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The Effects of CON Repeal on Medicaid Nursing Home and Long-Term Care Expenditures

Certificate-of-need (CON) and construction moratorium laws are used widely by states as a potential mechanism for constraining Medicaid nursing home expenditures. However, there is only limited empirical work examining whether these policies are effective at lowering Medicaid spending. Using aggregate state-level data from 1981 through 1998, this study found that states that repealed their CON and moratorium laws had no significant growth in either nursing home or long-term care Medicaid expenditures. In the context of declining occupancy rates within the nursing home market, this study provides strong evidence that states have little to fear in terms of increased expenditures with the repeal of CON and moratorium laws.

It is widely known that certificate of need (CON) programs have been ineffective in controlling hospital costs (Lanning, Morrisey, and Ohsfeldt 1991; Conover and Sloan 1998). However, many have argued that such programs have limited the growth of the nursing home industry, and thereby limited state Medicaid expenditures. Feder and Scanlon (1980) were among the first to make this point. They argued that CON restrictions were politically less visible than low Medicaid nursing home payment rates or restrictive eligibility conditions. As a result, CON could be an effective means of containing Medicaid long-term care expenditures. Over the years, many Medicaid commissioners have agreed (Wiener, Stevenson, and Goldenson 1998). Surprisingly, there has been little empirical work that directly supports or refutes this view.

This paper fills this void in three ways. First, it empirically examines the effect of nursing home CON and construction moratoria on Medicaid nursing home expenditures over the 1981 to 1998 period. During these years, 16 states repealed their CON nursing home laws for some period of time, 25 imposed moratoria on new nursing homes, and 10 states repealed their CON programs without imposing a moratorium. Second, it examines the effects of CON programs or moratoria on Medicaid long-term care expenditures. CON may be effective in limiting nursing home expenditures, but also may lead to greater use of home health care services by people eligible for Medicaid. Indeed, it has been argued that such substitution is a goal of some nursing home CON programs (Harrington 1994). The study estimates the effects on combined Medicaid

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expenditures for nursing homes and home health. Finally, the paper explores the effects of CON and moratoria on Medicaid nursing home payment rates and utilization. If CON repeal increases Medicaid expenditures, it is important to know whether this is largely attributable to higher payment rates per day of care or to an expansion in the number of days of care. The former would suggest a potential windfall to nursing home operators; the latter would imply an increase in access for the poor.

The results of the study indicate that the elimination of nursing home CON programs had no statistically significant effect on Medicaid nursing home or long-term care expenditures. Even the statistically insignificant effects suggested only a 3% increase in expenditures as a result of a CON repeal. Moreover, after decomposing Medicaid expenditures into payment rate and quantity terms, CON repeal did not have a statistically significant effect on either the Medicaid per diem payment or on the total number of Medicaid days. Thus, state Medicaid programs have little to fear in the way of higher Medicaid expenditures with the further repeal of nursing home CON laws.

Background

The nursing home market usually is characterized by Scanlon's (1980) model of price discrimination in two markets. Nursing homes are said to face two markets: a private market characterized by each home having some degree of monopoly power, and a public (Medicaid) market characterized by a fixed price administered by the government. The cost function for care is said to be identical for each market. Homes determine the quantity of services to be provided by setting marginal revenue equal to marginal cost, and split this capacity between public and private payers based upon their relative elasticities of demand. CON serves to limit the available capacity. The predictions of the model are that private patients will continue to obtain bed days of care. Over the relevant range of the CON limit, the entire constraint is borne by the Medicaid market. Thus, the model implies that limiting nursing home beds by means of CON will restrict Medicaid expenditures.

Over the years there have been several attempts to examine the effects of nursing home CON (Feder and Scanlon 1980; Birnbaum et al. 1982; Lee, Birnbaum, and Bishop 1983;

Harrington and Swan 1987; Harrington et al. 1997; Conover and Sloan, 1997; Miller et al. 2001). Most have focused on either the effects of CON on bed capacity or the effects of bed capacity on Medicaid expenditures. None has looked at the effects of CON on Medicaid expenditures.

