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The attenuation of legal change

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Abstract. *This chapter, forthcoming in the Research Handbook on Law and Time (F. Fagan & S. Levmore eds., Edward Elgar 2024), offers a contribution to the economics of legal transition. It argues that the lawmaker should mitigate the burden generated by the risk of legal change by avoiding "extreme" decisions*. *The chapter puts the attenuation policy in perspective and compares it to other transition tools.*

Key words: legal transition, cost-benefit analysis, legal change

JEL classification: K10

Non-technical summary: *This chapter contributes to the literature on legal transition by offering a perspective on the "attenuation policy." The attenuation policy invites the lawmaker to adjust its decisions to the contingent status of the parties, which might be favorable (high benefits/low costs) or unfavorable (small benefits/high costs). The attenuation policy provides parties with insurance, with a negligible impact on efficiency. The chapter puts the attenuation policy in perspective and compares it to other transition tools.*

Introduction

"... the logical method and form flatter that longing for certainty and for repose which is in every human mind. But certainty generally is illusion, and repose is not the destiny of man."
Justice Holmes, The Path of the Law.

Stability and predictability are the central pillars of the legal system. Yet, the law is not immutable: as societal preferences and market conditions change, so does the law. Considered from an ex-ante perspective, the variability of the law raises several major issues.

The first concerns the incentives that hard-to-predict changes in the law offer to the parties. When the law becomes unstable, it offers little guidance to the parties, who are compelled to guesswork the best course of action. So, the law might lose the grip on the parties' behavior. Also, if the guesses turn out to be wrong, parties bear the cost of the erroneous prediction. Since the costs of misplaced reliance on the law can be quite large – not least because the law also acts as a coordination device – innovative lawmakers should proceed with caution (Epstein 2003).

The second issue concerns the costs that uncertainty places on the affected parties. Since individuals dislike uncertainty about their future payoffs and insurance against legal change is (normally) not available, changes in the law produce a costly risk burden.

This chapter focusses on the latter issue and considers a specific policy tool available to the lawmaker to mitigate the risk-bearing costs: the attenuation of legal change.

The uncertainty of legal change

In this chapter, I focus on the risk burden that legal change places on the affected parties. I consider the case of an efficiency-pursuing lawmaker, that balances benefits and costs of a specific legal rule. As a leading example, I consider the case of a simple liability law setting (an "externality" setting, for the economists), in which a set of agents (injurers) can take precautions that reduce the magnitude of harm suffered by a different set of agents (victims). The lawmaker sets the standard of care for the injurers, taking into account costs and benefits of precaution. The standard of care can be pegged to a negligence rule or, more directly, to a command-and-control regime.

Since benefits and costs of precautions will reveal themselves in time, at time zero one cannot foresee with certainty the standard that will apply at time one. The legal system is henceforth burdened by *uncertainty*.

This simple model captures several relevant scenarios. At a basic level, it speaks for the case in which firms and agents are concerned about the path taken by upcoming legal rules that might drastically alter the cost structure of their economic activities. For example, technologies that are regarded as lawful at time zero, might turn unlawful at time one: firms that have relied on them, can be pushed

out of business at once.[1] The model also captures the case in which the law remains unaltered, by market conditions change. Precaution expenses might be subject to shocks (say, exceptional price increases): if the law does not adapt to the new circumstances, injurers end up bearing unreasonable costs.

From an economic perspective, this simple set-up raises several interesting issues.

If the level of precaution at time one depends on the investment at time zero, injurers face a classic problem of **investment under uncertainty**. Uncertainty here is driven both by the variability in precaution costs and the unpredictability of the standard. Mistakes in predictions would result in costs: the level of precaution obtained might be either excessive or insufficient, in light of the standard enacted at time one. The actual extent of these costs depends on the degree of "reversibility" of the decision made at time zero, that is, on how easily precaution levels can be adjusted ex-post. Costs, here, might be tied to stranded assets, retrofitting, technological conversion, etc., which have come to the forefront in the public debate on climate change.

