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Uncompensated Care and the Collapse of Hospital Payment Regulation: An Illustration of the Tinbergen Rule

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ABSTRACT

Hospital payment regulation has historically been introduced to meet multiple policy objectives. The primary objective of "all-payer" rate setting regimes was to control costs through consistent, centrally regulated payments. These regimes were often linked, however, to an ancillary goal of financing care for the uninsured. We show that this secondary objective made states' all-payer regimes economically and legally unstable. Their economic instability reflected a feedback loop from surcharge rates to insurance coverage rates and back to the quantities of uncompensated care in need of being financed. The erosion of all-payer regimes' surcharge bases was particularly pronounced when health maintenance organizations were exempted from surcharge collections, creating a regulatory arbitrage opportunity. The economic and legal instability we highlight could largely have been avoided by financing the cost of uncompensated care provision through taxation of income or other standard revenue bases. These developments thus illustrate the wisdom of the Tinbergen Rule, which recommends that independent policy objectives be met with independent policy instruments.

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Health care payment regulation has a long history. In the early 1980s, Sloan (1983) observed that payment regulation was "rapidly gaining popularity at both state and federal levels." By the mid-1990s, however, the "all-payer" regimes to which Sloan referred had been abandoned in all states but two (McDonough, 1997b). To gain insight into these developments, we revisit the structure and objectives of these regimes, which have subsequently resurfaced in health policy commentary (Atkinson, 2009; Murray and Berenson, 2015).[1]

All-payer rate setting systems - in which regulators determine the payments hospitals receive from insurers of all types - are a direct form of price regulation. Introduced during the 1970s and 1980s, they were motivated primarily to control health care costs (McDonough, 1997b). Beyond cost control, recent discussions of rate regulation emphasize issues of price transparency and consistency.[2]

In addition to these relatively direct objectives, all-payer rate setting was used as an instrument for financing the costs of hospital care for the uninsured (Thorpe, 1987; Volpp and Siegel, 1993; Murray and Berenson, 2015). That is, surcharges for financing "uncompensated care pools" were incorporated into the rates set by all-payer regulatory boards. By implicitly taxing the care insurers purchase for their beneficiaries, these surcharges increase the costs of private insurance. We show that the strain such surcharges place on private insurance markets depends crucially on other features of both rate regulation and uncompensated care financing. Our analysis reveals that both the legality and economic stability of all-payer regulations were undermined by their use as uncompensated care financing mechanisms.

On one level, the financing of uncompensated care is straightforward. Money

[1]For example, Vermont has recently been granted initial approval to implement an all-payer rate setting system which would include Medicare's participation.

[2]This reflects concerns about prices faced by the uninsured, which can be unknown to the consumer (and the supplying physician, for that matter) when care provision decisions are made (Batty and Ippolito, 2017; Brill, 2013). Others note that mandated price consistency erodes incentives for providing services with high quality on dimensions that are difficult to measure or otherwise difficult to reimburse (Pauly and Town, 2012).

spent on care for the uninsured must come from somewhere. At the same time, the financing of uncompensated care involves many variables, including the behavior of hospitals, policy makers, and potential insurance purchasers.

The cost in need of financing depends on several factors. A first is the size of the population without insurance (Garthwaite, Gross, and Notowidigdo, 2015). A second involves the incentives hospitals face when treating these individuals (Thorpe and Spencer, 1991; Thorpe and Phelps, 1991). A third involves regulators' capacity to weed out both cost-ineffective care and fraud (Gaskin, 1997).

Financing for uncompensated care comes from several sources. At the federal level, sources have historically included subsidies through the Disproportionate Share Hospital (DSH) program (Baicker and Staiger, 2005) and Medicare waiver arrangements. At the state and local levels, care for the uninsured is financed through public hospitals and additional assorted hospital subsidy schemes (Duggan, 2000). Further, non-profit hospitals' tax exemptions are, at least in principle, linked to their uncompensated care obligations (Dattel, 2006).

The final source of uncompensated care financing is cross-subsidization from private insurers. The uncompensated care pools linked to states' all-payer rate regulation regimes operated through this channel. While the details varied considerably across states and over time,[3] the basic structure was that surcharges sufficient to cover projected uncompensated care costs were added to each year's payment rates.

Uncompensated care surcharges thus depended on three distinct factors. First, they depended on the generosity of other sources of uncompensated care financing. Second, they depended on the behavior of hospitals and on the regulators charged with assessing what qualifies as uncompensated care (and reimbursement for that care). Third, they depended on the base on which the surcharges were collected.

[3]The New York Prospective Hospital Reimbursement Methodology (NYPHRM), for example, progressed from NYPHRM I to NYPHRM V between 1983 to 1995, with obscure but potentially consequential rule changes enacted throughout the intervening decade (McDonough, 1995).

We show theoretically that uncompensated care surcharges exposed all-payer regimes to risks of unraveling along two dimensions. First, the magnitude of surcharges affects the attractiveness of private insurance to potential beneficiaries. If an increase in surcharge rates leads beneficiaries to drop coverage, the increase in the ranks of the uninsured forces the surcharge to rise further still. The extent of this unraveling depends crucially on the shape of the demand curve. As in the case of adverse selection spirals, a "death spiral" may or may not occur (Rothschild and Stiglitz, 1976; Cutler and Reber, 1998; Buchmueller and DiNardo, 2002; Clemens, 2015). Second, where HMOs are exempted from uncompensated care surcharges, unraveling through increases in HMOs' market shares poses an additional challenge.

After developing these theoretical considerations, we provide empirical evidence on the contributions of several channels to the abandonment of the all-payer regimes in Connecticut, New Jersey, Massachusetts, and New York. HMO exemptions proved particularly consequential in the case of Massachusetts and, to a lesser extent, New York. Management of uncompensated care costs proved particularly consequential in New Jersey and Connecticut. Across all states, downward trending private coverage rates meant that the burden of financing uncompensated fell on an increasingly narrow, and arguably arbitrary, base. In this environment, the regimes in Connecticut, New Jersey, and New York were beset by legal challenges and, like the regime in Massachusetts, ultimately abandoned.

Maryland can be viewed as the exception that proves the rule regarding the stability of all-payer regimes with uncompensated care financing mechanisms. Its system has remained largely intact since its inception in 1971. Notably, it has retained access to a waiver from the Medicare program. That waiver was recently estimated to generate payment subsidies amounting to $1.5 billion per year beyond what Maryland's hospitals would receive in the waiver's absence (Murray and Berenson, 2015). The lone rate-setting system to persist thus benefits from substantial subsidy.

Our analysis sheds light on several issues of broader interest. We illustrate the risks associated with stretching a policy instrument to target multiple, independent objectives. The case we analyze is extreme in that the ancillary objective of financing uncompensated care proved not just to be ill targeted, but a primary cause of the regulatory regime's undoing. The developments we analyze thus provide a case study in support of the Tinbergen Rule, which holds that independent policy objectives are best met with independently dedicated policy instruments (Tinbergen, 1952).

We also highlight incidence considerations that arise when regulation engineers redistribution through cross-subsidization - a prominent feature in health care and health insurance contexts. Community rating regulations, for example, are similarly used as a form of social insurance (Clemens, 2015; Handel, Hendel, and Whinston, 2015). Both community rating regulations and the uncompensated care surcharges we study run risks of market unraveling that can be alleviated by financing transfers through explicit taxation rather than engineering them through regulation. Further, while the financing of tax-and-transfer arrangements can be targeted as desired across the income distribution, the burden of regulatory redistribution falls on those engaged in the affected markets.

Our work sheds light on two additional issues raised regularly in the health economics literature. The first is the cost-shifting hypothesis that health care providers respond to public payment reductions by increasing the rates charged to private insurers. We note, as New Jersey illustrates most sharply, that all-payer regimes could make cost shifting a mechanical phenomenon; declines in public payments expand the shortfalls that surcharge rates were set to meet.[4] Cost-shifting may thus be a more prominent phenomenon when regulatory regimes of this sort are in effect than when they are not.[5] Finally, our analysis suggests that regulatory arbitrage may join more

[4]Standard bargaining considerations push in the opposite direction because a weakening of a party's outside option will tend to reduce the payments for which it is able to negotiate (Dranove, 1988; Clemens and Gottlieb, Forthcoming).

[5]This appears loosely consistent with trends in the cost-shifting literature. Cutler (1998), for

conventional market factors, as analyzed by Dranove, Simon, and White (1998), as a force contributing to the managed care revolution.

The paper proceeds as follows. Section 1 provides more background on all-payer rate setting arrangements. Section 2 develops insights regarding the stability of all-payer regimes and the determinants of the financing pressures they face. Section 3 describes the data we assemble, and sections 4 and 5 present our empirical analysis. Section 6 discusses the legal challenges faced by all-payer regimes, and section 7 further discusses their economic incidence. Section 8 briefly concludes.

1 All-Payer Rate Setting and Uncompensated Care

All-payer rate setting regimes were arrangements through which state regulators determined the payments hospitals received from insurers. While rates varied across hospitals, they were typically equalized across the payments from all covered payers to a given hospital. Such systems gained considerable prominence in the United States during the 1970s and 1980s. More than half of states implemented some form of rate regulation or oversight of hospital budgets. We analyze the five states which implemented long-lived, mandatory rate regulation, namely Connecticut, Maryland, Massachusetts, New Jersey, and New York.[6] Table 1 presents details on the start, end, and other key dates in the history of these states' all-payer regulatory regimes.

example, finds stronger evidence of cost shifting during the 1980s than during the 1990s. In a summary of the literature, Frakt (2014) observes that evidence of cost-shifting weakened over time.

[6]While Washington state is often included among lists of mandatory all-payer rate regulation systems, our reading is that its regulatory system was effectively a system of budget review rather than rate regulation (Baker, 1975). The occasionally referenced regulatory regimes in Colorado and Wisconsin were short-lived, lasting only three years each (Chen and Weir, 2009). West Virginia continues to operate a long-standing system of rate regulation, however, the rate review system only applies to commercial insurers and allows for variation in payment methods and amounts within specified ranges (Murray and Berenson, 2015). Similarly, Maine's rate setting system, enacted in 1983, never encompassed Medicare and only partially applied to Medicaid (Kilbreth, 2010). Consistent with one of our primary points, Maine's use of uncompensated care surcharges was phased out in favor of efforts to push towards eliminating uncompensated care through expansions of insurance coverage (Kilbreth, 2010). We say little about Maine's experience because it has been documented in far less detail than the experience of other states.

Several states' rate setting systems were genuinely "all-payer" at their inception; both the state's Medicaid program and the federal Medicare program paid rates in common with private insurers. Consequential exceptions emerged over time. Medicare, for example, participated in several states' all-payer arrangements for a limited time. Payment of states' all-payer rates could imply substantial subsidies relative to what the same hospitals would receive under Medicare's Prospective Payment System (PPS). With the exception of Maryland, waivers from participation in the PPS were either terminated by Medicare or allowed to expire by the states.