In early work, Feder and Scanlon (1980) conducted a series of eight state case studies. They argued that nursing home operators sought to get beds approved before their competitors and before the regulatory apparatus became more restrictive. They concluded that the states appeared to be using CON to limit Medicaid expenditures. Birnbaum and colleagues (1982) and Lee and colleagues (1983) undertook early econometric examinations of the effects of CON. Using 1973–74 National Nursing Home Survey data, they found that the presence of a CON program increased nursing home occupancy rates and resulted in higher operating costs per resident day.

Harrington and Swan (1987) examined Medicaid long-term care expenditures for the period 1978 through 1983. They did not explicitly examine the effects of CON but did find that a 1% increase in beds per 1,000 elderly resulted in a .6% increase in Medicaid long-term care expenditures per elderly resident in the state. In a similar vein, Nyman (1989) examined nursing home use in Wisconsin in 1983. He argued that the only predictor of Medicaid usage should be bed capacity, while the usual demand factors should influence private demand. Any factor that increased private demand should have the effect of reducing use by Medicaid eligibles. His results were consistent with this view. However, Nyman (1993) replicated this test with 1988 data from Wisconsin, Minnesota, and Oregon and was not able to show that excess demand existed due to CON.

More recently, Harrington and colleagues (1997) examined the effects of CON and construction moratoria on nursing home bed growth between 1979 and 1993. They found that the presence of either CON or a moratorium resulted in a statistically significant reduction in bed growth. Unfortunately, the paper does not provide enough information to calculate precisely the magnitude of the effect, but the year-specific reduction appears to be more than 3.5 times the magnitude of the 13-year average increase in beds per 1,000 individuals in the population.

Miller and colleagues (2001) and Miller, Harrington, and Goldstein (2002) examine the role of CON and moratorium laws on Medicaid spending for home- and community-based services (HCBS). The authors posit that a CON or moratorium within the nursing home sector will constrain institutional spending and thus redirect Medicaid dollars to HCBS. The authors find support for this hypothesis in both absolute and proportional (i.e., HCBS spending divided by total spending) terms. Miller et al. (2001) also find that those states with a nursing home CON law have higher total per capita long-term care expenditures.[1]

In unpublished work from the late 1990s, Conover and Sloan (1997) examined the effects of CON repeal on total (Medicaid plus private-pay) nursing home expenditures per capita over the 1980 through 1993 period. They found that nursing home CON "generally has no detectable effect on nursing home spending, supply, Medicaid use or prices . . ." They did find a slight reduction in per capita spending resulting from the imposition of a moratorium on nursing home construction.

A branch of this literature has examined the effects of Medicaid payment levels and CON on nursing home quality. In the presence of a binding CON policy, homes have no incentive to compete for the care of Medicaid recipients on the basis of quality. Thus, the theory argues that— in the presence of a CON constraint—higher payment levels can lead to lower quality (Norton 2000). The early literature, particularly Nyman (1985, 1988a,b, 1989) and Gertler (1989, 1992), found evidence consistent with this view using state-level data. However, Grabowski (2001a,b), using more recent national data and better measures of quality, concluded that quality is increased modestly when payment rates rise. This difference in findings is attributed, in part, to significant changes that have occurred in the long-term care market regarding the importance of CON over the last two decades.

Although analyses from the late 1970s and early 1980s found evidence of excess demand conditions (Scanlon 1980; Nyman 1989), recent studies have noted that CON and construction moratorium policies no longer may be as important in constraining the growth of the nursing home market (Nyman 1993). Occupancy rates, an indirect measure of excess demand, have been

declining over the last two decades. From multiple waves of the National Nursing Home Survey, the national occupancy rate was 92.9% in 1977, 91.8% in 1985, and 87.4% in 1995 (Strahan 1997). With occupancy rates below 90%, the excess demand paradigm may not be relevant for much of today's nursing home industry.

However, there is no direct empirical test of the link between CON and actual Medicaid expenditures. The existing studies are suggestive in as much as they have found a link between CON and bed capacity or bed capacity and state expenditures. However, if private-pay residents had more non-nursing home options than Medicaid-eligible residents, a CON limitation might not have the actual effects on Medicaid expenditures asserted by these studies. Moreover, if long-term care markets have changed appreciably over the last decade, as the declining national nursing home occupancy rate suggests, the evidence of the past may not be a good guide to policy making today. Indeed, the markets have changed significantly. The medical protocols for treating chronic illnesses have changed over time so that more people are able to remain at home rather than enter a nursing home. Assisted living facilities, respite care, adult day care and home health care are all much more available today than they were even 10 years ago. These changes suggest that CON constraints may not be binding and their repeal may not affect Medicaid expenditures.

