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Does "Excess Supply" Drive Excessive Health Spending? The Case of Certificate-of-Need Laws

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Abstract
For decades, US policymakers and economists have searched for ways to slow the growth of spending on health care. One approach currently taken by thirty-five states is to restrict the supply of health care by requiring new and growing providers to show that they serve an "economic need." Hospitals and certain other health providers must obtain a certificate of need (CON) from a state board before opening or expanding. I show that in a simple model where CON restricts supply, the effect of CON on spending depends on the price elasticity of market demand for health care. CON will work to restrain spending when demand is elastic; however, most estimates show the demand for health care to be quite inelastic. I therefore predict that CON will increase prices for health care without much reducing its use, leading to an increase in spending.

JEL Codes: I11, I18, H75
Keywords: health care spending, certificate of need, health care supply, regulation

I. Introduction

Certificate-of-need (CON) laws require health care providers to obtain the permission of a state board before opening, expanding into new lines of service, or making large capital expenditures. These laws were passed rapidly between 1964 and 1980 in the hope of restraining the growth of health spending. By 1980, every state but Louisiana had a CON program, and the federal government was pushing states to adopt CON. Since the Medicare payment reform

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and the end of the federal push for CON in the 1980s, fifteen states have repealed their CON laws.

Earlier attempts to estimate the effects of CON laws on spending have suffered from a lack of theory—in particular, with regard to how the laws' effect should differ among payers and health services. I model CON laws as a reduction in supply and argue that they will only reduce spending when the demand for health care is price elastic. However, health care is generally estimated to be price inelastic, suggesting that CON laws are likely to backfire and increase total spending on health care for two reasons. First, inelastic demand means CON will increase the price of the services it targets more than it will reduce their use. Second, CON is not completely comprehensive. To the extent that sectors covered and not covered by CON laws are substitutes, CON that succeeds in restraining the use of covered care will increase the demand for, and spending on, uncovered care. I further show that CON likely reduces total welfare in the health care market. I show that results of the simple supply-and-demand model still hold after considering relevant complications such as moral hazard and point out other complications that more sophisticated theoretical work should explore.

II. Background and Literature Review

This section discusses the history of certificate-of-need laws and the goals behind their implementation, the laws' effect on quality and access to health care, and the previous literature on CON and spending.

A. Certificate-of-Need Laws: History and Intentions

The first CON law was passed by New York in 1964. Other states rapidly followed suit, and twenty-three states had programs in place by 1974. The rapid progress of CON laws was accelerated further when President Gerald Ford signed the National Health Planning and Resources Development Act of 1974 (P.L. 93-641). The law incentivized states to create CON programs, offering funding to those that did and threatening to withhold Medicare and Medicaid funds from those that did not. By 1980, every state except Louisiana had a CON program in place.

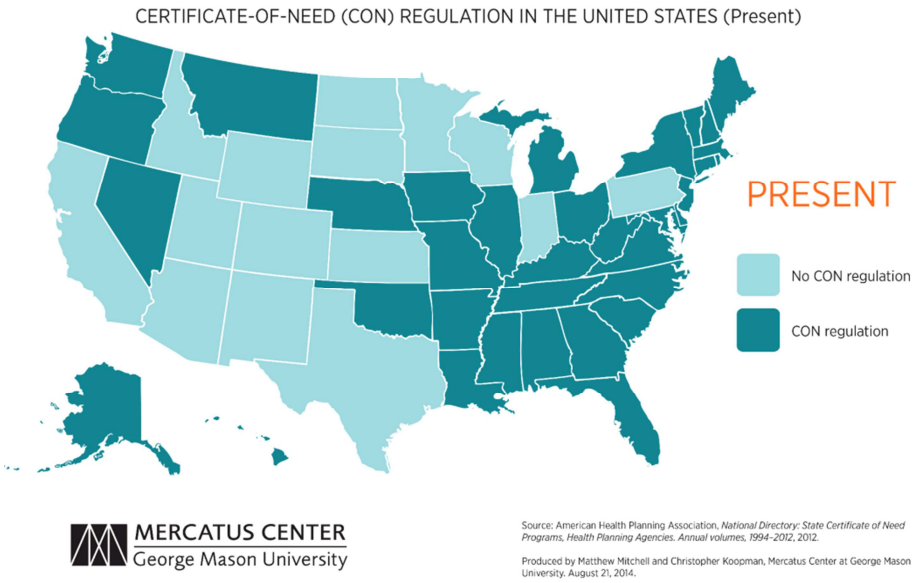
The text of the 1974 federal law promoting CON identifies two main goals for the legislation: promoting equal access to health care and restraining cost growth. The law makes clear its intention of restraining health spending: "The massive infusion of Federal funds

into the existing health care system has contributed to inflationary increases in the cost of health care. . . . Increases in the cost of health care, particularly of hospital stays, have been uncontrollable and inflationary, and there are presently inadequate incentives for the use of appropriate alternative levels of health care, and for the substitution of ambulatory and intermediate care for inpatient hospital care" (P.L. 93-641, Section 2a). The law plans to reduce spending growth through state-led planning: "In recognition of the magnitude of the problems described in subsection (a) and the urgency placed on their solution, it is the purpose of this Act to facilitate the development of recommendations for a national health planning policy, to augment areawide and State planning for health services, manpower, and facilities, and to authorize financial assistance for the development of resources to further that policy" (P.L. 93-641, Section 2b).