A second exception to all-payer rate setting involved the participation of Health Maintenance Organizations (HMOs). As detailed below, the extent of such exemptions varied considerably across states. Given their prominence over the last quarter century, an "all-payer" system that exempts HMOs may sound inherently unworkable and perhaps arbitrary in its application. When such regimes were first initiated, however, HMOs were far less prevalent. On average across states, they accounted for less than 5 percent of coverage through the early 1980s.

Two additional considerations underlay HMOs' exemptions from all-payer rate setting. First, capitated payment models can, by design, involve an effort to shift away from fee-for-service physician payments or diagnosis-based hospital payments. Differences in the nature of their hospital contracts thus raised complications for enforcing common payment regulations on both HMOs and more traditional insurers. Second, managed care and all-payer rate setting were sometimes viewed as potentially complementary approaches to controlling health care costs (Bovbjerg, Cuellar, and Holahan, 2000). Some policy makers thus viewed exemption from all-payer rate setting as a mechanism for promoting experimentation with managed care.

Early research on all-payer rate setting regimes focused on whether they achieved their stated cost containment goals. The evidence on this point varies across states, as should be expected given substantive differences in their implementation. The

weight of the evidence suggests that rate setting successfully limited health spending per hospital admission (Atkinson, 2009; Murray, 2009). It is less certain, however, whether this translated into reductions in broader spending metrics, including overall hospital spending and total personal health spending per capita (McDonough, 1995; Pauly and Town, 2012).

Pauly and Town (2012) further discuss rate regulation's implications for the efficiency of payment setting. Variations in market power appear, to at least some extent, to underlie variations in health care payments (Dunn and Shapiro, 2012, 2014; Cooper, Craig, Gaynor, and Van Reenen, 2015). Additional issues, including intransparency and the pervasiveness of public-private payment linkages, raise further questions about the efficiency of private health care payment setting (Batty and Ippolito, 2017; Brill, 2013; Clemens, Gottlieb, and Molnar, 2015). At the same time, mandated price consistency erodes incentives for providing services with high quality on dimensions that are difficult for regulators to measure, or in which they take no interest (Pauly and Town, 2012). As with any centralized price system, such regimes may struggle with either awareness of, or responsiveness to, determinants of supply and demand at the local level.

Our analysis focuses on the use of all-payer regulations as a mechanism for financing uncompensated care. By funding uncompensated care costs via transfers from the insured, this system introduced a potential instability. Specifically, this funding mechanism can be undone if individuals forego coverage, which would feed back into surcharge rates by increasing the overall uncompensated care financing burden. While the limited availability of premium data has made it difficult for research to examine the pass through of input costs directly, changes in health care costs have been regularly linked to declines in insurance coverage rates (Glied and Jack, 2003; Kronick and Gilmer, 1999). Despite the instability these systems risked, the view that uncompensated care "should" be financed within the hospital system was common

among the designers and implementers of the relevant regulations.

2 Understanding Uncompensated Care Financing

This section lays out our framework for analyzing the allocation of costs associated with uncompensated care. We begin with an accounting description of the uncompensated care financing budget constraint. Our goal in presenting this budget constraint in detail is to highlight the connection between uncompensated care surcharge rates and other policy instruments designed to subsidize care consumption by the uninsured and/or by low income households. We then introduce the relevant economic linkages across components of the framework. Our primary goal in presenting these linkages is to describe the stability of the uncompensated care financing mechanism when faced with shocks to uncompensated care financing needs.

2.1 Accounting for Uncompensated Care

From a purely accounting perspective, we begin by describing the aggregate of uncompensated care costs. Such costs are the product of the number of uninsured individuals, N_u, the number of visits each individual makes to the hospital each year, Q_u, and the resource cost of each visit, P_u. These costs can be financed through a variety of sources. Hospitals can receive subsidies from the federal government, F, and from state and local governments, S. They may use cross-subsidies generated through the rates charged to private insurers, C. Finally, they may incur a deficit D. The budget constraint associated with uncompensated care financing is thus:

$$N_u Q_u P_u = F + S + C + D. \tag{1}$$

2.2 The Economics of Uncompensated Care Financing

We now introduce relevant relationships between the components of the budget constraint in equation (1). The cross-subsides engineered through rate regulation involve surcharges on the rates charged to private payers. Let N be the total population and let the number of privately insured individuals be $N_p = N - N_u$. Let the number of visits by each private patient be Q_p, the base payment per visit be P_p, and the uncompensated care surcharge be τ. This gives us $C = N_p Q_p P_p \tau$.

We next consider the relationship between the surcharge and demand for private insurance. Surcharges increase the net price insurers must pay for their beneficiaries' care. For analytic simplicity, we assume that these charges are fully passed through to consumers in the form of higher premiums.[7] Demand for insurance, as described by the number of privately insured individuals, is thus decreasing in these surcharges. A further point of interest is that demand for private insurance depends on the accessibility of care, as represented by $Q_u P_u$, provided to the uninsured.[8] This gives us $N_p = N_p(1 + \tau, Q_u P_u)$, with $\frac{dN_p(1+\tau)}{d(1+\tau)} < 0$ and $\frac{dN_p(1+\tau)}{d(Q_u P_u)} < 0$.

Finally, we consider determinants of the total cost of uncompensated care. Q_u and P_u can be viewed as the extensive and intensive margins of the generosity of uncompensated care provision. The amount of uncompensated care per uninsured individual depends on two factors of interest. The first is the net revenue associated with each visit.[9] Letting R_u be the available per-visit reimbursement, the net revenue from each uninsured visit is $R_u - P_u$. A conceptually distinct source of variation in the uncompensated care *claimed* involves the management practices of uncompensated

[7] The conclusions we emphasize require only that these surcharges be partially passed through to insurance beneficiaries. Erosion of hospital quality driven by reduced spending on various inputs would have similar implications.

[8] This echoes a theme emphasized in Finkelstein, Hendren, and Luttmer's (2015) analysis of individuals' valuation of Medicaid when alternative sources of free or subsidized care are available.

[9] A key issue for the relevant incentives is whether uncompensated care is reimbursed on the margin or financed through block grants that are not adjusted for deviations in realized uncompensated care costs. Thorpe and Spencer (1991) and Thorpe and Phelps (1991) provide evidence that uncompensated care provision rises when hospitals' exposure to the costs of that care declines.

care pool administrators. The relevant activity of these administrators can be described as a combination of utilization review and fraud detection, or more generally as "moral hazard management." Let these management practices be described by the vector $\mathbf{E}$. Taken together, we can then write $Q_u = Q_u(R_u - P_u, \mathbf{E})$. The intensive margin could be similarly analyzed. That is, the resource cost of each uncompensated care visit could similarly be described as a function of fee-for-service reimbursement generosity and utilization management strategies. For simplicity we treat P_u as fixed.

With the above relationships in mind, the budget constraint associated with uncompensated care provision becomes:

$$[N - N_p(\tau + 1, Q_u P_u)]Q_u(R_u - P_u, \mathbf{E})P_u = F + S + N_p(\tau + 1, Q_u P_u)Q_p P_p \tau + D. \quad (2)$$

Let τ^* be the surcharge such that the budget constraint from equation (2) is balanced with an incurred deficit of $D = 0$. The budget balancing surcharge τ^* is

$$\tau^* = \frac{[N - N_p(\tau^* + 1, Q_u P_u)]Q_u P_u - F - S}{N_p(\tau^* + 1, Q_u P_u)Q_p P_p} \quad (3)$$

and revenue of $N_p(\tau^* + 1, Q_u P_u)Q_p P_p \tau^*$ is collected.

2.3 Financing Uncompensated Care through All-Payer Rate Surcharges

We now step further into the economics of financing uncompensated care through surcharges on private insurers' payment rates. In this section we characterize the ease with which such systems can generate incremental revenue. Such considerations would be particularly salient when a state first implements this financing mechanism or when its financing needs increase.[10]

[10]The latter scenario applies, for example, to our analysis of New Jersey following the loss of subsidies its system initially received from the federal Medicare program.

Differentiating equation (2) with respect to $1+\tau$ produces expressions that can be usefully compared with expressions that describe the incremental revenue generated by increases in tax rates (Feldstein, 1999; Saez, 2001). Net of new expenditure, the change in revenue generated by an increase in the surcharge rate is

$$\frac{\text{dNet Rev.}}{d(1+\tau)} = N_p Q_p P_p + \frac{dN_p(1+\tau)}{d(1+\tau)}\tau Q_p P_p + \frac{dN_p(1+\tau)}{d(1+\tau)} Q_u P_u. \tag{4}$$

The terms in equation (4) have intuitive interpretations. The first term describes the revenue mechanically generated by an increase in the surcharge rate. The second term describes the revenue lost by the decline in insurance coverage that results from increasing the surcharge rate. The third term describes the increase in uncompensated care costs resulting from the decline in insurance coverage due to the rising surcharge rate.

How does equation (4) compare with canonical expressions from the public finance literature? A superficial difference is that the surcharges we analyze are equivalent to sales taxes, while canonical papers in the public finance literature discuss incremental increases in income tax rates. It is thus helpful to keep in mind that the incentive effects of an income tax of 100 percent would be comparable to an infinite sales tax rather than a sales tax of 100 percent.

Beyond this superficial difference, there is a key conceptual distinction between the current setting and standard tax-collection settings. In standard income tax analyses, the government's revenue needs are taken as fixed, or as being determined through a separate problem. In such settings, behavioral responses to taxation enter solely through their effect on the size of the effective tax base. Here, by contrast, behavioral responses to surcharges affect both the base on which surcharges are collected and the amount of revenue the surcharge must generate. When individuals drop insurance coverage, any uncompensated care they consume increases surcharge financing needs.

A straightforward assumption greatly eases comparisons of the current setting

with canonical settings. Assume that the quantity of care consumed by each insured and uninsured individual is the same, so that $Q_p P_p = Q_u P_u$.[11] With that assumption in place, we now substitute the elasticity of the private coverage rate with respect to the tax-inclusive price, namely $\epsilon_{N_p,1+\tau} = \frac{dN_p(1+\tau)}{d(1+\tau)} \frac{1+\tau}{N_p}$, into equation (4). This yields the expression below:

$$\begin{aligned} \frac{\text{dNet Rev.}}{d\tau} &= N_p Q_p P_p [1 + \frac{\tau}{1+\tau} \epsilon_{N_p,1+\tau} + \frac{1}{1+\tau} \epsilon_{N_p,1+\tau}] \\ &= N_p Q_p P_p [1 + \epsilon_{N_p,1+\tau}]. \end{aligned} \tag{5}$$

The second and third terms from the top line of equation (5) describe the contraction of the surcharge base and the expansion of financing needs that result from a surcharge increase's effects on insurance purchases. These terms combine to produce the expression in the second line. The net revenue gain from an increase in the surcharge rate is equal to the "mechanical" or "static" revenue gain times 1 plus the elasticity of insurance coverage with respect to the surcharge-inclusive price.