Conceptual Framework

Most economic analyses of the market for nursing home care have employed Scanlon's (1980) model of a monopolistically competitive home that provides a uniform level of quality to both Medicaid and private-pay residents. Despite the different rates charged Medicaid and private-pay residents, a home is required by law to provide the same level of quality to all residents within a home regardless of payer source. A majority of states (44 in 1998) have CON or construction moratorium legislation designed to constrain the growth of the nursing home market and thereby control nursing home expenditures. Scanlon hypothesized that these policies impose a binding bed constraint on the market for nursing home care under which certain individuals are unable to gain access to care. State Medicaid programs pay, on average, approximately 70% of

the private-pay price. Thus, a home first admits the higher-paying private-pay residents and then fills the remaining beds with Medicaid residents. Thus, private-pay demand is still satisfied under a binding bed constraint, but there exists an "excess demand" for nursing home beds among Medicaid recipients.

This excess demand due to the binding bed constraint implies that there are some Medicaid recipients who cannot gain access to nursing home care. If the binding CON or moratorium law were repealed, these Medicaid-eligible individuals then would be able to gain access to nursing home services. Thus, the number of total individuals receiving nursing home services would increase, which thereby would have the effect of increasing total Medicaid expenditures. In sum, the Scanlon model generates the prediction that the repeal of a CON or construction moratorium law will lead to an increase in Medicaid nursing home expenditures.

Under an alternative model where CON is a nonbinding constraint, we can assume that both Medicaid and private-pay demand are satisfied. Under this framework, the repeal of a CON or moratorium law will have no real effect on the total number of Medicaid recipients receiving services (and thus, Medicaid expenditures), because there is no excess Medicaid demand prior to the repeal of the law. Thus, this alternative model generates the prediction that the repeal of a CON or construction moratorium law will not affect state Medicaid expenditures for nursing home care.

Methods

In order to examine the effect of CON and moratoria on Medicaid expenditures, we estimated fixed-effects models of the general form:

$$M_{it} = CON\_MORT_{it}\beta + Z_{it}\gamma + \alpha_t + S_i + \mu_{it}$$
(1)

where M_{it} is the level of Medicaid expenditures (or the decomposed Medicaid per diem or recipient days) for state i at time t; CON_MORT_{it} is the indicator for a CON or a construction moratorium law; Z_{it} includes a vector of economic and demographic variables; α_t is a time-specific intercept (a vector of year dummy variables); S_i is a state specific intercept (a vector of state dummy variables); and μ_{it} is a mean-zero random error.

Across different specifications of the model, M_{it} consists of either nursing home or long-term care Medicaid expenditures. The results reported here are based on a semi-log model in which M_{it} is the natural log of expenditures (or the decomposed Medicaid per diem or recipient days) in a given state and year. The parameters of Equation 1 were estimated using a least squares model. The state fixed effects capture all factors that are specific to a particular state and remain largely invariant over time. Such variables may include, for example, basic political and religious sentiments and geographic characteristics. The year fixed effects capture factors that are common across all states in a particular year, such as federal nursing home policies and the progress of health care technology. Thus, the basic identification strategy implicit in this fixed-effects approach purges the unobserved and potentially confounded cross-sectional heterogeneity by relying on within-state variations in CON and moratoria over time, and by using those states that did face changes in policies as a control for unrelated time-series variation.

Data

State-level data for the period 1981 through 1998 were collected from several secondary sources. See Table 1 for variable sources and descriptive statistics. The District of Columbia and Arizona were excluded from the analysis. We excluded the District of Columbia because many policy parameters are determined at the federal level; we excluded Arizona because it did not have a Medicaid program for long-term care during the initial part of the study period. Thus, we have a total of 882 observations (49 states times 18 years) for the total expenditures model, and 880 observations (882 minus two missing observations) for the total Medicaid days and Medicaid payment rate models. A brief discussion summarizing the variables analyzed with the study follows.