In the extreme case in which the decision at time zero cannot be modified at all, the problem boils down to a classic problem of **policymaking under uncertainty** (benefits and variable costs will reveal themselves only at time one). The policymaker announces at time zero the rule that will apply at time one, with the goal of minimizing the costs of mistake. In turn, the cost of mistake is measured by the inefficiency of the rule, given the conditions that have actually occurred. For instance, a scientific breakthrough might provide for cheap prevention, but this breakthrough was not considered when the standard was decided at time zero. In this case, opportunities to forfeit harm in a cost-effective way are not taken. This is the focus of the classic literature on policy making under uncertainty à la Weitzman (see Aldy and Viscusi (2014)).

If decisions can be reversed (at a cost) in the face of new information, an interesting issue arises with respect to the **optimal timing** of the policy making. Here a trade-off arises between the value of waiting – to have better information to make the decision – and the value of prompt decision making – to balance costs and benefits as they currently are. In order to deal with these effects, law making can take on articulated time structures, which might include deferred or delayed legislation, anticipatory legislation, conditional legislation, and sunset provisions (see Fagan and Levmore 2017).

Relatedly, a symmetric problem might be faced by the injurers, who could be tempted to (inefficiently) bring forward their investments, to increase the reversibility costs and to veer lawmaking in their preferred direction (*fait accompli* strategy).

To abstract from the issues raised by irreversibility – that requires a different type of analysis – I assume that precaution levels at time 1 only depend on expenditure at time 1.

This leaves us with the second major issue raised by the unpredictability of the future: the risk burden. Injures face uncertainty about the costs they will bear at time 1, while victims face uncertainty about the harm they will suffer.

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[1] Consider here the uncertainty associated with the transition to "net zero," which might forestall many traditional technologies and cause the demise of whole industries (IPCC 2018).

It should be noted from the outset, that this type of uncertainty cannot be (fully) mitigated by means of private insurance. As it happens, insurance against legal change is not available on the market (Shavell 2014). Furthermore, even if insurance were available, it would not be cost-free: in competitive markets, management costs lead to loading factors in the range of 30-50% of the premia. In the face of positive loading factors, the parties would take less than full coverage and a substantial share of the risk would still be placed on their shoulders.[2] To ease the exposition, I will assume that parties are not insured at all.

The following diagrams represent situations with uncertain costs of precaution (Fig, 1) and uncertain benefits of precaution (reduction of harm) (Fig. 2). I posit, at least for the time being, that the lawmaker follows standard cost-benefit analysis and balances marginal costs and benefits of precaution.
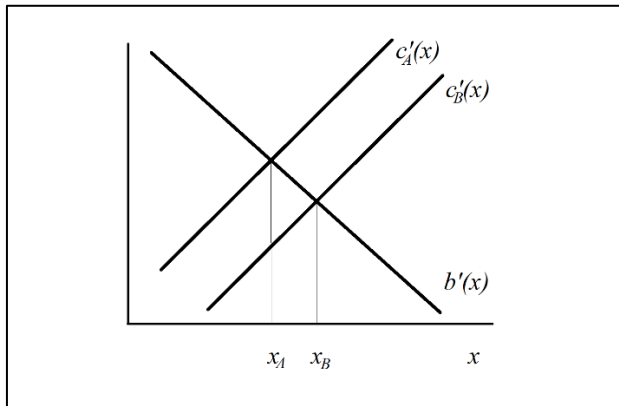

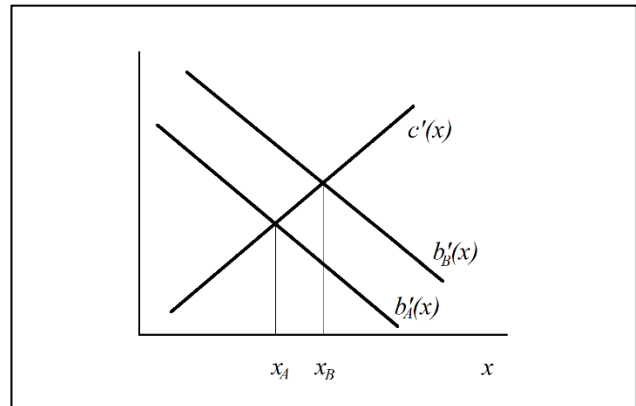*Figure 1-Uncertain costs*   *Figure 2-Uncertain benefits*