So long as the insurance coverage elasticity is less than one, net surcharge revenue rises as the surcharge rate increases. Because extensive margin estimates of insurance demand elasticities are typically modest (Liu, Chollet, et al., 2006), this will tend to be the case. At the same time, the feedback from coverage changes to financing needs implies that reaching a given net revenue target will require a higher rate in this setting than it would in the standard sales tax setting.

2.4 Incorporating Exclusions from the Effective Tax Base

We now consider all-payer regulatory regimes' treatment of HMOs. All-payer regimes struggled to regulate payments from HMOs, which were exempted from surcharges to

[11] This assumption is not literally true, as the effect of insurance coverage on the cost of care to the consumer tends to make $Q_p P_p > Q_u P_u$ (Finkelstein, Taubman, Wright, Bernstein, Gruber, Newhouse, Allen, Baicker, and Group, 2012). Differences between $Q_p P_p$ and $Q_u P_u$ do not qualitatively alter our expression's economic implications, but prevent it from further simplifying.

varying degrees. In the limiting case of Massachusetts, HMOs were fully exempted. Let N_b describe the total number of traditional insurance beneficiaries and N_{hmo} describe the number of HMO beneficiaries. Having distinguished between plan types, we note further that demand for traditional insurance is a function of both its own surcharge-inclusive price and the price of HMO coverage. We write the budget constraint with a differential tax on HMOs as:

$$N_b(\tau_b + 1, \tau_{hmo} + 1, Q_u P_u) Q_p P_p \tau + F + S + D$$
$$= [N - N_b(\tau_b + 1, \tau_{hmo} + 1, Q_u P_u) - N_{hmo}(\tau_b + 1, \tau_{hmo} + 1, Q_u P_u)] Q_u P_u. \quad (6)$$

The change in net revenue resulting from an increase in the surcharge rate is now

$$\frac{\text{dNet Rev.}}{d\tau_b} = Q_p P_p [N_b + \frac{dN_b}{d(1+\tau_b)} \tau_b] + [\frac{dN_{hmo}}{d(1+\tau_b)} + \frac{dN_b}{d(1+\tau_b)}] Q_u P_u. \quad (7)$$

The difficulty of increasing net revenue in this setting reflects two new considerations. First, the mechanical revenue gain from either introducing the surcharge or increasing the surcharge is reduced by the fact that the surcharge is collected on a smaller base. Second, a new behavioral response must be taken into account, namely surcharge-induced transitions from traditional insurance into HMO coverage.

Transitions across forms of insurance should be expected to have quantitatively relevant implications. Traditional insurance and coverage through HMOs are close substitutes. The elasticity of demand for one type of coverage with respect to taxation of another should thus be expected to be much larger than the extensive margin elasticity of demand for all forms of coverage combined. While estimating cross-price elasticities can be empirically challenging, existing studies are consistent with this economic intuition (Liu, Chollet, et al., 2006).

3 Data Sources

Our framework shows that a comprehensive understanding of uncompensated care financing requires data on several key features of the environment. These include insurance coverage rates, the intensity of uncompensated care provision, data on hospital spending through Medicare and Medicaid, data on other forms of state and local government support for hospital budgets, data on HMO market shares, and surcharge rates. This section outlines the sources we use to assemble these data.

3.1 Data on Insurance Coverage Rates

Because all-payer surcharges were collected on payments from private insurers, private insurance coverage rates describe the base from which these implicit taxes could be drawn. Our data on insurance coverage come from the March Economic and Demographic Supplements of the Current Population Survey. We use data from 1985 through 1996, which captures the years preceeding the abandonment of the all-payer regimes in Connecticut, Massachusetts, New Jersey, and New York.

3.2 Data on Uncompensated Care Provision

Data on total uncompensated care costs are not trivial to come by, due in part to the miscellany of mechanisms used to finance such expenditures. We take estimates of uncompensated care costs as a percent of total hospital revenue from Table 1 of Atkinson, Helms, and Needleman (1997), who report this series for Connecticut, Maryland, New Jersey, and New York. With the exception of Massachusetts, they thus describe the scale of uncompensated burdens for the states of primary interest.

3.3 Data on State and Local Government Hospital Spending

State and local governments contribute to uncompensated care financing through a variety of programs. Our series on such expenditures comes from the Annual Survey of State and Local Government Finance, which is produced by the U.S. Census Bureau (Various Years). We report state-level aggregates of spending on the functional category "direct hospital expenditures." Importantly for our accounting purposes, this hospital spending is outside of states' Medicaid programs.

3.4 Data on the Market Shares of Health Maintenance Organizations

Our data on HMO market shares come from surveys conducted by the firm Interstudy, which are the basis for data reported in historical additions of the Statistical Abstract of the United States. The data include snapshots of HMO market shares from 1980, 1985, 1990 and 1995, with annual updates thereafter. We accessed these data with guidance from Pinkovskiy (2014).

3.5 Data on Medicare and Medicaid Spending

Medicare spending is relevant in large part due to the implications of Medicare waivers for federal contributions towards states' uncompensated care financing. New Jersey, in particular, had a generous arrangement which lapsed in 1988. Our data on Medicare spending comes from the "State (Provider)" portion of the Health Expenditure Accounts made available by the Center for Medicare and Medicaid Services, as do our data on combined state and federally financed Medicaid expenditures.

4 Variations in the Uncompensated Care Financing Landscape

In this section we begin by documenting the evolution of uncompensated care surcharges across the rate setting regimes we study. Figure 1 presents surcharge rates for the select states and years for which the data are available. It is apparent that surcharges varied significantly both across states and over time. Our goal in this section is to use the data described in the previous section to understand these variations. Why, for example, was New York able to maintain relatively low surcharges, while New Jersey had higher rates that increased substantially in 1989? To help understand these patterns, figures 2, 3, and 4 present data on key components of the uncompensated care budget constraint.

Figure 2 shows the amount of uncompensated care in need of funding across states in the late 1980s. Notably, these financing requirements were unusually high in New Jersey, where uncompensated care made up nearly 12 percent of hospital charges. In part, this reflects the fact that New Jersey's management of uncompensated care costs (as represented by the vector **E** in our conceptual framework) was weak. Volpp and Siegel (1993) observe that per person hospital utilization among New Jersey's uninsured population significantly exceeded hospital utilization among the insured. Elsewhere in the country, hospital utilization among the uninsured was typically half that of the insured. New Jersey thus had an unusually high value of $Q_u P_u$, implying some combination of waste and generous care access for the uninsured.[12]

Figures 3 and 4 present total hospital spending alongside spending from public sector sources. A first observation from these data is that New York financed far more of its hospitals' expenditures through its Medicaid program and through other

[12]The states we analyze had comparable, and generally quite low, rates of uninsurance. Variations in uncompensated care costs as a fraction of total hospital charges (which is the metric reported by Atkinson, Helms, and Needleman (1997) and reproduced in figure 2) thus primarily reflect variations in utilization per uninsured individual.

direct hospital expenditures by its state and by local governments. Medicaid and other state and local government hospital spending accounted for a remarkable 55 percent of New York's hospital expenditures in 1985. In other states with all-payer rate setting regimes, the sum of these categories rarely exceeded 30 percent of hospital expenditures between 1985 and 1996. While New York's uncompensated care pool was a non-trivial element of its approach to financing uncompensated care, tax-financed expenditures through Medicaid and other hospital subsidy programs carried far more of the load in New York than they did in other states. This reduced the need for financing through cross-subsidies from the privately insured.

Figure 4 shows that New Jersey's hospitals were unusually reliant on Medicare expenditures during the mid-1980s. This was made possible by a waiver through which Medicare paid New Jersey hospitals higher rates than it would have paid equivalent hospitals in other states. This reconciles the fact that New Jersey initially maintained relatively moderate surcharge rates (see figure 1) despite having very high funding needs (see figure 2). When the Medicare waiver expired 1988, New Jersey's Medicare revenue declined by $500 million. This mechanically increased the all-payer system's surcharge rates from 10.5 percent to 18.1 percent.

In 1985, uncompensated care surcharge rates in Massachusetts were only moderately higher than in New York, yet between 1985 and 1988 they doubled from 7 percent to nearly 14 percent. We connect this to two features of the approach to uncompensated care financing adopted by Massachusetts. The first is that, unlike New York, Massachusetts generated far less hospital financing through its Medicaid program and other state and local government expenditures. The second is that it exempted HMOs from the state rate setting system throughout the period under analysis. Massachusetts thus spread its uncompensated care surcharges across a smaller base than other states. This mattered little in 1980, when the market share of Massachusetts HMOs was 2.9 percent. By 1985, however, that share had expanded to

13.7 percent. By 1990 it had expanded to 26.5 percent. As HMO market share grew, surcharge rates rose. In 1988, the state explicitly capped the revenue generated by uncompensated care surcharges at $300 million. This nominal cap began an effective phasing out of the all-payer financing mechanism (McDonough, 1995).

Surcharge rates in Connecticut reflected yet another distinctive problem of policy management (again, as represented by the vector **E** in our conceptual framework). When Connecticut moved to a uniform surcharge system in 1991, it deviated from other states in the sources of budgetary shortfall it included in its computation of uncompensated care surcharges. Specifically, it included estimated short-falls due to "underpayments" from both Medicare and Medicaid. The burden imposed on Connecticut's base of private sector payments was thus unusually high. The surcharge rate implied by the formula Connecticut initially applied was a substantial 31 percent. This triggered a combination of lawsuits and legislative revisions that significantly reduced the combination of surcharges and hospital-specific sales taxes applied in subsequent years. Even after these revisions, however, the surcharges in Connecticut rivaled those from the New Jersey all-payer regime's final years.

5 Erosion of Surcharge Bases and the Abandonment of All-Payer Regimes

In this section we analyze insurance coverage changes over the years preceding the abandonment of states' all-payer rate regulation regimes. We first present data on changes in private insurance coverage rates and in the fraction of individuals without insurance. We emphasize that, regardless of their underlying causes, these coverage changes implied contractions of all-payer regimes' financing bases and expansions of their financing needs. Building on this analysis, we use a shock to New Jersey's rate setting system to provide causal evidence on the channels through which un-

compensated care costs eroded the private insurance market. Next, we present data on expansions in HMO coverage in states that exempted HMOs from their all-payer surcharges. Using the experience of one state - Massachusetts - we present evidence on the causal pathways linking uncompensated care financing to the rise of HMOs and collapse of all-payer rate setting.

5.1 The Evolution of Insurance Coverage Preceding the Abandonment of All-Payer Regimes

This section presents data on changes in insurance coverage rates over the years preceding the abandonment of states' all-payer rate regulation regimes. In figure 5 we present data describing coverage changes over the years preceding four distinct events, namely the abandonment of the all-payer regimes in Connecticut, Massachusetts, New Jersey, and New York. We use CPS data on individuals under age 65 to estimate insurance coverage rates in each year in all 50 states and the District of Columbia. We then construct event studies comparing coverage in the relevant all-payer state to coverage in all other states. The event studies extend from the year four years preceding the abandonment of the all-payer system to the year of that event itself. The data presented in figure 5 are averages of these series across the four events we analyze. We present these trends relative to baseline coverage rates four years prior to abandonment.

