Stranded Costs, Takings, and the Law and Economics of Implicit Contracts

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Abstract

This paper explores ways in which economic analysis can help resolve the stranded cost controversy that has arisen in debates over electricity market deregulation. "Stranded costs" are costs electric utilities will not recover as power markets move from protected monopolies to an open, competitive environment. The paper begins with a description of the stranded cost problem, its magnitude, and the prominent arguments for and against recovery. We then turn to an analysis of contracts in order to understand whether there is, or should be, a legal duty to compensate utility shareholders for unrecovered costs. The paper also argues that efficient approaches to electricity deregulation will rely on more than an analysis of contracts. In particular, the politics of deregulation should be viewed as an independent constraint that affects the desirability of alternative approaches to stranded costs.

JEL Classification Nos.: L43, L94, K12

Key Words: stranded costs, deregulation, takings, electric utilities, contracts

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Timothy Brennan and James Boyd[1]

I. POLICY CONTEXT

Recent legislative and regulatory initiatives to introduce and expand competition in the electricity industry present numerous, complex challenges to the policy analyst. The potential complications in devising and implementing these initiatives may equal if not exceed those that the public faced in bringing competition to telecommunications, finance and transportation.[2] As with telecommunications, policy makers will have to decide whether behavioral regulation or structural separation will be the best policy for ensuring that continuing regulated, natural monopoly segments of the industry (transmission, local distribution) will not unduly favor or subsidize vertically related competitive segments (generation, retail services including installation, billing, and energy management). Unlike telecommunications, however, technological considerations require that electricity supply and demand must be kept equal on a virtually instantaneous basis -- mere "busy signals" are unacceptable. In addition, the laws of physics imply that electricity sent between points A and B will take all interconnected routes,

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[1] Timothy Brennan, Professor, Policy Sciences and Economics, University of Maryland Baltimore County (brennan@umbc2.umbc.edu); James Boyd, Fellow, Resources for the Future, Washington D.C. (boyd@rff.org). From July, 1996 through June 1997, Brennan will be a senior economist on the staff of the Council of Economic Advisers. Opinions expressed here are solely the responsibility of the authors and do not represent those of the CEA or its staff. Comments by participants in the 9th Annual Rutgers University Western Advanced Regulatory Economics Workshop and the referees are very helpful and greatly appreciated.

[2] For a general discussion of these complications, see T. Brennan, K. Palmer, R. Kopp, D. Burtraw, A. Krupnick, and V. Stagliano, *A Shock to the System: Restructuring America's Electricity Industry* (Washington, DC: Resources for the Future, 1996).

regardless of whether the transmission paths are owned by the firm contracting to deliver the power. Last but not least, environmental externalities, primarily air pollution from generation, as well as market power figure in electricity policy assessments, adding a further layer of complexity to an already difficult situation.

Thorny as these problems are, they all fall in the categories of problems that might be usefully addressed, if not ultimately answered, by economic analysis. One problem with introducing competition, however, threatens to be as contentious and difficult. That problem concerns "stranded costs," i.e., the costs electric utilities will not recover as power markets move from protected monopolies to open, competitive environments.[3] Utilities are concerned that competition from new entrants, able to use high efficiency generation technologies fueled by low cost natural gas, will make it impossible to recover the past costs they incurred to produce or procure power. Accordingly, the utilities want to make competition policies contingent on the requirement of some mechanism -- exit fees, transmission or distribution surcharges, pre-deregulation accelerated depreciation -- that will give them revenues sufficient to cover the costs.

Two aspects of the stranded cost controversy give it its intractability. The first is that the amounts at stake are enormous. We will discuss below in a bit more detail estimates of stranded costs; at this point it suffices to know that credible estimates range as high as $200

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[3] Since the costs at issue involve historical investments in generation plant and long term power supply contracts, "stranded costs" are often referred to as "stranded assets."

billion, exceeding the value of the equity in electric utilities today.[4] The second aspect is that stranded cost recovery is widely regarded as a zero-sum game. Efficiency arguments rarely surface.[5] The dominant strain of the argument is whether it is unfair to expose utilities to the losses they may bear if competition in electric power generation comes to pass.

This paper explores possible ways in which efficiency analysis can usefully contribute to the resolution of the stranded cost controversy. It begins with a description of the stranded cost problem, its magnitude, and the prominent arguments for and against recovery. At the outset, we note that the merits of particular methods to raise prices to generate the revenues for cost recovery, e.g., transmission surcharges, is not the subject of this paper.[6] Nor do we cover the distribution of responsibility for determining recovery of stranded costs associated with wholesale operations under federal jurisdiction, and the much larger retailing issue, to be settled by state public utility commissions across the country.

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[4] E. Hirst and L. Baxter, "How Stranded Will Electric Utilities Be?" *Public Utilities Fortnightly* (Feb. 15, 1995): 30–32.