In Figure 1, the marginal costs of precaution can be high (case A) or low (case B). The policymaker selects standard x_A in the first case, and standard x_B in the second case. Marginal costs can vary for a variety of reasons, that include technological progress and changes in market conditions. The uncertainty in costs affects both injurers, who will either bear costs $C_A(x_A)$ (high costs) or costs $C_B(x_B)$ (low costs), and victims, who will get a benefit from precaution equal to $B(x_A)$ (low reduction of harm) or $B(x_B)$ (high reduction of harm).[3]

In Figure 2, the marginal benefit of precaution can again be high (case A) or low (case B). If the marginal benefit is high, the standard is higher. Variations in marginal benefits can be due, for example, to scientific advancements (e.g., the discovery that a substance is more harmful than expected) or changes in environmental conditions (for instance, fire prevention measures become more valuable in the presence of increased drought). Again, this situation places an uncertainty burden on both injurers and victims.

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[2] People display risk aversion in most dimensions of their economic lives. Small-medium sized firms also display risk aversion: when available, they often purchase insurance.

[3] The area below $b'(x)$ from zero to the standard measures the size of the harm prevented: $B(x_A) = \int_0^{x_A} b'(x)dx$. Similarly, the area below $c'(x)$ from zero to the standard measures the size of the variable costs: $C_A(x_A) = \int_0^{x_A} c'_A(x)dx$.

In the situations depicted in Figures 1 and 2, changes in benefits and costs of lawmaking and the attendant legal changes impose costly uncertainty on the parties.

How can the lawmaker deal with this uncertainty?

A first solution available to a benevolent lawmaker is to provide direct insurance to the parties, by means of income transfers. Under this solution, the lawmaker acts like an insurance company that mutualizes the spikes in benefits and costs of the affected the parties. This solution, at long debated in the literature on transition policy, is clearly unrealistic, as it requires a continuous (and finely tuned) distribution of targeted subsidies and taxes. It should be noted, further, that one cannot always "blame" the government for the variability in costs and benefits: the precaution costs borne by the injurers can increase because the standard has increased (Fig. 2) or because marginal costs are higher due to an impairment in market condition (Fig. 1).

The solution I focus on requires that the lawmaker mitigates the uncertainty faced by injurers and victims by adjusting the standard. This is the **attenuation policy** first proposed by Shavell (2014), and later refined by Franzoni (2019). By suitably changing the standard emerging from cost-benefit analysis, the lawmaker can reduce the risk burden of the parties.

First of all, note that the risk for the injurers is due to the wedge between $C_A(x_A)$ and $C_B(x_B)$, while the risk for the victims is due to the wedge between $B_A(x_A)$ and $B_B(x_B)$.

To mitigate the risk borne by the injurers, the policymaker would have to reduce the standard when the precaution cost is high and increase the standard when the precaution cost is low.

Similarly, to mitigate the risk borne by the victims/beneficiaries, the lawmaker would have to reduce the standard when the benefits are high and increase the standard when the benefits are low.

Note that by "distorting" the standard away from conventional cost-benefit analysis, the policymaker creates an inefficiency. This inefficiency, however, is small compared to the gain due to the reduction in the risk burden of the parties.[4]

Let us consider Figure 1 and assume that, due to adverse market conditions, the marginal costs are high (case A). If the standard is fixed at x_A (as per conventional cost-benefit analysis), injurers face large costs ($C_A(x_A) > C_B(x_B)$) and victims face low benefits, because the standard is rather lax ($B_A(x_A) < B_B(x_B)$). Here, for risk-mitigation purposes, injurers and victims "demand" opposite changes in the standard: the injurers gain if the standard x_A is lowered (so as to reduce the high costs), victims gain if the standard x_A is raised (so as to increase the low benefit). The optimal direction of change of the standard depends on which of the two parties stands to gain more from the change. This in turn depends on their degree of aversion to risk and on the size of the risk they bear.[5]

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[4] A change in the standard has a first order effect on welfare, while it has a second order effect on the risk burden. The risk burden is (roughly) proportional to the square of the difference in payoffs (in cases A and B).
[5] Roughly: the standard should increase if $\alpha_I(C_A - C_B) < \alpha_V(B_B - B_A)$, where α_I measures the degree of risk aversion of the injurers and α_V the degree of risk aversion of the victims.

