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THE CATHEDRAL OF TRANSITION RELIEF IN ENVIRONMENTAL LAW

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Say that the government decides to introduce a new environmental regulatory regime, but that it has also decided to spare some actors from the harsh effects that the new regime otherwise would wreak on them. Even once these decisions have been made, questions remain as to precisely what form the relief from the transition in legal regimes—or "transition relief"—should take. The government could allow the actors in question to continue to engage in the behavior that the new regime will otherwise prospectively disallow. This so-called "grandfathering" could be limited in time and/or scope, or it could be absolute. On the other hand, the government instead could prospectively preclude the actors—much as all other actors—from engaging in the behavior that the new regime will disallow, but also compensate those actors for all or some of the value that this restriction will impose.

The choice to structure legal transition relief as grandfathering as opposed to compensation echoes a dichotomy that, since its introduction in 1972, has swept across the legal theoretical landscape: that is, the division between property and liability rules.[1] In their seminal paper, "Property Rules, Liability Rules, and Inalienability: One View of the Cathedral," Guido Calabresi and Douglas Melamed recognize the important distinction between whether an actor with an entitlement to certain behavior should have that entitlement protected by the right to continue in that behavior— "property rule" protection—or a right to cash compensation—"liability rule" protection.[2]

This Paper explores the questions of the appropriateness and likelihood of transition relief from changes in environmental legal regimes. Environmental law is an area where, because of the large capital investments made to comply with existing environmental rules, transition relief may have substantial effects on societal actors. Firms or even industries shut down, or substantially scale back in the absence of transition relief. That, in turn, may lead to unemployment. Consumers also may be affected by the choice of whether or not to convey transition relief. Finally, the presence or absence of transition relief may have an effect on environmental quality.[3]

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[1] *See* Guido Calabresi & A. Douglas Melamed, *Property Rules, Liability Rules, and Inalienability: One View of the Cathedral*, 85 HARV. L. REV. 1089 (1972). Calabresi and Melamed also distinguish property and liability rules from a third category of rules: inalienability rules.

[2] *See id.* Calabresi and Melamed also distinguish legal rules based upon which party holds the entitlement—in the example on which they rely, the polluter or the victim. In the context of relief from a legal regime change, the two parties are polluters and the government, and it is polluters who will hold the entitlement.

[3] Though effects of environmental quality are obviously of great import, I reach that issue only later in the Paper, insofar as the focus at first is on simply valuing transition relief, in different forms, that is given to polluters.

The Paper examines whether, in fashioning environmental legal transition relief, the government should, and likely will, offer transition relief in the form of a liability or property rule. It thus evaluates the choice between property and liability rules from both a political economy perspective and a normative perspective.

To be sure, the normative desirability of legal transition relief has been the subject of some scrutiny in the law and economics literature, which advances a general presumption against transition relief. This presumption is perhaps most closely associated with Louis Kaplow. In keeping with his general normative disapproval of transition relief, Kaplow argues that, to the extent that there is transition relief, partial transition relief is better than full transition relief. However, Kaplow's analysis in this area falls somewhat short. It does not appreciate all the benefits that property-based transition relief offers that liability-based transition relief does not. These differences are especially pronounced in the area of environmental law where large capital investments are commonplace, as are competitive advantages and disadvantages that arise from the structure of regulation.

I argue in this Paper that, from a normative perspective liability-based transition relief is preferable to property-based relief. This is because, all else equal, liability-based relief will be narrower than property-based relief. However, from a political economy perspective, property-based relief is more likely. Those who pollute prefer it because, all else equal, it is broader and therefore worth more. Workers and consumers may prefer because it is more likely to afford those groups transition relief as well. Finally, government is likely also to prefer property-based relief because (i) framing makes it more likely that it's not seen as a payment, (ii) property-based relief protects workers and consumers, too, and (iii) property-based relief may be viewed as fairer.

The Paper proceeds as follows. In Part I, I discuss environmental transition relief. First, I explicate various forms that environmental transition relief might take. I then turn to whether these forms constitute liability- or property-based transition relief. Finally, I outline commentators' views on the normative desirability of transition relief.

In Part II, I consider the valuation of legal transition relief. I first address liability-based relief, and then property-based relief. In both cases, I consider both "full" and "partial" relief.

Part III considers how political economy is likely to affect the choice between liability- and property-based relief. It argues that property-based relief will be more common.

Part IV addresses the normative question. It argues that, contrary to the political economy prediction, liability-based relief will generally be normatively preferable to property-based relief.

I. ENVIRONMENTAL TRANSITION RELIEF

A. Forms of Environmental Transition Relief

The question of whether to award transition relief arises whenever the government enacts a new economic regulatory regime. Transition relief lessens, or eliminates, the costs that the new regime otherwise will impose on societal actors who previously engaged in behavior that under the new regime will be restricted or prohibited.

In the context of environmental law, a new environmental regulation may render obsolete a substantial capital investment, such as a major piece of equipment or even an entire plant. Relief from that new regulation will lessen the economic blow that the new regime otherwise would impose. In addition, the new regulation's impact may reach beyond just the owners who invested in the equipment in question, to workers and even consumers. And transition relief can be extended to them as well.

Let us consider a taxonomy of transition relief in the context of environmental law as applicable to owners/investors who have made a substantial capital investment the return on which is now at least in part (by virtue of the new regulation) in jeopardy. First, transition relief may consist of compensation—that is, monetary payment from the government to the owners/investors who will no longer be able to engage in behavior in which they previously behaved (at least not at the same level). The compensation might be designed with reference to the status quo—that is, such that full payment would be enough to compensate the owners/investors for the amount of the capital investment that is now rendered valueless.[4] Alternatively, the compensation might be tied to the return on the investment. Under such an approach, full payment would be designed to compensate the owners/investors such that they would earn the profit they would have earned had they been able to rely on the equipment they purchased. Note that, in either of these cases, one might decide to compensate the owners/investors in whole or in part.

