4 The optimal timing of lawmaking

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Introduction

In a dynamic society, laws will need to change as economic relationships change, as technological innovations take place, as social customs evolve. Old laws, broadly defined to include legislation, custom, and judge-made law, become increasingly inefficient in the new environment. The question then is: what is the optimal timing of lawmaking?

Customary law, by definition, changes by an endogenous process, and will not be addressed here. The focus of the discussion will be legislation, where the element of choice is substantial, and the agency problem consequently a matter of importance. In common law jurisdictions, judge-made law remains an important source of law making. While judges have far less discretion than legislators in the matter of the hearing of a case, they do exercise some control over the scope of the decision rendered, and therefore have some control of the timing of lawmaking. Nonetheless, legislation remains the type of lawmaking where timing matters the most, and will be the focus of the discussion here, including the inherent agency problems and the timing rules that emerge to address these issues.

The process of lawmaking is analogous to investment (Parisi, Fon and Ghei 2004; Parisi and Ghei 2005). More specifically, lawmaking shares three critical characteristics with investments in physical assets: irreversibility in investment (sunk costs); uncertainty about future returns; and discretion with respect to the timing of investment. Once enacted, the costs sunk into legislation cannot be recovered if it turns out the legislation proves to be ineffective or worse. In fact, repeal comes with additional costs.

The ability to delay an irreversible investment profoundly affects the logic of whether and when to invest (see e.g. Pindyck 1991; Dixit and Pindyck 1994). In particular, ignoring the value of the option in the optimization calculation will result in the investment being undertaken too soon.

The application of the traditional net present value rule would dictate investment when the present expected value of the investment, the legal rule in this case, is equal to or greater than the cost of enacting the legislation. This rule, however, fails to take into account the value of the option when the costs of the legal intervention are irreversible and the innovation can be
dynamic models from the investment literature model to explore the problems of
lawmaking under uncertainty and to illustrate the effects of the option to delay
legal intervention on the optimal timing of lawmaking. Both these studies use
the construct of a benevolent planner, and discuss the political agency problem
as an extension. Gerson and Posner (2007) focus on how timing rules address
the agency problems in legal institutions; Luppi and Parisi (2009) compute the
option value of these timing rules, and suggest different forms of legislation
consistent with these parameters. Some of the earliest work in the area was by
Heiner (1986), on judicially driven innovation and the general wisdom in the
political economy of regulation stressing the importance of stability and certainty
in the legal system. Nonetheless, over time, the focus for timing of lawmaking
has come to be legislation, where this element is of critical importance.

Much like investment in an asset, adoption of a new law requires a direct
investment cost (I). The value of the law (V) is given by the present discounted
value of the law’s future benefits. These benefits could include an immediate
short-run payoff (δ), and a long-run benefit, which is uncertain. Parisi, Fon
and Ghei (2004), in the formal model, conceptualize the long-run value of the
law, V, as a stochastic process that follows a Brownian motion, with α as the
growth rate, and σ as the volatility measure of the law. Lawmaking can yield
immediate benefits, first, by replacing rules that were outmoded or inefficient.
Alternatively, if the activity was previously unregulated, the clarity provided
by the rule could provide some advantage in encouraging exchange. Waiting
to legislate would mean forgoing these benefits of legal intervention, and it is
therefore appropriate to think of these as a cost of waiting to legislate.

Implementing legislation is costly, as well, and none of these costs can be
recovered if the enacted rule proves to be inefficient or otherwise undesirable.
There are the direct legislative and political costs, including publication
and notice costs. The process of rulemaking through private legislatures, as
discussed by Schwartz and Scott (1995), should also be considered in this
context. There are the costs of disseminating information (Kaplow 1992) and
of acquiring information about the new law (Ehrlich and Posner 1973). There
are substantial learning costs for all agents, including the courts, enforcement
agencies and private individuals. There might be adjustment costs if the legal
innovation results in changes to the existing set of legal entitlements. There
will also be institutional costs associated with the discontinuation of an existing
rule, including sunk costs by enforcement agencies. These costs cannot be
recovered once the new law is promulgated. The irreversibility of lawmaking
costs requires lawmakers to be sensitive to uncertainty over future costs and
benefits from the new rule, and changes in the environment that might render
the rule obsolete. Any model of optimal lawmaking that fails to consider the
option value of waiting is necessarily assuming that the legal system can avoid
sunk costs and abrogate and enact law with sunk expenditures.
The Basic Problem

