Courts, Legislatures, and Property Rule Changes: Lessons from Eminent Domain During the 19th Century Railroad Boom

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Abstract: As property rules "evolve" in the face of changing circumstances, courts and legislatures shape the process. Although recent theoretical work has articulated a tradeoff that can render either the judicial or legislative branch the preferable institution in which to vest rule-changing authority, empirical analysis of the subject remains scant. In this paper, we assemble a data set that enables us to study judicial and legislative modifications to a property rule – the benefit offset – that was widely employed by railroad companies during the 19th century to reduce required compensation for land taken through eminent domain. At the beginning of the railroad boom, all states allowed the benefit offset; by the end, most states had banned it, some via court decisions, others via legislation. We develop a theoretical model that allows for interaction between a court and a legislature, where both the court and the legislature act as (imperfect) agents of the public. The patterns apparent in the data support the model's predictions: 1) challenges to the benefit offset generally began with litigation; 2) all states that litigated the offset eventually restricted it, but not always through litigation; 3) where courts chose to allow the offset, legislation restricted it, often with substantial lags; 4) the lags suggest not legislative ineffectiveness, but rather litigation launched when the offset was socially valuable (i.e., early in the track building process). Our model, econometric findings, and historical analysis show how giving both the court and the legislature the power to alter property rules establishes a redundancy that can expand the scope of rules the public will be willing to delegate.

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I. Introduction

Although it is widely recognized that property rules evolve in the face of changing circumstances (e.g., technological development), much remains unknown about the roles played by courts and legislatures in that process. Many scholars (e.g., Priest 1977; Rubin 1977) have argued that "judge-made" common law allows rules to evolve in an efficient fashion, while more recent theoretical research has articulated a tradeoff that can render either the judicial or the legislative branch the preferable institution in which to vest rule-changing authority (e.g., Maskin and Tirole 2004).[1] In terms of empirical analysis, there has been relatively little work on the similarities and differences between judicial and legislative control of rule changes. The likely reason is paucity of data – rule changes occur infrequently, and when changes do occur, they may lack sufficient comparability or variability.

In this paper, we assemble a novel data set to address that gap, investigating a property rule that was widely employed and then widely altered: the "benefit offset." The benefit offset was a rule that allowed entities taking property via eminent domain to reduce the mandated "just compensation" by subsequent rises in property values attributable to the project for which the property was taken (see Section II for detail).[2] The benefit offset gradually became a point of contention when it was employed by railroad companies taking private land to build rail lines during the 19th century. At the start of the railroad boom, all states allowed railroad companies to offset prospective benefits when taking land via eminent domain; by the end of the boom, most states had banned it. In some states the benefit offset was banned by court decision, in

[1] The possible efficiency of common law has been of longstanding interest; see, e.g., Coase (1960), Demsetz (1967), and Posner (1992). Hayek (1960) emphasizes the adaptability of judge-made law as one of its desirable features; see Beck, Demirguc-Kunt, and Levine (2003) for an empirical test applied to financial systems. Landes and Posner (1975) develop a political economy approach to court-legislature interaction; see also Glaeser, Johnson, and Shleifer (2001).

[2] There is a large literature on the economics of eminent domain; see, e.g., Munch (1976), Epstein (1985), Hermalin (1995), Miceli and Segerson (2007), Shavell (2010), and the work cited later in this paper.

other states through legislation (statutes or constitutional amendments), and in a few others through both litigation and legislation. These differences provide substantial variation to explore.

We begin by developing a simple theoretical model in which a rule can be banned (or not) by either a court or a legislature.[3] We base our model on stylized differences between courts and legislatures: We assume that the judiciary can respond rapidly once a segment of the population harmed by a rule decides to challenge the rule in court; at the time of the challenge, the court decides whether or not to strike down the rule (and the court will not later reverse its decision).[4] We assume that the legislature also has the power to disallow the rule, and it will do so at a point in time determined by the manner in which it weighs the costs and benefits accruing to constituents. The model illustrates how giving *both* the court and the legislature the power to alter rules establishes a redundancy that can expand the scope of rules the public will be willing to delegate, in turn increasing the ability of the system to support alterations to specific rules without threatening the stability of the underlying property rights regime.

We apply the model to our benefit offset data set. The evidence we develop is broadly

[3] For "legislatures," one can read "voters" – the key point is that legislation (especially constitutional amendments, as used to restrict offsetting) reflects the desires of at least a subset (and perhaps a majority) of voters. It is worth noting that political economy considerations outside the scope of our paper may imply that either a court or a legislature is preferable: Although judges are generally better insulated from interest group lobbying, that very insulation may produce welfare-reducing decisions (consider the regular decrying of "activist" judges). See Fleck and Hanssen (2013a) for a review of public choice issues as they apply to judges. Fleck and Hanssen (2013b) model the role of judicial review in checking electoral majorities and consider several applications, including eminent domain in the context of the *Kelo* decision. See Glaeser and Shleifer (2003) for a model that evaluates the social desirability of judges versus regulators ("legislators" in our parlance) as a function of levels of corruption. See Hanssen (2004a) for a model and analysis in which legislatures choose judicial institutions strategically.

[4] As a practical matter, when compared to legislatures, courts are more constrained in their ability to engage in frequent policy reversals. Thus, we consider the case when only one legal challenge will be filed (and the court's response to that initial challenge is not subject to future reversal by the judiciary). For work on why judges respect precedent and the effect on judicial decisions, see, e.g., Easterbrook (1982), Rasmusen (1994), and Knight and Epstein (1996). By contrast, legislators have much more flexibility – the capital gains tax, for example, may be 30 percent next year, or 15 percent, or 0, depending entirely on who holds the majority in the legislature. It is possible to establish a legal system that does not emphasize precedent, and there can be advantages and disadvantages of doing so; see Fleck and Hanssen (2012), who offer an explanation of why the ancient Athenians designed a system that did not rely on precedent.

consistent with the model's predictions. First, we find that nearly every state that chose to restrict the benefit offset began with litigation; this was true regardless of whether the benefit offset was eventually reined in by a court or through an act of the legislature. Second, in very few of the states where courts restricted the benefit offset did legislatures enact restricting legislation, while *all* legislatures in states where courts declined to restrict the benefit offset did so. An immediate conclusion can be drawn: When something (e.g., inter-temporally diminishing marginal benefits) makes a property rule sufficiently unattractive, a legal challenge is likely and, if the court does not act, a majoritarian institution can act – and in our data set always does.

Yet these results are only parts of a richer story. The public (or its elected representatives) can choose not just *if*, but *when* to pass legislation that reverses a court decision. What we see empirically is that while some states moved quickly, enacting legislation shortly after court decisions, other states waited years (or even decades) to respond. Although delays of this magnitude could, in principle, reflect the public's ineffectiveness in reversing a court, we suggest that it instead illustrates the court's unique role. When a court knows that legislation can be used to restrict a rule that becomes too costly, the court may be loath to declare the rule unconstitutional – because doing so will preclude a future flow of benefits. In other words, when a court expects that a rule will yield benefits as well as costs, it may decide, in the public's interest, to refrain from striking down that rule, even though the rule will become harmful at some point.

The model illustrates that a system of dual checks that works in this manner allows voters to benefit from a broader range of rules than they would otherwise be willing to enact. A corollary of this implication is that frequent property rule changes (such as evinced over the

history of the United States) need not signify a failure of the system, but rather voter confidence in the feasibility of welfare-enhancing rule changes.

That said, our results do *not* imply that the system will always protect property rights well – and indeed, the model illustrates the circumstances under which it will not. How effectively a legislature (or, more generally, any majoritarian institution) monitors and corrects court decisions that allow potentially harmful property rules to persist depends on the manner in which the legislature weighs its constituents' costs and benefits. If, for instance, the segment of the population that stands to benefit from a property rule dominates the legislative process, while the segment that stands to lose has little political influence, the legislature may fail to block harmful policies allowed by the court. In other words, whether a court and legislature provide an effective system of dual checks depends on the representativeness of the political system. If, as in the case of the benefit offset, the potential losers are politically influential landowners, one should expect to find (as we do) that the system of dual checks works well as a mechanism for reining in rules that become very costly. Yet if, by contrast, the potential losers are disenfranchised (or poorly enfranchised) – as were residents evicted from their homes by urban renewal projects in the middle of the 20th century (see our discussion in Section V) – our model provides reason to expect socially undesirable outcomes if courts fail to act.