The situation in Figure 2 is more straightforward. Let us suppose that the marginal benefit of precaution turns out to be high (case B). At the standard x_B, injurers face a large cost because the standard is high ($C_B(x_B) > C_A(x_A)$), while victims face a large benefit ($B_B(x_B) > B_A(x_A)$). Here, both sides stand to gain (from a risk-mitigation perspective) from a reduction of the standard.[6]

So, depending on the circumstances, the desiderata of the parties might go in the same or in opposite directions.

More generally, if the cost and the benefit curves are subject to random shocks, parties benefit from an increase or a decrease of the (conventional) standards as per the following table. The application of the standard arising from conventional cost-benefit analysis yields costs that range from $\underline{C}(x)$ to $\overline{C}(x)$, while benefits range from $\underline{B}(x)$ to $\overline{B}(x)$.

Figure 3: Attenuation policy

When the cost $C(x)$ arising from the conventional standard is less than C^*, injurers gain from an increase in the standard ($I: x \uparrow$). Conversely, when the cost is greater than C*, injurers gain from a reduction of the standard ($I: x \downarrow$).

When the benefit $B(x)$ arising from the convention standard is less than B^*, the victims gain from an increase in the standard ($V: x \uparrow$). When the benefit is greater than B^*, the victims gain from a reduction of the standard ($V: x \downarrow$).

At the thresholds C^* and B^* the marginal utilities of income of injurers and victims, respectively, are equal to the mean marginal utilities. When the precaution costs exceed C^*, injurers are facing an adverse income shock and their marginal utility of money is above average. Injurers are willing to pay an insurance premium to get a reduction of these costs. Similarly, when the level of harm borne by

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[6] Symmetrically, both sides gain from an increase in the standard x_A if the marginal benefits turn out to be low.

the victims is large (i.e., $B < B^*$), their marginal utility of money is above average. From an insurance perspective, a reduction of harm (an increase in Benefit) is advantageous.

Note that the thresholds C^* and B^* do not coincide with the mean costs and mean benefits. Here, what matters are the parties' degrees of **prudence**. Specifically, if injurers are prudent, the threshold C^* is greater than the average costs. If victims are prudent, the threshold B^* is less than the average benefit.[7] In very rough terms, a prudent agent tends to be very sensitive to adverse events. When her income decreases, her marginal utility of income increases in a disproportionate way. This implies that, from an insurance perspective, the agent is highly concerned about the worst outcomes (large precaution costs for the injurers, high levels of harm for the victims).[8]

From the diagram, we can see that there are circumstances in which the optimal attenuation policy can be easily characterized.

Optimal attenuation policy

In those situations, in which both the benefits to the victims and the cost to the injurers turn out to be high (B > B*, C > C*), both sides gain from a reduction of the standard.

Conversely, in those circumstances in which both the benefits to the victims and the costs to the injurers are low (B < B*, C < C*), both sides gain from an increase in the standard.

When injures and victims' desiderata pull the standard in opposite directions, the optimal policy is obtained by checking which party stands to gain more.

The optimal attenuation policy can be easily implemented: all the lawmaker needs to know, is whether the current circumstances define a "positive" or an "adverse" shock to the affected parties.

