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Competition and Health-Care Spending: Theory and Application to Certificate of Need Laws

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Competition and Health-Care Spending: Theory and Application to Certificate of Need Laws

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Abstract

Hospitals and other health-care providers in 34 states must obtain a Certificate of Need (CON) from a state board before opening or expanding, leading to reduced competition. We develop a theoretical model of how market concentration affects health-care spending. Our theoretical model shows that increases in concentration, such as those brought about by CON, can either increase or decrease spending. Our model predicts that CON is more likely to increase spending in markets in which costs are low and patients are sicker. We test our model using spending data from the Household Component of the Medical Expenditure Panel Survey (MEPS).

Keywords: competition, health-care spending, Certificate of Need, Medical Expenditure Panel Survey

JEL Classification Numbers: I11; I18; L10

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1 Introduction

Health care represents a large and growing share of both government and total spending, leading many policymakers and researchers to search for ways that spending growth could be slowed or reversed (Institute of Medicine 2013). One set of potential solutions involves changes to the level and manner of competition in health-care markets. Industrial organization (IO) is the primary field that studies the effects of competition. IO economists have studied health-care markets extensively, generally finding a positive role for competition, with some exceptions (Gaynor, Ho, and Town 2015). However, the outcomes of interest for traditional IO are prices, costs, quantities, quality, and welfare; IO studies generally do not focus on total spending as an outcome, especially marketwide total spending (as opposed to total revenue for a particular firm).

Health economists, by contrast, have been very interested in studying total health-care spending. The field is heavily empirical, with most papers on health-care spending eschewing the heavy-duty theoretical models common in industrial organization. But the empirics-first approach can leave us confused when different types of empirical evidence yield different answers. Analyses of specific mergers often find that they lead to large increases in prices and spending (Dranove and Sfekas 2009). But when studying geographic variation in spending across the US, measures of competition such as the Herfindahl-Hirschman Index explain almost none of the variation (Institute of Medicine 2013).

Sometimes conflicting empirical results appear even within a single literature. This has been the case with studies of how Certificate of Need (CON) laws affect spending. CON laws reduce competition by requiring health-care providers to obtain the permission of a state board before opening or expanding to certify that their new facility is “economically necessary,” with the goal of reducing health-care spending (Bailey 2018a). Reviewing this literature, Mitchell (2016) found one study arguing that CON reduces spending, while “Of

the remaining 11 studies that assess the effect of CON on expenditures, 7 found evidence that CON increases expenditures, 2 found no statistically significant effect, and 2 found that CON increased some expenditures while reducing others.”

Theory can help us understand why empirical results differ. But the literature on CON and spending has been almost completely atheoretical, apart from graphical supply-and-demand models in Mitchell (2016) and Bailey (2018b). In this paper, we put forward a theoretical model of how health-care market concentration affects total spending. Our theoretical model shows that increases in concentration, such as those brought about by CON, can either increase or decrease spending. Our model predicts that CON is more likely to increase spending in markets in which costs are low and patients are sicker.

We test our model using spending data from the Household Component of the Medical Expenditure Panel Survey (MEPS). By combining the restricted MEPS (which includes geographic identifiers) with data on CON laws from the American Health Planning Association, we can measure how health-care spending changes as states pass or repeal CON. We estimate that CON increases total health-care spending by 10.5%. We find that CON leads to even larger increases in spending for those in less-than-excellent health, consistent with the predictions of our theoretical model. By contrast, we estimate that the effect of CON does not significantly differ across high- and low-cost states.

2 Theoretical Model

Our model extends that of Gaynor, Haas-Wilson, and Vogt (2000). In general, moral hazard from health insurance leads to overconsumption, while imperfect competition leads to underconsumption. Therefore, one might expect these market imperfections to cancel out each other’s effects. But Gaynor, Haas-Wilson, and Vogt (2000) show that competition among

health-care providers can be expected to increase consumer welfare even in the presence of moral hazard, as long as the insurance market is itself competitive.

For IO economists and US antitrust policymakers, consumer welfare is the critical outcome to study. But for many health economists and health policymakers, the effect of competition on total spending is also of great interest. Gaynor, Haas-Wilson, and Vogt (2000) do not solve their model for total spending, so we do so here. We then extend the model to show how spending varies with certain market conditions.