Transition relief need not take the form of monetary compensation; it may instead allow for owners/investors who would otherwise be affected to continue to act as they did before—that is, to make use of the equipment they purchased—to at least some degree. I refer to this form of transition relief under the broad moniker "grandfathering."[5]

Grandfathering may take different forms, depending upon the precise nature of the new regulatory regime. Consider two examples. First, the new regulation might take the form of a ban of a particular production process, which renders obsolete equipment that some owners/investors purchased. Grandfathering might take the form of an exemption from the ban. That exemption might be full—that is, absolute, at least for the

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[4] Kaplow assumes that liability-based relief will generally take this form. *See* Louis Kaplow, *Transition Policy: A Conceptual Framework*, 13 J. CONTEMP. LEGAL ISSUES 161, 187 (2003) (noting that compensation will ordinarily be "confined to pre-enactment investment").

[5] *See* Jonathan Remy Nash & Richard L. Revesz, *Grandfathering and Environmental Regulation*, 101 NW. U. L. REV. 1677, 1678 (2007). For additional discussion, including the historical origin of the term, see Heidi Gorovitz Robertson, *If Your Grandfather Could Pollute, So Can You: Environmental "Grandfather Clauses" and Their Role in Environmental Equity*, 45 CATH. U. L. REV. 131, 131-35 (1995).

life of the equipment. In the alternative, the exemption might be partial: It might exempt owners/investors for only a portion of their production (partial in productive scope), it might be limited in time (partial in temporal scope), or both.

Grandfathering that is temporally limited itself is in some way designed to allow investors to recoup their investment over some sort of "amortization period." That term is commonly used in the many jurisdictions that offer an owner of a property dedicated to a land use that was legal at the time it was begun but is now barred by a zoning ordinance—a so-called "non-conforming use"—the right to continue to engage in that land use for a period of time.[6]

An amortization period can be restricted to a predetermined time period.[7] For example, under the Clean Water Act, if new standards for point sources are adopted within a ten-year "protection period," the source can attain a National Pollutant Discharge Elimination System (NPDES) permit which will exempt the source from complying with the newer standards.[8]

Second, amortization—and hence grandfathering—can be limited to the particular economic "useful life" of the investment in question. This will happen where grandfathering is extended for so long as the equipment in question remains in use. For example, the Clean Air Act applies (or applies more stringently) to new and modified sources. By implication, then, it does not apply (or applies less stringently) to existing sources that are not substantially modified.[9] This essentially allows existing sources to minimize Clean Air Act coverage for the useful life of the sources' capital equipment. Indeed, there is evidence that Congress understood this when it enacted the Clean Air Act in 1970, and anticipated (incorrectly, as it turned out) at the time that the useful life of most existing plants would be around 30 to 40 years.[10]

Third, grandfathering can be tied to the occurrence of a specific event. For example, some state land use amortization periods terminate when the current owner relinquishes ownership.[11]

Finally, grandfathering can also be designed to have hybrid triggers. Thus, many jurisdictions have land use amortization periods that terminate upon the earlier of (i) a set period of time, or (ii) the destruction (say, by fire) of a certain percentage of the existing

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[6] *See* Nash & Revesz, *supra* note [check], at 1731-32; 4-22 E.C. YOKLEY, ZONING LAW AND PRACTICE § 22-13.
[7] Kaplow refers to such a regime as "delayed implementation." Kaplow, *supra* note [check], at 186.
[8] *See* 33 U.S.C. § 1316(d) 40 C.F.R. §122.29(d)(1).
[9] *See, e.g.*, Nash & Revesz, *supra* note [check], at 1681-1707 (describing in detail how the Clean Air Act exempts from coverage sources other than new and modified sources).
[10] Put another way, Congress expected that all sources would be subject to uniform Clean Air Act coverage within around 30-40 years of the Act's enactment. *See id.* at 1682.
[11] *See, e.g.*, Village of Valatie v. Smith, 632 N.E.2d 1264 (N.Y. 1994) (upholding amortization period for non-conforming mobile home that terminated upon transfer of mobile home or underlying land).

structure that was used for the grandfathered purpose.[12] And the Clean Air Act's grandfathering of an existing source for its useful life, described above, ends upon the substantial modification of the source.[13]

Second, consider a new regime that takes the form of a Pigouvian tax. It imposes a tax on those who emit a set amount of a particular pollutant based upon the marginal cost that the emission of the pollutant imposes. Owner/investor operation of capital equipment might result in the emission of the pollutant, and thus—absent grandfathering—subject the owner/investor to tax liability. Grandfathering here would take the form of some sort of exemption from the tax. A full exemption would free the owner/investor from any tax liability. In contrast, here again there might be a partial exemption. And, once again, that partial exemption might be partial in terms of either productive scope—the law might provide a tax credit up to amount in proportion to (but less than) prior polluting activity—temporal scope—the law might provide a full tax credit for all activity, but for a limited period of time—or some combination thereof.

B. Transition Relief as Liability or Property Rule

Calabresi and Melamed's division of entitlements as protected by either liability or property rules fits the setting of environmental transition relief well. Calabresi and Melamed explain that an entitlement is protected by a liability rule when its violation results only in the owner of the entitlement receiving monetary compensation. In contrast, an entitlement is protected by a property rule when a violation of the entitlement empowers the owner to obtain an injunction to regain the entitlement.[14]

The forms of environmental transition relief map nicely onto the categories of liability rules and property rules. Compensation-based transition relief, whether full or partial, is a liability rule: Actors receive compensation but are either no longer allowed to engage in the behavior in question, or may do so only to a limited extent (in theory the extent to which compensation is not received). Grandfathering in its various forms,

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[12] *See generally* 4-22 YOKLEY, *supra* note [check], § 22-11; PATRICK ROHAN, ZONING AND LAND USE CONTROLS §41.04 (2003).