All-payer regimes were abandoned following periods during which private insurance coverage rates declined. Across the four episodes we analyze, private coverage in the states that abandoned their all-payer regimes declined by an average of 3.5 percentage points. This is nearly a 5 percent reduction on a baseline coverage rate of 78 percent. Some individuals transitioned into public insurance, while others became uninsured. The rise in the fraction uninsured averaged 1.5 percentage points, which was an increase of 11 percent on a base of 13.5 percent.

We do not interpret these coverage changes as being causally linked to either the existence of states' all-payer regimes or some other policy change. We observe instead that, regardless of their underlying causes, these developments increased the strain of uncompensated care costs on states' all-payer regimes. On average across the four states' experiences, surcharge rates would have had to rise by roughly 16 percent (5 percent from the decline in private coverage and 11 percent from the increase in the fraction uninsured) over the 4 years preceding their abandonment.

5.2 Causal Pathways in the Case of New Jersey

In this section we analyze a key shock to the New Jersey system: the expiration of its Medicare waiver. From its inception in 1978, New Jersey's all-payer system included a formal regulatory mechanism to fund the provision of uncompensated care. Initially, each hospital was allowed to charge a mark-up (on top of the state-approved rates) that was proportional to the amount of uncompensated care it delivered. Because hospitals delivered varying amounts of uncompensated care, the mark-ups charged by hospitals began to differ markedly. By 1985, mark-ups ranged from 1 to 20 percent across hospitals, placing hospitals that provided more uncompensated care at a competitive disadvantage (Volpp and Siegel, 1993).

New Jersey equalized surcharges across hospitals when it established the Uncompensated Care Trust Fund (UCTF) in 1987.[13] The UCTF was funded through a uniform add-on, which was updated bi-annually and applied to all hospital bills. The resulting trust fund revenue was then allocated to hospitals based on the amount of uncompensated care delivered. Underpinning the viability of this effort was the state's Medicare waiver - an agreement by Medicare to pay the state's all-payer rate, including the surcharge. This exceeded what Medicare paid in the rest of the country.

Beginning in 1989, Medicare reverted to paying the lower rates that it paid in the

[13]Connecticut similarly shifted from variable surcharge rates to a uniform surcharge rate in 1991.

rest of the country. As shown in figure 4, this significantly reduced the share of New Jersey's hospital expenditures that were financed by Medicare. Prior to the waiver's expiration, Medicare accounted for about 40% of a typical hospital's business, and hence a similar amount of UCTF contributions (Volpp and Siegel, 1993).

Figure 1 illustrates the UCTF surcharge rate for the years surrounding the waiver's expiration. In 1988 the surcharge rate was 10.5 percent. The expiration of the waiver mechanically led the surcharge rate to rise sharply. From 1988 to 1989, the add-on increased by 7.6 percentage points (72 percent) to 18.1 percent.[14]

In Figure 6 we present the evolution of coverage rates in New Jersey compared to other states. Panels A and B show uninsured and private coverage trends, respectively. Prior to the waiver's expiration, coverage rates in both New Jersey and other states were relatively stable. After the expiration of its Medicare waiver, however, New Jersey's uninsured rate increased at a faster rate than the national average. A similar pattern emerges in panel B, where New Jersey's private coverage rate diverges beginning in 1989. From 1989 to 1992, private coverage in New Jersey declined faster than private coverage in other states.

We more formally estimate the effect of Medicare's withdrawal on the evolution of coverage in New Jersey using the event study specification below, in which i indexes individuals, t indexes years, and s indexes states:

$$COV_{i,s,t} = \alpha + \sum_{k \in K} \delta_k \text{New Jersey}_{s(i),1989+k} + X_{i,s,t}\beta + M_{s,t} + \lambda_s + \gamma_t + \epsilon_{i,s,t}, \qquad (8)$$

$$\text{where } K = \{-3, -2, 0, 1, 2, 3, 4\}.$$

$COV_{i,s,t}$ is a binary indicator of coverage (e.g., individual i is privately insured). The

[14]This increase is consistent with Volpp and Siegel (1993), who report that Medicare was responsible for about 40 percent of the UCTF funding. Assuming this is correct, reallocating Medicare's share would increase the surcharge by 67 percent. For an average hospital stay, the surcharge was adding an additional $1,425 on to the $7,500 bill by 1991.

regression includes the standard features of difference-in-differences specifications, namely sets of state and year fixed effects, which are represented by λ_s and γ_t.

The control vector $X_{i,s,t}$ contains a set of individual characteristics. The variables in $X_{i,s,t}$ account for age, marital status, education, household income, employment sector (government, self-employed, private), and whether an individual's employer offers a pension. We also include controls for state Medicaid generosity in $M_{s,t}$ to account for Medicaid expansions in the late 1980s. Using data presented in Yelowitz (1995), we capture expansions in generosity through changes in two measures of eligibility between 1988 and 1991: the age limit for children and income limit for infant coverage.[15] We calculate the change in each measure between 1988 and 1991 and interact each with year indicator variables to allow the effects of coverage expansions to unfold dynamically over time.

The primary coefficients of interest are the set of δ_k. These are the coefficients on the variables described by New Jersey$_{s(i),1989+k}$, which are indicators for whether an observation is from New Jersey in a year that is k years relative to 1989. The coefficients of interest thus describe differential coverage changes in New Jersey relative to other states.

We estimate equation (8) using data from the March Supplements of the Current Population Survey (CPS) for 1986-1993.[16] The coverage changes are from a given year relative to the omitted year, $k = -1$, which denotes the year just before the expiration of New Jersey's Medicare waiver. We also report results from a trend-break specification which summarizes the change in coverage trends in a single coefficient. That is, we estimate:

[15]This time period captures the vast majority of expansions. For example, by 1991, every state had increased the maximum eligibility age to 8 for children.

[16]The CPS's questions regarding insurance coverage ask about coverage in the previous years. The data thus describe insurance coverage from 1985 to 1992.

$$COV_{i,s,t} = \alpha + \delta(\text{New Jersey}_s(i) \times T_{s,t}) + X_{i,s,t}\beta + M_{s,t} + \lambda_s + \gamma_t + \epsilon_{i,s,t}, \quad (9)$$

$$\text{where T} = \begin{cases} 0, & \text{if } t(i) < 1989 \\ t(i) - 1988 & \text{if } t(i) \geq 1989, \end{cases}$$

where T is equal to the number of years subsequent to 1988.

Figure 7 reports our estimates of the effects of the waiver's expiration on coverage rates in New Jersey. In the years following the waiver's expiration, we observe a decline in coverage rates in New Jersey relative to the rest of the country. The percent uninsured had risen 6.4 percentage points more in New Jersey than in other states by 1992. This is a 54 percent increase in uninsured rate from a base of 11.8% in 1988. We estimate a concurrent decline in private coverage of 4.6 percentage points. Our trend break specifications imply that the uninsured rate increased 1.5 percentage points per year faster in New Jersey than in other states following the waiver's expiration. The corresponding trend break estimate for private insurance rates indicates a reduction of just under one percentage point per year.

Because this analysis involves a setting in which a single state was affected by the policy change of interest, cluster robust standard errors are likely to be insufficiently conservative (Bertrand, Duflo, and Mullainathan, 2004; Cameron, Gelbach, and Miller, 2008). We thus implement an approach to inference commonly called the permutation test (Imbens and Rosenbaum, 2005; Abadie, Diamond, and Hainmueller, 2012). This test involves assigning "placebo" treatment status, one at a time, to each of the 50 states. For each placebo treatment state, we then estimate (9). This generates a distribution of placebo treatment effects. Inference is conducted by examining the position of the true estimates within the distribution of placebo estimates. The fraction of placebo estimates that are larger than the true estimate can be inter-

preted as the p-value on a one-sided significance test. Figure 8 plots the distribution of placebo estimates, with the true estimate highlighted. In our estimates involving changes in the fraction uninsured, the true point estimate exceeds all placebo point estimates. In our estimates involving the fraction with private insurance, only one estimate exceeds the true estimate. Our trend break estimates are thus statistically distinguishable from 0 by conventional standards.

These declines in private coverage and increases in the fraction uninsured suggest that, had New Jersey not abandoned its all-payer regime, surcharges would have risen further still. The coverage changes we estimate suggest that the waiver's expiration resulted in a 7 percent contraction of the financing base and a 50 percent increase in financing needs associated with the uninsured. Absent other policy changes, surcharge rates would thus have had to rise by an additional 9 percentage points (a 57 percent increase on the 1991 base of 18 percent) to fund uncompensated care.

While New Jersey's insurance market had significantly deteriorated, we note that it was unlikely to enter a "death spiral." As emphasized in section 2, extensive margin elasticities of demand for insurance coverage tend to be insufficiently large to generate the extreme version of this outcome. At the same time, these developments imply that the increasingly burdensome incidence of uncompensated care financing was borne by a narrowing base of private insurance purchasers. We speculate that this would have contributed to the strength of subsequent legal challenges to the surcharge financing mechanism.

5.3 HMO Market Shares Preceding the Abandonment of All-Payer Regimes

As discussed above, states struggled with the question of how best to incorporate HMOs into their all-payer regulatory regimes. Massachusetts went to the extreme of fully exempting HMOs from its all-payer surcharges. In New York, the transition

from the NYPHRM II to the NYPHRM III versions of the all-payer regime significantly increased HMOs' ability to negotiate discounted rates. This reform occurred in 1988 (McDonough, 1995). In this section, we present data on the evolution of HMO coverage in Massachusetts and New York relative to other states.

Panel A of Figure 9 presents data on the evolution of HMO market shares in Massachusetts, New York, and the remainder of the states. Note that the period we analyze corresponds with the HMO revolution. On average across all states, the market share of HMOs rose from 2.5 percent in 1980 to 10.2 percent in 1990 to a high of 24 percent in 1999. The extent of this growth varied significantly across states. Panel A of Figure 9 reveals that HMO growth in Massachusetts and New York was faster than elsewhere in the country. Further, the growth of New York's HMOs relative to the rest of the country accelerated around the time they were exempted from all-payer surcharges. Growth in New York's HMOs was particularly fast over the decade extending from 1985 to 1995.

Panel B of Figure 9 shows that the expansion of HMOs in Massachusetts was unusually rapid over the period during which HMOs had a regulatory arbitrage advantage. From 1980 to 1990, the market share of Massachusetts HMOs expanded from 3 percent to 27 percent. In the distribution of changes across states, the second largest increase was 17.5 percentage points, which occurred in both Connecticut and Delaware. The increase in Massachusetts exceeded the second largest increase by a full standard deviation of the distribution across all states. On average across the country, the market share of HMOs rose by 8 percentage points.

5.4 Causal Pathways in the Case of Massachusetts

The 1980s expansion of Massachusetts HMOs significantly eroded the base on which its uncompensated care surcharges were collected. From 1980 to 1990, the expansion of HMO market share implied a 25 percent contraction of the base on which sur-

charges were being collected. Relative to its 1985 surcharge rate of 10 percent, this mechanically implies a 3.3 percentage point increase in the surcharge rate.

