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Litigation, Judicial Path-Dependence, and Legal Change

ABSTRACT: In this paper we consider the role litigation and case selection play in the process of legal change. We build upon the existing literature on the evolution of common law, and develop a model of legal evolution to examine the conditions for stability in legal systems, once we assess changes in the scope of liability and legal remedies. This paper extends the recent findings of Fon and Parisi (2002) considering the effect of judicial path dependence in the case of litigation between parties with different goals and stakes driving their decisions to litigation. In the presence of such asymmetric stakes, judicial path dependence may alternatively lead to evolutionary expansion or contraction of legal rules. We seek here to set out the conditions and the likelihood of contraction or expansion of legal rules in various litigation and judicial environments. We consider the relevance of the degree of asymmetry in the litigation stakes, the existence and nature of positive litigation costs, and the weight of past precedents on the ongoing process of legal evolution.

Due to the very nature of common law, the boundaries of legal remedies and the domain of legal protection have changed overtime. For example, a large number of situations that were outside the domain of existing legal remedies (e.g., causes of action and torts that were not recognized, losses that were not compensable, etc.) have, over time, as a result of litigation and the ensuing judicial opinions, been granted remedial protection. Yet in other areas of the law, the domain of legal remedies has remained static, while others have experienced a contraction. Current theories of legal evolution are unable to explain, let alone generate predictions, on the rationale for the changes in how these remedies are afforded greater or lesser protection. In this paper, we consider the role of litigation and case selection on the evolution of legal change. We suggest that the dynamic process of case selection, and the doctrines of precedent and stare decisis aid in explaining the different patterns of the expansion, stability or contraction in the scope of liability in various areas of the law. We study the conditions for stability versus change in legal remedies, and identify the relevance of the degree of asymmetry in the litigation stakes has on the prospect of success of legal claims seeking to either expand or limit legal remedies.

In Section 1, we briefly assess existing explanations of the process of legal change and review the seminal papers that evaluate the process of selection of disputes as an ingredient of the efficient evolution of legal rules. We suggest that these explanations, while compelling in their rights, fail to provide a framework that could be used to explain or predict different outcomes to litigation that shifts the thread of common law. In Section 2, we venture to elaborate a model to aid in such explanation and prediction. We recognize the process of selection of legal disputes as perhaps the most fundamental force of legal evolution. We formulate a simple model of path dependence in the law in which the rate of recognition of legal claims brought by plaintiffs in past cases affects the state of the law in the future. For example, it is intuitive that a prevailing rate of negative judgments on a specific legal issue further reduces the likelihood that such a claim will be victories in future cases. Likewise, a high rate of success and recognition of new types of claims and/or causes of action will increase the probability that such claims will be recognized and those rights expanded in future cases. The evolution of the law is thus affected by the rate of production (or probability) of negative and affirmative judgments. We elaborate on this concept by identifying relevant parameters for path dependence in legal evolution, and illustrate that the equilibrium rate of production of negative versus positive precedents depends on the relationship between some critical parameters of the dispute. More specifically, we show that the processes of creation and change of legal precedent is affected by the degree of asymmetry of the stakes and the probability of success of plaintiffs' claims. In Section 3, we conclude with a few summary considerations and suggestions for applications and future extensions.

1.   Legal Evolution and the Changing Boundaries of Remedies and Liability

In this Section we frame our paper in the context of the existing literature on dispute selection and legal evolution. According to the well-known efficiency of the common law hypothesis, common law rules attempt to allocate resources efficiently, typically in a Pareto or Kaldor-Hicks efficient manner. This claim has provided an integral premise of extensive research in law and economics. According to this hypothesis, first intimated by Coase (1960) and later systematized and greatly extended

by Posner (e.g., Ehrlich and Posner, 1974; Posner 1994), common law rules enjoy a comparative advantage over legislation in generating efficient rules because of evolutionary selection through adjudication and the gradual accretion of precedent.[1] Several important contributions provide the foundations for this claim, though scholars who have advanced theories in support of the hypothesis often disagree as to their conceptual basis.

The fundamental aspect of common law's efficiency and evolutionary thread is *stare decisis,*[2] Rubin (1977) argues that efficiency of the common law is best explained by noting that parties are more likely to litigate inefficient rules than efficient ones. The pressure for common law to evolve to efficiency, he argues, rests on the desire of parties to create precedent because they have interest in future similar cases. Rubin thus considers three basic situations: (1) where both parties are interested in creating precedent (because he is likely to be a repeat player, at least in some sense); (2) where only one party is interested in creating precedent; (3) and where both parties are likely to be one-time players.