Along somewhat similar lines, the Americans With Disabilities Act directs that grandfathering for buildings that are not accessible for those with disabilities must be made accessible when "where such alterations . . . are not disproportionate to the overall alterations in terms of cost and scope (as determined under criteria established by the Attorney General)." 42 U.S.C. § 12183(a)(2). Regulations under the Act promulgated by the Department of Justice specify that "[a]lterations made to provide an accessible path of travel to the altered area will be deemed disproportionate to the overall alteration when the cost exceeds 20% of the cost of the alteration to the primary function area." 28 C.F.R. § 36.403(f).

[13] For historical discussion, see Nash & Revesz, *supra* note [check], at 1681-1707.

[14] Calabresi and Melamed draw the distinction in order to illuminate the choice by courts of what instrument is preferable in a given circumstance to protect an entitlement in a dispute between private parties. Thus, for example, they note that a court's ability calculate the proper damages may affect whether it should employ a liability rule. The project here takes a different tack. It focuses on enforcement of what transition relief renders an "entitlement" held by private parties vis-à-vis the government. And, here, courts will not be called upon to choose between property and liability rules (unless that choice is delegated to them by the political branches).

whether full or partial, constitutes a property rule: Actors are, to some degree at least, permitted to continue to engage in the behavior that is otherwise regulated.[15]

Just as commentators have observed that the dichotomy between liability and property rules is not absolute,[16] so one might have transition relief that is a hybrid between the two. Consider a new regulatory system that takes the form of a tradable pollution permit regime. Each permit authorizes its holder to emit a set amount of pollution. The permits are freely tradable, but no one may emit the pollutant without holding permits. Transition relief from the imposition of such a regime—and such relief is commonplace[17]—will take the form of grandfathering permits to preexisting polluters. That means that the government will distribute the permits to preexisting polluters at no cost. Such grandfathering will be absolute if permits are distributed at no cost in an amount sufficient to cover all of the actors' prior polluting activity. On the other hand, such grandfathering will be partial if instead permits are distributed in proportion to (but less than) prior polluting activity.

Note that, whether it is full or partial, grandfathering of permits under this kind of system is a hybrid between a liability and property rule. If an actor uses all or some of its grandfathered permits, then it has enjoyed property relief to that extent. On the other hand, if the actor sells all or some of its permits, then it receives liability relief to that extent.

C. The Normative Desirability of Transition Relief

The law-and-economics literature, and perhaps most profoundly Louis Kaplow, advances a general presumption against transition relief from economic regulation.[18] There are a few justifications for such a presumption. First, to the extent that we can assume that the new legal regime represents an improvement over the old one (which I will generally take to be the case[19]), transition relief moves us away from the normatively preferable regime.

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[15] One might argue that grandfathering does not distribute true "property" to the extent that the grandfathering rights are not freely alienable. On this account, a tradable pollution permit system does give rise to property, while simple grandfathering—i.e., the ability for one actor to continue to do what it did previously—does not. Still, property scholars recognize that even the latter setting gives rise to some form of property. *See* Jonathan Remy Nash, *Framing Effects and Regulatory Choice*, 82 NOTRE DAME L. REV. 313, 342-43 (2006); Carol M. Rose, *Rethinking Environmental Controls: Management Strategies for Common Resources*, 1991 DUKE L.J. 1, 23. And one can see the grandfathering rights that are not tradable independently still to be somewhat alienable to the extent that, for example, someone purchases all the stock of a corporate actor that enjoys grandfathering rights does in fact succeed to those rights. *See* Nash, *supra*, at 342-43 & nn.112-13.

[16] *See* Abraham Bell & Gideon Parchomovsky, *Pliability Rules*, 101 MICH. L. REV. 1 (2002).

[17] *See* Thomas W. Merrill, *Explaining Market Mechanisms*, 2000 U. ILL. L. REV. 275, 284.

[18] The arguments in this paper thus do not apply to social regulation. *See* Jonathan S. Masur & Jonathan Remy Nash, *The Institutional Dynamics of Transition Relief*, 85 N.Y.U. L. REV. 391, 395 n.9 (2010).

[19] Kaplow makes a similar assumption. Were this not the case, then transition relief would of course be normatively justified. That said, it may be the case that the presumption against transition relief extends even to some cases where the new legal regime is not normatively preferable.

Second, societal actors face numerous risks resulting from various kinds of "change"—such as changes in technology, changes in consumer demand, and changes in economic climate. Legal change is simply another variety of change. In general, the government does not provide relief from other types of change.[20] The situation, the argument proceeds, should be no different for legal regime.

Third, it is efficient for societal actors affirmatively to anticipate legal change (as other types of change) before it happens, and to take actions designed to ameliorate the effects of legal change ahead of time. The absence of transition relief creates an incentive, then, toward efficient actions. In contrast, the promise of transition relief threatens to undermine this incentive.

The strength of the argument against transition relief notwithstanding, several commentators have suggested that transition relief might nonetheless be appropriate in certain circumstances. These asserted exceptions can be seen to be motivated by five basic arguments: concerns of efficiency; concerns of maintaining appropriate investment incentives; concerns of fairness; concerns of maintaining government legitimacy and addressing extraordinary externalities and vindicating social norms; and concerns of political necessity.[21] As we shall see, each of these situations may arise in the context of environmental regulation.