[5] Sometimes it is asserted that stranded cost recovery may be necessary for utilities to compete. However, since the costs at issue are by definition sunk, in theory policies regarding their recovery should not affect the marginal decision of whether power supplied from those sources would be supplied in a competitive market. In practice, perhaps, the workings of bankruptcy laws could impede supplies from those assets if regulators do not permit stranded cost recovery.

[6] The technical nature of the problem of raising funds to cover a fixed cost, e.g., computing Ramsey prices, does not imply that solutions in practice will be trouble-free. For example, in 1992 the Federal Energy Regulatory Commission requirement that "if [a utility] loses a customer of generation capacity to a competitor but the customer continues to employ [the utility's] transmission grid, the charge for the transmission will include not only costs directly associated with it, but also the costs of [the utility's] generation capacity idled by the switch." The D.C. Circuit Court of Appeals found that this was tantamount to an anticompetitive, discriminatory tying arrangement. *Cajun Elec. Power Cooperative, Inc. v. FERC,* 28 F.3d 173, 177–78 (D.C. Cir. 1994).

We then turn to the economic theory of contracts, to understand how an implicit "regulatory compact" between utilities and regulators would follow principles in the economic analysis of law, particularly theories of efficient breach and implicit contracts. Because contracts covering all future contingencies, including regulatory rules, are costly to write *ex ante*, judicial interpretation *ex post* often becomes necessary.[7] From an efficiency perspective, the interpretation of implicit contractual obligations following an unspecified contingency should consider which party could best adapt to or insure against the risk that a costly contingency would ensue.[8] The interpreter also should consider "moral hazard," i.e. which party could mitigate damage at least cost by changing the likelihood of that contingency arising or of other factors costs due to breach of the contract.[9] Assigning financial exposure to the expected least-cost adapters or those with the greatest potential for moral hazard maximizes the joint *ex ante* value of the contract.

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[7] In a simple model of contracting, Hermalin and Katz argue that judicial interpretation, beyond mandating specific performance, will not improve the efficiency of outcomes expected at the time contracts are written when contracting parties have symmetric information regarding each other's valuations of performance. B. Hermalin and M. Katz, "Judicial Modification of Contracts Between Sophisticated Parties: A More Complete View of Incomplete Contracts and their Breach," *Journal of Law, Economics, and Organization* 9 (1993): 230-55. Their model finesses the cost of specifying contingencies, however, by assuming that "sophisticated parties" can always define a "catch-all" contingency that includes arbitration by an outside party, e.g., a court, as one of the actions that would take place. It consequently appears that the need for outside determination of what to do about stranded costs in light of the unspecified contingency of competition in generation markets is theoretically justified, as well as required in practice.

[8] C. Goetz and R. Scott, "The Mitigation Principle: Toward a General Theory of Contractual Obligation," *Virginia Law Review* 69 (1983): 967–1025, reprinted in part in V. Goldberg, *Readings in the Economics of Contract Law* (Cambridge: Cambridge University Press, 1989): 61–68; R. Posner, *Economic Analysis of Law* (Boston: Little, Brown and Co. 1992): 102–09.

[9] R. Cooter and T. Ulen, *Law and Economics* (New York: Harper Collins, 1988): 277–88, 304–16; A. Edlin and S. Reichelstein, "Holdups, Standard Breach Remedies, and Optimal Investment," *American Economic Review* 86 (1996): 478–501.

As applied to stranded cost recovery, this perspective requires us to evaluate competition as a contingency that the regulator and utility would have included in their ideal contract. Accordingly, Part 3 examines how courts and policy makers should interpret the implicit "regulatory compact" allegedly embodied in the franchise relationships between utilities and their regulators. That such a compact leads to full stranded cost recovery, or none at all, does not appear to be as automatic a conclusion as some analyses suggest.[10] While it may turn out to be correct, it needs to follow an analysis of adaptation, insurance and moral hazard issues. For example, one would want to know whether the electric utility or state regulator was in a better position *ex ante* to know about the (endogenous) chance that the Federal government might introduce competition into electricity, and how expectations regarding stranded cost recovery would have affected both regulatory policies and utility investment decisions.

An evaluation of the regulatory compact based on the economics of interpreting imperfect contracts may not lead to efficient electricity policy. Disproportionate clout, resulting from diseconomies of scale in producing political influence, imply that regulatory processes are notoriously subject to forces that can divert them from efficient solutions.[11] Others have viewed the utilities' stranded cost exposure as the result of a "taking" by the government, i.e., a loss in value following a change in regulatory policy.[12] This analysis,

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[10] We review some of the leading arguments pro and con in the next section of the paper.

[11] G. Stigler, "The Theory of Economic Regulation," in G. Stigler (ed.), *Chicago Studies in Political Economy* (Chicago: University of Chicago Press, 1988): 209–33; S. Peltzman, "Toward a More General Theory of Regulation," *Journal of Law and Economics* 19 (1976): 211–40.

[12] W. Baumol and G. Sidak, "Stranded Costs," *Harvard Journal of Law and Public Policy* 18 (1995): 835–49.

however, assumes that takings policy in this context is just another way of construing an obligation to honor an implicit regulatory compact.