When both parties have interest in future similar cases, and when the current legal rule is inefficient, Rubin claims that the party held liable has an incentive to force litigation. Parties will continue to use the courts until the rule is changed. If the current rule is efficient, however, there is no incentive to change it, so it will remain in force and litigation is unlikely to ensue. Where only one party has interest in future similar cases, however, the incentive to litigate depends on the allocation of liability. If liability falls on a repeat player, litigation likely occurs. If it falls to a one-time player, however, that party has no incentive to litigate. As a result, precedents evolve in the interested party's favor, whether or not the rule is efficient. In the event that neither party is interested in precedents, the status quo legal rule is likely to remain in force whether efficient or not. In this scenario, parties are more likely to settle out of court because they lack incentive

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[1] See however the opposing claims of some public choice theorists (most notably, Tullock, 1980 and 1997) who look at pervasive shortcomings of the common law process in the formation of legal rules. For a review of the seminal papers that contributed to the formulation of the efficiency of the common law hypothesis, and of their critics, see Posner and Parisi (1997).

[2] The legal doctrine of *stare decisis* (literally, to stand by things that have been settled) implies that courts should adhere to past legal precedent on issues of law when deciding pending cases. The doctrine is aimed at promoting certainty, consistency, and stability in the legal system and minimizing costs in the administration of justice.

to demand changes in the status quo. Rubin therefore concludes that common law becomes efficient based on the utility maximizing decisions of litigants, rather than on a judicial interest in efficiency.

Rubin's analysis was extended by Priest (1977), who articulated the idea that common law tends to develop efficient rules independent of judicial bias in decision-making. Priest asserts that efficient rules develop even in the face of potential judicial hostility toward efficient outcomes. He parts with Rubin, however, on the source of the tendency toward efficiency, rejecting Rubin's conclusion that this tendency occurs only where both parties to a dispute have interest in future similar cases and therefore have incentives to litigate. Instead, he asserts that litigation is driven by the costs of inefficient rules, rather than the desire for precedent. According to Priest's analysis, inefficient rules impose greater costs on the parties than do efficient rules, thereby making the stakes in a dispute higher. When the stakes are greater, litigation becomes more likely than settlement. Consequently, disputes arising under inefficient rules tend to be litigated more often over time than disputes arising under efficient rules. The corollary is that uncontested rules tend to be efficient. Because efficient rules are less likely to be reviewed, they tend to remain in force. Further, as inefficient rules are reviewed, the review process increases the opportunities for them to be discarded in favor of more efficient variants that will themselves be less likely to be reviewed. Thus, the legal system perpetuates selection of increasingly more efficient legal rules.

An important component of the theories advanced by Rubin and Priest are the criteria for selecting disputes for litigation. Only disputes that are actually litigated are capable of generating legal precedents. Disputes that do not lead to a filing or that are settled before final judgment have no impact on current law. Priest and Klein (1984) develop a model of the litigation process that explores the relationship between disputes that are litigated and those that are resolves via settlement. Priest and Klein show that the set of disputes that proceed to litigation constitutes neither a random nor a representative sample of all disputes. They then derive a selection hypothesis: when both parties have equal stakes in the litigation, individual maximizing decisions of the parties create a

strong bias toward a success rate for plaintiffs at trial (or appellants on appeal), regardless of the substantive law.[3]

The theories of Rubin, Priest, and Priest and Klein provide the essential ingredients for the theory of adverse selection in litigation advanced by Fon and Parisi (2002). Fon and Parisi's model parts from those of the previous literature in several important respects. Unlike Rubin, their results do not rely on the parties' incentives to create precedents. The selection of disputes does not occur because parties have asymmetric interest in future similar cases and therefore have incentives to avoid unfavorable precedents. In Fon and Parisi, litigation is exclusively driven by the attempt to maximize returns from the case, rather than by the desire for precedent. This paper follows Fon and Parisi, assuming that plaintiffs are rational and pursue litigation only when the expected net return from the case is positive. This implies that both one-time and repeat litigants jointly contribute to the process of legal evolution. In this respect, we are parting from Priest's analysis. Inefficient rules, we concede, impose greater costs on the parties subject to them over time more than efficient rules, and thus may be litigated more often than disputes arising under efficient rules. However, avoidance of inefficient rules is only a small factor in the parties' cost-benefit calculation. We assume that the opportunity to file a case initially is essentially controlled by the plaintiff, creating an opportunity for adverse selection. As noted in Priest and Klein, the set of disputes selected for litigation constitutes neither a random nor a representative sample of the set of all disputes: judges can only rule on cases they see. Fon and Parisi build upon existing literature on the evolution of the common law, considering a model of legal evolution in which judges have varying ideologies and propensities to extend the domain of legal remedies and causes of action.[4] Plaintiffs bring a case to court if the expected net return

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[3] When the assumption that both parties have equal stakes in the dispute is relaxed (e.g., where one party is a repeat player and has a stake in future similar cases), the rate of success in litigation begins to deviate from the hypothesized baseline, and the model predicts that the repeat player prevails more frequently. Priest and Klein present a great deal of data both from their own empirical investigations and from major empirical studies of the legal system since the 1930s. While they caution against concluding that these data confirm the selection hypothesis, largely due to measurement problems, the data are nonetheless encouraging.