First, transition relief may be necessary to further efficiency. Steven Shavell has explained broadly that there are circumstances where the social costs of the absence of transition relief outweigh the social costs of transition relief itself.[22] Where investments for compliance are durable, the costs that a firm faces to comply with a new legal rule immediately upon its enactment. Shavell provides an example from environmental regulation: The cost to an owner of retrofitting of a factory may far outweigh the marginal benefit gained.[23] Shavell also argues that the costs of administering transition relief may justify delaying legal transitions: Where legal change is inefficient without transition relief, and where the costs of distinguishing between those who should enjoy relief and those who should not outweigh the benefits of offering any relief at all, the change should be delayed until it becomes efficient with no transition relief.[24]

Second, policymakers may harness transition relief to encourage socially productive investment.[25] In the environmental area, Richard Revesz and I have explained

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[20] Sometimes insurance might be available. For a discussion of the possibility of private insurance functioning as legal transition relief, see Masur & Nash, *supra* note [check], at 406-28.
[21] The discussion in the text is drawn from Masur & Nash, *supra* note [check], at 399-402.
[22] *See* Steven Shavell, *On Optimal Legal Change, Past Behavior, and Grandfathering*, 37 J. LEGAL STUD. 37, 38 (2008). *But cf.* Richard L. Revesz & Allison L. Westfahl Kong, *Regulatory Change and Optimal Transition Relief* (draft paper), at 18-20 (arguing that Shavell undervalues the societal benefit of encouraging actors to anticipate legal change by not offering transition relief).
[23] Shavell, *supra* note [check], at 38-39.
[24] *Id.* at 39.
[25] *See* Lawrence Blume & Daniel L. Rubinfeld, *Compensation for Takings: An Economic Analysis*, 72 CAL. L. REV. 569, 582-99 (1984); Kyle D. Logue, *Tax Transitions, Opportunistic Retroactivity, and the Benefits of Government Precommitment*, 94 MICH. L. REV. 1129, 1138-43 (1996); Jonathan Masur, *Judicial*

that efficiency may justify grandfathering existing investments for some reasonable time period in compliance with an old environmental legal regime:

> One might argue that the incentive to anticipate legal change can be excessive in some cases. For example, an actor who foresees a change in technology and installs that technology might find that technology was about to advance again. Depending upon the cost of replacing old equipment with new and the rate at which technology is advancing, plant owners might rationally decide that it is too costly to comply with all technological changes, even ones that they anticipate.
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> To remedy this situation, grandfathering may be desirable where precautionary investments are "durable" for some period of time, and especially where the cost of including pollution control technology in new plants is far less than the cost of installing such technology in existing plants.[26]

A third justification for transition relief, advanced by Saul Levmore, is based upon political necessity.[27] Levmore sees Kaplow's description of the nature of legal regime change to paint a false choice.[28] Kaplow assumes that there can be a state of the world under a new legal regime without transition relief—call this state of the world *N*—and that state *N* is preferable to the status quo (state *S*). But it may be that state *N* is not attainable: Those who stand to lose in the transition from *S* to *N* may have enough political power to block that transition. They may demand and extract transition relief in exchange for allowing the new legal regime to be enacted. If that is true, then state *N* may not be a viable, attainable choice. Even if state *N* would be preferable to a state of the world where the new legal regime obtains but transition relief has been granted (call this state *N′*), the actual choice lies not between state *S* and state *N*, but rather between state *S* and state *N′*. If that is so, transition relief is normatively desirable so long as state *N′* is preferable to state *S* because transition relief will facilitate the attainment of this new legal regime. Without transition relief, the status quo *S* will remain entrenched.[29] In the environmental area, Lisa Heinzerling has elucidated how the distribution of sulfur dioxide permits (at no cost) to existing polluters was instrumental in the passage of the Clean Air Act Amendments of 1990—including its centerpiece national sulfur dioxide trading program.[30]

Fourth, I have explained elsewhere that the goal of maintaining governmental legitimacy may justify transition relief.[31] The absence of transition relief may generate externalities and impose costs on parties not directly affected by the transition.[32] Social

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Deference and the Credibility of Agency Commitments, 60 VAND. L. REV. 1021, 1025, 1041-47 (2007); Nash & Revesz, *supra* note [check], at 1727-28.

[26] Nash & Revesz, *supra* note [check], at 1727-28 (footnote omitted).

[27] *See* Saul Levmore, *Changes, Anticipations, and Reparations*, 99 COLUM. L. REV. 1657 (1999).

[28] *See id.* at 1665-66.

[29] *See id.*

[30] *See* Lisa Heinzerling, *Selling Pollution, Forcing Democracy*, 14 STAN. ENVTL. L.J. 300 (1995).

[31] *See* Jonathan Remy Nash, *Allocation and Uncertainty: Strategic Responses to Environmental Grandfathering*, 36 ECOLOGY L.Q. 809, 831, 833-34 (2009).

[32] *See id.* at 834.

norms may also dictate some transition relief.[33] Thus, for example, social norms may justify the distribution of fishing rights to existing fishermen in communities where fishing has been a way of life for generations,[34] as well as special transition relief or coal mine employees whose jobs will be restricted by virtue of new air pollution regulation.[35]

Fairness concerns provide a fifth and final possible justification for transition relief.[36] Revesz and I have argued in the context of environmental regulation:

> [O]ne can argue that it is unfair to require actors who have invested in an upgrade before a new regulation takes effect to once again undertake costly compliance with a new standard. Thus, like considerations involving incentive effects, concerns of fairness may justify extending protection to societal actors who invest before a regulation takes effect for some reasonable period of time.[37]

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Insofar as one of the goals of this Paper is to evaluate the relative normative desirability of property- and liability-based transition relief, I pause here to explain the normative metric that one draws from the foregoing (and accordingly the one that I use in this Paper). First, consider those who accept one or more of the proffered justifications for transition relief. These justifications are exceptions to the general norm *against* legal transition relief. It is important to realize that the proffered exceptions to the general preference against transition relief are just that—exceptions. They are not licenses to offer broad-based transition relief, and I do not treat them as such. Rather, they are arguments in favor of limited transition relief—limited to the extent necessary to vindicate the particular interest that the absolute absence of transition would threaten. To the extent any of the prerequisites for any of the exceptions are met, only *limited* transition relief is justified. In general, then, the overall preference is against transition relief. As a consequence, all else being equal, given the choice between transition relief that is below, and above, the optimal level of transition relief by the same amount, relief that is suboptimally low is preferable.[38]