State Medicaid Expenditures, Payment Rates, and Recipient Days

Four separate dependent variables were used in this study. We obtained state nursing home and long-term care Medicaid expenditures from the Centers for Medicare and Medicaid Services (CMS), Office of the Actuary. Long-term care expenditures included both nursing home and home health expenditures in an effort to capture

Table 1. Descriptive statistics

State-level variables	Mean	Standard deviation	Source
Total NH Medicaid costs (millions of 1998 $)	598.3	861.1	a
Total LTC Medicaid costs (millions 1998 $)	650.3	1,036.8	a
Nursing home Medicaid payment rate (1998 $)	79.52	30.85	b
Medicaid recipient days (millions)	7.32	7.63	a,b
Moratorium (Yes = 1, No = 0)	.24	.43	b
CON (Yes = 1, No = 0)	.84	.36	b
No CON or moratorium (Yes = 1, No = 0)	.09	.28	b
Federal matching share	60.27	8.71	f
Total population (millions)	4.99	5.41	c
Percent age 65–84	10.92	1.90	c
Percent age 85+	1.25	.36	c
Personal per capita income (1,000s 1998 $)	21.22	5.88	d
Percent, metro population	64.05	21.95	d
Unemployment rate	6.34	2.21	d,e
Nursing home wage (1998 $)	15,646.51	3,409.82	g

Notes: NH = nursing homes; LTC = all long-term care.
[a] Department of Health and Human Services, Health Care Financing Administration (HCFA), Office of the Actuary, September 27, 2000.
[b] Harrington et al. (1999 and prior editions).
[c] U.S. Bureau of the Census, Current Population Reports. P-25 Series. Available at: www.census.gov. Extracted October 24, 2000.
[d] Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States* (various issues).
[e] Bureau of Labor Statistics. Available at: http://stats.bls.gov. Extracted November 7, 2000.
[f] HCFA, Office of the Actuary, Medicare and Medicaid Cost Estimates Group.
[g] Bureau of Labor Statistics, Covered Employment and Wages series.

any potential substitution between the nursing home and home health sectors. Excluded from both measures were Medicaid expenditures for recipients in intermediate care facilities for the mentally retarded. All monetary values are in constant 1998 dollars and measure the aggregate expenditure regardless of the share paid from state funds.

To further analyze the effect of CON repeal on state Medicaid behavior, nursing home Medicaid expenditures were decomposed into per diem Medicaid price and Medicaid recipient days. This decomposition allows a test of whether price and quantity effects were imbedded within the overall expenditures results. We obtained the per diem Medicaid payment from various publications by Harrington and colleagues (Harrington et al. 1999) and Swan and colleagues (Swan et al. 1993). Initially, most states paid different rates to skilled nursing facilities (SNFs) and intermediate care facilities (ICFs), but this distinction was eliminated with the enactment of the Omnibus Budget Reconciliation Act of 1987 (OBRA 87). For the pre-OBRA 87 period, a weighted average per diem was created based on a state's proportions of SNF and ICF recipients provided to us by Charlene Harrington.

CMS only began reporting total Medicaid recipient days in 1987. Medicaid recipient days were calculated by dividing total nursing home expenditures by the per diem price. The resulting variable was found to be quite robust to the reported days measure in the 1987–98 period. The variable means differed by only 1.2%. As a result, we used the calculated nursing home Medicaid days measure for the entire analysis period.

Certificate-of-Need and Construction Moratorium Regulations

Information on the presence of CON and moratoria was obtained from various issues of the *State Data Book on Long Term Care Market Characteristics* (Harrington et al. 1999). In theory, a CON law constrains the growth of beds by employing a need-based evaluation of all applications for any new bed construction. A home must show to the state CON review board a "clinically legitimate" rationale for additional beds. A moratorium on construction is even more stringent in that it effectively prevents any expansion within the nursing home sector. Although these policies theoretically restrict or prohibit growth in the nursing home market, they work much differently in practice.