[4] The selection hypothesis advanced by Fon and Parisi (2002) differs from Priest and Klein (1984) and Hadfield (1992). Along the lines of Rubin and Bailey (1994), Fon and Parisi develop an alternative model of legal evolution, which takes into account some important public choice components. Unlike Rubin and Bailey, who focus on the role of lawyers in changing the law, Fon and Parisi consider the role of judges. In

from the case is positive. The net expected value of the case depends on the objective merits of the case, the state of the law, and the ideological propensity of the judge. Their model showed that when the policy views of the judges are capable of affecting the decision of marginal cases, case selection might create a strong bias toward filing marginal cases in pro-plaintiff jurisdictions, i.e., forum shopping. This means that progressive judges have a greater opportunity to create new legal precedents than conservative judges. In their model, this generated a potential monotonic increase of remedial protection in the legal system. More generally, adverse selection mechanisms were shown to have a potentially pervasive effect on the process of legal change.

More specifically, their result shows that, for the special case of litigants who have similar stakes in a matter, the combined presence of differences in judges' ideology and plaintiff's case selection generates a steady, consistent trend in the evolution of legal rules and remedies. In this paper, we revisit the conclusions of Fon and Parisi to consider the more general and realistic case of asymmetric stakes in litigation.

In real-life situations, very few areas of the law are likely to generate litigation with equal stakes. We therefore consider the conditions for stability and change in legal systems in relation to the degree of asymmetry in the litigation stakes and the likelihood of success in litigation. The identification of these critical parameters for stability and change may explain some of the different patterns of evolution in the levels of remedial protection and gradual recognition of plaintiffs' actions in different areas of the law that are seen when one studies legal history.

2. **Litigations Stakes, Probability of Success, and Selection of Legal Disputes: An Economic Model of Legal Evolution**

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their model judges have different ideological views and plaintiffs decide whether to file suit based on the likelihood of success in the specific court. As a result, the parties' rational decisions create a strong bias toward filing in liberal jurisdictions. This means liberal judges have a greater opportunity to create new legal precedents than conservative judges.

We consider a model of civil litigation. Litigants are faced with a dispute where the probability of success for plaintiff is p. Following Priest and Klein (1984) and Fon and Parisi (2002), we assume that potential litigants form rational estimates of the probability of success in litigation and take them into account when evaluating expected returns from their cases. These predictions, although unbiased, have some margin of error, which explains why some disputes are litigated, rather than settled before trial.[5] When a plaintiff verdict is obtained the judicial award is W. In the case of a verdict in favor of defendant, the plaintiff pays an amount L to the defendant. In this context, litigation would have symmetric stakes if $W = L$. It is imperative to note that plaintiffs always face the cost of litigation C, (filing fees and cost of bringing the action) which will not be recovered even in case of successful filing.[6] Plaintiffs are rational and decide whether to bring a case to court. Cases are filed whenever the expected net return from the case is positive. The expected return of the litigant is given by the following:

$$R = p \cdot W - (1 - p) \cdot L - C , \qquad (1)$$

To clarify the impact of the magnitude of asymmetric stakes on the decision problem, we highlight the win-loss ratio W/L and concentrate on the normalized expected return function by rewriting equation (7):

$$\frac{R}{L} = p \cdot (\frac{W}{L} + 1) - (\frac{C}{L} + 1) . \qquad (2)$$

Taking the expected return function R/L as a function of p, we can see that its slope is $\frac{W}{L} + 1$, the horizontal intercept is

$$p = \frac{C + L}{W + L} , \qquad (3)$$

and the vertical intercept is

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[5] In real life this information may be available before filing or after filing. In both cases, rational estimation of the probability of success influences the decision whether to pursue, or to continue, litigation. Only those cases that pass this initial phase potentially lead to law-creating legal precedents.
[6] These values should be interpreted as the optimizing values, i.e., the optimal level of expenditure in litigation, and the resulting probabilities of success and expected judicial awards.

$$\frac{R}{L} = -(1+\frac{C}{L}) \ . \tag{4}$$

We proceed in our analysis by considering the relevance of litigation costs and symmetry of litigation stakes on the process of legal evolution. We first investigate the case in which litigation is characterized by equal stakes and where there are no litigation costs (Figures 1a and 1b). This basic case will serve as a benchmark for the study of the more realistic cases of expensive and asymmetric litigation.

2.1   Symmetric Stakes and Costless Litigation

In Figure 1a we show the expected return as a function of the probability of winning, p, given symmetric stakes $W/L = 1$ and costless litigation $C = 0$.[7] Note that in this limit case, all filings with a probability of success p less than half, $p < 1/2$, the expected return is negative, and the plaintiff would rationally choose not to file suit. For all cases with probability p such that $p > 1/2$, the expected return becomes positive and rational plaintiffs would rationally choose to file suit. It is interesting to note that in this special case, the subset of cases that are likely to be filed has a probability of success greater than ½. As it will be discussed further, this has important implications for our model of path dependence and legal evolution. Similar to what was shown in Fon and Parisi (2002), if there is prevailing rate of positive judgments with respect to some new legal issue or interpretation of existing causes of action, the recognition of such legal claims in future disputes will be facilitated by the presence of a majority of authority.

