curve).

Figure A1. Effects of changes in A on the absolute rate of pooling settlement



The dashed dark line in the graph represents the elasticity of the demand for legal remedies that can be measured on the y-axis. An increase in the amount-at-stake decreases the rate of pooling settlement only when claimant's costs are low enough (approximately smaller than 0.2)/the demand for legal remedies is sufficiently inelastic (approximately smaller than 0.3). When the demand is elastic (or with unitary elasticity), an increase in the amount-at-stake enlarges the rate of pooling settlement for every value of the defendant cost.

Since $\frac{\partial s}{\partial A} < 0$ for $c_K < (c_K + c_\Delta)(1 + c_K + c_\Delta)^{-3}$, it is straightforward that the parameter restriction in terms of c_K is more binding. To have a settlement rate decreasing in A , K 's cost/the elasticity of the demand for legal remedies has to be lower than that one to have a rate of pooling settlement decreasing in A . Therefore, an increase in the amount-at-stake reduces the rate of settlement only when claimant cost is very low/demand is strongly inelastic. Obviously, $\frac{\partial s}{\partial A} > 0$ when $\frac{\partial s_0}{\partial A} > 0$. Finally, when the demand for legal remedies is elastic (or with unitary elasticity), an increase in the amount-at-stake enlarges the rate of settlement for every value of litigation costs.

Obviously, $\frac{\partial s}{\partial A} > 0$ when $\frac{\partial s_0}{\partial A} > 0$. Finally, when the demand for legal remedies is elastic (or with unitary elasticity), an increase in the amount-at-stake enlarges the rate of settlement for every value of litigation costs.

$$\frac{\partial(I/J)}{\partial A} < 0 \text{ for } c_K > (c_K + c_\Delta)(1 + c_K + c_\Delta)2(1 - c_K) \quad < 0 \text{ for } c_\Delta < c_K(3c_K - 1)(1 - (3c_K - 1))^{-1}$$

$$\frac{\partial(I/J)}{\partial A} = 0 \text{ for } c_K = (c_K + c_\Delta)(1 + c_K + c_\Delta)2(1 - c_K) \quad \text{Solving for } c_\Delta, \text{ it becomes } \frac{\partial(I/J)}{\partial A} = 0 \text{ for } c_\Delta = c_K(3c_K - 1)(1 - (3c_K - 1))^{-1}$$

$$\frac{\partial(I/J)}{\partial A} > 0 \text{ for } c_K < (c_K + c_\Delta)(1 + c_K + c_\Delta)2(1 - c_K) \quad > 0 \text{ for } c_\Delta > c_K(3c_K - 1)(1 - (3c_K - 1))^{-1}$$

Recalling that $c_K = \varepsilon_{J,c_K} (1 + \varepsilon_{J,c_K})^{-1}$, the parameter restriction can be written also in terms of elasticity of the demand for legal remedies:

$$\frac{\partial(I/J)}{\partial A} < 0 \text{ for } \varepsilon_{J,c_K} > \tilde{\varepsilon} \geq 1$$

$$\frac{\partial(I/J)}{\partial A} = 0 \text{ for } \varepsilon_{J,c_K} = \tilde{\varepsilon} \geq 1 \quad \text{where } \tilde{\varepsilon} = \frac{1}{2c_\Delta + 4} (c_\Delta + \sqrt{18c_\Delta + 9c_\Delta^2 + 1}) \geq 1$$

$$\frac{\partial(I/J)}{\partial A} > 0 \text{ for } \varepsilon_{J,c_K} < \tilde{\varepsilon} \geq 1$$

standardized rate of litigation increases with an increase in amount-at-stake only if the elasticity of the demand for justice is sufficiently low (not necessarily inelastic). For a sufficiently elastic demand for justice, the standardized litigation rate can be decreasing in A .

The opposite reasoning is valid for the standardized rate of settlement.

A.3.

$\Sigma = l\lambda + (1-J)\gamma$. Substituting by l and then by $c_K = 1 - J$ social cost of dispute resolution can be rewritten as $\Sigma = 1/2(2 - J + c_\Delta)^{-2} \lambda + (1 - J)\gamma$ for case I and $\Sigma = \frac{1}{2}J^2\lambda + (1 - J)\gamma$ for case II. Partial derivatives with respect to J are $\frac{\partial \Sigma}{\partial J} = (2 - J + c_\Delta)^{-3} \lambda - \gamma \leq 0$ and $\frac{\partial \Sigma}{\partial J} = J\lambda - \gamma \leq 0$ for case I and II respectively. By replacing again $J = 1 - c_K$ in the expressions above, the conditions to have the social cost of dispute resolution decreasing in J are: $\frac{\partial \Sigma}{\partial J} = (1 + c_K + c_\Delta)^{-3} < \gamma/\lambda$ and $\frac{\partial \Sigma}{\partial J} = 1 - c_K < \gamma/\lambda$ for case I and II respectively. The two conditions correspond to a unique condition equal for both cases:

$$\frac{\partial \Sigma}{\partial J} < 0 \text{ iff } \left| \frac{\partial l}{\partial c_K} \right| < \frac{\gamma}{\lambda}.$$

A.4.

Socially meritorious claims have been defined as those characterized by $\left| \partial l / \partial c_K \right| < \gamma / \lambda$. It is socially efficient a complete subsidization when $l/J < \gamma/\lambda$ (6.1).

For case II $\left| \partial l / \partial c_K \right| = 1 - c_K$ which is always larger than $l/J = 1/2(1 - c_K)$. Therefore it is always efficient subsidizing all socially meritorious claims falling in case II.

For case I, $\left| \partial l / \partial c_K \right| = (1 + c_K + c_\Delta)^{-3}$ is larger than $l/J = 1/2(1 + c_K + c_\Delta)^{-2} (1 - c_K)^{-1}$ for $c_\Delta < 1 - 3c_K$ corresponding to $\varepsilon_{J, c_K} < \hat{\varepsilon}$ (see A.1.). Therefore, for socially meritorious claims with elasticity of the demand for legal remedies smaller than $\hat{\varepsilon}$ condition (6.1) is always verified. For claims falling in case I and characterized by elasticity equal to larger than $\hat{\varepsilon}$, condition (6.1) has to be satisfied in order to have efficient subsidization.