Analysis of the interaction between courts and legislatures has a long history, including the discussion and debate leading to the initial design of a "separation of powers" regime by the U.S. Founding Fathers.[5] Recent work on judicial-legislative interaction has focused on such things as the willingness and/or ability of courts to check legislatures (e.g., Dahl 1957, 1989; McCloskey 1960; Bickel 1962; Ely 1980; Klarman 1996) or on how courts and legislatures

[5] Of course, the formal role of the court in a separation of powers system is to interpret the constitutionality of legislation, and to leave the actual legislative process to legislators and voters.

respond strategically to each other (e.g., Rogers 1991; Spiller and Gely 1992; Ferejohn and Weingast 1992; Epstein and Knight 1996; Segal 1997). Our analysis differs in that we model courts and legislatures as potential *partners* in the delicate process of changing property rules.

And the process is indeed delicate, as Lamoreaux (2011) notes in her discussion of "The Mystery of Property Rights." The mystery is this: On the one hand, secure and stable property rights are essential to economic development and growth; on the other hand, innovation and development may be retarded if property rules cannot evolve in the face of technological and social change.[6] To take a concrete example, the United States has a property rights regime sufficiently trusted that it serves as a destination for fleeing capital. Yet the United States also has a record of alterations to property rules (creating losers as well as winners) in the face of new technologies and/or the availability of new resources.[7] Our paper helps explain this apparent contradiction. Our model predicts (and our empirical results suggest) that where there are multiple checks, the public may be willing to accept rules that will eventually become very costly, as long as the rules are currently generating positive net benefits. As a result, a repeated pattern of rule changes – as seen throughout the history of eminent domain (e.g., Fleck and Hanssen 2010) – need not signal a system in which voters are naive or in which public figures are particularly difficult to control. Rather, the opposite may be true – the public may rationally delegate the eventually costly rules because it knows it can alter them later.

II. Legal and Historical Background of the Benefit Offset

When a parcel of land (or other property) is taken via eminent domain for a "public use,"

[6] For an earlier discussion of this idea, see Hogue (1966, 8).
[7] See, e.g., Aumann (1940), Horwitz (1977), Friedman (1985), and Posner (1992).

its owners are entitled to "just compensation."[8] These two requirements (public use and just compensation) are written into the U.S. Constitution and into the constitutions of most states, and ostensibly check the ability of governments to take private property. In practice, each requirement has proven sufficiently malleable so as to allow a broad range of takings.[9] Although the interpretation of "public use" has probably generated more debate, the method used to determine dollar amounts required for just compensation has also sparked controversy.[10] The debate over just compensation became particularly pronounced during the 19th century, largely because of the benefit offset (e.g., Nichols 1917; Fischel 1995; Fleck and Hanssen 2010).[11]

How the benefit offset worked is simple to illustrate. Assume a farmer loses 10 of 100 acres to a railroad, the pre-railroad price of farmland is $100 per acre, and the price rises to $105 per acre when the railroad lays its track. The farmer is due compensation equal to $1000 (10 x $100) for taken land, less $450 (90 x $5) for the increase in the value of the remaining land, summing to a net payment of $550.[12]

The benefit offset was one of several "expediting doctrines" used to support public

[8] Although eminent domain is typically used to take to land, attempts have been made to employ it to take such varied things as football franchises (see, e.g., *City of Oakland v. Oakland Raiders 32 Cal. 3d 60 1982*) and mortgages (San Bernardino County in California recently floated this idea – see, e.g., http://www.sfgate.com/business/bottomline/article/Eminent-domain-plan-gaining-support-3751091.php).

[9] The use of eminent domain has caused controversy throughout the history of the United States. See Hart (1995, 1996a, 1996b) on the early United States and the colonial era, and Fischel (1995, 2004) and Somin (2004) on more recent controversies. For overviews of how the debate over eminent domain has played out in the economic literature, see Epstein (1985), Hermalin (1995), and Miceli and Segerson (2007).

[10] See, e.g., Fleck and Hanssen (2010), who describe a series of controversies in the application of eminent domain.

[11] To understand the debate, note that courts often interpret "just compensation" as "market value," which may be sufficiently straightforward for farmland, but difficult to determine and probably less than fully compensatory when homes are being taken. For empirical evidence on the level of compensation actually paid to those whose property is taken, see Munch (1976) and Chang (2010). On the debate over the effects of compensation mechanisms on efficiency, see Blume, Rubinfeld, and Shapiro (1984), Fischel and Shapiro (1988, 1989), and Nosal (2001).

[12] We have not found a precise description of the mechanism by which likely future price rises were determined, but (judging from the wording of various court cases) it involved "impartial appraisers" (e.g., *Henry Kramer versus The Cleveland and Pittsburgh Railroad*, Supreme Court of Ohio, 5 Ohio St. 140, 1855) and a quasi-judicial process, similar to that used for determining compensation for land takings under eminent domain. For example, the state constitution of Oklahoma (Art. 2, Sect. 24) specifies "Such compensation shall be ascertained by a board of commissioners of not less than three freeholders. . . The commissioners shall be selected from the regular jury list of names prepared and made as the Legislature shall provide. Any party aggrieved shall have the right of appeal."

infrastructure projects (typically highways and canals) in the early 19th century. The value of these projects to the general public provided the rationale for efforts to expedite their completion.[13] Moreover, because the gains to residents (e.g., farmers, miners) of isolated locales from the construction of transport infrastructure were so enormous, relatively little controversy surrounded the benefit offset when it was first applied.

The earliest of these infrastructure projects were carried out by state governments, but failure and scandal in the first decades of the 19th century inspired policymakers to assign the responsibility to private corporations. These private corporations were vested with the same eminent domain powers – including offsetting – that governments had employed (e.g., Scheiber 1973). Thus, at the beginning of the railroad boom, every state allowed railroad companies to apply the benefit offset.

Initially, railroads' use of the benefit-offset generated little concern (presumably because landowners had so much to gain from access to rail transport), but as time passed, controversy arose. Much of the popular attention focused on instances in which railroads paid only a nominal sum for land taken. As Scheiber (1973, 237-238) explains:

> Frequent damage awards of one dollar, after offsetting had been figured, occurred in Illinois, and . . . awards of six cents, after offsetting, became a cause célèbre in New York.

Whether such cases indicate the misuse of the benefit offset or merely unpopular applications of the rule, we do not know; however, as we will show, the response in most states was not simply to alter the manner by which future rises in land values were calculated, but to eliminate

[13] See Scheiber (1973). Other expediting doctrines included restriction to statutory remedies in case of dispute, the limitation of compensation to property physically taken rather than damaged, and protection of the proceedings from jury trial. The rationale for subsidizing railroad construction (most famously through land grants) has been debated extensively, with explanations offered that include imperfect capital markets, racing, and the fact that railroads were natural monopolies (see, e.g., Engerman 1972; Mercer 1982; Donald and Hornbeck 2012; Duran 2013). On the variety of subsidies received by railroads, see U.S. Federal Coordinator of Transportation (1938).

completely the practice of general offsetting.[14]

Figure 1 shows the growth in miles of railroad track over the time period relevant to our study. Figure 2 shows a map of the U.S. railroad network as of 1918, shortly after track laid peaked at 254,000 miles in 1916. By then, most states had restricted the benefit offset.

III. A Model with Dual Checks on a Rule

To provide a theoretical foundation for our empirical analysis, we will model a system of dual checks (legislative and judicial) on the delegation of a rule that (if enacted) is beneficial initially, but will eventually do more harm than good. Note that if either the legislature or the court were a *perfect* monitor – always revoking rules at the efficient time to do so – the secondary check would be (at best) redundant. Thus, we consider a system of imperfect checks: Judicial decisions have some degree of randomness, and while legislatures respond to costs and benefits, they may act too slowly. Greek letters indicate exogenous parameters.

Assumptions

(A1) *Benefits and costs of the rule*. If established at time t=0, the rule in question will remain in effect until revoked by the legislature or by the court. For two segments of the public (Group H and Group L), the flow of benefits (or costs) generated by the rule at time t are as follows (for $t \geq 0$): $v_H(t) = \gamma$; $v_L(t) = \alpha - \delta t$; $\gamma > 0$; $\alpha > 0$; $\delta > 0$. Once the rule is revoked, the flows of costs and benefits become zero.