In this section we consider how the Massachusetts insurance market might have evolved had it not capped surcharge revenue at $300 million in 1988 and abandoned its all-payer regime in 1991. Inferring the insurance market's counterfactual evolution requires inferring the causal effect of all-payer surcharges on the HMO market share. This is a non-trivial task because the expansion of Massachusetts HMOs resulted from many factors. In addition to the arbitrage opportunity associated with uncompensated care surcharges, these include the market conditions underlying the HMO revolution more generally (Dranove, Simon, and White, 1998). To infer the causal effect of the all-payer regime on the market share of Massachusetts HMOs, we thus consider a range of counterfactuals based on HMO growth in other states.

The market share of Massachusetts HMOs increased by 24 percentage points from 1980 to 1990. As noted above, the second largest state-level increase was 17.5 percentage points, which occurred in both Connecticut and Delaware. We interpret the difference, namely 6.5 percentage points, as a reasonable lower bound on the all-payer regime's causal effect on the market share of Massachusetts HMOs. On average across all other states, the market share of HMOs rose by 8 percentage points over this time period. Because Massachusetts shared additional characteristics with other states that experienced rapid HMO growth, we interpret the difference between Massachusetts and all other states, namely 16 percentage points, as an upper bound. Our preferred estimate compares Massachusetts with other states in the Northeast census region. Across these states, the average increase in the HMO market share was 11 percentage points. Our preferred estimate is thus that the all-payer regime caused the HMO market share to increase by 13 percentage points more than it otherwise would have.

What does this estimate imply about the elasticity of coverage type with respect

to surcharges levied exclusively on traditional insurers? At its peak in 1988, the surcharge from which HMOs were exempt reached 13 percent. We thus estimate that a 13 percent add-on to hospital costs resulted in a 13 percent decline in the market share of traditional insurers. This suggests a surcharge elasticity of roughly 1 in the presence of a close substitute. The rapid growth of HMOs nationally suggests that, at least during this time period, this degree of substitutability was quite plausible.

How would the Massachusetts market have continued to evolve had its all-payer regime remained intact? Across the Northeast, the market share of HMOs rose by an additional 16 percentage points between 1990 and 2000. In Massachusetts, their market share expanded by an additional 26.5 percentage points. It reached a peak of 54 percent in 1998, dipped to 53 percent in 2000, and dropped to 40 percent by the early 2000s.

During the 1990s, the base on which surcharges were collected would thus have contracted considerably. From 1990 to 2000, the market share of traditional insurers contracted by 1/3 (from 74 percent to 47 percent). The required surcharge rate would thus have risen by roughly 50 percent, from 13 percent to nearly 20 percent. The elasticity estimated above suggests that this increase would have led to an additional 7 percent decline in traditional insurers' market share. In this setting, it appears quite plausible that the market for traditional insurance coverage would have unraveled completely. Absent a complete unraveling, the incidence of uncompensated care financing would have begun to fall on a very narrow base.

6 Legal Challenges to All-Payer Surcharges

Eroding surcharge bases and accompanying increases in surcharge rates contributed to a series of lawsuits levied against several states' all-payer rate setting regimes. The lawsuits involved self-insured, large-employer plans alleging that all-payer surcharges

violated the Employee Retirement Income Security Act (ERISA). The legal reasoning behind these claims centered on the fact that ERISA gives federal regulation primacy in the governance of self-insured, large-employer plans. ERISA has historically been interpreted as exempting self-insured firms from state regulations that "relate to" an employee benefit plan.[17] Firms in New Jersey, New York, and Connecticut argued with some success that surcharges on their insurance plans' payments to hospitals "relate to" the benefits they seek to provide their employees.

Courts in New Jersey, Connecticut, and New York initially ruled in favor of the firms, thereby invalidating the surcharge financing mechanism.[18] Later, these decisions were overturned by the Supreme Court's 1994 ruling in *New York State Conference of Blue Cross & Blue Shield Plans v. Travelers Insurance Co.*[19] In the meantime, however, states had moved quickly to identify alternative uncompensated care financing sources. Over a five year period, for example, New Jersey diverted $2 billion from its unemployment insurance trust fund to its uncompensated care trust fund (McDonough, 1997b). In Connecticut, legislators increased the financing of uncompensated care through the state's general fund.

7 Incidence of Uncompensated Care Surcharges

What can we learn from the legal and economic challenges faced by the all-payer regimes we analyze? We conclude that these systems' challenges can be traced, at least in part, to the peculiar distributional implications of using all-payer surcharges

[17]Similar reasoning has more recently led self-insured plans to be exempted from regulations requiring insurers to surrender detailed health insurance claims data to state governments seeking to create "all-payer claims databases."

[18]See *United Wire, Metal and Machine Health and Welfare Fund v. Morristown Memorial Hospital,* 793 F. Supp. 524 (D.N.J. 1992); *New England Health Care Employee Union District 1199 v. Mt. Sinai Hospital,* 846 F. Supp. 190 (D.Conn. 1994); *Travelers Insurance Co. v. Cuomo,* 14 F.3d 708 (2d Cir. 1993).

[19]See in *New York State Conference of Blue Cross & Blue Shield Plans v. Travelers Insurance Co.* 514 U.S. 645 (1995). Upon appeal, a similar decision regarding New Jersey's rate setting system was found in *United Wire, Metal and Machine Health and Welfare Fund v. Morristown Memorial Hospital,* 995 F.2d 1179, (3d Cir. 1993)

to finance hospitals' uncompensated care costs. We identify three salient features of these surcharges' economic incidence.

A first point of interest is the economic instability of the all-payer surcharge mechanism. As shown in section 2, uncompensated care surcharges are a less stable financing mechanism than broad-based income taxation. Standard tax analysis observes that an increase in a tax rate typically leads to a contraction of the tax base. As a result, the rate increase raises less revenue than a "static" or "mechanical" calculation would imply. The current setting contains an amplified feedback mechanism. This is because contractions of the surcharge base involve simultaneous expansions of uncompensated care financing needs. A second source of instability stemmed from all-payer regimes' treatment of HMOs. As shown in our analysis of Massachusetts, contractions in the effective tax base could be particularly large when HMOs were exempted. The exclusion of a close substitute from the implicit tax base significantly increases the elasticity of the implicit tax base with respect to the surcharge-inclusive price. As a result, the surcharge mechanism in Massachusetts risked a full unwinding and, by extension, a failure to raise significant revenue.

The Massachusetts all-payer regime's unraveling has a close parallel with a second class of cross-subsidy regulations in the health insurance context. By preventing insurers from adjusting premiums to account for a beneficiary's health status, community rating regulations engineer transfers from the healthy to those with pre-existing conditions (Clemens, 2015; Handel, Hendel, and Whinston, 2015). These regulations risk unraveling through adverse selection. If premiums rise above healthy individuals' willingness to pay, the healthy may exit the market. As coverage among the healthy declines, premium will rise. When a complete "death spiral" unfolds (Cutler and Reber, 1998), the envisioned transfers to those with pre-existing conditions may altogether fail to materialize. Like all-payer surcharges, these regulations thus risk failing to achieve their distributional goals while simultaneously reducing the welfare

of those they implicitly attempt to tax.

A second point involves the political economy of all-payer surcharges' incidence. The incidence of all-payer surcharges was targeted at private insurers and their beneficiaries. From a political economy perspective, it is relevant that insurers and the managers of employer-provided health plans are well organized groups. Exemptions from all-payer surcharges (e.g., for HMOs or for states' Blue Cross and Blue Shield plans) exacerbated this problem. The existence of exemptions both narrowed the revenue base and introduced the prospect of lobbying for further exceptions. In practice, surcharges became sufficiently large (and arbitrarily applied) to prompt legal action. As discussed in section 6, self-insured plans in three states filed claims of federal pre-emption under ERISA. Although eventually overturned, each suit was initially successful in federal court.

A third point involves the welfare implications of all-payer surcharges' incidence. The incidence of surcharges added to hospital payments falls on some combination of hospital patients with private insurance coverage, individuals who drop coverage due to increases in their premiums, and the owners and employees of hospitals and insurance companies. The welfare properties of uncompensated care surcharges are thus quite murky. From a social welfare perspective, it is worth asking whether hospital care for the uninsured would be better financed through taxation, which can be targeted as desired across the income distribution and will result in less disruption to the markets for health care and health insurance.

Analogies involving the incidence of tax-financed transfers and regulatory cross-subsidies can be made in many settings. Examples include redistribution through the minimum wage, interest rate ceilings (Glaeser and Scheinkman, 1998), rent control (Arnott, 1995), universally priced postage and the pricing of public utilities (Posner, 1971). In the familiar minimum wage context, for example, the incidence of resulting transfers is borne by some combination of low-skilled workers' employers, consumers

of the goods and services they produce, and low-skilled individuals who lose employment. Analogies to the set of firms, consumers, and targeted individuals who bear the incidence of all-payer surcharges are thus fairly strong.

8 Conclusion

Our analysis of hospital rate regulation illustrates issues that can arise when a policy instrument's purview is over-extended. Policy makers primarily understood all-payer rate setting regimes to be a mechanism for controlling costs. We provide evidence that both the economic and legal stability of these regulations were undermined by their extension to ancillary goals. Specifically, the stability of hospital rate regulation was undermined by its use as a mechanism for financing uncompensated care.

Uncompensated care surcharges were beset by several problems. We show that the surcharge mechanism risks an unraveling phenomenon that is comparable in some respects to the adverse selection problem. Further, the administration of these surcharges was cumbersome and their economic incidence was complex. Had these surcharges remained intact, their incidence would increasingly have been borne by relatively narrow sets of privately insured individuals.

The history of all-payer rate setting can be understood through the lens of the Tinbergen Rule (Tinbergen, 1952), which recommends that independent objectives be met with independently dedicated policy instruments. Cost control and uncompensated care financing are, in the relevant sense, independent policy objectives. Because they were abandoned, all-payer rate setting regimes ultimately achieved neither.