2.1 Review of Gaynor, Haas-Wilson, and Vogt (2000)

A potential consumer of health insurance faces uncertainty over his future health. Specifically, he will suffer a health shock ϵ with a commonly known distribution. Once the shock is realized, units of “the medical good” x are available at price p .

The consumer can also purchase insurance. Insurers offer policies that take the form (m, τ) , where the consumer pays premium m ex ante and subsequently pays only $\tau \leq p$ for the medical good ex post.

A consumer with income Y , policy (m, τ) , and health shock ϵ will choose health-care consumption to solve:

$$\max_x \{U(Y - \tau x - m, x, \epsilon)\} \quad \text{subject to} \quad (1)$$

$$x \geq 0 \quad (2)$$

$$Y - \tau x - m \geq 0, \quad (3)$$

where $Y - \tau x - m$ is spending on nonhealth-care consumption. Denote the solution to this

problem as $x^*(Y - m, \tau, \epsilon)$. Then, the consumer's indirect utility function is:

$$V(Y - m, \tau, \epsilon) = U(Y - \tau x^* - m, x^*, \epsilon), \quad (4)$$

and his ex ante expected payoff is:

$$EV(Y - m, \tau) = \mathbb{E}_\epsilon[V(y - m, \tau, \epsilon)]. \quad (5)$$

Profits for the insurer and health-care provider are, respectively:

$$\pi_i = m - \mathbb{E}_\epsilon[(p - \tau)x^*] \quad (6)$$

$$\pi_m = \mathbb{E}_\epsilon[(p - c)x^*]. \quad (7)$$

A competitive insurer maximizes consumer welfare subject to a break-even constraint; a monopolist insurer maximizes profit subject to a consumer participation constraint.

2.2 Application of Gaynor et al. (2000) to Spending

Expected spending in equilibrium is characterized by $\mathbb{E}_\epsilon[p \cdot x^*(Y - m, \tau(p), \epsilon)]$. If a regulating body sets price equal to $p' > p$ by, say, restricting entry, then the new amount of expected spending is $\mathbb{E}_\epsilon[p' \cdot x^*(Y - m, \tau(p'), \epsilon)]$.

Is this new number higher or lower? Lemma 3 from Gaynor, Haas-Wilson, and Vogt (2000) tells us that insurer-optimal $\tau(p)$ is weakly decreasing in p . Since x^* is weakly decreasing in τ , this implies that x^* is weakly decreasing in p (that is, the Law of Demand applies), and therefore $x^*(Y - m, \tau(p'), \epsilon) \leq x^*(Y - m, \tau(p), \epsilon)$. The net effect on spending therefore

depends on two elasticities: the consumer's price elasticity of demand $\frac{\partial x^*}{\partial \tau}$ and the insurer's responsiveness to the change in price $\tau'(p)$. If these are relatively inelastic, then a price increase results in a spending increase. If these are relatively elastic, then a price increase results in a spending decrease.¹

To further analyze how price changes affect spending, we will impose additional assumptions and characterize conditions under which spending will increase or decrease. Suppose that ϵ varies uniformly over some interval $[0, A]$, where $\epsilon = 0$ is perfect health and $\epsilon = A$ is extreme illness. Let the consumer's ex post payoff be represented by:

$$U(Y - \tau x - m, x, \epsilon) = Y - \tau x - m - (x - \epsilon)^2. \quad (8)$$

This specification implies that a consumer can fully offset the disutility associated with ϵ by choosing health-care consumption $x = \epsilon$, but the disutility of going untreated is disproportionately high for the severely ill. A consumer with income Y , policy (m, τ) , and health shock ϵ maximizes his ex post utility by maximizing U subject to a nonnegativity constraint on x .² The first-order condition yields consumer demand for health care:

$$x(\tau) = \epsilon - \frac{\tau}{2}. \quad (9)$$

Since x must be nonnegative, $x(\tau) = 0$ for $\epsilon \leq \frac{\tau}{2}$. That is, consumers who are only slightly ill do not use any health care. Demand for health care increases at a one-to-one rate above this threshold. The threshold itself depends on τ , the effective price of health care for consumers; the more expensive health care is, the larger the fraction of consumers who go untreated.

