

The Dynamics of Legal Systems

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Motivation

- ▶ Literature on the comparison between legal systems
 - ▶ the *quality* of the rules produced by different legal systems and of their enforcement (La Porta, Lopez de Silanes and Shleifer, 2008).
 - ▶ adaptability as a determinant of success for a legal system (Beck and al., 2003)
- ▶ Adaptability channel :
 - ▶ legal traditions differ in their ability to adjust to changing (commercial) circumstances
 - ▶ legal systems that adapt quickly to minimize the gap between the contracting needs of agents foster economic development more effectively than would more rigid legal traditions.

Motivation

- ▶ Authors working along those lines focus on the substantive content of legal rules :
 - ▶ corporate law or antitrust statute, law governing the enforcement of contracts or property rights.
 - ▶ relatively little attention has been paid to the process that brings about such rules.
- ▶ Some exceptions :
 - ▶ procedural formalism (Dankov et al., 2003)
 - ▶ isolation of courts from political control (Mahoney 2001, Glaeser and Shleifer, 2002)
 - ▶ accumulation of legal (human) capital (Hadfield, 2008) : quality of legal adaptation depends on "the institutional determinants of judicial incentives"

- ▶ issue addressed here :
- ▶ courts are fed with cases through litigation.
- ▶ the decision of which cases to litigate is up to private parties.
- ▶ to gain a better grasp of the legal process, it is crucial to take into account the dynamic interaction between courts as producers of information about the law, and potential litigants as receivers of such information.

- ▶ goals of the paper :
- ▶ a dynamic modelization in which the parties' decision whether to litigate depends on information produced by courts and, vice versa, the courts involvement in the lawmaking process depends on the cases proposed by the parties.
- ▶ provide insights into the process of adjudication and lawmaking by courts.
- ▶ focus on the process of rule formation and not on the quality of the rules produced.
- ▶ we depart from most of the previous literature on the topic.

- ▶ Posner's hypothesis :
- ▶ the legal system in common law jurisdictions exhibits a cyclical pattern concerning the rate of litigation and the degree of uncertainty of the law.

"If [legal uncertainty] is great, there will be much litigation [...]. But since litigation [...] generates precedents, the surge in litigation will lead to a reduction in legal uncertainty, causing the amount of litigation to fall in the next period. Eventually, with few new precedents being created, legal uncertainty will rise, as the old precedents depreciate (because they are less informative in a changed environment), and this uncertainty will evoke a new burst of litigation and hence an increased output of precedents."

- ▶ Some other references :
- ▶ many evolutionary metaphors in the legal literature (Hathaway, 2001)
- ▶ see e.g. justice Cardozo, Holmes,... : "natural adaptation of the law"
- ▶ the model of the common law adopted by many scholars is a legal version of the Darwinian paradigm.
- ▶ Evolution often refer to path dependency (Thelen 2003)

Model

- ▶ litigation between two risk-neutral agents
- ▶ The plaintiff seeks compensation from the defendant for an amount D (the harm).
- ▶ The parties can either settle for an amount $S \geq 0$ or go to trial.
- ▶ if necessary, a court will assess the merit of the case and award the plaintiff damages equal to pD , with $p \in [0, 1]$.

Model

- ▶ legal uncertainty makes it difficult for the parties to predict what level of p the court will apply.
- ▶ each party derives an estimate of p : p_{Π} for the plaintiff and p_{Δ} for the defendant.
- ▶ Density function is $f(p; \bar{p}, \sigma)$ and cumulative distribution function is $F(p; \bar{p}, \sigma)$.
- ▶ The mean μ of the distribution indicates the merit of case (i.e. the expected value of p).
- ▶ the variance σ^2 indicates the uncertainty of the case.