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Tables and Figures

Uncompensated Care Surcharge Rates (Various Years)

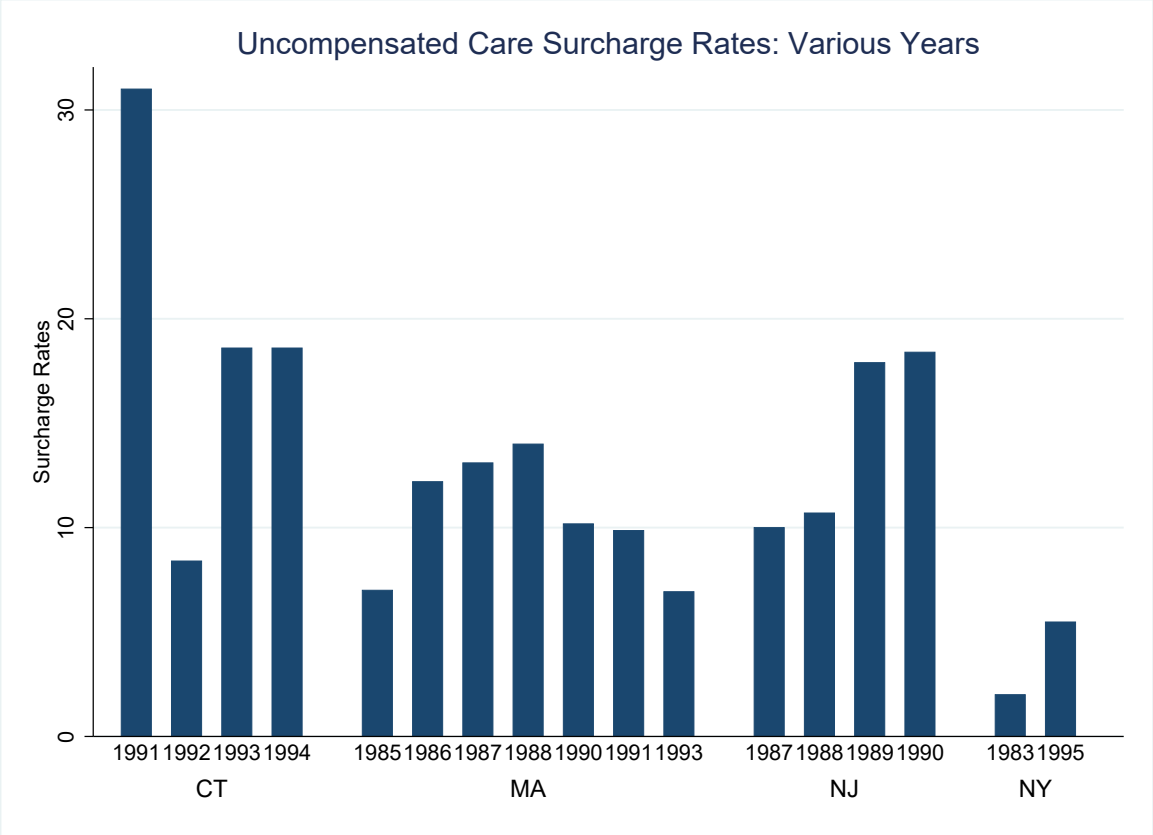


Figure 1: **Uncompensated Care Surcharge Rates (Various Years):** This figure presents surcharge rates for states' uncompensated care pools in various years. New Jersey: Data are take from Gaskin (1997). Connecticut: Data are from Kasprak (1999). Massachusetts: Data for 1985 and 1988 are from McDonough (1997a); data for 1986: Massachusetts Rate Setting Commission (1987); data for 1987: Holahan et al. (1997); data for 1990: Auditor of the Commonwealth of Massachusetts (1999). New York: Data are from Bovbjerg, Cuellar, and Holahan (2000).

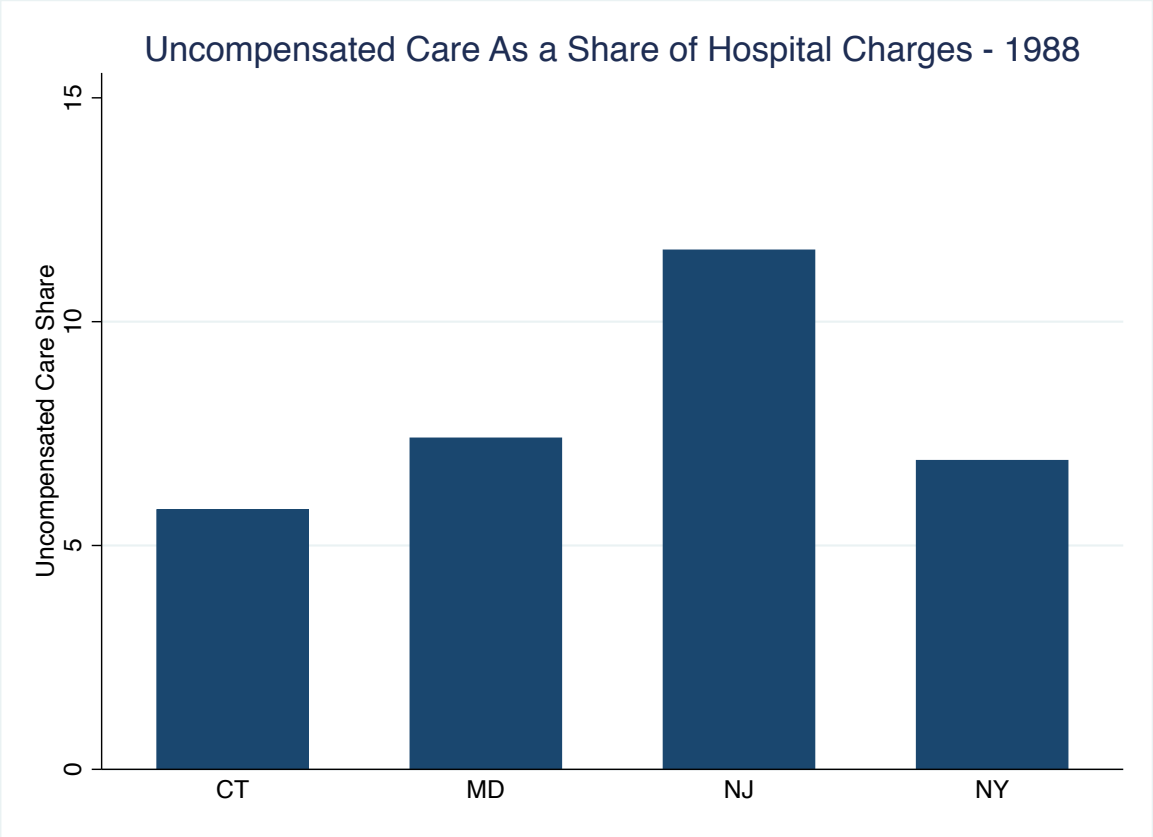


Figure 2: **Uncompensated Care Provision As a Share of Hospital Charges:** This figure presents data on uncompensated care provision as a share of total hospital charges. The data are taken directly from Atkinson, Helms, and Needleman (1997).

Distribution of Hospital Financing (1985)

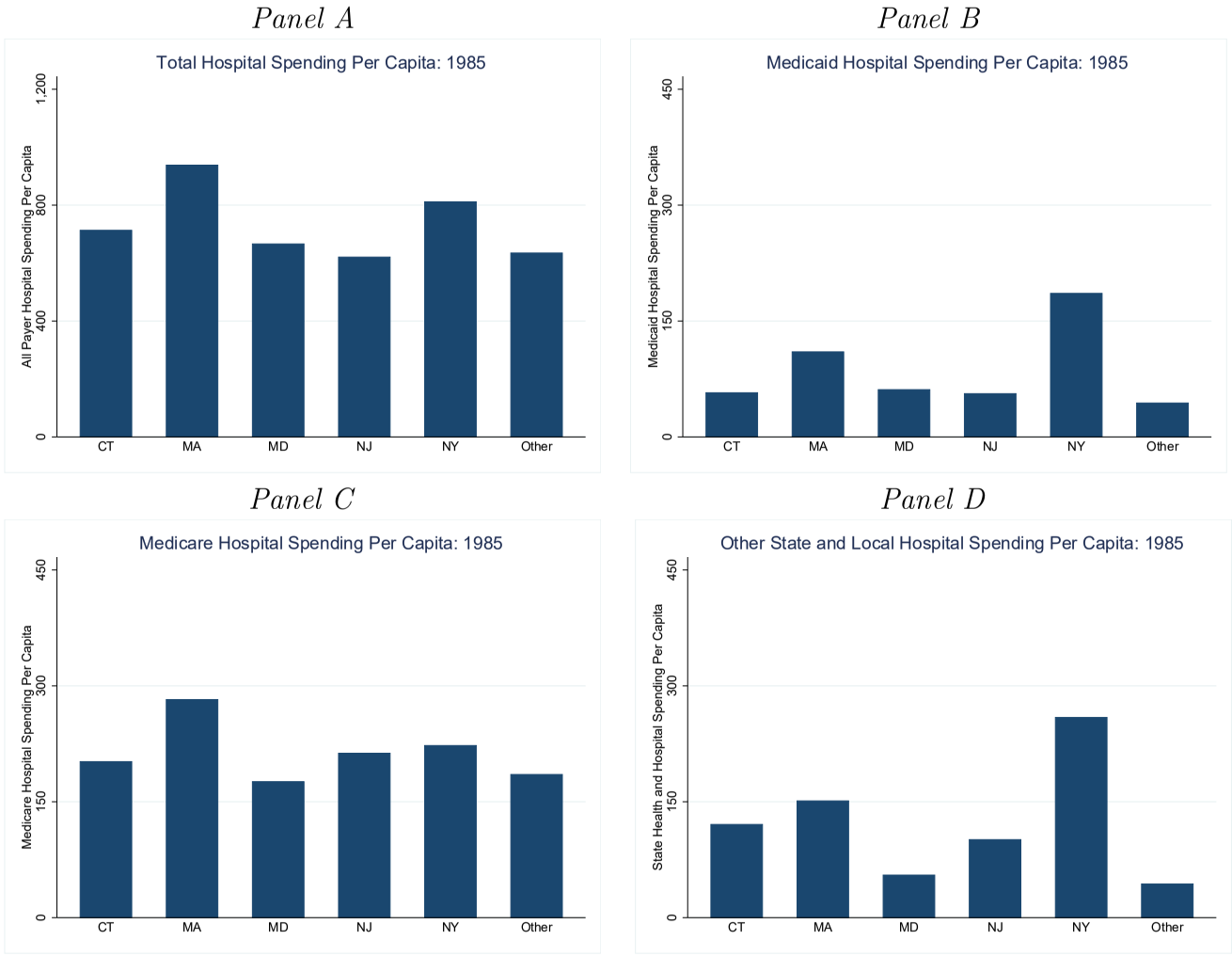


Figure 3: **Distribution of Hospital Financing (1985):** This figure presents baseline hospital spending per capita, both in total and across several sources of public sector financing. The data in panels A, B, and C come from the National Health Expenditure Accounts, as presented by the Center for Medicare and Medicaid Services. The data in panel D come from the Annual Survey of State and Local Government Finances conducted by the U.S. Census Bureau.