¹This result is simply a formalization of the graphical intuition from Mitchell (2016) and Bailey (2018b).

²We drop the nonnegativity constraint on consumption of the composite good, which effectively allows the consumer to take on debt to pay for his medical expenses. It would be functionally equivalent to assume that Y is sufficiently high to cover the medical expenses of the sickest possible consumer.

We can compute a consumer's indirect utility as follows:

$$V(Y - m, \tau, \epsilon) = U(Y - \tau x(\tau) - m, x(\tau), \epsilon) = \begin{cases} Y - m - \epsilon^2 & : \epsilon \leq \frac{\tau}{2} \\ Y - m + \frac{\tau^2}{4} - \epsilon\tau & : \epsilon > \frac{\tau}{2}. \end{cases}$$

A competitive insurer chooses policy (m, τ) to maximize the expectation of this indirect utility, subject to a break-even constraint. The break-even constraint binds,³ so we can use it to characterize m as a function of τ :

$$m(\tau) = (p - \tau) \mathbb{E}_\epsilon \left[\epsilon - \frac{\tau}{2} \mid \epsilon > \frac{\tau}{2} \right] \quad (10)$$

$$\Rightarrow m(\tau) = (p - \tau) \left(\frac{A}{2} - \frac{\tau}{4} \right). \quad (11)$$

With this substitution, the insurer chooses τ to maximize a consumer's expected indirect utility:

$$\max_{\tau} \left\{ Pr \left(\epsilon \leq \frac{\tau}{2} \right) \mathbb{E}_{\epsilon \leq \frac{\tau}{2}} [Y - m(\tau) - \epsilon^2] + Pr \left(\epsilon > \frac{\tau}{2} \right) \mathbb{E}_{\epsilon > \frac{\tau}{2}} [Y - m(\tau) + \frac{\tau^2}{4} - \epsilon\tau] \right\} \quad (12)$$

$$= \max_{\tau} \left\{ \left(Y - \frac{\tau^3}{24A} + \frac{p\tau}{4} \right) \right\}. \quad (13)$$

$$(14)$$

Taking the first-order condition with respect to τ yields the insurer's solution as a function of price:

³Suppose the constraint did not bind; then an insurer could offer the same τ and slightly lower m to capture the full market.

$$\tau(p) = (2Ap)^{\frac{1}{2}}, \quad (15)$$

which also yields consumer demand as a function of price:

$$x(p) = \begin{cases} 0 & : \epsilon \leq \left(\frac{Ap}{2}\right)^{\frac{1}{2}} \\ \epsilon - \left(\frac{Ap}{2}\right)^{\frac{1}{2}} & : \epsilon > \left(\frac{Ap}{2}\right)^{\frac{1}{2}}. \end{cases}$$

We can now characterize total equilibrium health-care spending S as a function of price:

$$S(p) = p \cdot Pr\left(\epsilon > \frac{\tau(p)}{2}\right) \cdot \mathbb{E}_{\epsilon}\left[x(\tau(p)) \mid \epsilon > \frac{\tau(p)}{2}\right] \quad (16)$$

$$= \frac{Ap}{2} + \frac{p^2}{4} - p^{\frac{3}{2}} \left(\frac{A}{2}\right)^{\frac{1}{2}}, \quad (17)$$

and partially differentiate to see how total spending varies with price:

$$\frac{\partial S}{\partial p} = \frac{1}{2} \left(A + p - 3 \left(\frac{Ap}{2}\right)^{\frac{1}{2}} \right). \quad (18)$$

This expression is strictly positive for $p \in [0, \frac{A}{2})$ and strictly negative for $p \in (\frac{A}{2}, 2A)$ and is thus uniquely maximized at $p = \frac{A}{2} \equiv p_s$.⁴

Throughout, we have treated price p as being exogenous. In actuality, the equilibrium price will be determined endogenously, depending on the concentration of the health-care industry, and this price will fall somewhere between the perfectly competitive price and the monopolist price. The effect of CON legislation is to increase market concentration and

⁴Spending is equal to zero for all $p \geq 2A$ because it is too costly for even the sickest consumer to purchase health care.

therefore increase market price within this interval.