However, properly designed takings policy could prevent disproportionate utility influence over policy decisions regarding the transition to competition in electricity markets. Part 4 of the paper considers this, via a general theory of compensation which takes the government as an agent with numerous principals.[13] An optimal "takings" rule, however, should be judged according to whether it promotes efficient regulation and discourages excessive regulation. An implication, counter to equity-based intuition, is that the government should compensate those who lose under regulation more, the *greater* is their political influence, because politically powerful parties may prevent socially efficient regulation unless compensated. The analysis suggests that compensation for stranded costs should be paid, not because the government as principal should honor implicit contracts, but because such a rule may mitigate utilities' incentives to stand in the way of competition.

The paper concludes with a summary of our findings.

II. OVERVIEW

A. Genesis

The electricity industry includes four primary components. Following the general direction of power flows, it begins with *generators*, which utilize a host of technologies --

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[13] T. Brennan and J. Boyd, "Political Economy and the Efficiency of Compensation for Takings," RFF Discussion Paper 95-28 (Washington: Resources for the Future, 1995); J. Boyd and T. Brennan, "Pluralism and Regulatory Failure: When Should Takings Trigger Compensation?", mimeo.

primarily burning fossil fuels, nuclear reactions, or the force of gravity on falling water -- to drive turbines and produce electricity. This electricity is shipped over long distances via high voltage *transmission* lines or grids. Very large industrial users of electricity may take delivery directly, but most electricity is then stepped down in voltage and made available to customers through a *local distribution* network. The local distribution network provides services related to the *marketing* of electricity -- soliciting customers and billing for use.

During the early 20th century, the electricity industry in the U.S. evolved into a generally vertically integrated structure, with investor-owned utilities providing all four services. There are exceptions to this pattern, the most notable of which are municipally-owned or rural cooperative local distribution companies and some federally-owned power producers. State public utility commissions ("PUCs") have traditionally regulated the vertically integrated utilities have traditionally been regulated in all their facets. The PUCs set electricity rates based on the costs of generation, transmission, distribution, and marketing, and review electricity investments for their prudence in light of costs and expected demand. In more recent years, PUCs have added a role in promoting energy conservation and environmental protection to their responsibilities for setting prices.

As the promise of competition and deregulation spread to finance, transportation, and telecommunications markets, holes in this picture of a regulated, vertically integrated electricity business began to widen in the 1970s. Using antitrust, municipally-owned distribution companies secured the right to have the transmission utilities that serve them "wheel" power

from independent generators.[14] To foster development of independent power industry the 1978 Public Utility Regulatory Policies Act (PURPA) required utilities to buy power from cogenerators and renewable energy sources if the price of that power was less than "avoided costs" of internal generation, where the determination of avoided cost was left to local regulators. While not primarily intended to foster competition, PURPA demonstrated the feasibility of operating power generation independently of transmission. Building on this experience, Congress in 1992 passed the Energy Policy Act (EPAct), which ordered the Federal Energy Regulatory Commission to open utility transmission grids to independent generators. In 1996, FERC issued Order 888 to implement this EPAct mandate.

These Federal legislative and regulatory changes, and complementary responses by PUCs, were contemporaneous with changes in generation technology that reduced the minimum efficient scale of power plants, particularly those fueled by natural gas. Consequently, the economic effects of regulatory change will be most pronounced in the generation side of the electricity industry. With considerable oversimplification, the current vision of the electricity industry left by those changes is one in which transmission and local distribution continue to be regulated monopolies, but where generation and the downstream marketing of electricity are competitive.[15]

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[14] *Otter Tail Power Co. v. United States*, 410 U.S. 366 (1973). A skeptical review of the accomplishments of *Otter Tail* is A. Kleit and R. Michaels, "Antitrust, Rent-Seeking, and Regulation: The Past and Future of *Otter Tail*," *Antitrust Bulletin* 39 (1994): 689–725.

[15] Local distribution is viewed as a monopoly for the reasonably foreseeable future because of the large sunk costs associated with putting in the wires, poles, and conduits necessary to deliver electricity to customers' premises.

As a result, utility costs that would be stranded by these policy changes fall into four basic categories:

1) Undepreciated investments in power plants that are more expensive than generators available today.[16]

2) Long-term contracts -- most if not all mandated by PURPA -- with high-priced independent generators, mostly using renewable energy technologies.

3) Generators built but not used, primarily nuclear.

4) Expenses related to "demand-side management" (DSM) and other conservation programs that, as substituted for new plant construction, were charged to the generation side of the business.