Table 2. Dates of nursing home CON repeal and bed construction moratorium

States	CON repeal	Moratorium
Alabama		1984–1989, 1994–1995
Alaska		1996, 1998
Arkansas		1987–1988, 1992–1993
California	1987–present	
Colorado	1984–present	
Idaho	1983–present	
Indiana	1996	
Kansas	1985–present	
Kentucky		1981–1990, 1992–1994
Louisiana		1997–1998
Maine		1981–1998
Massachusetts		1991–1998
Michigan		1996–1998
Minnesota	1984–present	1983–1998
Mississippi		1981–1998
Missouri		1983–1998
Nevada	1997–present	
New Hampshire		1995–1998
New Jersey		1991
New Mexico	1984–present	
New York		1986
North Carolina		1981–1983
North Dakota	1995–present	1995–1998
Ohio		1983, 1987, 1993–1997
Pennsylvania	1997–present	
Rhode Island		1996–1998
South Dakota	1988–present	1988–1998
Texas	1985–present	1985–1998
Utah	1985–present	1989–1998
Washington		1993
West Virginia		1981–1998
Wisconsin		1987–1998
Wyoming	1987–1989	

Source: Harrington et al. (1999).
Notes: All other states either did not repeal their CON law or did not employ a bed construction moratorium during the period 1981–1998.

An examination of state-specific trends in nursing home beds makes it clear that some states with moratoria in effect, nonetheless, experienced growth in the number of beds. To understand the nature of nursing home moratoria and any exceptions policies, the study team contacted the states with moratoria to inquire about the presence of any exceptions possibilities. It is clear that in many cases a "moratorium" does not preclude an expansion of bed supply. For example, most state moratoria provide an exception for any expansions "required" by federal law or

that are "necessary" to meet a "critical" public health need. In a few states, the moratoria permit modest expansions in capacity for small existing nursing homes. There is also some variation in the restrictiveness of CON across states. In some states, a CON law effectively works as a moratorium, while in others, CON appears to be a nonbinding constraint on nursing home expansion.

Given this, we viewed CON and moratoria as common regulatory restrictions on bed expansions where the effect of their binding varied across states. In the absence of data to quantify the variance in the binding effect of specific state regulations, restrictions on bed capacity in a state were measured by a single dummy variable set equal to one if neither a CON nor a moratorium policy was in effect. Clearly, a trade-off associated with this dummy variable approach is that it might not capture the complexity of the state CON and moratorium programs. However, it would be prohibitively expensive to gather all the information that would be needed to assess the complexity of every state's programs, especially over time. Further research will be necessary to parse out how variation in the design, implementation, and oversight of the state CON and moratorium programs relates to these current findings.

During the period 1981 to 1998, 16 states repealed their CON laws for some period of time (see Table 2); 25 states had a moratorium on new nursing home construction in place. Ten states repealed their CON law for some period of time without instituting a moratorium. These 10 were: California, Colorado, Idaho, Indiana, Kansas, New Mexico, Nevada, Pennsylvania, Utah and Wyoming.

Other Variables

The empirical model controls for a series of economic and demographic variables likely to influence Medicaid expenditures. Although we discuss the variables in detail subsequently, the economic variables are the state nursing home wage rate, per capita income, and unemployment rate. The demographic variables are the state's total population, elderly proportion of the population, and the proportion of the population living in metropolitan areas.

Labor accounts for 60% to 70% of nursing home costs. Higher wage rates are expected to raise costs and result in higher Medicaid expendi-

Table 3. Effect of regulation on Medicaid expenditures

	Ln NH expenditures	Ln LTC expenditures
Repeal CON with no moratorium	.030 (.029)	.025 (.037)
Ln total population	−.44* (.11)	−.40* (.13)
Ln % population age 65–84	−.43* (.15)	−.36 (.19)
Ln % population age 85+	.54* (.11)	.39* (.14)
Ln per capita income	.124* (.055)	.176* (.070)
Ln % metro	.225* (.072)	.175 (.092)
Ln unemployment rate	−.039 (.023)	−.024 (.029)
Ln wage	.594* (.077)	.561* (.098)
Constant	−2.06* (.86)	−2.39* (1.09)
State fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
R^2	.987	.977
N	882	882

Notes: Standard errors are in parentheses. NH = nursing homes; LTC = all long-term care.
* Statistically significant at the 5% level.

tures. The average annual nursing home wage rate was obtained from the Bureau of Labor Statistics (BLS) for Standard Industrial Code 805: Nursing and Personal Care Facilities.