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[33] *See id.*
[34] *See id.* at [check].
[35] *See, e.g.*, Paul L. Joskow & Richard Schmalensee, *The Political Economy of Market-Based Environmental Policy: The U.S. Acid Rain Program*, 41 J.L. & ECON. 37, 50 (1998) (describing controversy over Byrd Amendment to 1990 Clean Air Act Amendments that would have provided benefits to coal mine employees who lost their jobs); Arnold W. Reitze, Jr., The *Legislative History of U.S. Air Pollution Control*, 36 HOUS. L. REV. 679, 721-22 (1999) (same).
[36] *See* Kyle D. Logue, *Legal Transitions, Rational Expectations , and Legal Process*, 13 J. CONTEMP. LEGAL ISSUES 211, 213 (2003); Nash & Revesz, *supra* note [check], at 1730-31; DANIEL SHAVIRO, WHEN RULES CHANGE: AN ECONOMIC AND POLITICAL ANALYSIS OF TRANSITION RELIEF AND RETROACTIVITY 101-03 (2000).
[37] Nash & Revesz, *supra* note [check], at 1730-31 (footnote omitted).
[38] *Cf.* Revesz & Kong, *supra* note [check], at 55 (arguing that optimal transition relief is lower than the current system, which sequentially decides first on the new regime and then on transition relief, is likely to generate).

There are those who, despite the arguments in favor their favor, might reject all the justifications for limited transition relief, and adhere to the traditional view that transition relief is *never* justified. For those with such a normative gauge, less transition relief will always be preferable to more.

II. VALUING LIABILITY- AND PROPERTY-BASED TRANSITION RELIEF

In this Part, I seek to determine the relative valuation of property-based, as opposed to liability-based, transition relief from the perspective of polluters, i.e., those whose activities degrade the environment and whose behavior would otherwise be regulated by the new legal regime. I first examine the value of liability-based relief, both full and partial, after which I turn to property-based transition relief. Throughout this Part, I assume that we are dealing with (i) an owner who has invested in a piece of capital equipment that the new legal regime would render unusable, and (ii) that transition relief, if it is offered, would in the case of property-based relief continue for—and in the case of liability-based relief be based upon—the capital equipment's anticipated "useful life."

A. Liability-Based Transition Relief

Assume that a company has made investment I_0 in capital equipment. The capital equipment purchased is in compliance with then-applicable environmental requirements. Assume further that the equipment has an anticipated useful life of U years, and that the company will make profit P_n^A in each year n. Assuming a fixed discount rate r, the company will make a net profit (or suffer a net loss), *NP*, based on this investment equal to:

$$NP = -I_0 + \sum_{n=0}^{U} \frac{P_n^A}{(1+r)^n} \qquad (1)$$

A new regulation that precludes the use of the capital investment from year 0 (but later in year 0 than the purchase) on takes away the second term of NP from the investor. This will leave the investor with NP = - I_0. (This assumes that the investor does not foresee the new regulation coming and decide against the initial investment in the first place.)

Consider now transition relief in the form of compensation. The first, limited form of compensation discussed above[39] would restore the investor's status quo ante by paying the investor back I_0, thus leaving the investor at NP = 0.

My focus, however, is on compensation for the actual entitlement. A full compensation for the entitlement would pay, in theory, the investor the entire second term of equation (1) above. This would, in theory, put the investor in exactly the same position as if the new regulation had not been enacted with respect to it (which is, after all, the point of full compensation).

In actuality, however, arriving at an a priori amount for compensation[40] is quite difficult. First, the compensation calculation will rely on expected yearly profits—P_n^E—rather than actual yearly profits. While it is certainly possible that actual profits will end up falling short of expectations, it is far more likely—if only because the fact that

[39] *See supra* [check].

[40] I assume that all compensation is made a priori in a lump sum. One could imagine annual payments corresponding to an actual flow, but such a scenario is harder administratively and unlikely to happen. *Cf.* Kaplow, *supra* note [check], at 188 (arguing that Takings compensation is taken to be the model for cash-based transition relief since "[o]utside the takings context, compensation (and taxation of gains) is rarely employed."). Note however, that the distribution of tradable pollution permits at no charge to polluters in proportion to their preexisting pollution levels can be seen as effectively constituting compensation (or at least a hybrid of compensation and property-based relief) that extends indefinitely over time. *See, e.g.*, Jonathan Remy Nash, *Too Much Market? Conflict Between Tradable Pollution Allowances and the "Polluter Pays" Principle*, 24 HARV. ENVTL. L. REV. 465, 506-07 (2000).

assessing future speculative profits is so difficult that the project is often simply abandoned[41]—that actual profits will exceed expected profits, at least as calculated, so that $P_n^A > P_n^E$. In this sense, actual compensation will be different from—and probably less than—the true compensation that is properly due. Rather than rely upon a summation using the expected as opposed to actual profits, let ρ represent the ratio of discounted total expected profits to discounted total actual profits. To the extent that (as expected) expected profits will be less than actual profits, ρ will be less than 1, although it need not be.[42] Then the total compensation will be

$$\rho \sum_{n=0}^{U} \frac{P_n^A}{(1+r)^n}$$

and so the total net profits (after compensation) will be:

$$NP_{FC} = -I_0 + \rho \sum_{n=0}^{U} \frac{P_n^A}{(1+r)^n} \qquad (2)$$

Partial compensation represents a decision to compensate the investor for some portion—say γ—of what it otherwise would lose by virtue of the new regulation, with $0 < \gamma < 1$. Then net profits after compensation will be:

$$NP_{PC} = -I_0 + \gamma\rho \sum_{n=0}^{U} \frac{P_n^A}{(1+r)^n} \qquad (3)$$

[41] The difficulty in assessing the proper amount of "damages" when courts are called upon to do so is sometimes offered as a reason for preferring property-based to liability-based protection of entitlements between private parties. *See, e.g.*, James E. Krier & Stewart J. Schwab, *Property Rules and Liability Rules: The Cathedral in Another Light*, 70 N.Y.U.L REV. 440, 454 (1995). *Cf.* Mary E. Becker, *Promissory Estoppel Damages*, 16 HOFSTRA L. REV. 131, 135 (1987) (noting that courts routinely decline to award expectation damages in contracts cases when those damages would be speculative or indefinite).