The lawmaker is risk neutral and benevolent. The external environment changes at a stochastic rate. The lawmaker can choose the optimal legislative instrument and control the timing of legal intervention. The new law is always more efficient. The lawmaker always has the option of waiting until another period to change the law. The lawmaker’s task, therefore, is determining the optimal timing of legal intervention.

The problem is formulated as a binary dynamic programming problem (Parisi, Fon and Gheï 2004). At each time, , the legislature can adopt the new law, or postpone the legal intervention. The net present value of the optimal payoff of the law-adopting opportunity is \( P_t(V_t) \). If the legislature chooses to terminate the wait, the termination payoff will be \( V_t - 1 \). On the other hand, if the legislature chooses to wait, there is no immediate payoff in the current period. There is, however, a value to waiting, given by expected future (optimal) adoption payoff in the next period, discounted to the present period: 

\[
\frac{1}{1 + \alpha + \delta} E \left[ P_{t+1}(V_{t+1}) \right].
\]

The optimal payoff value for \( P_t(V_t) \) is equal to the larger of the two. Due to the stochastic nature of the problem, the precise timing of adoption cannot be found. It is possible, however, to formulate the problem in terms of finding a threshold value for the payoff, \( V^* \), such that it is optimal to innovate whenever \( V \geq V^* \) and cash in the option. When the value falls below this critical level, an optimizing lawmaker will maintain the status quo and delay legal innovation, that is, keep the option.

There are four variables that will impact the decision about timing of lawmaking. First, the extent to which the costs are irreversible. The value of waiting should increase with the extent of irreversibility. As discussed above, costs associated with legal innovations are peculiarly likely to be irreversible. In the real world, with agency problems, as will be discussed below, reputational and other considerations are an additional sunk cost that lawmakers need to take into account in the decision-making process. The second variable that matters is the extent of uncertainty in the system. The greater the uncertainty, the greater the cost of giving up the option of waiting. Waiting allows the lawmaker to acquire more information, and preserve the opportunity of undertaking legal innovation based on this information in the future. This is particularly true when it comes to information technology, which has evolved, and continues to evolve, rapidly, and regulators struggle to keep up with innovations in technology. The third factor that matters is the value of the law over time. The greater the expected value of the law, the greater should be the value of waiting. On the other hand, the greater the short-term benefits of legal innovation, the lower is the net value of waiting. Thus, if an immediate ban could prevent an endangered species from extinction, for example, the gain could outweigh the value of waiting.
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The general problem facing the lawmaker is that of choosing the right moment to switch to a new law. On one extreme, the lawmaker could change the law in response to each change in the environment; on the other, he or she could never change the law. The former would be cost prohibitive; the latter would result in laws that would be obsolete and inefficient. In between these extremes, there should be a range where the benefits of an innovation exceed the sunk costs.

The importance of the option in the context of law is that, by waiting, the lawmaker preserves the opportunity to make the innovation in the future. The lawmaking opportunity is always available, and is comparable to a perpetual option with no expiration date. When a lawmaker chooses to legislate, this option is killed. Legal innovation should be undertaken only when the expected value of lawmaking exceeds the lawmaking costs by an amount equal to the value of keeping the option alive. In the presence of uncertainty, this result modifies considerably the criterion that suggests proceeding with legal innovation any time the present value of the expected benefits of legal innovation exceed the expected costs.¹