Model

- ▶ When deciding whether to settle or to litigate, the parties compare the expected outcome from litigation with the settlement amount S .
- ▶ Normalizing the settlement costs to zero, let c_{Π} and c_{Δ} be the positive litigation costs borne by the parties under the American rule.
- ▶ necessary and sufficient condition for litigation :

$$p_{\Pi} - p_{\Delta} > \frac{c_{\Pi} + c_{\Delta}}{D} \equiv r.$$

Model

- ▶ The ex post probability of litigation can be estimated from the beliefs distribution :

$$\begin{aligned} L &\equiv P(p_{\Pi} - p_{\Delta} > r) \\ &= \int_r^1 F(p - r) f(p) dp \end{aligned}$$

L increases in σ and decreases in r while it is constant in p .

Model

- ▶ Let us focus on the effect of σ on L and keep all other parameters constant.
- ▶ the litigation rate at time t is a function of the divergence in the parties' expectations :

$$L(t) = g^{-1}(\sigma(t)) \quad (1)$$

where g^{-1} is a strictly increasing function.

- ▶ A natural process of obsolescence—due to social, economic or technological changes—makes legal rules progressively less in tune with the underlying characteristics of conflicts.

Model

- ▶ The process of obsolescence makes the divergence in the parties' expectations $\sigma(t)$ increase over time as it becomes more difficult to predict the court decision.
- ▶ A countering force is offered by the production of information by the court, which reduces the divergence of expectations at a certain rate.
- ▶ Keeping the rate of obsolescence constant, we can write :

$$\frac{d\sigma(t)}{dt} = f(U(t)) \quad (2)$$

where f is a strictly increasing function and $U(t)$ is an index of the uncertainty of law at time t .

Model

- ▶ A natural way to formalize the production of information is simply to look at the number of precedents $n(t)$ issued at time t
- ▶ more precedents produce more information. Thus, we can write :

$$U(t) = G^{-1}(n(t)) \quad (3)$$

where G^{-1} is a strictly decreasing function.

Model

- ▶ the number of precedents produced at time t varies depending on the number of cases filed at that time (incoming cases put pressure on the court to speed up decisions).
- ▶ Denoting by N the number of disputes arising, we have that $NL(t)$ cases will be filed at time t .
- ▶ Keeping N constant, we can write :

$$\frac{dn(t)}{dt} = F(L(t)) \quad (4)$$

Dynamics of litigation and uncertainty

- ▶ From the preceding equations, we obtain the system governing the rate of litigation and the degree of uncertainty :

$$\left\{ \begin{array}{l} L'(t) = \frac{f[U(t)]}{g'[L(t)]} = \frac{\frac{d\sigma(t)}{dt}}{\frac{dL}{d\sigma(t)}} \\ U'(t) = \frac{F[L(t)]}{G'[U(t)]} = \frac{\frac{dn(t)}{dt}}{\frac{dn(t)}{dU}} \end{array} \right. \quad (5)$$

Dynamics of litigation and uncertainty

- ▶ The solution to (5) gives the stationary point of the legal system.
- ▶ This point is characterized by :
 - ▶ a litigation rate : $L^* = F^{-1}(0)$
 - ▶ a level of uncertainty : $U^* = f^{-1}(0)$
- ▶ At this point, the rate of change is zero for both variables :
$$\frac{dL(t)}{dt} = \frac{dU(t)}{dt} = 0.$$

Dynamics of litigation and uncertainty

- ▶ Suppose that - initially - the legal system is such that $L(0) = L^*$ and $U(0) = U^*$, neither litigation nor uncertainty change over time.
- ▶ the system is completely stable :

$$\begin{aligned}L(t) &= L(0) = L^* \\U(t) &= U(0) = U^*.\end{aligned}$$

Dynamics of litigation and uncertainty

- ▶ Suppose that initial conditions depart from the stationary point.
- ▶ litigation and uncertainty will typically follow a motion that can be described by transforming (5) in an algebraic equation :

$$h(x) = \int^x F(S) g'(S) dS$$

$$H(x) = \int^x f(S) G'(S) dS$$

Dynamics of litigation and uncertainty

- ▶ By totally differentiating $h(L(t)) - H(U(t))$ we obtain a "phase curve" :

$$h(L(t)) - H(U(t)) = \text{constant}$$

- ▶ If this phase curve is closed, the point $[L(t), U(t)]$ moves periodically in a cycle.
- ▶ conditions : existence and unicity of $f^{-1}(0)$ and $F^{-1}(0)$.
- ▶ the stationary point is the center of the trajectory (ref. metaphor).
- ▶ considering legal origins (e.g. common law or civil law) equilibria and trajectories are certainly different.
- ▶ legal evolution is directly constrained by history. Impossible to change the trajectory without a shock !