(A2) *Legislative mechanism to revoke the rule*. The legislature will revoke the rule if the weighted net benefit flow becomes negative. Stated more formally, the rule will be revoked as soon as $(1-\lambda)v_H(t) + \lambda v_L(t) < 0$, where λ is the weight on Group L ($0 \leq \lambda \leq 1$).[15]

(A3) *Decision to challenge the rule in court*. Members of Group L will challenge the rule in court if doing so will raise the expected benefits to Group L; the timing of the challenge

[14] Special benefits – benefits specific to a single owner's land – could continue to be offset in the majority of states even after general offsetting was restricted. For example, if in the course of building a railroad, a swamp was drained and land thus rendered cultivable, that benefit could be offset, while general rises in land values due to the new railroad line could not.

[15] Note that λ can reflect group L's relative electoral representation, lobbying ability, or both. See Section V for a discussion of real-world interpretations of λ.

will be chosen to maximize the expected net benefits to Group L.

(A4) *Judicial mechanism to revoke the rule*. If Group L challenges the rule in court, the court will decide either to revoke the rule at that time or to allow the rule to continue (in which case the rule remains in effect until revoked by the legislature). The probability of the court deciding to revoke the rule is proportional to the net social benefits: With $V_C(t)$ representing the public's expected net gain (i.e., summed over the two groups and based on Assumption A1) from the court revoking the rule at time t, the probability of the court revoking the rule is $P_R(t) = \max \{\pi V_C(t), 0\}$, where π is exogenous and in the following range: $0<\pi\leq 2\delta\lambda^2\gamma^{-2}(1-2\lambda)^{-2}$.[16]

Solving the Model

As a starting point, consider the net value that can be derived from an enacted rule. With t_E denoting the efficient time to revoke the rule (i.e., the time when the benefits of the rule switch from positive to negative), $t_E = (\gamma+\alpha)/\delta$. If the rule is revoked at t_E, the total benefits derived from the rule are $.5(\gamma+\alpha)^2/\delta$. Let B(t) denote the total benefits derived from enacting the rule at time 0 and revoking it at time t. A convenient way to express B(t) is as follows: $B(t) = B(t_E) - .5\delta(t-t_E)^2$ or, equivalently, $B(t) = .5(\gamma+\alpha)^2/\delta - .5\delta(t-t_E)^2$.

To find the potential gains from having both a court and a legislature, we must begin with the legislature's behavior. The time at which the legislature will revoke the rule (denoted t_λ) is $t_\lambda = [(1-\lambda)\gamma + \lambda\alpha]/(\lambda\delta)$. The court becomes relevant when $\lambda<.5$ (i.e., when the legislature places a weight on Group L's benefits that is smaller than the weight it places on Group H's benefits); in this case, the legislature waits too long relative to the social optimum before revoking the rule (i.e., $t_E<t_\lambda$).[17] With $\lambda<.5$, the value of the court revoking the rule at time t is indicated by $V_C(t) = B(t) - B(t_\lambda)$. Thus, $V_C(t)$ and, consequently, $P_R(t)$ (i.e., the probability of the court revoking the rule) will take positive values over the range of t for which $(2t_E-t_\lambda)<t<t_\lambda$, and zero values

[16] The restrictions on the value of π ensure that the probability of the court revoking the rule remains in the range from zero to one.

[17] If $\lambda\geq.5$, the court will never revoke the rule, because it would never be in a position to improve the timing of the revocation.

otherwise.[18]

Now consider Group L's decision regarding whether and when to bring a legal challenge. The revocation time that would maximize Group L's benefits (denoted t_L) is: $t_L = \alpha/\delta$. But Group L will not challenge the rule at that time (as we will explain more fully), because there is a tradeoff between (i) the probability of the court revoking the rule and (ii) the benefits to Group L of the rule being revoked. Stated more precisely, Group L's expected benefits (denoted E_L) depend on the timing of the challenge (denoted t_C) and, conditional on the challenge being successful, Group L's benefits (denoted B_L): $E_L(t_C) = P_R(t_C)[B_L(t_C) - B_L(t_\lambda)]$. Expressing this in terms of the benefits:

$$E_L(t_C) = \pi[B(t_C) - B(t_\lambda)][B_L(t_C) - B_L(t_\lambda)]$$

This can be rewritten as a function of points in time:

$$E_L(t_C) = \pi\delta^2[(t_\lambda - t_E)^2 - (t_E - t_C)^2][(t_\lambda - t_L)^2 - (t_C - t_L)^2]$$

Identifying the time at which Group L brings its legal challenge (denoted t_C^*) is straightforward. Note that the optimal time for a challenge will be in the range such that: $(2t_E - t_\lambda) < t_C^* < t_\lambda$, so that $P_R(t_C) > 0$; $t_L \leq t_C^*$, because waiting until t_L would increase $B_L(t_C)$ without decreasing $P_R(t_C)$; $t_C^* \leq t_E$, because waiting past t_E would reduce both $P_R(t_C)$ and $B_L(t_C)$. The question, then, is at what point between $\min\{t_L, 2t_E - t_\lambda\}$ and t_E will Group L challenge the rule. Because $E_L(t_C)$ is concave over that range, there is a unique t_C^* that satisfies: $\partial E_L(t_C)/\partial t_C = 0$.[19]

Implications

[18] The maximum value of $P_R(t)$ occurs at $t=t_E$, with $P_R(t_E) = .5\pi\delta^{-1}\lambda^{-2}\gamma^2(1-2\lambda)^2$. Recall that Assumption A4 restricts the possible values of π so that $0 < P_R(t_E) \leq 1$.

[19] To see why there must be a unique interior solution t_C^*, note that the question above for $E_L(t_C)$ yields:

$$\partial E_L(t_C)/\partial t_C = (t_E - t_C)[(t_\lambda - t_L)^2 - (t_C - t_L)^2]/(2\pi\delta^2) - [(t_\lambda - t_E)^2 - (t_E - t_C)^2](t_C - t_L)]/(2\pi\delta^2)$$
$$\partial^2 E_L(t_C)/\partial t_C^2 = -[(t_\lambda - t_L)^2 - (t_C - t_L)^2]/(2\pi\delta^2) - 4[(t_E - t_C)](t_C - t_L) - [(t_\lambda - t_E)^2 - (t_C - t_E)^2]/(2\pi\delta^2)$$

Thus, $\partial^2 E_L(t_C)/\partial t_C^2 < 0$ in the relevant range, because $t_L < t_C < t_E$ in the relevant range. Note that this also verifies t_C^* as an interior (i.e., $t_L < t_C^* < t_E$) maximum with positive values, because: $\partial E_L(t_C)/\partial t_C > 0$ if $t_C = t_L$; $\partial E_L(t_C)/\partial t_C < 0$ if $t_C = t_E$; and over the time period from $\max\{t_L, 2t_E - t_\lambda\}$ to t_E (which includes a positive amount of time), it must be that $P_R(t_C) > 0$, $B_L(t_C) > 0$, and (therefore) $E_L(t_C) > 0$.

What should we expect to observe from a system of dual checks? As a preliminary point, it is essential to recognize that real world data are not rich enough to allow direct tests of the model's predictions; notably, we cannot observe the net benefits of enacted rules, and thus we cannot test how courts and legislatures respond to those net benefits, per se. What we can do, however, is consider three implications that allow for indirect tests.

Implication 1: A group that is harmed by a rule (and expecting the harm to increase) will challenge the rule in court before the expected time for the legislature to revoke the rule. Thus, for initially beneficial rules that will become harmful, we expect to see challenges in court – even if it is the legislature that will eventually revoke the rule.

Implication 2: If harmed groups bring their challenges to court at the rational time to do so, courts will sometimes – but not always – agree to revoke the rule.

Implication 3: When a court decides, in response to a legal challenge, not to revoke a rule that will clearly become harmful, the legislature – if it is sufficiently responsive to the costs that fall on the harmed group – will revoke the rule in the future.