Extensions

Sequential Lawmaking
Many lawmaking exercises in the real world are not the one time legal intervention discussed above, but instead, involve sequential multistage intervention, such as regulatory programs that are implemented in stages, or international treaties that require ratification and subsequent harmonization in a process that can sometime take decades (such as the General Agreement on Tariffs and Trade (GATT), which commenced after the end of the Second World War, and is still under way in the form of the Doha Round). Under plausible assumptions, the sequential lawmaking problem will result in the effects of uncertainty and irreversibility having increased importance. The longer it takes for a legal enactment to come into force, the greater is the uncertainty regarding the value of the innovation at the time of entry into force of the final law, and therefore an even higher expected discounted benefit from legal innovation will be necessary to justify that innovation.

Benefits from Experimentation
Even unsuccessful legal innovation can occasionally generate informational benefits, since it discloses the intrinsic value of the attempted legal solutions and reduces the risk of similar legislative errors in the future. Legislative errors

¹ Majd and Pindyck (1987) address a similar problem, where a firm invests continuously until the project is completed. The analogy with a multistage legal intervention is obvious.
may indeed provide valuable information about the net benefits (or lack thereof) of alternate legal rules. Thus, for example, collectivization of land did not help productivity of land in the then Soviet Union (Ghei 2009) – which provides valuable information for property rights rules.

The informational value of past legislative errors reduces uncertainty over the value of future legal innovation alternatives. The value of learning from experimentation offsets, to some extent, the value of waiting. With learning, the test for optimal timing becomes more permissive. There are two relevant types of learning. First, if the underlying learning evolves stochastically, the value of learning is given by the opportunity to observe the unknown reality. To the extent that this “learning” is only obtainable in conjunction with actual legal innovation, delaying intervention would preclude the acquisition of such benefits. Second, learning can be independent of any stochastic uncertainty. The identity of the best legal rule might be unknown, but the rule itself does not evolve over time. If so, there is no gain from waiting, and in fact, there is an opportunity cost to delaying experimentation.

Specificity of Legal Rules
The specificity of legal rules is an issue that is very much interrelated with that of timing, even though the two have been treated as essentially independent in the literature. Ehrlich and Posner (1973) were the first to discuss the problem of the optimal degree of specificity of legal rules. Schwartz and Scott (1995) modeled rulemaking in the context of a private legislature as a single-shot multistate game. However, Kaplow (1992) points out that it is possible to have a complex rule and simple standard.

The problem of optimal specificity can be reassessed in a dynamic fashion. The more specific the law is, the more expensive it is going to be to enact. On the other hand, a well-specified rule, though it requires a larger upfront investment, will have lower operating costs. A simple rule will have lower enactment costs, but higher implementation costs. Thus, the sunk costs are very different depending on the degree of specificity of a law. The option value of delaying legal intervention will vary in the presence of uncertainty and sunk costs, and economies of scale – all factors a lawmaker needs to take into account in the decision-making process.

The Political Agency Problem
The formal model above assumed a benevolent planner. In the real world, of course, as the rich public choice literature has examined, there are significant agency problems (see e.g. Mueller 2003) when it comes to political institutions, in that a small number of legislators and a somewhat larger, but still small, number of judges and regulators have the authority to act on behalf of voters.
There is no reason, a priori, to believe that the agent’s goals will always be identical to that of the principal.

Gerson and Posner (2007) identify the following relationships where agency problems dominate: “between voters and legislators, between Congress as a whole and committee members, and between legislators and bureaucrats.”

Gerson and Posner analyze the vast panoply of timing rules that exist in the context of the principal–agent relationships that dominate political institutions. They categorize timing rules into four types: delay rules, rapidity rules, coordination rules, and trigger rules. Delay rules slow action. Rapidity rules specify a time period and mandate action within that time period. Coordination rules specify when an action must take place. The timing might be arbitrary, but helpful in that the decision-making body would otherwise have trouble coordinating on its own. Trigger rules “use the timing of legislative action to trigger some other feature of the legislative process.”