It is immediate that $p = c$ when the health-care market is perfectly competitive. The monopolist chooses p to solve:

$$\max_p \left\{ (p - c) \cdot Pr \left(\epsilon > \frac{\tau(p)}{2} \right) \cdot \mathbb{E} \left[x(\tau(p)) | \epsilon > \frac{\tau(p)}{2} \right] \right\} \quad (19)$$

$$= \max_p \left\{ \frac{Ap}{2} + \frac{p^2}{4} - p^{\frac{3}{2}} \left(\frac{Ap}{2} \right)^{\frac{1}{2}} - \frac{Ac}{2} - \frac{pc}{4} + c \left(\frac{Ap}{2} \right)^{\frac{1}{2}} \right\}. \quad (20)$$

Taking the first-order condition, multiplying through by $4p$, squaring both sides, and collecting terms yields the following cubic equation:

$$4p^3 - (10A + 4c)p^2 + (4A^2 + 8Ac + c^2)p - 2Ac^2 = 0. \quad (21)$$

Denote the root of this equation that is the maximizer of the monopolist health-care provider's objective by p_m .

$$p_m = \frac{A}{4} + \frac{c}{2} + \frac{1}{4}(A^2 + 4Ac)^{\frac{1}{2}}. \quad (22)$$

Note that $p_m > p_s$ for any $c \in (0, 2A)$. That is, the monopolist health-care provider chooses a price that is on the “downward slope” of $S(p)$. Thus, the range of feasible prices in a health-care market characterized by parameters A and c is $[c, p_m]$. Enacting CON legislation shifts the market price away from c and closer to p_m .

Does this shift increase or decrease spending? It can do either; moreover, increasing c makes it “more likely” that CON will reduce spending. This is true because p_m is strictly

increasing in c . Therefore, an increase in c shifts both endpoints of the $[c, p_m]$ interval to the right.