We can add a fourth implication that, rather than suggesting empirical tests, provides some plausible guidelines for interpreting empirical evidence:

Implication 4: When deciding whether to enact a rule, rational actors will consider the expected effects of judicial and legislative checks on that rule. Thus, even if one observes that a rule is revoked after it becomes harmful, that need not imply that the initial decision to establish the rule was undesirable, even among members of the group that eventually suffered harm from the rule. Moreover, the more the public can rely on a judicial check backed up by a legislative check, the more incentive it has to enact rules that can become harmful.

IV. Empirical Analysis

Restrictions on the benefit offset took two forms: court decisions ruling the benefit offset unconstitutional, and legislation outlawing use of the benefit offset (constitutional amendments and statutes). The data we collect include (i) all decisions involving railroads' use of the benefit offset handed down by each state's highest court and (ii) all statutes or constitutional

amendments restricting the benefit offset passed by individual states.[20] We obtained our litigation data from LexisNexis searches; the state-by-state information presented in Nichols (1917, chapter 16) provided an essential starting point. Nichols is also the source for most of our data on legislation to restrict the benefit offset.[21]

Table 1 indicates, for each state in our data set, whether the state litigated use of the benefit offset, and whether the state restricted the benefit offset through litigation, legislation, both, or neither. North and South Dakota are grouped together because railroad data are provided for the Dakotas jointly; as a result, we have 47 observations in total.[22] Table 2 provides summary statistics for these and several other variables we will employ in our analysis. As the tables indicate, more than 80% of all states restricted the offset. The average state began to lay railroad track in 1851; the average (restricting) state restricted the offset in 1869.[23] In the vast majority of states – 77% – the benefit offset was litigated. In 57% of states, high courts restricted the offset; in 30% of states, the offset was restricted via legislation.[24]

What was the broad temporal pattern of restrictions? Figure 3 plots the year that a state restricted the benefit offset (via either court decision or legislation) against the year the state first laid a mile of track. (States that did not restrict the benefit offset are excluded.) From the chart,

[20] Constitutional amendments were more common than statutes, and were typically written when new constitutions were drafted.

[21] For states that had not restricted the offset by 1917 (the year that Nichols' book was published), our data are based on supplemental examinations of constitutions and statutes. Our litigation data cover only high court decisions, not lower court decisions. Thus, if a lower court restricted use of the benefit offset and the case was not appealed, our data set would not include the case. Although this is not ideal, we believe it is unlikely to cause problems for inference – as a general rule, judicial decisions that overturn legislative acts are relatively rare, and are generally subject to appeal. In the 19th century, few states had intermediate courts of appeal, in which instance state supreme courts were required to hear all appeals from lower courts.

[22] Grouping North and South Dakota has little effect – both entered the Union at the same time (in 1889) and both are coded the same way with respect to restrictions on the benefit offset (no litigation and no legislated restrictions).

[23] Our track data are collected from Poor's *Manual of the Railroads of the United States*, which begins with 1835. It is possible that some states along the east coast may have had some small amount of track laid by then.

[24] Summing the percentages over the two types of restrictions does not equal that of the total with restrictions, because some states imposed both types of restrictions. The first state in our sample to litigate was New York in 1831; the last was Rhode Island in 1907 (the next to last was Virginia in 1894).

it can be seen that restrictions on the offset were adopted only gradually, over a time period spanning more than six decades. The fact that the later a state began building railroads, the later (on average) it restricted the benefit offset suggests the desirability of the offset fell as more railroad track was laid (perhaps driven by diminishing marginal returns to the track itself).

In short, it appears that states did not simultaneously "learn" that the benefit offset was a bad idea and then forbid it, but rather – as in our model – the value of the offset declined over time, with much cross-state heterogeneity in when the offset became harmful enough to merit restriction. In the model's terminology, t_E (the efficient time to restrict) may have varied across states. We will explore that possibility in what follows.

Very Basic Tests of Implications 1-3: The Temporal Pattern

We begin by investigating whether the data are broadly consistent with the model's implications. The model's first implication is that the rule will be challenged in court before the expected time that the legislature would revoke it. Of course, we cannot observe that "expected" time, but if we use actual time as a proxy, the implication can be restated to predict that litigation will (generally) precede legislation. As Figure 4 illustrates, this was certainly the case: Of the 39 states that restricted the benefit offset, 36 began by litigating (i.e., only 3 legislated without first litigating). The second implication is that courts will sometimes, but not always, agree to revoke the rule. Of the 36 state high courts in which the benefit offset was litigated, 27 ruled to restrict it, while nine did not. The model's third implication is that where a court does not act, the legislature eventually will. In all nine states where courts chose not to restrict the offset, restrictive legislation followed, while among the 27 states where courts restricted the offset, only two legislative restrictions followed.

Further Tests: At what Point in the Rail Building Process was the Offset Banned?

Given the small size of our data set, we will keep our objectives for inference modest and our specifications parsimonious. Our goal will be to establish some general features of the manner in which states adopted restrictions. Although our data set is not sufficient to allow us to establish precisely which factors led to which court and legislative actions, we can test whether early-restricting states differed from later-restricting states, and whether never-restricting states differed from both. In other words, by examining the factors that predict *when* a restriction occurred, we can assess whether courts and legislatures appear to have been responding to costs and benefits. If our model provides a useful description of the way in which states changed the benefit offset rule, we should find that early-banning states have a set of characteristics that suggest an early t_E (the efficient time to ban) while late-banning and never-banning states have a set of characteristics that suggest a later (or perhaps never-reached) t_E.

Two determinants of t_E: year of first track; land area per capita

Because we cannot observe t_E directly, we will focus on two factors likely to affect t_E. The first is the year in which the state began laying rail lines. If the value of additional railroad routes declines as more lines are laid – a reasonable assumption – restrictions should occur earlier in states that started laying railroad track earlier.[25] The second is intended to capture the influence of the state's topography on whether and when the benefit offset became undesirable. In essence, we would not expect a state with vast expanses of land and few people to have arrived rapidly at a point where there were so many rail lines that another line had little additional value – nor would we expect the benefit offset to then impose large costs on landowners, because land in such states is generally cheap. Therefore, we will use land area per

[25] This variable will, of course, reflect a variety of factors, most notably that railroads spread first in the eastern states (before many of the western states had even become states); see Table 1 and Figure 2. We will return to this issue later in the paper. On the value of transport infrastructure, see Melo, Graham, and Brage-Ardao (2013).

capita in 1900.[26] If the restriction of the benefit offset followed the process depicted by our model, we should find that states that started building track later and had more land per capita restricted the benefit offset later.

We begin by limiting our sample to the set of states that litigated the benefit offset (recall that all litigating states eventually restricted the benefit offset) and estimating a baseline regression: the year the state restricted the benefit offset as a function of year of first track and land per capita. The result is shown in the first column of Table 3. The estimated coefficients on year of first track and land per capita have the predicted positive signs and are statistically significantly different from zero in joint tests ($p = 0.02$).[27] It appears that states that began to lay track later and that had more land per capita in 1900 indeed restricted the benefit offset later.

Given that three states restricted the benefit offset legislatively without first litigating, it is useful to verify that the findings hold when these states are included in the sample.[28] The result is shown in the third column of Table 3. One consequence of adding these three observations is that the effects of year of first track and land per capita (again positive, as the model predicts) are now more precisely estimated, so that they are individually as well as jointly statistically significant.

To gain additional insight into Table 3's findings, we include a dummy variable that equals 1 if the state court restricted the benefit offset. The results are shown in columns 2 and 4 of Table 3. The estimated coefficients on court restriction are small and statistically insignificant, and the dummy variable's inclusion has almost no effect on the other estimated

[26] As we will discuss, land per capita is correlated with many other factors that could serve the same econometric purpose; thus, we interpret land per capita as a proxy for the effects of geography (our main concern) rather than as a variable intended to generate a coefficient with a precise causal interpretation.

[27] Note that joint significance is what is pertinent given that our main concern is the effect of heterogeneity in t_E (rather than the effects of each determinant of t_E). In any case, our data set is probably too small to yield precise estimates of the individual coefficients.