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[7] From the point of view of the plaintiff's filing decision, costless litigation may be result of a loser-pays-all system, when filing will lead to a certain victory or by a pro-bono or subsidized litigation. Besides these exceptional cases, the case of costless litigation has no easy correspondence to real-life scenarios. It is nevertheless a useful stepping-stone for the understanding of the more complex case of costly litigation choices.
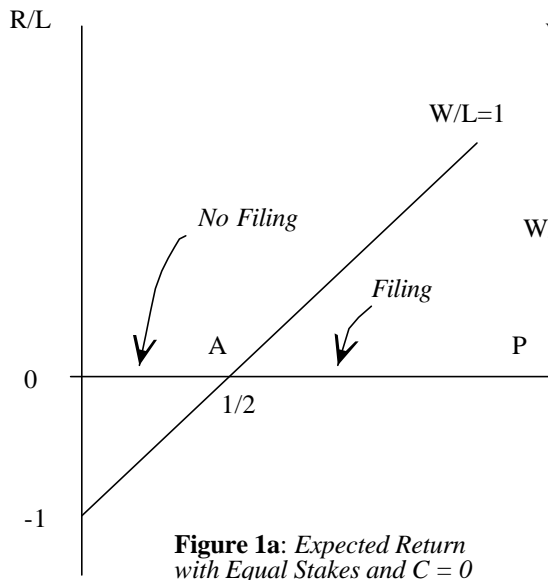
Figure 1a: *Expected Return with Equal Stakes and C = 0*
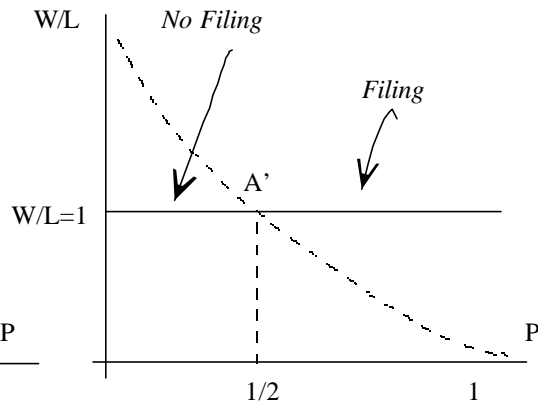
Figure 1b: *Filing Decision with Equal Stakes and C = 0*

Figures 1a and 1b show the filing decision as a function of stakes and probability. The horizontal line $W/L = 1$ highlights the case of symmetric stakes. The dotted curve in Figure 1b shows a general zero-expected-return curve (i.e., the set of points that represent break-even litigation) for the case of zero litigation costs. This helps us identify the relationship between the stakes and the probability of winning on such break-even margin. The dotted curve represents the hyperbola $\dfrac{W}{L} = \dfrac{1}{P} - 1$ and it shows the tradeoff between the win-loss ratio W/L and p.[8]

For the understanding of the filing decision under equal stakes and costless litigation, we should concentrate on the straight line located at $W/L = 1$. The intersection between such equal-stakes line $W/L = 1$ and the break-even litigation curve (dotted curve), is given by point A' in Figure 1b, which corresponds to point A in Figure 1a. For all cases with probability of success p such that $p < 1/2$, no suits are filed. These

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[8] This is rewritten from (3) with $C = 0$.

correspond to the points lying to the left of A' on the horizontal line $W/L = 1$. All cases with probability p such that $p > 1/2$, the litigant files suit. These correspond to points lying to the right of A' on the horizontal line $W/L = 1$.

2.2   *Asymmetric Stakes and Costless Litigation*

We shall now extend our model to consider situations where litigants face different litigation stakes. Recall that in our model when a plaintiff verdict is obtained, the award is *W*. Conversely, when a defendant's verdict is obtained the plaintiff pays an amount *L* to the defendant. In the previous section we considered the special case where *W = L*. We shall now consider the more general case where *W* ¹ *L*. It should be noted that asymmetric stakes are likely to be expected in most litigation scenarios, since the potential liability of the plaintiff towards his defendant in case of unsuccessful action is generally smaller than the hoped-for award, in the event of a successful filing.[9] Although our model with asymmetric stakes allows for both forms of asymmetry, our discussion will be limited to the more realistic case of *W > L*. Symmetric results would obtain in the complementary case of *W < L*. We continue to assume costless litigation *C* = 0. Such assumption will be relaxed in the following Section.