Evolution of Hospital Financing Over Time (1985 to 1996)

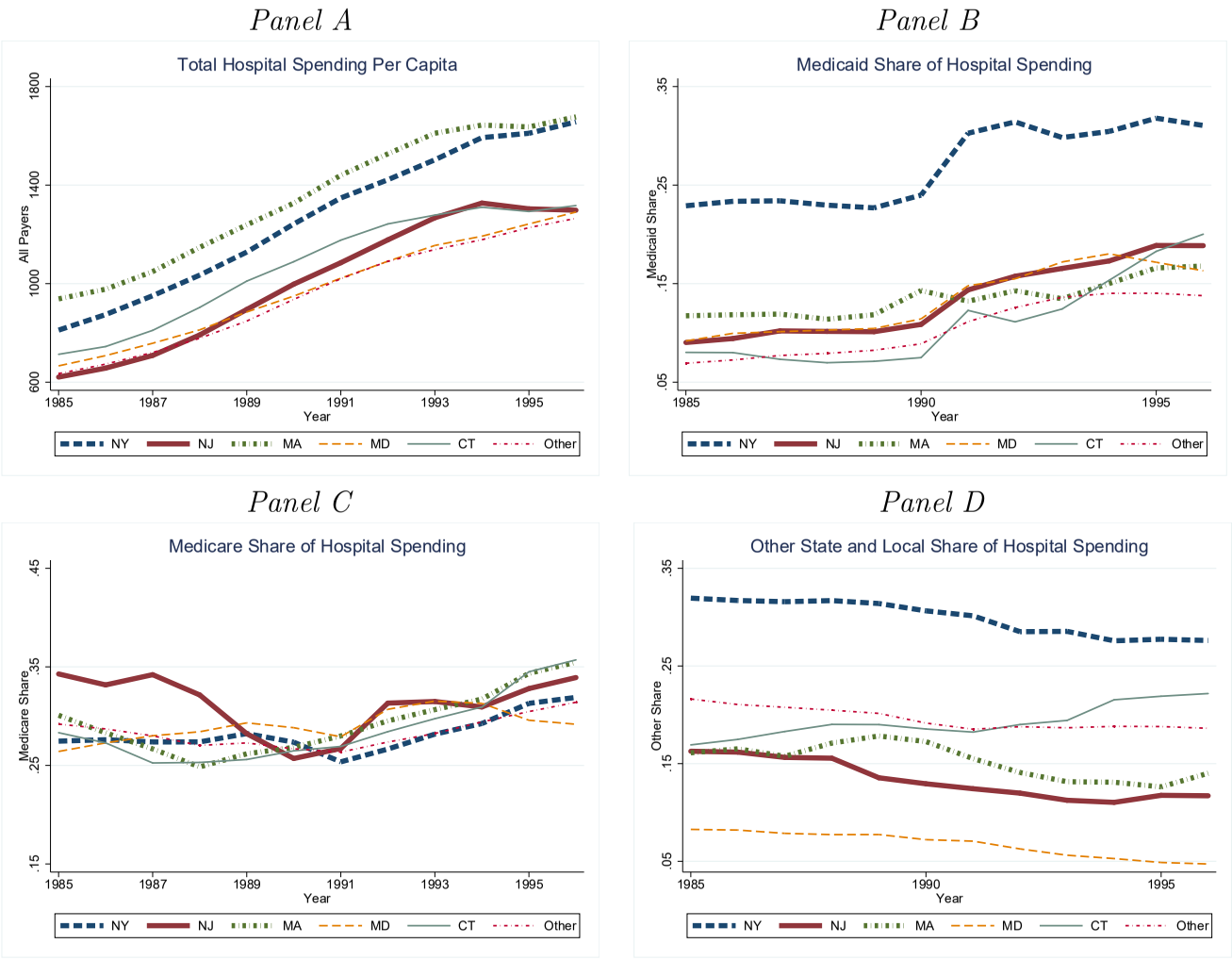
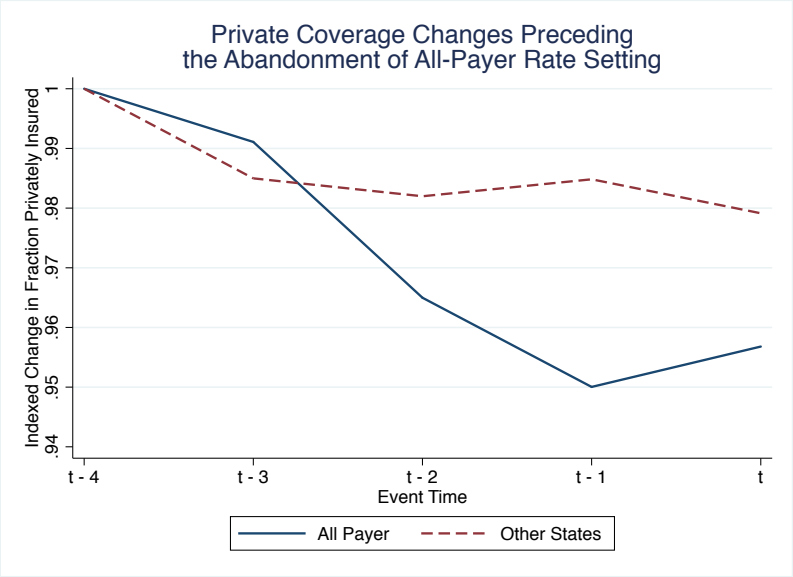


Figure 4: **Evolution of Hospital Financing Over Time (1985 to 1996):** This figure presents the evolution of hospital financing over time, both in total and across several sources of public sector financing. The data in panels A, B, and C come from the National Health Expenditure Accounts, as presented by the Center for Medicare and Medicaid Services. The data in panel D come from the Annual Survey of State and Local Government Finances conducted by the U.S. Census Bureau.

Coverage Changes Preceding the Abandonment of All-Payer Rate Setting

Panel A



Panel B

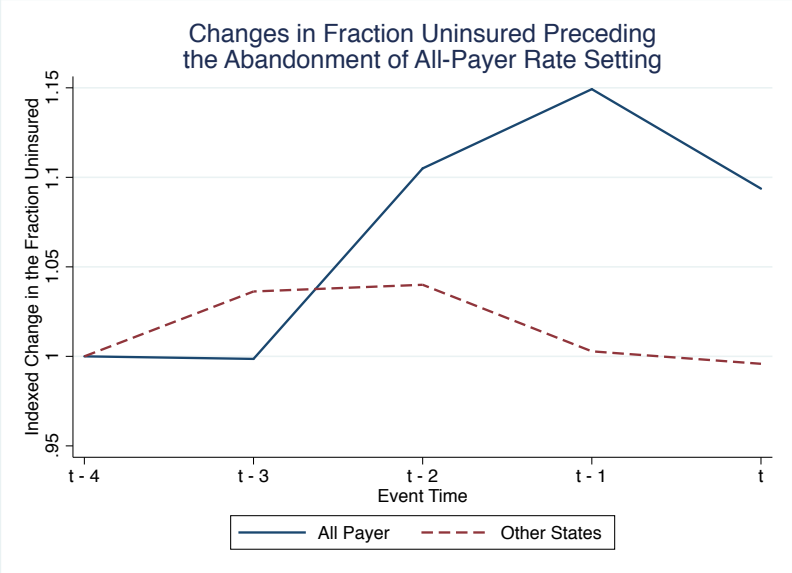
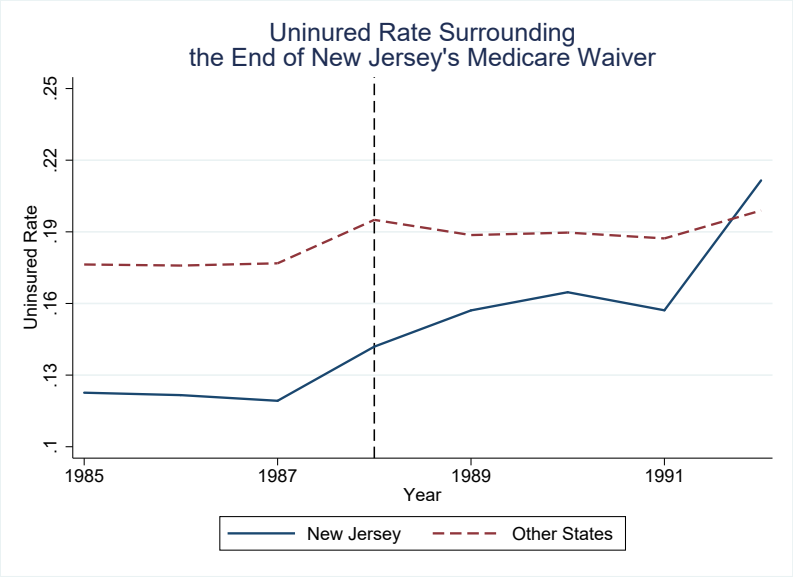


Figure 5: **Coverage Changes Preceding the Abandonment of All-Payer Rate Setting:** This figure presents data on private insurance coverage rates during the years preceding the abandonment of states' all-payer regimes. The "all-payer" episodes included in the construction of the figure include those associated with CT, MA, NJ, and NY. Insurance coverage rates were calculated by the authors using data from the Current Population Survey and are shown relative to baseline rates four years prior to abandonment.

Insurance Coverage Rates Surrounding the End of New Jersey's Medicare Waiver

Panel A



Panel B

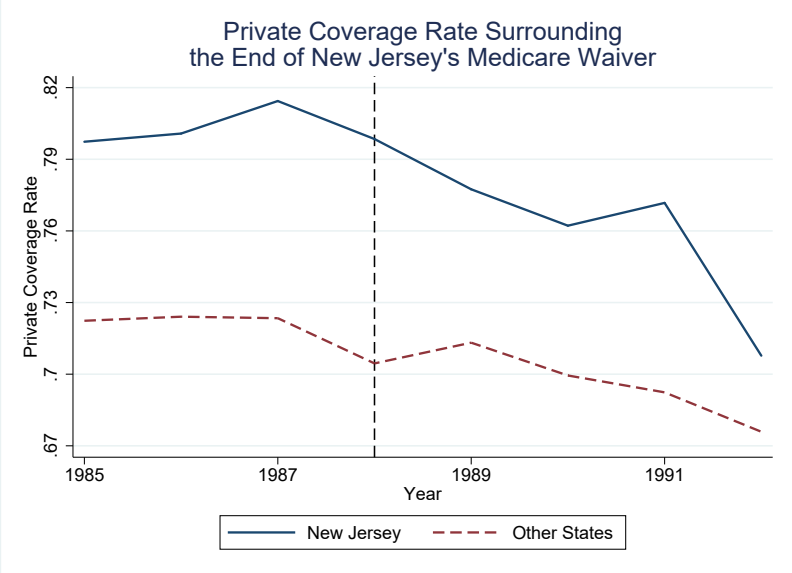


Figure 6: **Insurance Coverage Rates Surrounding the End of New Jersey's Medicare Waiver:** Data are from the Annual Social and Economic Supplement to the CPS for years 1986-1993, corresponding to insurance coverage for 1985-1992. The sample excludes all respondents over the age of 65. Panels A and B illustrate uninsured and privately insured rates surrounding the expiration of New Jersey's Medicare waiver, respectively.