The state per capita income variable (in 1998 dollars) was obtained from the U.S. Bureau of the Census, and the state unemployment rate was obtained from the BLS. Higher incomes and lower unemployment rates were expected to reduce the number of people eligible for Medicaid and decrease Medicaid expenditures. As an important note, the federal government determines the match rate for each state's Medicaid program based on the state's per capita income. That is, the higher the state's per capita income, the lower the federal Medicaid match rate. As such, we excluded the federal Medicaid match rate from our regression models due to the potential issue of multicollinearity, but it should be noted that the per capita income measure may encompass the effect of the federal match rate on Medicaid expenditures.

As already noted, the demographic variables included in the model were: the size of the state population, the proportion of "young" old (ages 65 to 84) and "old" old (age 85+) in the population, and the proportion living in metro areas. The population variables were obtained from the U.S. Bureau of the Census. A large population suggests a greater number of eligible residents and, therefore, a higher level of Medicaid nursing home expenditures. The elderly are likely to use nursing home services; this is particularly true for the old-old (i.e., those age 85 and older). Thus, we expect higher proportions of elderly

people to lead to higher levels of Medicaid nursing home expenditures. A larger metropolitan population suggests that nursing homes will be more readily available to potential residents and their families. This is likely to result in increased demand for Medicaid services and higher nursing home expenditures.

Results

Overall, the results indicate that, at most, CON regulation had a very weak effect on Medicaid expenditures (see Table 3). The first column reports the results for Medicaid nursing home expenditures and the second column reports the results for total long-term care expenditures. We evaluated the CON/moratoria parameter after making the Kennedy (1981) adjustment for binary variables in semi-log specifications. The adjustment had no effect on point estimates to two significant digits. There was no statistically significant effect of CON repeal on either nursing home or total long-term care Medicaid expenditures.

Turning briefly to the other variables in the model, most of the variables had the same sign across both the nursing home and long-term care expenditures models. In general, the signs were of the expected direction. A larger proportion of the population age 85 and older was associated with higher Medicaid expenditures. A 1% increase in this proportion was associated with a .54% percent increase in nursing home expenditures and a .39% percent increase in long-term care expenditures. However, a growth in the proportion of the young old (ages 65 to 84) was

Table 4. Decomposed results: effect of regulation on Medicaid per diem payment rates and recipient days

	Ln Medicaid per diem	Ln Medicaid days
Repeal CON with no moratorium	.029 (.017)	.002 (.029)
Ln total population	−.305* (.061)	−.13 (.11)
Ln % population age 65–84	−.221* (.088)	−.21 (.15)
Ln % population age 85+	−.070 (.065)	.60* (.11)
Ln per capita income	.092* (.032)	.030 (.055)
Ln % metro	.026 (.042)	.200* (.073)
Ln unemployment rate	.030* (.013)	−.073* (.023)
Ln wage	.479* (.045)	.101 (.077)
Constant	−1.44* (.50)	13.35* (.86)
State fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
R^2	.934	.986
N	880	880

Note: Standard errors are in parentheses.
* Statistically significant at the 5% level.

associated with lower nursing home and total long-term care Medicaid expenditures. One interpretation of this result is that this age group may rely disproportionately on Medicare, private-pay funding, and informal or other alternative care sources as a substitute to nursing home care. And, new medications may keep the younger "old" with chronic conditions out of nursing homes until they are older and sicker. A larger metropolitan population was associated with higher expenditures, but the result was not statistically significant in the long-term care expenditures model. Both higher per capita income and higher nursing home wages were associated with increased expenditures. The income result is a bit counterintuitive in that one would expect—all else equal—that wealthier states would have lower Medicaid spending. This result may reflect more generous Medicaid coverage in those states with higher per capita income. Another unexpected result was that a larger overall population was associated with lower expenditures. The remaining variables in the model were not statistically significant.