We illustrate the present case of asymmetric-stakes and costless litigation in Figures 2a and 2b. As we can see from Figure 2a, the expected return line for the asymmetric stakes case is steeper than the equal stakes case considered above.[10] Point *B* in Figure 2a and point *B'* in Figure 2b correspond to zero expected return with

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[9] For example, in most situations of tort litigation, litigants face asymmetric stakes: if the plaintiff pursues a chance of winning an amount *W*, he seldom faces a symmetric chance of losing an equal amount when he loses his case. In this context, procedural rules shifting the litigation costs on different parties (e.g., English rule systems), or fee arrangements (e.g., contingent fees, pro-bono litigation) or other situations involving limitations on the liability of one party (e.g., limited liability litigants, insolvent parties, etc.) may substantially affect the results of the present analysis. The relevant margin for legal evolution is affected by all such factors since they would change the proportion of positive versus negative precedents generated by the marginal cases filed (i.e., those factors will have an impact on the percentage of cases with positive expected payoff which will be rationally filed and would have a probability of success less than the critical value required for legal evolution).

[10] This is true because the slope of the equal stakes expected return line is 2, while the slope for the asymmetric stakes expected return line is $1 + W/L > 2$.

$p = \dfrac{L}{W+L} = \dfrac{1}{1+W/L}$. For all cases corresponding to $p < \dfrac{1}{1+W/L}$, the expected return

from litigation is negative, and the plaintiff would rationally avoid filing suit. For all

cases corresponding to $p > \dfrac{1}{1+W/L}$, the plaintiff would file suit since the expected

return from litigation is positive.

Figure 2a: *Expected Return with Asymmetric Stakes and C = 0*

Figure 2b: *Filing Decision with Asymmetric Stakes and C = 0*
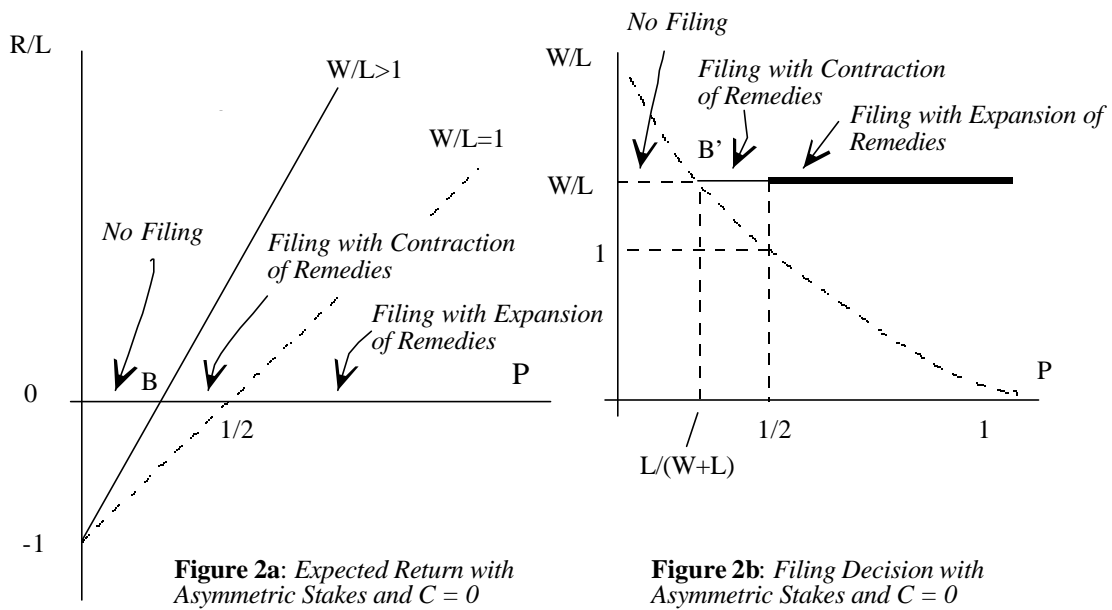
In order to understand the impact of asymmetries in litigation on the process of
legal evolution, it is important to realize that a case may be rationally filed even when the
probability of success is less than 50 percent. However, although privately rational, the
filing of suits in such low probability cases may have a negative impact on the likelihood
of success of future similar cases. When past litigation generates a flow of negative
precedents that outweighs the positive precedents, such that the percentage of positive
precedents alls below the critical *evolutionary threshold*, *p**, it is conceivable that the

process of legal evolution may generate a gradual contraction in the scope of remedies.[11] To the extent that the evolutionary threshold is set at $p^* = \frac{1}{2}$, no such contraction could obtain in the case of symmetric stakes.

Lastly note that for all cases corresponding to $p > p^*$ (in our case, $p > 1/2$), the probability of success for a break-even litigation increase above the evolutionary threshold and evolutionary expansion would likely occur. This is true because more positive precedents will be generated with resulting path dependence in the evolution of case law. These conditions foster an expansion in the scope of remedies and legal protection.