Interpretation of Posner's hypothesis

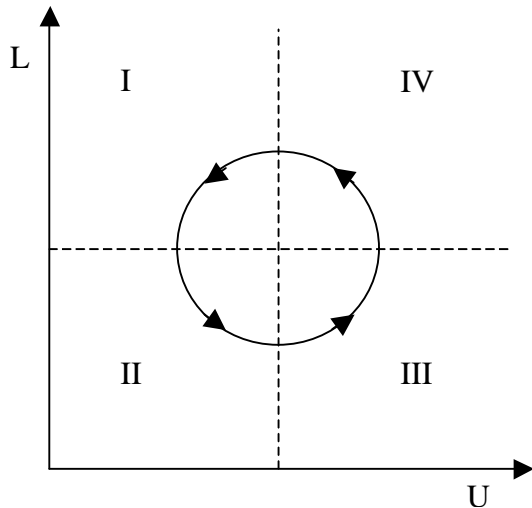


FIG.: The legal cycle

Conclusion

- ▶ In traditional approach, the litigation rate should respond immediately to changes in the predictability of the outcome of trials, and hence to uncertainty of law.
- ▶ Instead, we consider a framework in which responses are somewhat delayed.
- ▶ reasons for delays : congestion effects and rigidities inherent to the functioning of legal institutions.
- ▶ Compare with path dependency models : "legal change is unpredictable" (Hathaway, 2001).
- ▶ Here, we agree on the importance of rigidities, but legal evolution is, at least, partially predictable.
- ▶ To do : relation with efficiency ? empirical investigations ? implications for legal policies ?

Extension : dynamic impact of shocks

- ▶ an exogeneous event could imply a legal change : the state can decide to modify the cost of trial, cut-backs in the number of judges, introduce improvements in the judicial selection process, promote ADR methods to alleviate the judicial caseload, or better means of monitoring judges for possible misconduct or change procedural rules, etc.
- ▶ to explain the nature of legal change, use the average values of U and L .

Extension : dynamic impact of shocks

- ▶ The average values for litigation and uncertainty on a period T are given by :

$$L^* = F^{-1}\left(\frac{1}{T} \int_0^T F(L(t)) dt\right) = F^{-1}(0).$$

and

$$U^* = f^{-1}(0).$$

Extension : dynamic impact of shocks

- ▶ Suppose the legal system enters in a phase of expansion (more judges, changes in legal costs...) :
 - $f(x)$ becomes $f_{\varepsilon}(x) = f(x) + \varepsilon_1$
 - $F(x)$ becomes $F_{\varepsilon}(x) = F(x) + \varepsilon_2$ with $\varepsilon_i > 0$.
- ▶ Consequently, we have new average rates of litigation and uncertainty (remember that F^{-1} is increasing and f^{-1} is increasing) :

$$L^{**} = F^{-1}(-\varepsilon_1) < F^{-1}(0) = L^*$$

$$U^{**} = f^{-1}(-\varepsilon_2) < f^{-1}(0) = U^*$$

- ▶ the legal system is characterized (on average) by a decrease in uncertainty and a decrease in litigation.

Extension : dynamic impact of shocks

	Contraction of n	Expansion of n
Expansion of σ	{ uncertainty decreases litigation increases	{ uncertainty decreases litigation decreases
Contraction of σ	{ uncertainty increases litigation increases	{ uncertainty increases litigation decreases

Useful for policy makers !