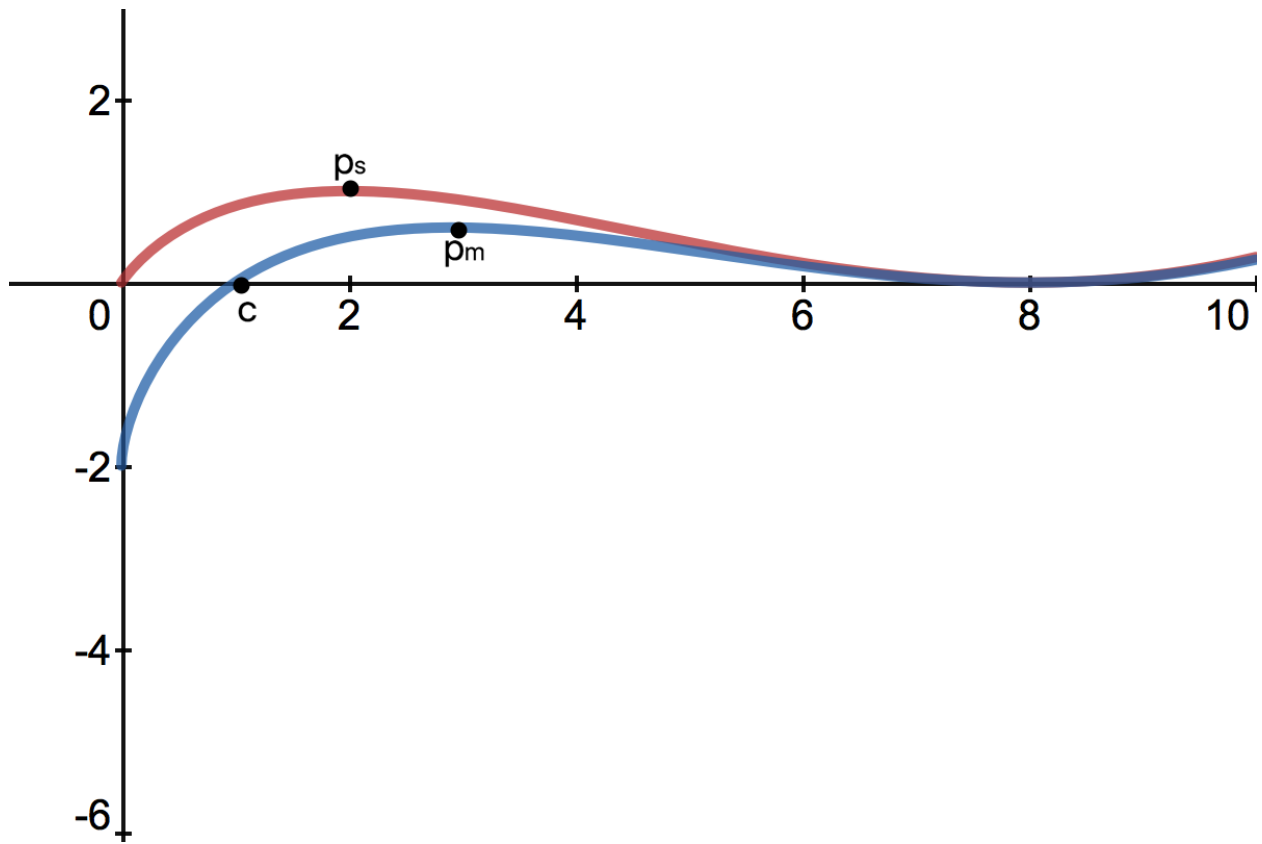
The graphs in Figure 1 provide examples. In these graphs, the red curve is $S(p)$ and the blue curve is the monopolist's profit function. In the first graph (Case 1), $A = 4$ and $c = 1$. We can see that $p_s = \frac{A}{2} = 2$ and that $p_m = 2.914$. So the range of possible prices in this market is $[1, 2.914]$. If the current price is 1.5 and enacting CON increases the price to 2, then we can see that overall spending will increase. If the current price is 2.5 and enacting CON increases the price to 3, however, then overall spending will decrease.

In the second graph (Case 2), $A = 4$ and $c = 3$. Because $c > p_s$, the range of feasible prices $[3, 4.5]$ is entirely on the “downslope” of the $S(p)$ curve. Thus, any price increase will result in an overall decrease in spending. This graphical intuition is true in general. The curves are always this same basic shape. The $S(p)$ curve always intersects the x-axis at 0, and $2A$ and is always maximized at $\frac{A}{2}$. The monopolist's profit function always intersects the x-axis at c and $2A$ and is always maximized at $p_m > p_s$. Thus, the result about increasing c making it more likely for CON to decrease spending is in general true and not just an artifact of the parameters chosen in these graphs.