[28] These three are Florida, Kansas, and Nevada. Kansas entered the Union with a restriction written into its constitution, and Florida enacted a new constitution containing a restriction in 1886.

coefficients. The point estimates are of such magnitude as to predict that states with court restrictions banned the benefit offset less than one year after otherwise similar (i.e., holding constant year of first track and land per capita) states without court restrictions. This is consistent with (although not conclusive evidence of) judicial and majoritarian checks on the benefit offset taking effect at roughly equivalent stages in the decline of the benefit offset's net value – and corresponds to what the model predicts when legislative decisions are closely linked to net social benefits and courts (also weighing net social benefits) make forward looking decisions.[29]

States where courts did *not* restrict the offset

As shown in Table 1 and in Figure 4, nine state courts declined to restrict the benefit offset. Did the legal challenge occur relatively early in the railroad expansion process in these states, as would be the case if courts were responding to net benefits in the manner the model depicts? To address this question, we estimated the effects of our two main empirical determinants of t_E (year of first track; land per capita) on year of restriction for the set of states where courts restricted the benefit offset, and then examined the out-of-sample fitted values for the set of states where courts allowed the benefit offset. What we find is consistent with courts having allowed the benefit offset to continue when legal challenges came early in the track-building process: The fitted values (i.e., the predicted years of counterfactual court restrictions in states that had no court restrictions) are, on average, thirteen years after the year of the actual legal challenge. Of course, these results should be viewed as suggestive rather than conclusive,

[29] This is not to say that the stopping point would necessarily maximize net social benefits – as in our model, the way the political system weighs costs and benefits depends on who receives the benefits and who incurs the costs. It is well known, for example, that incumbent firms sometimes lobby to raise the costs of new entrants. And in the case of railroads, it is plausible that incumbents who had employed the benefit offset would subsequently support ending the practice as a mechanism to restrict entry. Thus, our claim is not one about efficiency per se, but rather one about the responsiveness of policy to costs and benefits. On the political economy of railroad regulation, see Gilligan, Marshall, and Weingast's (1989, 1990) analysis of the coalition in support of, and the economic incidence of provisions in, the Interstate Commerce Act of 1887.

because the fitted values are based on imprecisely estimated coefficients. However, as we will show later in this paper (see Table 6), we find complementary evidence in that the amount of time that elapsed between court rulings that allowed use of the benefit offset and the eventual restriction via legislation was typically substantial.

Reaching t_E late or never – explaining why some states never restricted the benefit offset

The eight states that never banned the offset are listed in Table 4, along with state-specific values for several variables (North and South Dakota are counted as one state). With so few states in the subsample, we cannot estimate the precise effects of each of these factors; nonetheless, it is quite clear that the non-restricting states *are* different, and in ways consistent with the model's predictions. As the table shows, states that did not restrict the offset had lower population densities, wider ranges of elevation, and less rainfall than states that did restrict the offset. They also began to lay track later on average – not surprisingly, most of these states are located in the West.

In the context of the model, these may be states that never reached t_E (the efficient time to revoke the rule) or even t_C (the optimal time for Group L to challenge the rule in court), because the railroad boom ended before enough lines had been laid for the benefit offset to become objectionable to landowners (i.e., there were not so many lines that the marginal benefits of an additional line to individual landowners would have been negative). Consider again Figure 2, which presents a map of U.S. railroads in 1918 (shortly after nationwide track miles peaked). Compared to the eastern half of the country, states in the western half were crossed by many fewer lines, presumably reflecting the much lower population densities and more difficult topographies documented in Table 4. Furthermore, the low population densities are not simply the result of late settlement – the eight non-restricting states account for all five of the lowest

population density states in the United States today (counting North and South Dakota as a single state and not including newcomer Alaska). They continue to be today what they were then – states where few people reside and land is generally cheap.[30]

We do not have enough data to sort out precisely which of the many differences between the eight non-restricting states and the other 39 caused the heterogeneous treatment of the benefit offset. Nonetheless, two simple econometric exercises can be conducted. First, we will extend Table 3's analysis by examining whether the states that never banned the benefit offset look more like the late-banning states than like the early-banning states. Second, we will use some simple probit specifications to investigate more directly the timing of judicial restrictions.

For the first exercise, we use the results from the restriction-imposing states (column 3 in Table 3) to obtain out-of-sample fitted values – that is, to obtain the predicted years for (counterfactual) restrictions – for the eight states that never restricted the benefit offset. For those eight states, the average fitted value is 1888, whereas for the states with restrictions the average fitted value (and, by mathematical necessity, the average year of actual restriction) is 1869. Thus, the non-restricting states do indeed look more like late-restricting states than like early-restricting states.[31]

For the second exercise, we estimate two probit specifications, with a dependent variable equal to 1 for states that imposed a restriction. The first of these uses year of first track and land per capita as the only explanatory variables, while the second adds a third (and new) explanatory variable: miles of 2007 railroad track per square mile of land. We use 2007 data (rather than historical data) in order to proxy for the long-run amount of track in each state – low values of

[30] According to the Lincoln Institute for Land Policy, average price of land for residences (not including structures) in these eleven states (ND and SD counted separately) as of the first quarter of 2012 was $19,000, versus $44,000 for the other 39 states. See http://www.lincolninst.edu/subcenters/land-values/land-prices-by-state.asp.

[31] Using the results from column 1 in Table 3 yields an even larger difference in predicted year for counterfactual restriction (1911) and the actual year of court restriction, but recall that these fitted values are based on less precisely estimated coefficients.

the variable highlight states that would have been unlikely ever to reach the point where the benefit offset became undesirable.[32] The first two columns of Table 5 present the results. The principal variable of interest (track per square mile) has a positive estimated effect (t=2.15) with a large magnitude.[33] While, as discussed above, there are many factors that vary between the non-restricting states and the other states (so it would be imprudent to attribute causality to the track variable), the finding is consistent with the hypothesis that the absence of restrictions on the benefit offset indicates a relative absence of harm from the benefit offset.

Did legislatures correct court "mistakes"?

At first glance, one might conclude from the fact that all state court decisions allowing the offset were superseded by legislative actions banning it (see Figure 4) that legislatures corrected judges who made "mistakes." However, the model suggests another possibility: Courts that are backstopped by legislatures may refrain from declaring a rule unconstitutional while the rule is still generating positive benefits on net, even if the rule will become socially harmful eventually. Is this what happened? Table 6 lists the nine states that passed legislative restrictions after courts allowed use of the benefit offset to continue; the table also shows the year of the initial litigation, the year of the subsequent legislation, the number of intervening years, and the amount of track (as a percent of 2007's total) that had been laid at both times. In only two (or perhaps three) instances did legislation follow immediately upon the heels of the court decision: The mean gap between a court's decision and legislation was more than nine

[32] An alternative approach would be to use data from when the miles of rail peaked in the United States (roughly a century ago). The advantage would be less noise from recent events, but there would be two major disadvantages. First, the variable would be more subject to endogeneity problems (e.g., the employment of the benefit offset presumably would have led to more track laid, ceteris paribus), whereas any effect of the benefit offset had probably all but disappeared by 2007 (most of the marginal routes have been removed). Second, and perhaps more importantly, the peak number of track miles occurred at different times in different states, as railroads spread to previously less well connected areas (such as remote parts of the western states).

[33] With all other variables at their sample means, the estimated probability of a restriction is .73 when evaluated with track per square mile at .0284 (one standard deviation below the mean of the variable) and .97 when track per square mile is raised to the .0586 (the mean of the variable).

years. It appears that legislation was not simply a means of correcting "erroneous" court decisions.[34]

In order to examine this in more detail, we estimate two probit specifications that predict court restrictions among the sample of states that litigated the offset. Each specification includes year of first track and land per capita; the second also includes the percentage of 2007 track that had been laid at the time of the court ruling. The results are shown in the third and fourth columns of Table 5: The track variable has the hypothesized positive sign and, while not precisely estimated (t=1.61), has a substantial magnitude.[35] The closer a state was to its stopping point (proxied for by 2007 track), the more likely were courts to restrict the offset.