[42] A government actor that knew that it was systematically inevitably underestimating profits, and wanted to ameliorate that (subject to the persistent information problem) could choose simply to augment the number at which it arrived by some multiplier in excess of 100%. *Cf.* Eric R. Claeys, *Public-Use Limitations and Natural Property Rights*, 2004 MICH. ST. L. REV. 877, 919-25 (discussing "mill-acts" enacted by states in the nineteenth century that provided for compensation in excess of 100% of calculated fair market value).

To some degree, the question of whether the actor determining the amount of compensation was the legislature (which presumably has discretion to award what it sees fit) or an actor, such as an agency or court, acting under a delegation from the legislature that sets out the basic process for determining compensation.

B. Property-Based Transition Relief

Full property-based transition relief—i.e., full grandfathering—will leave the investment, and the net profit from the investment in place. Unlike liability-based relief, it will allow its recipients to receive actual profits.

At the outset note that, even though liability-based relief is theoretically supposed to compensate for what grandfathering would offer, having actual grandfathering itself is different. First, those who enjoy grandfathering receive their actual profits, i.e., $\rho = 1$.

Beyond this, property-based relief will confer additional opportunities for profit upon those who receive it. Consider first that grandfathering will often provide those who receive it with an advantage over their competitors. While a firm that is grandfathered can continue to engage in behavior that is now prohibited, its competitors cannot (except to the extent that the area also grandfathered). This presumably will make production less costly for the grandfathered firm than for other firms.[43] Grandfathering thus affords existing firms—who are grandfathered—a "barrier against entry."[44] This barrier protects existing companies for would-be competitors who might enter the market; these new competitors would face costs that existing actors do not.[45] Let M_n represent the benefit from this "barrier against entry" that the grandfathered firm receives in year n.

Second, to the extent that the amortization period is not based upon a set time period, but rather is tied to the time that the capital equipment is actually in use, that creates an incentive for investors to extend the life of the equipment from the U years that it was expected to remain in service out to V years instead, $U < V$.[46]

Third, property-based transition relief is more likely than liability-based relief to confer on recipients the possibility of successfully seeking a continuation of the grandfathering when it is set to expire. As I have discussed above, liability-based relief will tend to consist of a one-time payment, after which the transition relief will be concluded; it would be odd, then, if years later recipients sought payment of additional funds. In contrast, recipients will enjoy property-based relief over a period of time. When the end of that period draws near, it will be less jarring to have actors who have been receiving relief lobby simply to have what now seems to be the status quo continue. In some sense, then, actors receiving property-based relief in effect have the option of *lobbying later* to preserve the grandfathering benefit.[47] Call this option value O

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[43] Otherwise, one would expect the grandfathered firm to give up the behavior voluntarily.
[44] *See* Nathaniel O. Keohane, Richard L. Revesz & Robert N. Stavins, *The Choice of Regulatory Instruments in Environmental Policy*, 22 HARV. ENVTL. L. REV. 313, 348-51 (1998).
[45] I have suggested elsewhere that this benefit might more properly be seen as a "barrier against exit," that makes it less attractive for existing competitors to exit a field. *See* Nash, *supra* note [check], at 506.
[46] *See* Nash & Revesz, *supra* note [check], at 1709.
[47] *See* Revesz & Kong, *supra* note [check], at 40-51 (presenting public choice analysis of attempts to extend Clean Air Act grandfathering); Nash & Revesz, *supra* note [check], at 1695-1705 (documenting

(discounted to present value). *O* could end up being less than zero of firms expend resources on lobbying to no avail, but, assuming that the firms have considerable sophistication, firms will be unlikely to lobby unless lobbying is likely to bring results that exceed its costs.

There is one cost that grandfathering is likely to impose: To the extent that grandfathering terminates when a piece of equipment is modified, owners may be reticent to undertake cost-effective, efficient modifications that they otherwise would undertake. This decision may result from certainty that the modification would mean the end of grandfathered status, or simply out of fear that that might be the case. This so-called "old plant effect"—which also reduces environmental quality, as I discuss below, will likely exact an efficiency charge, say ε, on an owner.

Given these points, the value of property-based relief will be

$$O - \varepsilon + \sum_{N=0}^{V} \frac{P_n^A + M_n}{(1+r)^n}$$

and a recipient's net profit will be

$$NP_{FP} = -I_0 + O - \varepsilon + \sum_{N=0}^{V} \frac{P_n^A + M_n}{(1+r)^n} \qquad (4)$$

recent attempts by industry to extend Clean Air Act grandfathering which were successful with EPA but ultimately mostly stricken by the courts).

For partial property-based relief (with $0 < \gamma < 1$), the value of relief will be

$$O - \varepsilon + \gamma \sum_{N=0}^{V} \frac{P_n^A + M_n}{(1+r)^n}$$

and a recipient's net profit will be

$$NP_{PP} = -I_0 + O - \varepsilon + \gamma \sum_{N=0}^{V} \frac{P_n^A + M_n}{(1+r)^n} \qquad (5)$$

Property-based transition relief thus offers recipients more profits than does liability-based relief. The difference in net profits (assuming full relief (i.e., $\gamma = 1$, and that ρ is less than 1) is:

$$O - \varepsilon + \sum_{n=0}^{U} \frac{(1-\rho)P_n^A + M_n}{(1+r)^n} + \sum_{n=U+1}^{V} \frac{P_n^A + M_n}{(1+r)^n}$$

In the end, it seems highly likely that $NP_{FC} \leq NP_{FP}$ and also highly likely that $NP_{FC} \leq NP \leq NP_{FP}$.[48] It also seems highly likely that $NP_{PC} \leq NP_{PP}$.