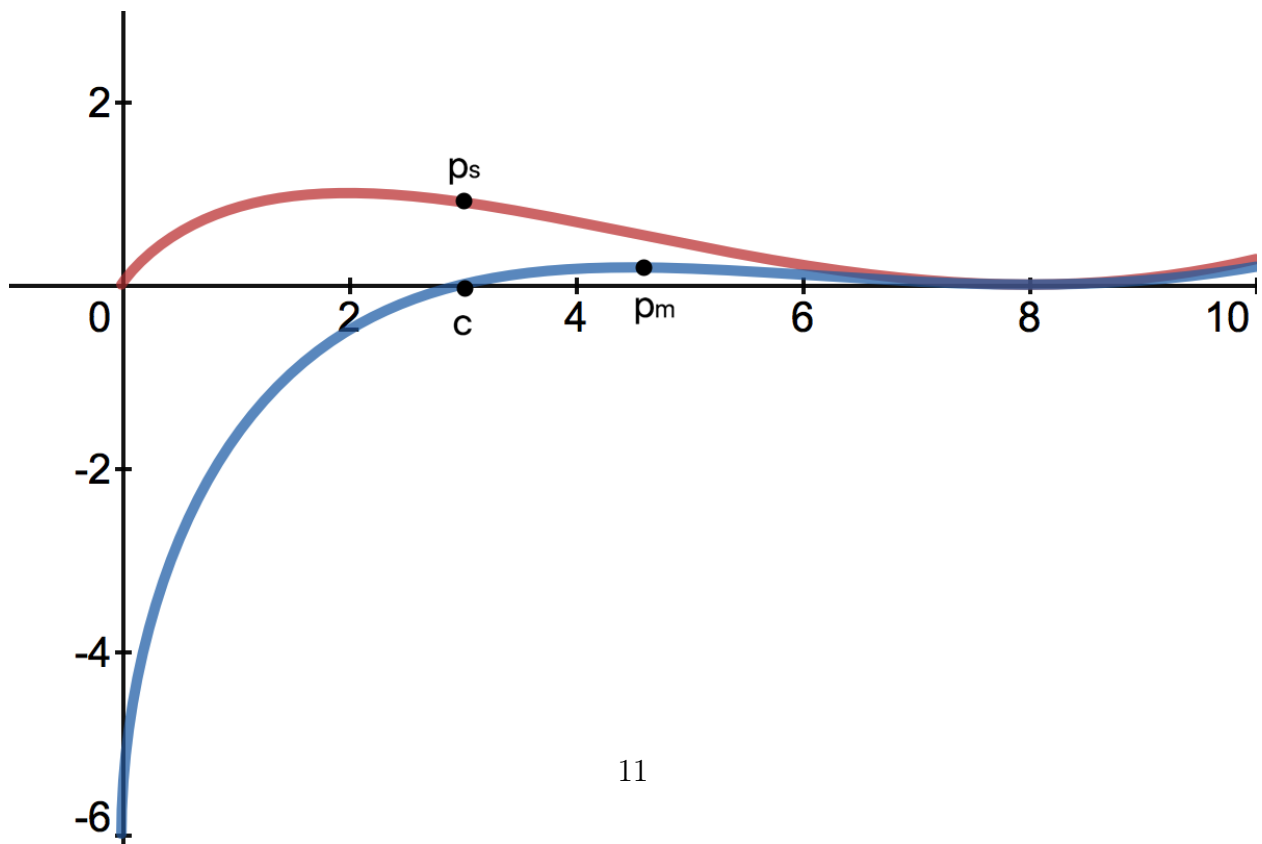
To formalize this intuition, let $\mathcal{F}(A, c)$ represent the fraction of the interval $[c, p_m]$ over which $S'(p) < 0$. Since we already know that $S'(p) < 0$ for all $p > p_s$, it is immediate that this fraction is equal to 1 if $c > p_s$. That is, if $c > p_s$, then increasing price can only decrease overall spending.

Figure 1: Effect of CON on Spending

Case 1: Costs Low Relative to Severity of Sickness



Case 2: Costs High Relative to Severity of Sickness



Consider instead the case where $c < p_s$. Then, we can write:

$$\mathcal{F}(A, c) = \frac{p_m - p_s}{p_m - c} \quad (23)$$

$$= \frac{2c + (A^2 + 4Ac)^{\frac{1}{2}} - A}{A - 2c + (A^2 + 4Ac)^{\frac{1}{2}}}. \quad (24)$$

Differentiating⁵ with respect to c yields:

$$\frac{\partial \mathcal{F}(A, c)}{\partial c} = 8A^2 + 8Ac > 0. \quad (25)$$

Thus, an increase in c weakly increases (and never decreases) the fraction of feasible prices for which an increasing price will result in lower overall spending.

We can perform a similar analysis of how spending responds to changes in A . As before, a perturbation to A when $c > p_s$ has no effect, so let us consider the case where $c < p_s$. Then,

$$\frac{\partial \mathcal{F}(A, c)}{\partial A} = 2A - 2(A^2 + 4Ac)^{\frac{1}{2}}. \quad (26)$$

This expression is nonnegative if and only if $4Ac \leq 0$. Since A and c are both assumed to be strictly positive, this is never the case. Thus, \mathcal{F} is strictly decreasing in A when $c < p_s$ and weakly decreasing overall. We can therefore predict that CON is less likely to reduce spending in areas where people are sicker.

⁵And omitting the quotient rule denominator, which is always positive.