However, the usual method for estimating stranded costs does not involve these cost components directly. Rather, they are based on predicted difference between the revenues utilities would get absent free entry by competitive generators and the revenues they would obtain at the estimated post–competition price. Even using this technique, there can be a great variation in the estimates. Under a variety of assumptions regarding the breadth of the electricity market subject to competition and the cost of the marginal unit of electricity, Hirst and Baxter find that the after-tax discounted present value of the reduced contribution to cost

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One might think that transmission could be competitive, in the way that long distance telephony may be competitive. However, to deliver electric power efficiently given variations in supply and demand, transmission grids within regions are typically interconnected, to facilitate multiple delivery paths. Once interconnected, the relationships between the transmission capacity between two points can substantially affect the amount of electricity that can and will flow between any other points in the system. An agreement by the owner of one transmission system to deliver electricity will increase the flow of electricity on all systems. The complex externalities created by interconnected transmission networks appears at present to require centralized control, pricing, and planning, that makes independent competition costly and perhaps infeasible.

16 Some industry analysts argue that the lack of depreciation was the result of regulatory policies mandating slow depreciation.

recovery could range anywhere from $34 billion to $210 billion with the most serious losses in the northeastern quadrant of the U.S.[17]

B. Positions

Even by current public policy norms, a $34 billion to $210 billion dollar stranded cost is controversial. Moreover, any method used to raise that much money will not only involve considerable transfers from electricity consumers or taxpayers to utility stockholders, but will inevitably impose some costs on the economy overall, by creating or increasing divergence between market prices for electricity and its marginal cost.[18] Consequently, a review of some of the arguments for and against stranded cost recovery is in order.

Baumol and Sidak offer a useful summary of the arguments in support of stranded cost recovery.[19] They first assert that if stranded costs are imposed on an incumbent's margin, then they may be inefficiently displaced by higher cost or lower quality generators, if some "competitively neutral" method of recovery is not imposed on the electricity industry as a whole. They then argue that failure to ensure recovery will discourage future investments in regulated industries. They also claim that forcing stockholders to absorb stranded costs would

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[17] Hirst and Baxter, *supra* n. 2.

[18] Lump sum redistribution would not bring about these inefficiencies, but we regard it as unavailable in practice. We also ignore here arguments that taxing electricity use may have some side benefits, if it is underpriced because of insufficient attention to pollution externalities associated with electricity use. A very useful survey of this general issue of the "double dividend" from pollution taxes is W. Oates, "Green Taxes: Can We Protect the Environment and Improve the Tax System at the Same Time?" *Southern Economic Journal* 61 (1995): 915–22.

[19] Baumol and Sidak, *supra* n. 9 at 845.

be unfair, because they are not allowed to reap unanticipated excess profits. The rate of return utilities were typically allowed did not compensate them for the risk of future competition, and "prudence reviews" by regulators ensured that utility investments were not improper.[20]

On the other side, Stelzer notes that utilities are routinely vulnerable to changes in policy, and that regulation has long been premised on the belief that we should turn instead to competition whenever possible.[21] Studness claims that most of the investment in nuclear power plants, which comprises perhaps $50 billion in stranded costs, were incurred in the face of obvious excess capacity in generation during the 1970s and 1980s.[22] Michaels notes that compensation rewards those firms who expanded in the face of insufficient demand and penalizes those who wrote off investment.[23] He also claims consumers had little choice but to compensate utilities for these "unwise" investments, and that the level of cost recovery is too great to impose absent an explicit regulatory promise to do so.[24]

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[20] See also W. Baumol, P. Joskow, and A. Kahn, *The Challenge for Federal and State Regulators: Transition from Regulation to Efficient Competition in Electric Power* (Washington: Edison Electric Institute, 1994) at 35–40; A. L. Kolbe and W. Tye, "It Ain't In There: The Cost of Capital Does Not Compensate for Stranded-cost Risk," *Public Utilities Fortnightly* (May 15, 1995): 26–28.

[21] I. Stelzer, "What Happens When The Rules are Changed and the Plug is Pulled on Electric Utilities?" *The American Enterprise* 5 (Nov./Dec., 1994): 76–84, esp. 81. This premise may be one honored in the breach.

[22] C. Studness, "The Flawed Case for Stranded Cost Recovery," *Public Utilities Fortnightly* (Feb. 1, 1995): 38–40.

[23] R. Michaels, "Stranded Investment Surcharges: Inequitable and Inefficient," *Public Utilities Fortnightly* (May 15, 1995): 21, 24–25.

[24] Crews adds that "ratepayers were never asked" if they would guarantee utilities' future incomes against competition from less expensive suppliers. C. Crews, "'Stranded Cost' Recovery Robs Consumers," *Competitive Enterprise Institute Update* 8 (Sept. 1995): 4–5.

III. LAW AND ECONOMICS, AND THE "REGULATORY COMPACT"

The central issue in the stranded cost controversy seems to be what duties were created between regulators and utilities in the process of granting electricity franchises subject to profit controls. The extent to which utilities have a claim to compensation for stranded costs has been based on an interpretation of the regulatory franchise as a long-term contract, primarily between the state PUCs and the utilities, which implies PUC obligations following the opening of generation markets to competition.[25] The franchise relationship between PUCs and utilities could explicitly guarantee either that the utility would not face competition, e.g., by having the exclusive right to supply electricity within some area, or that the utility receive some payment if competition were to arise.