2.3   Asymmetric Stakes and Costly Litigation

We shall now turn our attention to the case with positive litigation cost, considering the impact of such costs on the process of case selection and evolution examined above. In Figure 3, we compare the zero-expected-return curve for positive litigation cost, $\dfrac{W}{L} = \dfrac{1}{P}(\dfrac{C}{L}+1)-1$ (represented as the darker hyperbola marked as $C > 0$)[12] to the zero-expected-return curve for the case of zero litigation cost (represented as the lighter hyperbola marked as $C = 0$).[13]

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[11] We could easily contemplate an evolutionary threshold different from the value of $p = \frac{1}{2}$. For example, some legal systems may require more than half of the authority in favor of a certain solution before construing such rule as persuasive or binding under case law (see, e.g., the Louisiana system of *jurisprudence constante*). Conversely, other systems may give greater weight to a minority view, when it recognizes a new cause of action or expands the scope of existing remedies (e.g., in many ways, leading cases in a traditional Common law system may be regarded as examples of this category). In both such situations, the evolutionary threshold marking the boundary between situations of legal expansion and situations of legal contraction would not coincide with the vertical line $p = \frac{1}{2}$. More conservative thresholds set at $p^* > 1/$ would increase the region of legal contraction, while more progressive thresholds set at $p^* < \frac{1}{2}$ would facilitate the evolutionary expansion of remedies. In the context of our model, the different positioning of the evolutionary threshold may provide an explanation of the different trends of expansion of tort liability in different legal systems. For example, the stylized fact that the expansion of tort remedies is more pronounced in the United States than it is in Europe (Tellinghast et al., 1995) can be explained by the fact that the evolutionary threshold in Civil law jurisdictions is shifted to the right of the standards of precedential value accepted in Common law jurisdictions.

[12] Note that the zero-expected-return curve for $c > 0$ asymptotically approaches the vertical axis and ends at $W/L = C/L$ when $p = 1$.

[13] The equation for the zero-expected-return is simply rewritten from (3). This equation highlights the relation between stakes and probabilities to break even when a suit is brought to court.

We consider the effect of positive litigation costs in both symmetric and asymmetric litigation. Three different win-loss ratios are presented in Figure 3. For any given win-loss ratio, all points to the left of the zero-expected-return curve correspond to cases with negative expected returns. Rational plaintiffs would not file suits in this region. Hence, for example, in the case of symmetric stakes, no filing would take place in the region between the vertical axis and point D.
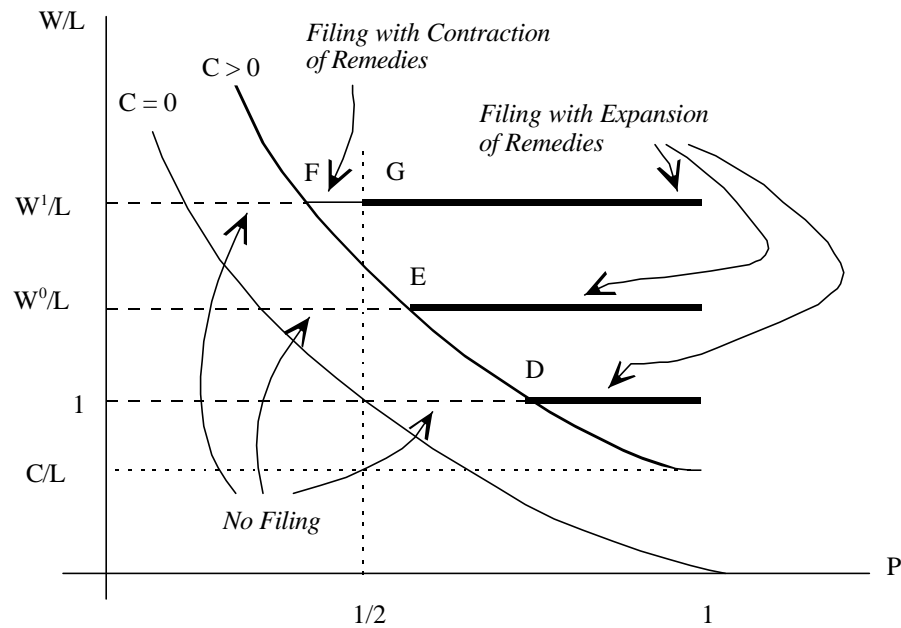
Figure 3: *Filing Decision with C > 0*

On the other hand, for any given win-loss ratio, all points to the right of the zero expected return curve correspond to cases with positive expected returns. These cases are potential candidates for filing by rational plaintiffs. In such region of positive expected return, if the probability of winning is greater than the critical *evolutionary threshold*, $p*$ (in our example, $p* > 1/2$), evolutionary expansion may obtain. Recall in fact that when past litigation generates a percentage of positive precedents that falls above $p*$, legal evolution may induce a gradual expansion of the scope of remedies. For example, given the intermediate asymmetric stakes W^0/L in Figure 3, the region to the right of point E would likely be characterized by evolutionary expansion. This is true because the

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probability of success required to induce litigation also suffices to induce evolutionary expansion. These conditions would thus foster an expansion in the scope of remedies and legal protection.