In sum, the theoretical analysis makes two predictions, which we proceed to test empirically:

- 1) CON is more likely to reduce health-care spending when the production costs of health care are high.
- 2) CON is less likely to reduce health-care spending when health-care consumers are sicker.

3 Data and Empirical Model

Our data on CON laws come from the American Health Planning Association, which maintains an annual database of which states have CON programs in effect. CON programs began with New York in 1964, expanding rapidly with a federal push in the 1970s that threatened to withhold Medicare funds from states that did not adopt CON. As a result, every state had a program by the 1980s. In the 1980s, the federal government stopped pushing states to adopt CON, and, in fact, the federal antitrust agencies began suggesting that states repeal CON laws as anticompetitive, which they continue to do (Federal Trade Commission, 2015). Since the early 1980s, 16 states have repealed their CON programs, most recently New Hampshire in 2016.

Our primary data on health-care spending come from MEPS. Since 1996, MEPS has surveyed about 40,000 Americans per year with extensive questions regarding their health-care spending, usage, health status, and demographic information. We use the restricted version of MEPS that allows us to know which state an individual resides in, and so whether CON applies to them. Our dependent variable is the natural log of total health expenditures per person.⁶

⁶Taking the natural log helps correct for the extreme skew of health spending; in a given year, most people spend little to nothing, while some spend tens or hundreds of thousands. Despite total health spending per

Our baseline model to predict how CON affects spending is as follows:

$$\ln\text{TotalSpending}_{ist} = b_0 + b_1\text{CON}_{st-1} + b_2T_t + b_3S_s + b_4\text{Controls}_{ist} + e_{ist},$$

where T represents year, S state, and controls include individual-level measures of age, sex, race, ethnicity, marital status, education, and insurance status. After evaluating the overall effect of CON on spending, we test our theoretical model’s predictions about how the effect of CON varies with health status by adding an interaction term of CON and individual health status:

$$\ln\text{TotalSpending}_{ist} = b_0 + b_1\text{CON}_{st-1} + b_2\text{CON}_{st-1} * \text{Health}_{ist} + b_3T_t + b_4S_s + b_5\text{Controls}_{ist} + e_{ist}.$$

We use a similar interaction to test whether the effect of CON varies by the state-level costliness of health care:

$$\ln\text{TotalSpending}_{ist} = b_0 + b_1\text{CON}_{st-1} + b_2\text{CON}_{st-1} * \text{Cost}_{st} + b_3T_t + b_4S_s + b_5\text{Controls}_{ist} + e_{ist}.$$

4 Results

Table 1 shows that CON is associated with much higher health spending, but that most of this association is not caused by CON. Still, after including year and state fixed effects and extensive individual-level controls, column 3 shows that CON is associated with 10.5% overall higher spending.

capita being of immense policy interest, most research on how CON laws affect spending has focused only on subcomponents of total spending such as hospital spending per admission (Sloan 1981), nursing home spending (Rahman et al. 2016), or prices (Bailey, Hamami, and McCorry 2017). Only three papers before ours appear to have estimated the effect of CON on total health spending per capita, with one finding no effect (Conover and Sloan 1998) and two finding that CON increases spending (Lanning, Morrissey, and Ohsfeldt 1991; Bailey 2018a).

Table 1: Overall Effect of CON on Health Spending

	1	2	3
CON	.646*** (.012)	.203*** (0.056)	0.105** (0.050)
Year FE	Yes	Yes	Yes
State FE	No	Yes	Yes
Individual Controls	No	No	Yes
Adj R ²	0.01	0.03	0.22
N	265,826	265,826	265,826

Notes: The dependent variable is the natural log of total health spending. Robust standard errors are in parentheses; *** indicates $p < .01$, ** indicates $p < .05$, * indicates $p < .10$. Control variables are sex, race (black, Asian), education (high school grad, college grad), marital status, age (dummies for each year), and insurance status (private, Medicare, Medicaid).

Table 2 shows the results when health status and the interaction of CON and health status are added to the regression. As common sense suggests, compared with the omitted category of excellent health, those who report merely good health spend more on care, and those who report less-than-good health spend dramatically more. The overall effect of CON drops to insignificance, but its interaction with health status is highly significant; CON may lead those with less-than-excellent health to spend as much as 20% more. This fits with our theoretical prediction that CON will lead to relatively higher spending by sicker patients.