The stranded cost debate suggests that there are no explicit assertions of these guarantees in regulatory franchise agreements. Consequently, the stranded cost issue turns not on explicit terms but on whether an "implicit contract" between PUCs and utilities mandates cost recovery in the event of competition. The ubiquitous phrase "regulatory compact," used to describe the obligation to compensate utilities for stranded costs, is essentially a synonym for "implicit contract." Giving this implicit contract a name, however, neither proves its existence nor specifies its terms. We need to examine first why franchise agreements did not explicitly spell out duties not to permit entry or to compensate utilities in the event of entry. Then, if one believes that the franchise contracts should have included terms relating to competition, the next step is to identify what those terms would be. Following an economic

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[25] FERC regulates the interstate transmission of electricity for resale, but FERC estimates that only about 9% of the stranded assets come under its jurisdiction. Cite.

approach, the terms would be those that would have maximized expected joint benefits at the times the franchise relationship was created or modified.

A. Would competition policy be a contingency in the regulatory contract?

The first step -- not the last -- in understanding the stranded cost issue is to observe that its root cause is the advent of competitive alternatives to the existing, vertically integrated power generation system. Almost as a rule, entry by firms with lower cost, innovative technologies is a risk to which producers throughout an economy are exposed. The very purpose of free markets is to abet that process.

Suppliers in an economy are free to write exclusive dealing or take-or-pay contracts to limit their exposure to subsequent competition. Under an exclusive dealing contract, the buyer promises to purchase only from the seller, or *vice versa*. Take-or-pay contracts obligate a buyer to pay the contracted supplier if the buyer purchases elsewhere. Take-or-pay can be viewed as an exclusive dealing contract with an explicit penalty cause for breach.

The question becomes whether the franchise agreement between a PUC and a utility should be interpreted as such a contract guaranteeing the utility a market for its electricity. Exclusive dealing contracts generally are written to prevent unmonitorable free riding created by the relationship between buyers and suppliers,[26] or to discourage outside activities that

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[26] H. Marvel, "Exclusive Dealing," *Journal of Law and Economics* 25 (1982): 1–26. A typical example would be an automobile engine supplier who agrees to deal exclusively with one particular automobile manufacturer, so information on the market given by latter to the former on car markets does not leak out to its competitors.

would reduce effort that the buyer would make on the seller's behalf.[27] Take-or-pay contract penalties, correctly formulated, can prevent inefficient outside purchases, when the price of alternatives to the seller's product is less than the contract price but greater than the seller's production cost.[28] However, the seller could also cut its price below the contract price and still earn positive profits in this case. Absent an independent rationale for a long term contract in the first place, such as mitigating opportunism or allocating risk, the prospect of competitive prices alone does not seem to be a typical provision in this kind a contract.[29] Justifications for stranded cost recovery as a penalty for breach should begin with those independent rationales.

The foregoing argument cannot absolutely rule out the possibility that an optimal contract between electric utilities and PUCs could include a clause to exclude future competitors. However, it does increase the burden of proof on the stranded cost recovery advocate. Proponents must argue that competition is not explicitly considered in regulatory franchises because its likelihood at the time franchises were granted was too small to be worth the cost of explicitly including it in the contract. Moreover, they must refute the claim that competition was omitted simply because it would never have been included even if contracting costs were insignificant.

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[27] T. Brennan, "Exclusive Dealing, Limiting Outside Activity, and Conflict of Interest," *Southern Economic Journal* 56 (1989): 323–35. An example would be university rules limiting consulting by faculty, to limit distractions and help retain their focus on teaching and research.

[28] S. Masten and K. Crocker, "Efficient Adaptation in Long-Term Contracts: Take-or-Pay Provisions for Natural Gas," *American Economic Review* 75 (1985): 1083–93.

[29] Penalty clauses for switching could be strategic devices to discourage entry. P. Aghion and P. Bolton, "Contracts as a Barrier to Entry," *American Economic Review* 77 (1987): 388–401.

B. Adaptation and opportunism: What would a competition policy clause contain?[30]

If the prospect of competition alone does not seem to warrant an interpretation that franchise contracts require electricity buyers to purchase only from incumbent utilities, advocates of stranded cost recovery can turn to factors that would lead electricity to be supplied under long term franchise contracts. The long-term nature of the franchise regulation itself introduces two factors differentiating electricity markets from other settings, with regard to the potential for mitigating losses due to potential future competition. First, the regulatory mechanisms themselves might have prevented otherwise efficient adaptation to potential competition. Second, the introduction of competition is not a wholly exogenous event. The state and federal parties to the regulatory compact also possessed the regulatory ability to prevent the development of an independent generation industry.

These two factors correspond to the two leading rationales for including contingencies in long term contracts. The first assumes the contingency is exogenous. If so, an efficient contract would allocate liability from future contingencies to the parties who can adapt to or insure against them at least cost. Absent capital market constraints or other transaction costs, the crucial considerations here are *ex ante* knowledge -- who knows best the expected losses if the unexpected contingency ensues.[31]

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[30] This section draws on Brennan et. al., *supra* n. 1 at Ch. 6.