Meanwhile, for all suits with probability p falling to the right of the zero expected return curve but to the left of the critical evolutionary threshold, $p < p*$ (in our example, $p < \frac{1}{2}$), cases would be filed but the small percentage of positive precedents would likely lead to an evolutionary contraction of remedies. For example, given the high stake ratio W^1/L in Figure 3, the region between points F and G would be characterized by active litigation but contraction in the scope of remedies. This is true because the probability of success sufficient to generate break-even litigation falls below the evolutionary threshold $p*$ and evolutionary contraction would follow as a consequence of the high rate of negative precedents generated overtime. In this region, we could thus observe a contraction in the scope of remedies and legal protection.

2.4   Litigation and the Evolutionary Expansion of Legal Systems

We now consider the effect of doctrines of precedent and other forms of judicial path dependence on the evolution of legal rules. We begin with the assumption that judges give deferential weight to both positive and negative precedents. Positive precedents become persuasive authority when their density in past cases falls above our critical threshold, $p*$ (which we assumed to be set at $p* = \frac{1}{2}$ in our illustrations). Negative precedents influence future decisions when the density of positive precedents falls short of such threshold.[14]

The above analysis has revealed that, in the case of asymmetric stakes, judicial path dependence may lead to evolutionary expansion or contraction of legal remedies.

In Figure 4 we bring together our findings for different levels of asymmetry in the litigation stakes, when litigation involves a positive litigation cost C and a fixed loss L. All points to the southwest of the zero-expected-return curve (i.e., break-even litigation

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[14] For the purpose of the present analysis, we assume that the threshold $p*$ is exogenously determined by the legal system. Obviously, the findings of this paper should have normative implications and illuminate the institutional choice of the optimal threshold $p*$.

curve) correspond to cases that generate negative expected payoffs and are thus not filed. This no-filing region is given by $\left\{ (p, W/L) / p < \dfrac{C+L}{W+L} \right\}$. All cases to the northeast of the zero-expected-return curve correspond to cases that generate positive expected payoffs and are thus plausible candidates for filing. The area to the northeast of the zero-expected-return curve and to the left of $p = p*$ (in our case, $p = 1/2$) is given by $\left\{ (p, W/L) / \dfrac{C+L}{W+L} \leq p < \dfrac{1}{2} \right\}$. In this area we could possibly observe an evolutionary contraction in the scope of remedies. The area to the northeast of the zero-expected-return curve and to the right of the critical threshold $p = p*$ (in our case, $p = 1/2$) is given by $\left\{ (p, W/L) / \dfrac{C+L}{W+L} \leq p \ and \ \dfrac{1}{2} < p \leq 1 \right\}$. In this area, we could conversely observe an evolutionary expansion of legal remedies. Lastly, the region characterized by a stable domain of legal remedies is given by $\left\{ (p, W/L) / p = \dfrac{1}{2} \geq \dfrac{C+L}{W+L} \right\}$. This is represented by the darker portion of the vertical line at $p = 1/2$ which lies above the zero-expected-return curve.
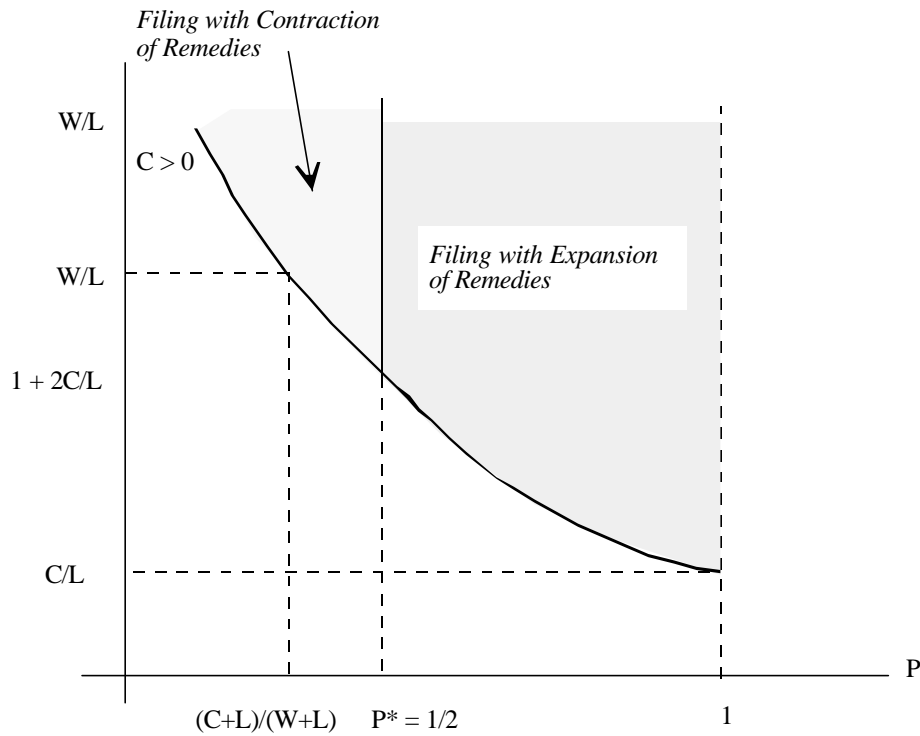
Figure 4: *The Evolution of Legal Remedies*