Finally, note that a grandfathering of permits under a tradable pollution permit system will bring more benefit to recipients than even a simple grandfathering scheme. For every permit a holder has, the holder can either use the permit—and thus obtain profit based on its use—or sell the permit—and thus obtain money equal to the fair market value of the permit ("FMV").[49] In effect, the holder will obtain the maximum of profit and FMV. Beyond that, the recipient of grandfathered permits over time will benefit from a barrier against entry: Even if the holder chooses to sell the permits, the fact that new entrants must pay for permits will discourage would-be competitors from entering the field. And the recipient will also enjoy the option value O of possibly extending the distribution of permits at no charge farther into the future. The net profit a recipient enjoys under such a regime, then, will be at least as much as NP_{FP}, and perhaps even greater.

[48] Another way to understand the result is that, to the extent that the legislature establishes a fixed "amount" of transition relief, somewhat more liability-based relief ought to be awarded than if the relief were property-based.

[49] There may be tax consequences to such sales. For discussion, see Jonathan Remy Nash, *Taxes and the Success of Non-Tax Market-Based Environmental Regulatory Regimes*, *in* 5 CRITICAL ISSUES IN ENVIRONMENTAL TAXATION 735 (Nathalie J. Chalifour et al. eds., 2008).

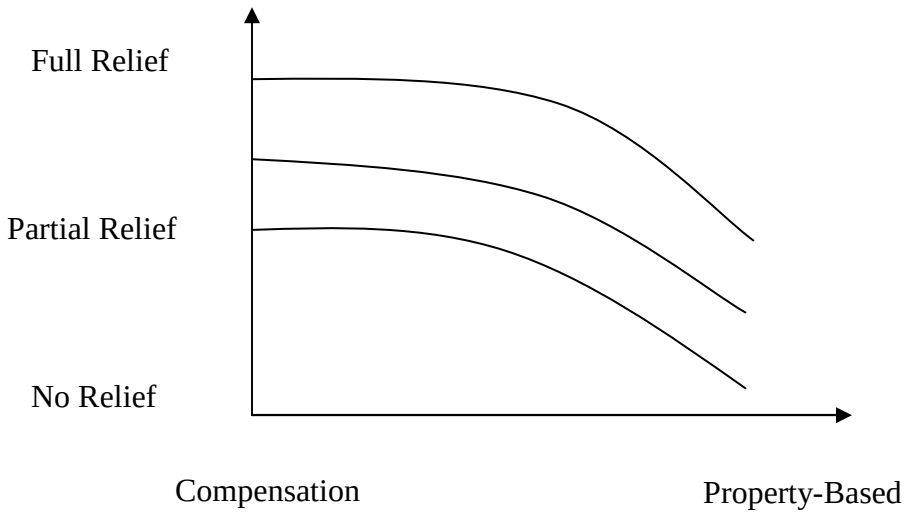
III. THE POLITICAL ECONOMY OF LIABILITY- AND PROPERTY -BASED TRANSITION RELIEF

The prior Part established that, as a general matter, property-based compensation will be larger than liability-based compensation for owners of firms. In this Part, I use that finding to consider the political economy of transition relief in this area. With respect to transition relief for owners, government supplies transition relief while owners provide the demand for it.

Consider first that owners will prefer more transition relief to less transition relief. Recall that, for any given level of transition relief, property-based relief will be more valuable than liability-based relief. Thus, one would expect owners to prefer property-based relief to liability-based relief.

Moreover, it seems that, depending on the magnitude of γ, firms may prefer partial property-based relief to full liability-based relief. This is reflected in Figure 1. The x- and y-axes represent two variables that determine the value of transition relief: whether the relief is liability- or property-based, and the extent to which the relief is "full," respectively. The ellipses in the figure represent firms' indifference curves as to combinations of form and scope. They reflect the fact that more complete liability-based relief will be disfavored as compared to less complete property-based relief.

FIGURE 1



On the supply side, to the extent that government is constrained in granting transition relief, it is most likely to be constrained by the amount of actual government outlays. Consider that, for full liability-based relief, government outlays G_{FC} will equal

$$G_{FC} = C + \rho \sum_{n=0}^{U} \frac{P_n^A}{(1+r)^n} \qquad (6)$$

where C is the amount of transition relief (if any) given to actors other than investors in the capital equipment (e.g., workers).

Contrast that to the government outlays for property-based relief, G_{FP}. G_{FP} will be essentially zero. After all, here owners profit simply because they may engage in the behavior in which they previously have behaved; the government need not pay out any amount. To be sure, from a Coasean perspective one might argue that the government has foregone income that it otherwise would have had—for instance, by distributing at no charge pollution permits that it could have auctioned off—and that this is equivalent to an outlay.[50] To whatever extent this argument makes economic sense, however, framing effects still may make government outlays appear to be zero.[51]

One also might argue that government expenditures in the future will be likely because of environmental harm that will likely result from polluting behaviors that are allowed to continue under property-based relief. Again, however, framing effects are likely to render those costs as speculative and temporally removed at the time that relief is granted, and therefore are less likely to be included in the outlay calculus.

Note in addition that government actors may anticipate benefits from future lobbying by those receiving grandfathering to extend that grandfathering further. Indeed, Fred McChesney has argued that legislators prefer regimes that put in place future opportunities to receive rents by virtue of lobbying.[52]

Note that other constituencies—such as workers and consumers—receive some transition relief by virtue of property-based transition relief received by owners. Thus, the likelihood of any actual government outlay to those groups is also significantly reduced where owners enjoy property-based relief. In addition, these other constituencies

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[50] *See, e.g.*, STANLEY S. SURREY & PAUL R. MCDANIEL, TAX EXPENDITURES (1985); Stanley S. Surrey, *Tax Incentives as a Device for Implementing Government Policy: A Comparison with Direct Government Expenditures*, 83 HARV. L. REV. 705 (1970).