[31] As an aside, we can imagine contexts in which a contract might assign exposure to the party with the least knowledge. Where knowledgeable parties would be known to self-select in the purchase of insurance, and if insurers cannot acquire that knowledge themselves at low cost, insurance markets could collapse due to adverse selection. If so, efficient contracts might assign exposure to the least knowledgeable party.

The second factor recognizes that the chance the contingency arises is endogenous, depending upon the *ex post* actions of the parties. The objective in this case is to mitigate opportunism and moral hazard. A contract will assign *ex post* performance obligations to the "second mover" parties, to prevent them from exploiting the vulnerability of "first movers" following specific investments relying on the favorable actions of the "second movers." The objective is to assign liability to the actor with the greatest ability to influence the likelihood that the contingency occurs.

C. Is the utility the least-cost adapter?

The policy question then is to examine adaptation cost and moral hazard to determine what competition contingency clause the regulatory contract should have included, assuming it should have included one at all. Consider first adaptation to an exogenous possibility of competition. The likelihood of competition in power generation depends primarily on whether technological change would reduce scale economies in generation and, perhaps, whether public policy is likely to adopt competition as a worthwhile goal or mechanism.[32] A reasonable guess is that the utilities are more expert than regulators in predicting technological change in power generation.

Stranded cost recovery advocates can respond that changes in political ideology are an independent factor putting utilities at risk. To the extent that this is so, we might expect that

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[32] These two factors are not independent. We would expect that competition would be more likely to be adapted, holding policy ideology constant, as it became more feasible and, hence, would lead to greater social benefits.

the PUCs are better able to predict changes in policy attitudes toward competition. It is important to recognize, however, that the competitive initiatives in these markets were largely federal, but that the regulatory compacts are primarily with state PUCs. Whether states or utilities are better predictors of federal policy change seems an open question.

Even if the utilities had better information regarding the likelihood of exogenous factors affecting the likelihood of competition, they may not have been in the best position to adapt to them if other aspects of the regulatory relationship prevented them from adapting and, consequently, that regulators are obligated to provide for stranded cost recovery. There are at least three arguments supporting this proposition. A first is that PUC approvals of utility investments as "prudent" embodied an implicit promise to ensure recovery of those costs. In considering moral hazard-based justifications for implicit competition contingencies in regulatory contracts, we discuss below explicit legal commitment that the regulated firm not be subject to expropriation of its sunk investments by the regulator. It suffices to observe that there appears to be no legal guarantee that utilities would be able to cover costs in the face of competition.[33] Thus, this "prudence" argument essentially begs the question it is intended to answer: whether the implicit contract embodied in a prudence review should be interpreted as containing a competition contingency.

The potential for non-recovery introduces a second argument in support of cost recovery. In competitive markets, investors do not supply capital into industries subject to the

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[33] "The use of, or failure to obtain, patronage, due to competition, does not justify the imposition of charges that are exorbitant and unjust to the public." *Market Street Railway Co. v. Railroad Commission of California*, 324 U.S. 548, 567 (1945), cited in M. Crew and P. Kleindorfer, *The Economics of Public Utility Regulation* (Cambridge, MA: MIT Press, 1986): 98.

risk of low-cost entry unless present earnings, and the product prices to support them, increase accordingly. However, regulators need not respond to the prospect of competition by raising rates and earnings to reflect this risk. This argument might apply to capital that utility investors had not recovered at the time competition became more than a trivial possibility, if PUCs did not increase allowed returns on undepreciated, irreversible investments.[34] However, it does not apply to investments made after competition became a significant risk, perhaps following passage of PURPA in 1978. After that time, it may have been harder to claim that the absence of competition provisions in franchise agreements reflected the unlikelihood of new entry or that utility willingness to make those investments reflected a belief that allowed returns compensated them for competitive risk.

Recalling PURPA brings up the third argument in favor of stranded cost recovery: that the utilities could not choose the least cost generation technologies, in light of future competition, because regulators forced them to commit to employing higher cost technologies for a long period of time. As noted above, PURPA required that utilities purchase power from high cost energy sources. Financing those sources required that the utilities enter into long term contracts to purchase this power. The "avoidable cost" standard, while reasonable in principle, became in may states equivalent to a "highest cost" pricing standard.[35] A utility forced to purchase power at prices above costs arguably ought not be required to absorb those

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[34] Even here, however, those investors could have argued that they deserved an increase in the rate of return, as regulators are legally obligated to set a utility's rates "to compensate its investors for the risks assumed." *Federal Power Commission v. Hope Natural Gas* 320 U.S. 591, 605 (1944), cited in A. Kahn, *The Economics of Regulation* I (Cambridge, MA: MIT Press, 1989): 40.