Finally, we can glean suggestive evidence by looking at the percentage of year 2007 track for all states that eventually restricted use of the benefit offset (through either court or legislative action). Table 7 shows the result. The top row lists the average for the 27 states whose courts ruled the benefit offset unconstitutional. At the time of the court ruling, these states had laid on average 69% of year 2007 track. By comparison, the nine states in which courts allowed use of the offset had laid on average only 26% of year 2007 track (15% if the two states where legislatures immediately undid the court decisions are excluded). All nine of these states eventually passed legislation restricting the offset's use; they did so when (on average) 57% of year 2007 track had been laid. In short, the evidence suggests that legislatures and courts both responded, and in a similar fashion, to the extent to which the railroad network had been

[34] It is also worth noting that in the two instances where litigation appears to have occurred before the first mile of track was laid (Indiana and New York), that litigation involved non-railroad uses of the benefit offset (canals and roads). As noted, our track data come from Poor's *Manual of the Railroads of the United States*, which provides data only from 1835 onwards. New York may have had some small number of railroad lines built by 1831.

[35] With all variables at their sample means (among states that litigated), the estimated probability of a court restriction is .81. When the track variable is increased from its mean to its mean plus one standard deviation (i.e., increased from .585 to 1.222), the estimated probability increases to .94. We included a variable for whether judges were appointed or elected in the state at the time the case was litigated (see, e.g., Hanssen 2004b). The corresponding z-statistics are about 1.3; the coefficient estimates imply that electing judges is associated with a roughly 20 percent decrease in the likelihood that the benefit offset is banned by the court,

completed.

Summary of findings

In sum, we find as follows: First, if the benefit offset was challenged in court, the state eventually restricted the practice – through legislation if not through court decision. Second, courts and legislatures appear to have responded to costs and benefits, in the sense that each restricted the offset at similar points in the track building process. Third, where courts chose not to restrict the offset, the railroad building process was typically in its early stages – consistent with there being value in leaving it to the legislature to restrict at a later time. Always in such cases, legislatures passed later restrictions. Fourth, states that never restricted the benefit offset (none of which experienced a legal challenge) were sparsely populated and never developed a dense railroad network – the type of states our model suggests simply did not reach the point where it would have been worth restricting the benefit offset. Taken together, the results suggest that courts and legislatures provided an effective system of "dual checks" on the benefit offset – legislatures acting as backstops to court rulings.

V. The Model's Implication 4 and the "Mystery of Property Rights"

Our model thus highlights how a system of dual checks – courts backstopped by legislatures – can promote efficient property rule changes (i.e., changes that do not undo confidence in the broader property rights regime). We can thus offer a conjecture as to why the United States, despite its long history of changing property rules, maintains its reputation as a bastion of secure, growth-promoting property rights. First, the expected harm done by changes in property rights is limited, because damaging rules will eventually harm politically influential groups, and will then be altered by either courts or legislatures. Second, given the potential gains from allowing flexibility in property rules, combined with the limited expected harm, the

citizenry is willing to accept substantial evolution in property rules.

That said, it is important to note that our model also highlights the conditions under which the dual check system may *fail* to produce socially desirable outcomes. The key question is whether affected parties are well-represented in the political process. In the case of the benefit offset, the aggrieved parties were landowners – a group generally presumed to wield substantial political influence, as signified by λ in the model. Therefore, where courts chose not to restrict the use of the offset, legislatures could be counted on to do so (sometimes with substantial but arguably socially beneficial lags). This need not always be the case, as we will illustrate with brief discussions of two other (eventually) controversial uses of eminent domain.

Beginning during the New Deal and continuing through the 1960s, the federal government made funding available for large-scale "urban renewal" and "slum clearance" projects, creating incentives for municipalities to use eminent domain to take land and buildings.[36] Although these projects had widespread (and bipartisan) political support, they were bitterly opposed by displaced populations (e.g., Jacobs 1961; Wilson 1966). Litigants challenged the notion that the "renewal" of inner city areas was a legitimate public use (as constitutionally required for the employment of eminent domain), and the issue reached the U.S. Supreme Court in *Berman v. Parker* (1954). The Court chose *not* to outlaw the use of eminent domain for urban renewal projects, and in contrast to the benefit offset experience, no countervailing restrictive legislation (either state or federal) followed.[37] The reason was simple: The aggrieved parties were poor residents of poor communities – a constituency with little political influence (e.g.,

[36] See, for example, Babler (1937), Altshuler and Luberoff (2003), Fischel (2004). See also the overview in Fleck and Hanssen (2010).

[37] *Berman et al. v. Parker et al.*, 348 U.S. 26 (1954). The judiciary was required to choose between an older "narrow doctrine" of public use (which, in essence, interpreted "public use" as "use by the public") and the more expansive interpretation needed to justify urban renewal (allowing takings for a "public purpose"). Thus, despite the unanimous nature of the decision, the Court's expansive interpretation of public use reflected a new consensus. See, e.g., Fleck and Hanssen (2010, 107-108), including the discussion of how the differences between Nichols (1917) and Nichols (1940) reflect the judiciary's evolving interpretation of public use.

Lewis 1959; Jacobs 1961; Wilson 1966).[38] In the context of the model, λ (the weight the legislature places on the interests of those harmed by the property rule) was small. What brought large-scale urban renewal to an end was not legislation, but riots, a socially destructive means by which a disenfranchised group can make its feelings known.[39]

In *Kelo v. New London* (2004), another eminent domain case reached the U.S. Supreme Court. The Court ruled (5 to 4) in that the city of New London could use eminent domain to take non-blighted homes as part of a private waterfront development that included a campus for Pfizer, the pharmaceuticals giant.[40] As with urban renewal, unhappy residents challenged the notion that this was a legitimate public use. There was a difference, however – the potential losers from this practice were not urban poor, but rather middle class homeowners (along with, presumably, those who expected to become homeowners). Middle class homeowners are generally a politically influential group (e.g., Fischel 2001); in the language of the model, λ was large. As a result, and in sharp contrast to the lack of legislative response to urban renewal concerns, within two years of the *Kelo* decision, thirty-seven states had passed restrictions on the use of eminent domain that *Kelo* had allowed.[41]

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[38] One reason for the lack of influence was a lack of direct involvement in the deliberative process (e.g., Jacobs 1961). Moreover, disenfranchisement among the poor (especially African Americans in the South) also reduced the political influence of those harmed by urban renewal. For empirical evidence on the greater influence of voters over nonvoters, see Fleck's (1999, 2001) analysis of distributive policy.

[39] Altshuler and Luberoff (2003, 24-5) write, "Dramatic national change [in the urban renewal approach] awaited the urban riots of 1965-67. Some of the poster cities of the urban renewal program, such as Newark and Detroit, were among the hardest hit. Study commissions appointed to explain what had caused the riots, moreover, commonly found government clearance activities to be among the most intense sources of ghetto resident grievance. . . . One immediate result was a near-total abandonment of slum clearance activities. Some renewal officials, of course, wanted to proceed with their plans, but virtually no one else cared to risk provoking riots." On the costliness of – and in particular the discontent caused by – these projects, see also Anderson (1964) and Kerner Commission (1968). This is not to say that urban renewal had only negative effects (see Collins and Shester 2013 for an analysis of benefits); our point is that the political process could not be counted on to give much weight to the losses.

[40] *Susette Kelo, et al., v. City of New London, Connecticut, et al*., 545 U.S. 04-108 [2005].

[41] The rapid reaction suggests that affected parties, in contrast to the case of the benefit offset, did not expect a transitory period of net gain. This is not to say that in all of these states the new legislation will be sufficient to block the practices that voters seek to block; see, e.g., Somin (2009). On the types of legislation passed, see also López, Jewell, and Campbell (2009).

To be clear, our argument is not that landowners (or homeowners) are necessarily an influential group (i.e., a group for which the model's λ is large) – they may or not be, depending upon the issue.[42] The key point is this: The system of dual checks will only work as well as the political system balances the interests of those who stand to gain and those who stand to lose.

VI. Conclusion

Although it is widely recognized that property rules evolve in the face of changing circumstances (e.g., technological development), and that the evolution may be promoted by either legislatures or courts, lack of suitable data renders systematic investigation difficult. In this paper, we employ a data set that allows for systematic analysis of the benefit offset, an eminent domain compensation rule. The benefit offset was initially established across the United States, eventually banned by most, but not all, states, and banned by courts in some states and by legislatures in others. To guide our empirical analysis, we develop a theoretical model that allows for interaction between a court and a legislature, where both the court and the legislature act as (imperfect) agents of the public. Consistent with the model's predictions, we find the following: rule challenges generally began with litigation; all rules that were litigated were eventually restricted; where courts decided not to restrict rule, legislatures did so, often with substantial lags; the lags suggest not legislative ineffectiveness, but rather legal challenges launched when rules were still socially valuable.