Table 4 reports the results of the decomposition of nursing home Medicaid expenditures into per diem payment and resident-days effects. The decomposition allows a test of whether offsetting Medicaid rate and quantity effects underlie the overall expenditures results. Although highly unlikely, it might be the case, for example, that CON repeal led to a large increase in recipient days, but this increase was not reflected in higher

Medicaid expenditures due to a decrease in Medicaid payment rates under CON repeal.[2] The results, however, show that regulatory change did not have a statistically significant effect on either Medicaid payment rates or overall days.

In sum, the repeal of CON was not associated with a large increase in overall Medicaid nursing home expenditures. This result held when we broadened Medicaid expenditures to include home health care expenditures or decomposed Medicaid expenditures into per diem price and recipient days.

Checks for Robustness

The findings were robust to a number of alternate model specifications. (All of the robustness checks are available upon request from the authors.) First, it could be argued that there is some lag between a change in CON or moratorium policy and nursing home behavior. To test this argument, we ran versions of the model with one-period (CON_MORT_{it-1}) and two-period lags (CON_MORT_{it-2}) included. Second, unobservable characteristics in a state might change over time in ways that differ across states. To test for this, we ran the models including state-specific linear time trend terms ($t*S_i$). Third, state fixed effects provide important controls for the unobserved and state-specific determinants of Medicaid expenditures that could confound policy evaluations. However, there was the potential that the use of these controls removed much

of the available sample variation in CON and moratoria due to the limited within-state variation in the regulatory variable. This collinearity was examined by restricting the analysis to only those 10 states that varied their regulatory (*CON_ MORT*) status over the period 1981 through 1998. Fourth, within-state autocorrelation may be an issue. A Durbin-Watson test for within-state serial correlation was inconclusive, but we obtained very similar results when the models were re-estimated using a within-state first order autocorrelation [AR(1)] error structure.

A final issue involves the potential endogeneity of the Medicaid expenditure and regulatory variables. In essence, the likelihood that a state will repeal CON may be affected by lower-than-average Medicaid expenditures for nursing home services in previous years. This suggests that a state's Medicaid expenditures and presence of CON/moratorium might be determined simultaneously. Under such circumstances, the correlation between the CON repeal variable and the residual in the Medicaid expenditure equation is not zero, as is required to obtain unbiased estimates using ordinary least squares (OLS) regression. The standard approach to addressing this endogeneity issue is to employ instrumental variables (IV). However, it is highly questionable whether suitable instruments are available. Following Lanning, Morrisey, and Ohsfeldt (1991), measures of political economy such as an index of liberality, an index of Democratic control, and an index of interparty competition for the state government were evaluated as potential instruments. However, these instruments were rejected due to their weak first-stage explanatory power (Staiger and Stock 1997). It is difficult to conceive of other variables that are determinants of state CON and moratorium laws, but not state Medicaid expenditures.

Thus, we tested the potential endogeneity of the regulatory measures following work by Gruber and Hanratty (1995), Friedberg (1998), and Vita (2001). The idea was to include a dummy variable set equal to one in the year preceding enactment of the regulatory change. If regulatory changes were an exogenous determinant of Medicaid expenditures, then the coefficient on the lead dummy variable should equal zero. If low levels of state Medicaid expenditures caused a repeal of CON, or high levels caused an adoption of a moratorium, then the lead term coefficient should be positive.

The coefficient on the lead dummy was not statistically different from zero, which suggests that the CON/moratorium variable was not endogenous.

Discussion

This paper has directly examined the effects of the repeal of nursing home CON on Medicaid expenditures. It found no statistically significant effect of the repeal on either Medicaid nursing home expenditures or on the sum of nursing home and home health care expenditures. Moreover, even if the results were found to be statistically significant, the magnitude of the CON repeal coefficient was quite small in each of the four regression models. Finally, the repeal of CON did not have a statistically significant effect on either Medicaid payment rates or overall Medicaid days.

The policy implication that emerges from this current study is rather straightforward. In the aggregate, it appears that state legislatures have little to fear in the way of cost consequences from the repeal of nursing home CON. Based upon an analysis of 18 years of data, the states that repealed CON and did not enact a moratorium, as a group, did not experience an increase in Medicaid long-term care expenditures. Consideration of alternative empirical specifications suggests that this finding is robust and not an artifact of the techniques employed or the specific states that enacted repeal. Although there may be unique state-specific cases where CON is a meaningful constraint, this study cannot find evidence in the aggregate that CON matters towards limiting Medicaid nursing home expenditures.