Discussion

a) *Means of attenuation.* The attenuation policy aims at smoothing out the "extreme" cases in the distribution of the potential policy outcomes. In the model used above, this was done by means of changes in the precaution standard. The same goal can be achieved through other legal means providing relief to adversely affected parties, like partial exemptions, waivers, grandfathering, and phase-ins. The relief can apply both to cases in which the shocks are due to legal transition and to cases in which the shocks are due to changes in market conditions.

b) *Uncertainty vs surprise.* The purpose of the attenuation policy is to reduce the uncertainty faced by the parties. Essentially, it reduces the variance in precaution costs for the injurers and the variance of the benefits for the victims. This reduction of uncertainty should not be confused with

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[7] Technically, an agent is prudent if her marginal utility of income is convex. Most individuals are prudent. See Kimball (1990) for a definition, and Franzoni (2022) for an application to the attenuation policy.
[8] When the precaution cost is greater than the threshold C^*, the marginal utility of the injurer is greater than her average marginal utility. The injurer is willing to pay a premium (which reduces her income in all states) to increase her net income in the adverse event. A similar logic applies to the victims.

the "demoralization costs" mentioned in the early literature on legal transition (Michelman 1967). Demoralization arises when the agent's expectations are frustrated: "I was relying on standard x_0, while instead standard x_1 applies." Attenuation does not deal with incorrect predictions. It deals with outcomes that have been regarded as "possible," but that happen to lie at the ends of the possibility range. In this model, agents foresee different possible outcomes, but only one turns out to be true. The probability they attach to these outcomes is assumed to be correct. Admittedly, in practice, this might not always be the case.

c) *Objective vs subjective risk.* Predictability impinges on the ability of the parties to foresee, with a reasonable degree of accuracy, future contingencies. As mentioned above, this ability might often not always be taken for granted. "Objective predictions" might not be available, as the costs and benefits of legal decision making tend to be affected by a multiplicity of volatile factors, both technological and political.[9] Situations in which objective forecasts are hard to come by are said to be characterized by "deep uncertainty." This type of uncertainty is particularly relevant for climate policy, due to the ample spectrum of trajectories that global climate can take over the next decades. It should be noted that the attenuation policy described above does not require objective/shared forecasts. It can also be based on *subjective* forecasts, as far as these forecasts are known to the lawmaker.

d) *Insurance vs redistribution.* The attenuation logic follows an insurance logic: agents benefit from the reduction in the variance of their payoffs. So, the attenuation policy fulfills an efficiency goal. A different perspective is that based on "redistribution," that is on the idea that policy should be tilted in favor of the neediest. While redistribution is obviously important, it is usually kept outside of the picture, under the hypothesis that it can be more effectively pursued by other means. Under the attenuation logic, the standard should be relaxed (at the margin) when the injurers face an abnormal precaution cost and the victims a normal or abnormal benefit. Under the redistribution logic, the standard should be relaxed when the injurers are relatively "poor" (and thus deserve a transfer of welfare) and the victims relatively "rich" (and thus able to give up welfare).

e) *Attenuation and countercyclical legal intervention.* Because attenuation becomes relevant when agents suffer from adverse shocks, it can be regarded – to some extent – as a "countercyclical" form of intervention, sensitive to downturns in agents' income (see Masur and Posner (2017), Fagan (2017), Listokin (2019)). However, if the cycle affects in the same way both injurers and victims, the direction of the desirable policy change might not be obvious (as we have seen, it depends on the degrees of risk aversion of the parties and the intensity of the downturn they are subject to).

f) *The scope of risk mitigation.* In the model developed above, the attenuation policy was applied to a simple externality setting in which the precaution standard of the future is not known. This standard can arise from a negligence rule or a regulatory intervention. The scope of the attenuation logic is obviously much broader than this: it applies to all legal situations in which parties are subject to uncertainty. This uncertainty can concern the future but also the past, if legal intervention has retroactive effects (see Levmore 1999 and Shaviro 2000). The attenuation logic requires legal intervention to fend off, as far as possible, extreme payoff shocks to the parties.

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[9] Masur and Nash (2022) illustrate several tools that might allow the government to facilitate the prediction of regulatory change.

Conclusions

The attenuation policy provides a simple and easily applicable tool to mitigate the risk burden of parties facing an uncertain legal setting. It suggests that the lawmaker accounts, in addition to the traditional costs and benefits, also of the risk-mitigation benefits provided by a policy that protects parties from misfortunate hardship.

This policy can complement the traditional tools available to the lawmaker to facilitate legal transition and to deal with adverse market conditions.

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