These results are particularly informative when contrasted to other eminent domain-based

[42] To provide a counter example, consider rent control laws. The direct losers are property owners (especially when there are additional restrictions, such as prohibitions on converting apartments to condominiums, combined with de facto life tenure for tenants), yet the controls have nonetheless proven durable. When incumbent tenants who favor rent control (Group H) have more political clout than landlords and would-be tenants (Group L), λ will then be low, and majoritarian institutions will not serve as effective backstops for wealth-reducing court decisions. Among the costs of rent control, a key factor is the misallocation of the existing housing stock (e.g., Glaeser and Luttmer 2003). Note that the constitutionality of rent control policies – especially when price ceilings are combined with restrictions on the use of property (e.g., precluding landlords from converting apartment buildings to owner-occupied housing) – depends on how courts interpret what types of policies should be considered uncompensated takings.

disputes. We conclude that when the potential losers from a property rule are politically influential (as were the landowners in the benefit offset case or homeowners facing *Kelo*-style redevelopment projects), legislatures (or other majoritarian institutions) will serve as effective backstops when courts do not protect those who stand to lose. Yet when the potential losers have little political clout (such as those displaced by urban renewal projects in the mid-20th century), there is equally little reason to expect that legislatures (or other majoritarian institutions) will backstop courts.

What broader lessons can be drawn? Although the vast majority of economists believe that secure property rights promote economic growth, much remains to be explained about the nature of such security in countries (such as the United States) that vest courts and majoritarian institutions with the discretion to modify property rules (e.g., Lamoreaux 2011). We have explored the balancing act that courts and voters/legislators play when adapting rules to new circumstances. Ideally, the process maintains relatively secure property rights in combination with the ability to redefine rights when new opportunity (e.g., technological advances) makes redefinition valuable. Real world policymaking is, of course, far from perfect, but what we observe in our analysis of the benefit offset can be viewed as a sensible effort to achieve a second-best outcome: A system of dual checks that can – under the right conditions – ensure that the rules governing the assignment of property rights evolve in response to costs and benefits.

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Table 1: Data by State

State	Year Entered Union	Litigated	Restricted by court	Restricted by legislation	Both	Neither
Alabama	1819	1	0	1	0	0
Arizona	1912	0	0	0	0	1
Arkansas	1836	1	1	1	1	0
California	1850	1	0	1	0	0
Colorado	1876	1	0	1	0	0
Connecticut	1788	1	1	0	0	0
Delaware	1787	1	1	0	0	0
Florida	1845	0	0	1	0	0
Georgia	1788	1	1	0	0	0
Idaho	1890	0	0	0	0	1
Illinois	1818	1	1	0	0	0
Indiana	1816	1	0	1	0	0
Iowa	1846	1	0	1	0	0
Kansas	1861	0	0	1	0	0
Kentucky	1792	1	1	0	0	0
Louisiana	1812	1	1	0	0	0
Maine	1820	1	1	0	0	0
Maryland	1788	1	0	1	0	0
Massachusetts	1788	1	1	0	0	0
Michigan	1837	0	0	0	0	1
Minnesota	1858	1	1	0	0	0
Mississippi	1817	1	1	0	0	0
Missouri	1821	1	0	1	0	0
Montana	1889	0	0	0	0	1
Nebraska	1867	1	1	0	0	0
Nevada	1864	0	0	1	0	0
New Hampshire	1788	1	1	0	0	0
New Jersey	1787	1	1	0	0	0
New Mexico	1912	0	0	0	0	1
New York	1788	1	0	1	0	0
North Carolina	1789	1	1	0	0	0
North/South Dakota	1889	0	0	0	0	1
Ohio	1803	1	1	0	0	0
Oklahoma	1907	0	0	0	0	1
Oregon	1859	1	1	0	0	0
Pennsylvania	1787	1	1	0	0	0
Rhode Island	1790	1	1	0	0	0
South Carolina	1788	1	0	1	0	0
Tennessee	1796	1	1	0	0	0
Texas	1845	1	1	0	0	0
Utah	1896	1	1	0	0	0
Vermont	1791	1	1	0	0	0
Virginia	1788	1	1	0	0	0
Washington	1889	1	1	0	0	0
West Virginia	1863	1	1	0	0	0
Wisconsin	1848	1	1	1	1	0
Wyoming	1890	0	0	0	0	1
TOTAL		36	27	14	2	8

Table 2: Summary Statistics

variable	mean	st.dev.	min	max	# obs
Restricts offset	0.83	0.38	0	1	47
Year first track laid	1851	15.2	1835	1879	47
Year restricts offset	1869	18.4	1838	1912	39
# years offset in effect[a]	22.7	17.6	-5	70	39
Litigates offset	0.77	0.43	0	1	47
Court restricts offset	0.57	0.50	0	1	47
Legislation restricts offset	0.30	0.46	0	1	47
Land per capita 1900	0.19	0.46	0.003	2.61	47

[a] From year when first track was laid. One state, Kansas, restricted the offset before any track had been laid.

Table 3

Dependent variable: Year state restricted offset

	(1)	(2)	(3)	(4)
constant	1597.6 (2.57)	1595.4 (2.52)	1094.8 (2.68)	1088.9 (2.50)
year first track	0.1440 (0.43)	0.1450 (0.42)	0.418 (1.80)	0.421 (1.79)
land per capita	97.558 (1.64)	97.407 (1.62)	15.03 (2.18)	15.28 (2.14)
court restriction		0.3218 (0.05)		0.999 (0.17)
R^2	.166	.135	.262	.200
# obs	36	36	39	39
Sample	states that litigated	states that litigated	states that restricted	states that restricted

t-statistics in parentheses

Table 4: States that Did Not Restrict the Offset

State	First Track Laid	Pop. Density 1900	Land Area	Elevation Span	Inches Rainfall
Arizona	1878	1.1	113998	3830	13.6
Idaho	1878	1.9	83570	3644	18.9
Michigan	1839	25.0	96716	429	32.8
Montana	1879	1.7	147042	3354	15.3
New Mexico	1878	1.6	121589	3147	14.6
N-S Dakota	1871	4.9	147816	1913	18.95
Oklahoma	1871	5.7	69898	1428	36.5
Wyoming	1867	0.9	97814	3264	12.9
Average	1870	5.4	109,805	2626	20.4
Other states	1847	60.3	57,471	1409	41

Elevation Span calculated as highest point minus lowest point. Inches Rainfall based on annual averages 1971-2000.

Table 5: Probit Estimation of Probability of Restricting Offset

Dependent Variable:	Restriction		Court Restriction	
	(1)	(2)	(3)	(4)
constant	124.03 (0.84)	45.789 (0.84)	20.084 (0.38)	-2.699 (0.05)
year first track	-0.0662 (2.96)	-0.0250 (0.86)	-0.0105 (0.37)	0.0016 (0.05)
land per capita	-1. 281 (0.25)	-1.021 (1.24)	1.5377 (0.29)	-0.2962 (0.50)
track/area in 2007		44.826 (2.15)		
track when litigated/ track in 2007				1.067 (1.61)
Pseudo R^2	.383	.524	.003	.108
# obs	47	47	36	36
Sample	full set of states	full set of states	states that litigated	states that litigated