This finding flies in the face of conventional wisdom. Medicaid commissioners have long held that CON has been effective in limiting the number of beds and thereby reducing Medicaid costs. There are reasons to doubt this view, however. First, the evidence supporting it always has been relatively weak. In order for CON to affect Medicaid expenditures, a series of links must occur. CON must hold down the number of nursing home beds within a market. Next, fewer beds must translate into fewer Medicaid recipients within nursing homes. And finally, fewer Medicaid recipients in nursing homes must translate into lower total Medicaid expenditures. As noted in the background section, some studies have supported one of these links (e.g., CON and beds or beds and expenditures), but not the overall

relationship between CON and expenditures. It is possible, for example, that CON reduces the number of total beds, but not necessarily overall Medicaid expenditures. Medicaid recipients still may be able to obtain care in roughly equivalent numbers even with fewer beds in a marketplace because the CON policy is not binding, or because private-paying individuals may choose alternative forms of care in the face of lower quality due to the binding CON.

A second reason to doubt conventional wisdom is that nursing home markets have changed rather substantially since the studies conducted in the 1980s and early 1990s. There has been a dramatic growth in the availability of substitutes to nursing home care, partially due to changing medical protocols that have reduced the incidence of some chronic conditions (such as stroke or cardiovascular debilitating disease) and allowed elderly individuals to stay out of nursing homes. Assisted living facilities are much more common in today's marketplace, as are home health care, respite care, adult day care, adult foster care, and hospice care.[3] Indeed, Hawes, Rose, and Phillips (1999) note that one-third of the facilities that called themselves "assisted living" had been in existence for five or fewer years in 1999. These options are, arguably, much more available for higher income, non-Medicaid residents.

Moreover, there is some reason to believe that healthier, private-paying residents are most likely to take advantage of these options. The evidence is relatively limited, however. In a study of Oregon counties in 1989, Nyman and colleagues (1997) found that private long-term care recipients readily substituted adult foster care for nursing home care. The authors found that a nursing home lost .85 residents for every additional foster care resident within the county. A 1% increase in per capita income also was estimated to increase the number of foster care residents by 2.25%. If these data are generalizable, they suggest that over the last decade private-paying patients who otherwise would have used nursing homes increasingly have been obtaining care in other settings. Even a modest shift would increase the availability of nursing home beds for Medicaid eligibles and potentially render CON constraints ineffective in controlling Medicaid costs. Indeed, Grabowski (2001b) reports that Chicago area nursing homes have employed "bed brokers" to help facilities fill beds in the face of declining occupancy.

In sum, state Medicaid policymakers have invested heavily in the use of CON and construction moratorium laws for nursing home care with the idea that these policies will work to constrain Medicaid expenditures. However, there has been little prior empirical evidence that these policies actually lowered expenditures. The findings of this study are fairly straightforward in showing that states that have repealed their CON and moratorium policies have not experienced a significant growth in expenditures. Although further studies will be necessary, the policy implications of this study argue that CON laws are not an effective means of limiting Medicaid expenditures.

Notes

1 This result may be an artifact of the study's empirical approach that relies on potentially confounded cross-sectional comparisons of per capita long-term care expenditures between those states with a nursing home CON program in place and those states without. Such cross-state findings often reflect the presence of unobserved state-specific attributes that influence both the adoption of CON and the level of long-term care expenditures. For example, it may be that states with strong private demand for nursing home care also choose to adopt nursing home CON programs. In a different policy context, Dee (1999) illustrates the importance of controlling for state and year fixed effects in an examination of state alcohol policies and teen traffic fatalities.

2 Because the nursing home industry likely would oppose both a CON repeal and a decrease in the Medicaid payment rate, it is highly unlikely that a state legislature would be able to adopt both of these measures simultaneously.

3 Adult foster care homes are residential settings that provide 24-hour personal care, protection, and supervision for individuals who cannot live alone but who do not need continuous nursing care.

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