They then proceed to consider the problem of the optimal timing of legislation in an uncertain environment. The choice of legislation is immediate legislation, where the public good is created in time period 1, to take effect in the same time period. The benefit \( B \) is created with probability \( p \). The cost \( C_H \) and legislative cost \( k \) are certain. The value of the action is \( pB - C_H - k \).

Alternatively, the legislature can choose to wait, and pass the law in period 2 only if the public good will create the benefit \( B \). The cost is lower, \( C_L \), because people can anticipate the deferred legislation. Both the cost and benefit are incurred with probability \( p \), but they must be discounted by \( d \) where \( d < 1 \). The value of the deferred legislation is \( dp(B - C_L - k) \).

Immediate legislation dominates the higher the value of \( p \), the lower the cost of enactment and adjustment, and the higher the discount rate.

The legislature can also pass anticipatory legislation in period 1, to take effect in period 2, such that legislative costs are incurred with certainty and without discounting; the benefits of the public good are discounted and probabilistic. The legislature can also pass conditional legislation in period 1 that provides that the public good will be created in period 2 if and only if \( B \) turns out to be greater than \( C_L \), avoiding the cost of repeal.

What is the impact of timing rules? Delay rules would seem to increase the probability of deferred legislation – but they can also increase the probability of anticipatory and conditional legislation. So delay rules can cause the legislature to act too quickly, and add to the inefficiency of the system. Rapidity rules may also force the legislature to act quickly when it might be inclined to delay.

Timing rules could have two different functions. They might reduce agency costs, in that they reduce the advantages of interest groups in the legislative process. It takes time for groups to mobilize, and the general public will take longer than organized special interest groups. Therefore, delay rules help larger, less organized groups to be heard. Or delay rules could create new problems.
60 Production of legal rules

If the public is largely passive, delay rules make it easier for interest groups to monitor legislators and enhance their influence in the process. The same can be said for rapidity rules.

Nonetheless, Gerson and Posner find that timing rules work to facilitate the monitoring of agents by principals and reduce the ability of ill-motivated agents to make policy decisions that violate the policy preferences of political principals. . . . Within the legislature timing rules may ensure that committees develop relevant expertise without also using that expertise to excessively self-serving ends. Outside the legislature, timing rules can allow a diffuse and disorganized public to combat the influence of private interest groups on legislation and to monitor legislative behavior more carefully.

They do issue a warning that

[. . . ]

Luppi and Parisi (2009) extend the framework to seven timing rules, and calculate the option values. Immediate legislation also causes an obsolescence problem. Deferred legislation creates an option to defer, and citizens have time to adapt. The value of this option needs to be included in the optimization exercise. Anticipatory legislation is similar to deferred legislation, but it has the possibility of repeal. The timing rule offers an option of exit through repeal, and the value of this option is the difference between the net present value of the anticipatory legislation and the value of immediate legislation. Conditional legislation, where the law comes into effect only if $B > C_L$, offers an option of exit without repeal. All these options need to be factored into the optimization problem in view of the irreversibility problem discussed above.

Luppi and Parisi also consider three other cases that Gerson and Posner do not: sunset legislation, delayed legislation, and revisable legislation. Sunset legislation offers the option of preordered exit. Delayed legislation is a commonly used legislative strategy when law is enacted with an option to delay entry into force, to allow adaptation and behavioral changes. Revisable legislation has an option to revise, so the lawmaker has the benefit of a rule in place while taking into account the possibility of changes in the future.

The dynamic pattern of cost structure will affect the optimal choice of legal rules. As legislative costs increase, the value of the option to delay decreases, and makes immediate legislation more attractive. There are also reputational and other costs to be kept in mind, as well as the agency problems mentioned.

In the real world, the socially optimal timing of lawmaking can often diverge from what is optimal for the legislator, in view of the agency problems that exist.
Timing rules go some way toward correcting the problem, but they can also add to the problem. Even abstracting from the agency problem, in an uncertain world, when investment is irreversible, using a simple net present value rule, without taking into account the value of waiting, will result in rushing into lawmaking too soon.

References