Table 2: Effect of CON, Health Status, and Their Interaction on Health Spending

CON	0.037 (0.062)
Good Health	0.391*** (.019)
Less Than Good Health	1.865*** (.031)
Good Health x CON	.203*** (0.025)
Less Than Good Health x CON	.131*** (0.038)
Year FE	Yes
State FE	Yes
Individual Controls	Yes
Adj R ²	0.25
N	247,382

Notes: The omitted health category is “excellent”; “good” combines MEPS categories “good and “very good,” while “less than good” combines MEPS categories “fair” and “poor.” The dependent variable is the natural log of total health spending. Robust standard errors are in parentheses; * * * indicates $p < .01$, * * indicates $p < .05$, * indicates $p < .10$. Control variables are sex, race (black, Asian), education (high school grad, college grad), marital status, age (dummies for each year), and insurance status (private, Medicare, Medicaid).

In our theoretical model, “cost” refers to the marginal cost of production. Marginal cost is generally difficult to measure, and we face the additional difficulty that our data come from consumers rather than producers. Further, high-cost services in health care are generally those in which patients are sicker and their willingness to pay is higher; if we found a differential effect on, for example, inpatient versus outpatient spending, it would not be clear if this should be attributed to inpatient costs being higher, inpatient patients being sicker, or something else. Lacking any direct measure of marginal cost, or even an individual-level proxy, we turn to a state-level proxy: the wages of health-care workers. Health-worker wages are one of the largest components of Medicare’s geographic cost indices (Committee

on Geographic Adjustment Factors in Medicare Payment 2011). MEPS measures personal income as well as the industry of those surveyed, allowing us to create a measure of health-sector wages in each state.⁷

Table 3 shows the effects of state health wages and their interaction with CON on health spending. We find that neither state income nor its interaction with CON are statistically significant at traditional levels. The sign of the interaction is positive, as predicted by our theory, indicating that CON may increase spending less in higher-health-income (higher-cost) states. Given that our proxy for marginal cost is far from perfect, we do not see the lack of statistical significance as a major blow to the relevance of our theoretical model, but we do think it indicates the necessity of future empirical work that incorporates supply-side data to better proxy for marginal cost.

Table 3: Effect of CON, State Health Wages, and Their Interaction on Health Spending

CON	0.161 (0.155)
State Health Wages (10000s of \$)	-.019 (1.47)
State Health Wages x CON	-0.016 (0.032)
Year FE	Yes
State FE	Yes
Individual Controls	Yes
Adj R ²	0.23
N	175,612

Notes: The dependent variable is the natural log of total health spending. Robust standard errors are in parentheses; * * * indicates $p < .01$, * * indicates $p < .05$, * indicates $p < .10$. Control variables are sex, race (black, Asian), education (high school grad, college grad), marital status, age (dummies for each year, and insurance status (private, Medicare, Medicaid).

⁷This is far from a perfect measure: Labor is only one piece of marginal cost, and the relevant MEPS industry category is overly broad, including education and social services workers along with health.

5 Conclusion

Our theoretical model shows how costs, health, and provider concentration interact to determine overall health-care spending per capita. The effect of high concentration on spending is neither a straightforward increase nor decrease. Rather, the effect of concentration depends on other facets of market structure including cost and health. Empirical work that finds weak or mixed effects of concentration (or concentration-affecting policies such as CON) should consider which sort of market they are observing. Our own empirical work finds that CON increases overall per capita health spending by 10.5% but that this effect is quite heterogeneous. We find that CON has no significant effect on the spending of those with excellent health while increasing spending by the less healthy as much as 20.3%. Studies finding a weak effect of concentration overall (such as Institute of Medicine (2013)) should consider whether the effect is consistently weak or instead a mix of strong negative and positive effects in different environments. Likewise, the mixed empirical results from the CON literature may be due not to differences in statistical technique, but instead, driven by true underlying differences in how CON affects the various areas or dependent variables studied.

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