With asymmetric litigation, cases can be rationally filed even when the probability of success is small. As a result, the number of negative precedents may outweigh the number of positive precedents. When the percentage of positive judgments falls below *p**, the filing of the first cases leads to the consolidation of negative authority. This process of judicial path dependence may induce a gradual contraction in the scope of remedies. Conversely, if the probability of positive judgments falls above *p**, initial filings may be followed by an evolutionary expansion of remedies. Figure 4, depicts some of the relevant tradeoffs in this process of legal evolution. An increase in the degree of asymmetry in the litigation stakes renders smaller probability cases worthy of pursuit. This may lead to an increase of the region with evolutionary contraction. The presence of positive litigation costs, on the contrary, increases the probability of success necessary to justify litigation. This, in turn, may lead to an increase of the region with evolutionary expansion. The combined effect of asymmetric stakes and positive litigation costs is of

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particular interest at this point. Positive (and non recoverable) litigation costs offset the impact of litigation asymmetries. When litigation costs equal the value   , parties would behave as if the litigation stakes were symmetric. This would foster greater evolutionary expansion. In the general case, when litigation costs are equal or greater to the critical value   , parties would only file in the $p > p^*$ region, tilting the balance entirely in favor of evolutionary expansion. Finally, Figure 4 shows that the relative size of the regions with evolutionary expansion or contraction critically depends on the institutional choice of p^*. A change in the institutional weight of past precedents may have a substantial impact on the direction that the process of legal evolution may take. For example, an increase in the level of case consistency required for an emerging jurisprudential trend to become binding case law may reduce the area of evolutionary expansion and increase the opportunity for evolutionary contraction.

3.   Conclusion

As is well known in the literature (e.g., Priest and Klein, 1984), the selection of disputes for litigation is biased by the parties' strategic litigation choices. Following the previous work by Fon and Parisi (2002), in this paper we have examined the role of case selection and litigation in the evolution of legal remedies. Fon and Parisi considered the case of litigants facing symmetric stakes and allowed for judges to differ in their ideological or policy views.[15] The results of the present paper do not rest on judges' ideological decision-making. Rather, all judges give deferential weight to past decisions, when the weight of authority falls above a threshold, p^*, exogenously determined by the legal system. Our extension reveals that the monotonic increase in the scope of remedies is not a necessary consequence of adverse selection in litigation. In many ways, the results complement those reached in the earlier literature and may serve as important building blocks for the study of the more complex interaction between ideological judicial intervention and path dependence in judicial action.

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[15] In Fon and Parisi (2002) parties had equal stakes and plaintiffs controlled the initial filing. The essence of their model was agnostic on the actual direction of legal evolution, depending on the different opportunities to control the filing of marginal cases and predict the ideological views of the adjudicating courts. The model predicted that in the more frequent case of plaintiffs having better control over whether and where to file claims, the stock of precedents would increasingly expand the scope of remedial protection.

This paper has extended the previous results considering the effect of judicial path dependence in the case of litigation with asymmetric stakes. Most importantly, in the case of asymmetric stakes, judicial path dependence is likely to lead to evolutionary expansion or contraction of legal remedies, as demonstrated. What distinguishes asymmetric from symmetric stake litigation, is that cases can be rationally filed also when the probability of success are fairly small. The result is that a large number of negative precedents (e.g., those affirmatively denying the recognition of new cause of action or restrictively interpreting the scope of application of an existing remedy) may be produced. When the percentage of positive judgments falls below the level of support that the legal system in question considers necessary before widespread judicial recognition occurs, an initial wave of filing may be followed by a gradual implosion. Conversely, in other situations instances of judicial innovation may be followed by evolutionary expansion, such that a small fraction of early favorable decisions could lead to wider acceptance and eventually consolidate into a binding doctrine. In this paper we set out the conditions for the different evolutionary outcomes of various litigation environments. We considered the relevance of the degree of asymmetry in the litigation stakes, the presence of positive litigation costs, and the weight of precedents on the process of legal evolution.

Our analysis offers a benchmark for the comparative analysis of different doctrines of precedent and provides insights to the institutional design of judicial lawmaking and the importance of giving the optimal weight to precedent in a variety of dynamic settings. Future work should examine the fitness of our model of legal evolution in explaining the changing patterns of expansion of legal remedies, and the varying tendencies of legal systems to grant increasing levels of relief for plaintiff's claims (e.g., situations that were once considered outside the domain of compensable harm are gradually granted protection in the law). Additionally, further theoretical extensions should consider the effects of adverse selection and judicial path-dependence in conjunction with different procedural systems and alternative fee-shifting arrangements.

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