[35] Brennan et. al., *supra* n. 1 at 31.

costs if subsequent competition makes their recovery impossible.[36] However, this argument is considerably less compelling for generators constructed by the utilities themselves, unless there is similar evidence that regulators forced them to do so.[37]

D. Competition and opportunism

Considering utility plant construction and regulatory reaction is a reminder that exposure to stranded costs is not simply a matter of adapting to or hedging against the prospect of competition. It involves the amount of investment exposed to competition, as well as the regulator's decisions to open power markets and encourage new entry. Traditionally, the primary opportunistic concern in regulated industries has been that the regulator would not allow utilities to recover sunk investments, instead set rates only sufficient to cover operating costs. The legal requirement that regulators allow utilities a "just and reasonable" return on investment represents an important public commitment to prevent opportunistic expropriation of the sunk investments by regulated firms. If that commitment were not credible, there would be no services to regulate.

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[36] A similar conclusion would apply to expenditures by utilities in conservation technologies that they would not have otherwise undertaken., *if* utility generation decisions were not otherwise distorted, e.g., by constructing new plants to expand the rate base, if the allowed rate of return exceeded the cost of capital. Presumably, the point of prudence reviews is to prevent just that sort of overinvestment, but such reviews are unlikely to be perfect.

[37] A potentially interesting source of evidence would be statements by utility executives at the time these plants were constructed. If they were advertised as the efforts of farsighted private enterprise rather then compelled by coercive regulators, it might be somewhat disingenuous to contend that those investments should be insulated from competition.

That this commitment keeps regulators from arbitrarily preventing utilities from recovering costs is clear. On the other hand, a commitment to ensure recovery regardless of circumstances creates a moral hazard problem on the utility side. The utilities will have no incentive to limit construction, or to resist mandates to purchase expensive renewable power or to promote conservation, if recovery of all such investments is guaranteed. The relevance of prudence reviews is, as noted above, not that they guarantee recovery, but that they arguably obviate the moral hazard problem that might otherwise justify limits on recovery.

The moral hazard issue on the regulatory side relates to whether or not regulators will be too quick to promote competition if they do not have to take the effects of competition on utility equity holders into account. Our earlier look at exclusive dealing arrangements suggests that there is probably not a general obligation for regulators to either block competition from new technologies or to compensate utilities in the event such competition arises.[38] Rarely are regulators currently accused of being too quick to advocate competition. Whether stranded cost recovery is a means to prevent this, however, is a perhaps unexpected rationale for looking at pro-competition policies as potentially unconstitutional "takings."

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[38] It may be instructive to suppose that the demand for utility-supplied electricity was going to fall or become more elastic because of the invention of low-cost solar power systems. In the present situation, new generators still have to use utility-owned transmission and distribution systems, so there is a convenient way to recover the generation costs of incumbent utilities. Would we argue that solar collectors should be taxed to cover these costs?

One argument that entrants *should* be taxed is that if they are not, and if regulators are still obligated to recover costs, they will have to raise rates on customers for whom solar panels are not an economic option. In effect, entry shrinks the "tax base" over which these costs can be raised, reducing welfare below the Ramsey optimum. This can make entry inefficient even if the entrants have lower marginal costs than the incumbent. See T. Brennan, "Entry and Welfare Loss in Regulated Industries," in M. Crew (ed.), *Competition and the Regulation of Utilities* (Norwell, MA: Kluwer Academic Publishers, 1990): 141-56, esp. 148–150.

IV. "TAKINGS" CLAUSES AND ENERGY POLITICS

The contracting approach to stranded costs assumes that the PUCs are essentially brokers for electricity purchasers. However, the regulators are not principals themselves but agents with multiple principals -- different classes of consumers, utilities themselves, and the general public. As such, regulators cannot be assumed to act in the public interest. Regulators will be affected by the political rewards that the different interest groups can provide for having decisions tilted in their favor.[39] One of the earliest empirical studies questioning the "public interest" view of regulation suggested the PUCs acted in the interest of the utilities they were supposed to regulate, and had little if any observable effect on electricity prices.[40]

Agency problems associated with regulation introduce an interest in political or constitutional mechanisms that would counteract any tendency to excessive or inadequate regulation. One such device would be to require that, under some circumstances, regulators be required to compensate those who suffer losses as a result of their policy decisions, i.e., compensation for "takings." The "takings" term comes from the Fifth Amendment of the U. S. Constitution which says, in part, that "nor shall private property be taken for public use, without just compensation." Courts have traditionally limited compensation to takings, defined as either physical possession by the government or total loss of value, but more recent

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[39] See Stigler and Peltzman, both *supra* n. 8; P. Joskow and R. Noll, "Regulation in Theory and Practice: An Overview," in G. Fromm (ed.), *Studies in Public Regulation* (Cambridge, MA: MIT Press, 1983): 1–65, esp. 35–40; D. Kaserman and J. Mayo, *Government and Business: The Economics of Antitrust and Regulation* (Fort Worth: Dryden Press, 1995): 517–32.