z-statistics in parentheses

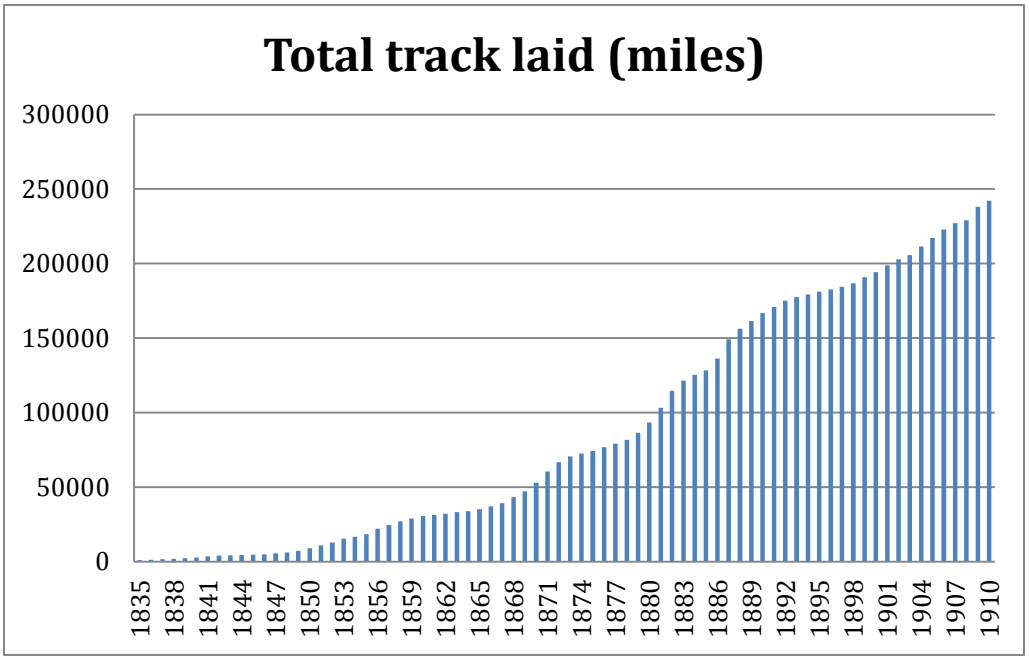
Table 6: States that Passed Legislation Restricting the Offset after Courts Permitted the Offset

State	Year of Litigation	Year of Legislation	Years Difference	% of 2007 Railroad Track laid at time of court decision	Eminent domain use litigated
Alabama	1868	1868	0	29%	Railroad
Maryland	1871	1871	0	110%	Railroad
Iowa	1855	1857	2	2%	Railroad
California	1871	1880	9	19%	Railroad
Colorado	1880	1891	11	59%	Railroad
Indiana	1840	1852	12	0%	Canal
South Carolina	1852	1868	16	26%	Railroad
Missouri	1857	1875	18	8%	Railroad
New York	1831	1850	19	0%	Highway

Table 7: Decision to Restrict versus Percent Track Laid
(As percent of year 2007 track)

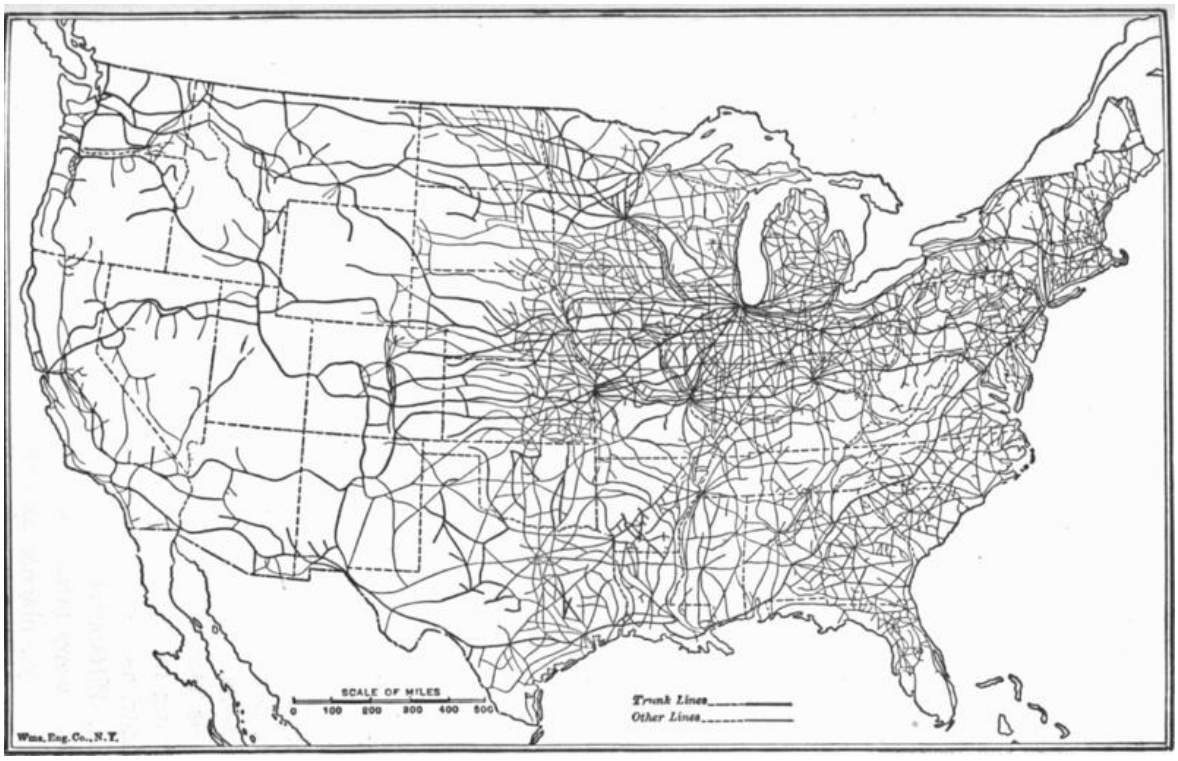
	# states	% 2007 track laid	avg. year entered Union	avg. year restricted
Court ruled unconstitutional	27	69%	1818	1868
Court ruled constitutional	9	26%	1821	1858
Legislature restricted		57%		1868

Figure 1



SOURCE: Henry V. Poor, *Manual of the Railroads of the United States* (1868-1917)

Figure 2: U.S. Railroads in 1918



Source: Beard and Beard (2005)

Figure 3: Year of benefit offset restriction versus year first track laid

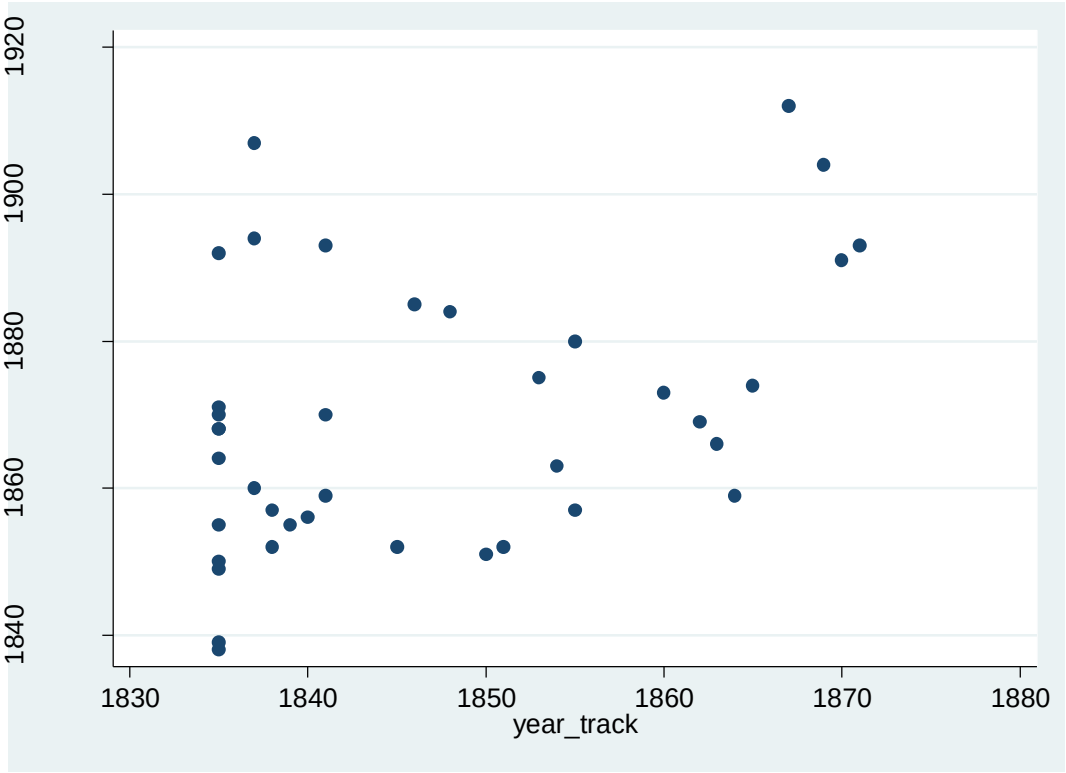


Figure 4: Overview of litigation and legislation process