[51] *See, e.g.*, Elizabeth Garrett, *A Fiscal Constitution with Supermajority Voting Rules*, 40 WM. & MARY L. REV. 471, 498-99 (1999) (noting debate in the literature over the public perception of tax expenditures, as compared to affirmative government spending); *cf.* Nash, *supra* note [check], at 356-57 (noting the importance of how a regulatory regime frames the role of government to the regime's perception and acceptance).

[52] *See generally* FRED S. MCCHESNEY, MONEY FOR NOTHING: POLITICIANS, RENT EXTRACTION, AND POLITICAL EXTORTION (1997).

may also prefer property-based relief, since they will receive some benefit that may not be replicated under liability-based relief.

Finally, note that those who benefit from improvement in environmental quality are likely often to be dispersed and, therefore, to wield less political clout (at least as compared to other interest groups). Thus, even though the public-at-large might prefer the higher environmental quality that accompanies the choice of liability-based transition relief as compared to property-based relief, government suppliers of transition relief may not see much of that demand strongly expressed.

In conclusion, to the extent that transition relief is on the table, owners are likely to prefer property-based relief because it is probably going to be larger than liability-based relief. Government is also likely to prefer property-based relief because it is seen to require less in the way of actual, visible government outlays. And other constituencies are likely also to prefer the tangible benefits of property-based relief, or else to face difficulties having their wishes vindicated in the political process. As a consequence, one should expect property-based relief to be far more common than liability-based relief.

IV. NORMATIVE EVALUATION OF LIABILITY- AND PROPERTY-BASED TRANSITION RELIEF

In this Part, I turn to a normative evaluation of the choice between liability-based and property-based legal transition relief.[53] As I described above, if one does not accept any justification for limited transition relief or not (i.e., if one adheres to Kaplow's strict preference against transition relief), one will prefer less transition to more transition relief. On the other hand, if one accepts some limited transition relief in some settings, one should still prefer to err on the side of less transition relief than more, unless it can clearly be shown that the lesser choice is far below the optimal level, i.e., given a choice between one level of transition relief that is below the optimal level by some amount, and another level that is above the optimum by the same amount, one should prefer the former.

Given this normative metric, it seems that liability-based relief is preferable to property-based relief. First, in terms of the value of what is being given to industry, property-based relief includes incentives for distortionary behavior: the incentive to extend the useful life of equipment beyond what is economically desirable, the incentive to lobby to extend grandfathering beyond its expiration date, and the erection of barrier against entry.

[53] Much ink has been spilled over the question of whether, in general, property rules or liability rules are normatively better ways to protect entitlements. *See, e.g.*, Krier & Schwab, *supra* note [check]. Most of those analyses rest on facts not applicable here: that the validity of the entitlement is disputed between private actors, and a court is to determine the proper entitlement. Thus, for example, it is sometimes argued that liability rules are inferior since they require valuation of the entitlement, and valuation can pose great difficulties for courts. *See, e.g.*, *id.* at [check]. In this context, it is true that Congress might also have difficulties arriving at "correct" valuations. But, as I have argued above, this may be a benefit here, since it serves to cabin the scope of transition relief. More generally, Congress is not institutionally expected to arrive at the "correct" amount of relief in the same way that a court might be expected to.

Second, property-based relief will allow certain behavior that degrades the environment to continue.[54] Moreover, under what is called the "old plant effect," a more stringent regulatory regime combined with grandfathering may, perversely, actually wind up producing poorer environmental quality than obtained under the old, less stringent regime. Consider that owners who enjoy the benefits of grandfathering may put off building new plants—or updating old ones—if that action would result in the loss of the grandfathering benefit.[55] But extending the life of an existing plant not only avoids grandfathering, but it also means that older—and likely dirtier and less efficient—plants will remain in operation longer.

It is worth noting that property-based transition relief does offer the benefit of (to some degree at least) helping all groups who would otherwise be adversely affected by the new legal regime. Grandfathering a plant will help not only the owners of the plant, but also employees at the plant, and also consumers who purchase the products produced at the plant. In contrast, liability-based relief may raise difficult questions about how to allocate scarce moneys among multiple groups who may rightfully claim to have been adversely affected.[56]

At the end of the day, however, it seems that, unless *C*—the compensation given to groups other than industry as transition relief (see equation (6) above)—is very large, the amount of transition relief afforded by liability-based relief will be smaller—and therefore probably preferable to—property-based relief. In addition, from a social welfare perspective, one must include as well the environmental degradation costs that likely accompany property-based relief. Ironically, then, while liability-based relief is generally normatively preferable, political economy predicts that property-based relief will more often result.

V. CONCLUSION

This Paper has argued that, in the context of relief from environmental legal regime change, property-based forms of relief are likely to be more common than liability-based relief. At the same time, it also has argued that liability-based relief is likely to be normatively preferable.

In future research, I hope to address the question of how to move the likely outcomes closer to the desirable ones. One possible solution may be to view liability- and property-based transition relief as providing different degrees of relief. The arguments here indicate that the low end of liability-based relief is lower than the low end

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[54] *See* Kaplow, *supra* note [check], at 186 (noting that grandfathering, in all its variations, will "allow adverse effects of pre-enactment investment to continue.").

[55] *See* Nash & Revesz, *supra* note [check], at 1708-12.

[56] *See* Nash, *supra* note [check], at [check] (describing this problem in the context of fisheries regulation); Masur & Nash, *supra* note [check], at [check] (arguing in favor of an independent agency to make these difficult allocative decisions).

Of course, one can argue that grandfathering to some degree simply preserves the status quo, which may have its own distributive downsides.

of property-based relief, while the high-end of property-based relief is greater than the high end of liability-based relief. That said, there is likely to be considerable overlap between the two, with a given level of liability-based relief corresponding to a level of property-based relief (in effect, with a lower ρ). This suggests that, to the extent that property-based relief is the natural default, one might be able to translate that to monetary compensation (albeit without compensation for items such as the option on extending the grandfathering).

Another avenue for future research would be to consider other areas where the theory about transition relief here might have application.