[40] G. Stigler and C. Friedlander, "What Can Regulators Regulate? The Case of Electricity," *Journal of Law and Economics* 5 (1962): 1–16.

decisions suggest that takings may be expanded to cover any regulation that goes beyond what would be prohibited under nuisance doctrines in property law.[41]

Economic analyses of takings policies have typically viewed it as analogous to a liability rule under tort law, where the obligation to compensate is supposed to induce efficient behavior by the government *qua* tortfeasor.[42] The tort analogy, however, requires that the regulator is not already internalizing the benefits to the "victim" of its policies -- here, the utilities. It also requires that the regulator treat payments as a cost. Both assumptions are doubtful. The "capture" theory of regulation presupposes that regulators not only recognize victim interests, but that they are likely to grant them disproportionate weight. Moreover, the compensation payments do not come out of the regulator's pocket, but from someone else's.

Consequently, an analysis of takings policy requires explicit modeling of the regulator's agency relationship. In general, these models produce the counterfactual conclusion that compensation for policy-induced losses should be greater the *more* politically powerful are the losers. Compensation serves to stop powerful losers from impeding efficient policies, and the more powerful they are, the more they have to be paid.[43] Applied in the electricity context, stranded cost payments to utilities are not made to be fair, or to maintain the efficiency of regulatory contracts, but to ensure that utilities do not stand in the way of competition.

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[41] D. Kmiec, "At Last, the Supreme Court Solves the Takings Puzzle," *Harvard Journal of Law and Public Policy* 19 (1995): 147–59.

[42] For examples, see Posner *supra* n. 5 at 58–61; T. Miceli and K. Segerson, "Regulatory Takings: When Should Compensation Be Paid?" *Journal of Legal Studies* 23 (1994): 749–76.

[43] For more extensive analyses, see papers by Boyd and Brennan, *supra* n. 10.

To see this, first assume that lump-sum compensation for stranded costs would be possible. By keeping utilities whole, such payments would eliminated the utilities' incentive to oppose competition. In addition, the obligation to pay would forces users to internalize the utilities' costs in deciding how much to support competition. Consequently, they would maximize their political efforts in support of competition policy when it would maximize net benefits to the entire economy.

In practice, the transfers from users to utilities to cover stranded costs will not be lump-sum, and hence will introduce economic deadweight losses in other markets. These losses mean that users will tend to undervalue moves to competition, if full compensation for stranded cost is required. Accordingly, utilities should get more (less) than full compensation for stranded costs if they have more (less) political clout than electricity users. If users have more influence over regulators than do utilities, this implies that stranded cost recovery should be reduced. If utilities have more clout, however, they should be made more than whole by competition, to lead them to exert that clout to overcome the opposition of the users.[44] While the "capture" theory suggests that this is the most likely outcome, it is important to note that some of the beneficiaries of regulation -- large industrial users, independent power producers -- may also have considerable political influence over competition policy in electricity.

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[44] Theoretical models are available from the authors. They are in the style of those presented in Brennan and Boyd, *supra* n. 10, but where the compensation for regulation-induced losses comes from the beneficiaries of the regulation, rather then from the taxpayers as a whole. If stranded cost recovery is to come from the taxpayers, then the level of compensation should be reduced, to limit taxpayer opposition to competition policy.

V. CONCLUSIONS

The stranded cost controversy is too big to go away, but we need not concede that efficiency analysis has little to add to a question most commonly viewed as purely political. We can examine regulatory franchises as contracts, and apply tools from the economic analysis of law to examine whether these contracts should have included competition provisions and what those provisions should have included. It is unlikely that franchises were equivalent to exclusive dealing contracts, in which utilities were promised insulation from competition. The key ideas are that contracts should, ideally, allocate exposure to those who can affect the size of that exposure, either by adapting to contingencies, insuring against them, or mitigating their likelihood.

In looking at adaptation, three claims supporting cost recovery are that regulators implicitly promised recovery when approving investments as prudent, failed to allow utilities to respond to competitive risk, and forced them to make inefficient power purchases. The strongest arguments in favor of cost recovery are that utilities may have been vulnerable to the inability to raise rates on investments made prior to the time competition became a significant possibility, and that utilities were forced to make some uneconomic power purchases subsequent to that time. The argument, however, is less compelling for ordinary, unmandated investments made after that time, when utilities accepted allowed rates of return and did not insist on competition contingencies.

An important factor for interpretation of the regulatory compact is opportunism. Regulatory law quite properly prevents regulators from exploiting the vulnerability of utilities following their irreversible investments in assets specific to providing the regulated service.

However, policy decisions to introduce competition fit this mold only if regulators are too likely to adopt competitive policies if they do not take utility losses into account. While exclusive dealing does not seem a part of regulatory compacts, we ought not assume that regulators choose the level of competition that maximizes social benefit. Looking at agency issues in regulation leads to an argument derived from "takings" law -- that stranded cost recovery could be beneficial by mitigating utility incentives to oppose competitive initiatives.

Undepreciated utility investments made prior to the competitive era, mandated uneconomic power purchases, and these takings-related considerations all suggest that some stranded cost recovery is desirable and substantial recovery may be inevitable. Electricity policy debates will have to recognize this and devote considerable attention to ways of raising these revenues that minimize distortions and preserve the benefits that competition in generation is supposed to convey.