The Effect of New Jersey's Medicare Waiver Termination on Uninsured and Private Insurance Rates

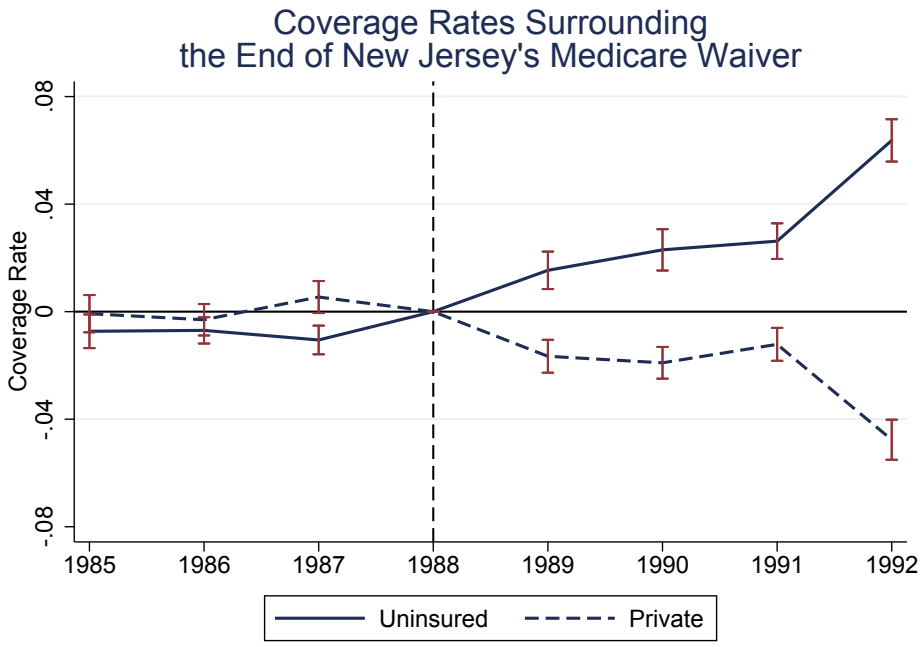
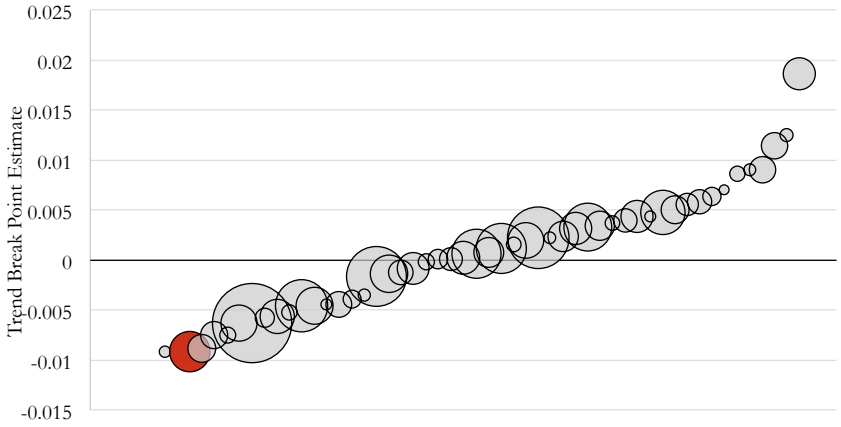


Figure 7: **The Effect of New Jersey's Medicare Waiver Termination on Uninsured and Private Insurance Rates:** Data are from the Annual Social and Economic Supplement to the CPS for years 1986-1993, corresponding to insurance coverage for 1985-1992. The sample excludes all respondents over the age of 65. The figure reports the estimates for δ_ks from Equation 8 evaluated with uninsured and private insurance as the dependent variable, respectively. In both event study models the omitted category is "1 year prior" (i.e. 1988), so all other treatment dummies are measured relative to that year. Vertical lines indicate 95% confidence intervals. Standard errors are clustered at the state level.

Trend Break Placebo Estimates for Insurance Coverage Surrounding the End of New Jersey's Medicare Waiver

Panel A: Private Coverage Rate



Panel B: Uninsured Rate

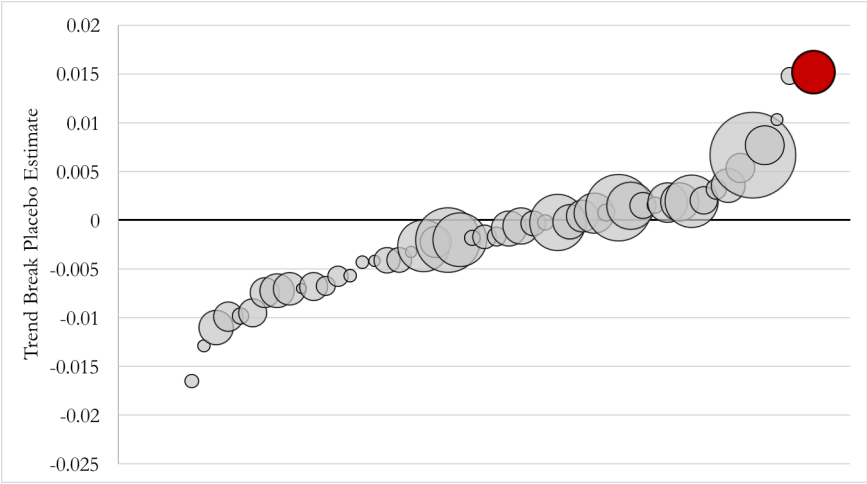
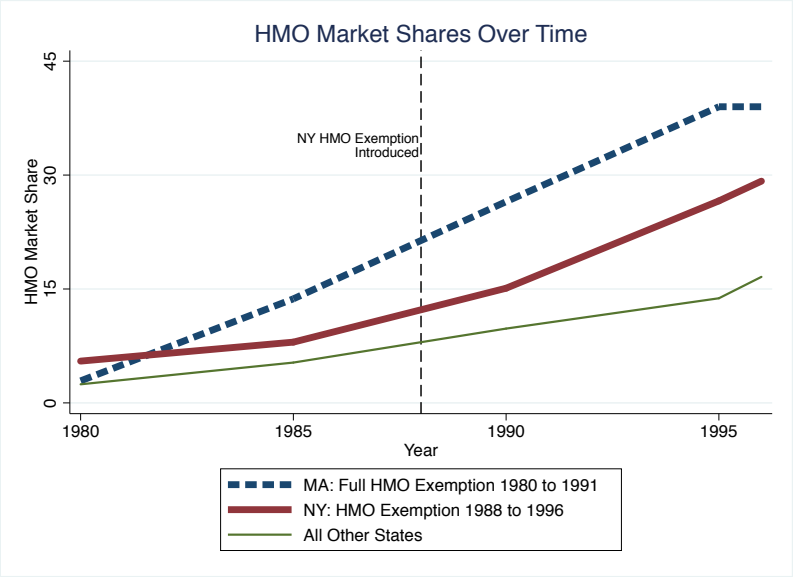


Figure 8: **Trend Break Placebo Estimates for Insurance Coverage Surrounding the End of New Jersey Medicare Waiver:** Data are from the Annual Social and Economic Supplement to the CPS for years 1986-1993, corresponding to insurance coverage for 1985-1992. The sample excludes all respondents over the age of 65. Each circle in both panels represents an estimate of δ from equation 9. The 51 circles in each panel correspond with separate estimates for which "treatment status" has been assigned to a different state. The true point estimate associated with the regression in which treatment status is assigned to New Jersey is filled in with darker coloring than the other 50 estimates. Panel A presents estimates for the private coverage rate while panel B presents estimates for the fraction uninsured. The area of each state's marker is scaled in accordance with the "treatment" state's population in 1990.

Evolution of HMO Market Shares Over Time

Panel A



Panel B

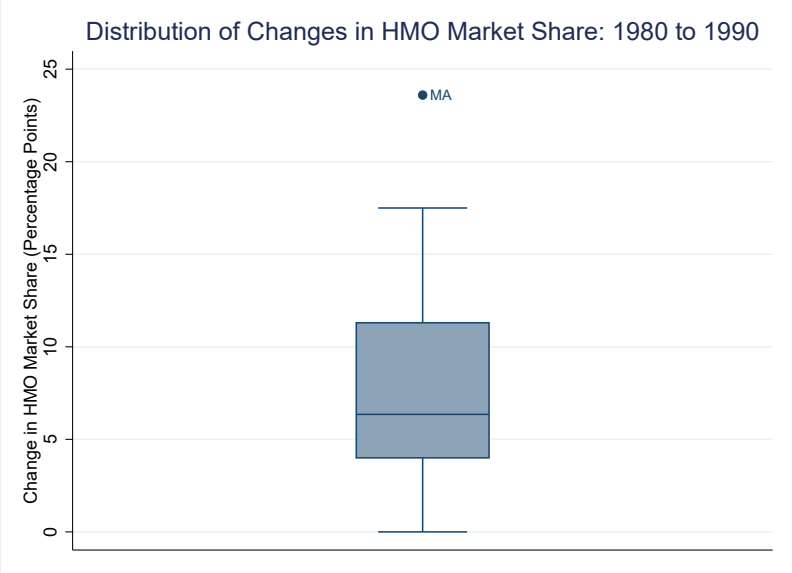


Figure 9: **Evolution of HMO Market Shares Over Time:** Data from Interstudy. Note that prior to 1995, data are reported every five years. Beginning in 1995 data are annual.

Table 1: **All-Payer Rate Setting Timeline**

State	Years Regulated	Key Events
New York	1971-1996	1982: Medicare waiver begins
		1985: Medicare waiver ends
		1988: HMOs exempted from all-payer system
		1993: ERISA preemption ruling[a]
		1995: Supreme Court overturns ERISA preemption[b]
		1996: New York Health Care Reform Act of l996 replaces rate setting
New Jersey	1974-1992	1985: Uncompensated Care Trust Fund created
		1988: Medicare waiver ends
		1992: ERISA preemption ruling[c]
		1992: Health Care Reform Act of 1992 replaces rate setting
		1994: Appeals court overturns ERISA preemption[d]
Massachusetts	1975-1991	1982: Medicare waiver begins
		1985: Medicare waiver ends & uncompensated care pool begins
		1988: $300 million cap on uncompensated care
Connecticut	1976-1994	1991: Uncompensated care pool established and 31 percent surcharge introduced
		1994: ERISA preemption ruling[e]
Maryland	1971-Present	1978: Initial Medicare waiver
		1980: Congress incorporates Medicare waiver into statue
		2014: New Medicare waiver begins

[a] *Travelers Insurance Co. v. Cuomo,* 14 F.3d 708 (2d Cir. 1993); [b] *New York State Conference of Blue Cross & Blue Shield Plans v. Travelers Insurance Co.* 514 U.S. 645 (1995) ; [c] *United Wire, Metal and Machine Health and Welfare Fund v. Morristown Memorial Hospital,* 793 F. Supp. 524 (D.N.J. 1992). [d] *United Wire, Metal and Machine Health and Welfare Fund v. Morristown Memorial Hospital,* 995 F.2d 1179, (3d Cir. 1993); [e] *New England Health Care Employee Union District 1199 v. Mt. Sinai Hospital,* 846 F. Supp. 190 (D.Conn. 1994).