These planning agencies are expected to achieve spending reductions by "preventing unnecessary duplication of health resources" (P.L. 93-641, Section 1513). State CON programs are expected to "provide for review and determination of need prior to the time such services, facilities, and organizations are offered or developed or substantial expenditures are undertaken in preparation for such offering or development, and provide that only those services, facilities, and organizations found to be needed shall be offered or developed in the State" (P.L. 93-641, Section 1523).

The federal push for CON was repealed in the mid-1980s (P.L. 99-660, Title VII). Most states have been slow to respond, but fifteen have repealed their CON programs, as shown in figure 1. These CON repeals offer an opportunity to study the effect of CON: What happened to health care access, outcomes, and spending in the states that dropped CON compared to those that did not?

Figure 1. States with and without CON programs



Source: Matthew Mitchell and Christopher Koopman, "40 Years of Certificate-of-Need Laws across America," Mercatus Center at George Mason University, October 14, 2014.

B. Effect of CON on Access and Quality

In addition to controlling spending on health care, CON legislation had an express goal of improving equality of access to health care, both by inducing providers to supply more indigent care and by limiting "cream skimming," where hospitals take only profitable patients while leaving unprofitable patients to others. One theory of how CON could reduce cream skimming is by restricting the creation of suburban and specialty hospitals in order to protect urban and rural hospitals serving poorer patients (Reinhardt, Reinhardt, and Reinhardt 1987; Stratmann and Russ 2014).

Another theory is that CON boards could use their power over the approval of new projects to induce providers to offer more indigent care. Zhang (2008) finds this to be the case, estimating that CON laws result in a very slight (.07%) increase in the admission of uninsured patients. However, most of the literature indicates no effect or a negative effect of CON on access to care. Cutler, Huckman, and Kolstad (2010) find that CON increases travel distance for coronary artery bypass graft surgery, and DeLia et al. (2009) find that CON

increases racial disparities in care. Stratmann and Russ (2014) find that CON programs do not increase the amount of indigent care provided.

More recently, CON advocates have argued that CON increases the quality of care by promoting regionalization, moving patients into high-volume facilities that are associated with better health outcomes (Vaughan-Sarrazin et al. 2002). The literature on CON and quality has focused almost entirely on the quality of heart surgery and has indicated that CON may decrease heart surgery mortality (Ho 2006), increase it (Cutler, Huckman, and Kolstad 2010), or have no effect (Popescu, Vaughan-Sarrazin, and Rosenthal 2006). The only papers to examine how CON affects more general outcomes have found that it has no effect (Bailey 2018) or worsens mortality (Shortell and Hughes 1988).

C. Previous Literature on CON and Spending

In addition to the goals of improving quality and expanding access to care, CON laws are meant to reduce spending. The empirical literature on how CON laws affect spending has found mixed results, as summarized in table 1 (see Mitchell 2016 for a more thorough review of the literature). These mixed results may stem from the fact that the studies measure different types of spending.

Table 1. Summary of literature on CON and spending

Study	Empirical strategy	Findings: Effect of CON
Rivers et al. (2010)	State FE, hospital controls	0% effect on hospital spending; strict CON increases hospital spending by 4.9%.
Conover and Sloan (1998)	State FE	Decreases hospital spending by 5%, overall spending by 0%.
Lanning et al. (1991)	2SLS	Increases hospital spending by 18.5%, overall spending by 12.7%.
Hellinger (2009)	GEE	Decreases hospital beds by 10%, which decreases spending by 1.8%.
Grabowski et al. (2003)	State FE	Changes Medicaid nursing home expenditures by 0%.
Rahman et al. (2016)	State FE	Increases spending on nursing homes by 25%; decreases spending on home health care by 30%.

Conover and Sloan (1998) find that CON reduces spending on acute care by 5 percent but does not reduce overall health expenditures. Hellinger (2009) finds that CON reduces the number of hospital beds by 10 percent and argues based on other literature that this should translate into a 1.8 percent reduction in spending. Grabowski, Ohsfeldt, and Morrisey (2003) find that repealing CON for nursing homes has no effect on Medicaid nursing home spending, and Rivers, Fottler, and Frimpong (2010) find no effect of CON on hospital spending per patient. Lanning, Morrisey, and Ohsfeldt (1991) find that CON fails in its goal, increasing hospital spending by 18.5 percent and total health spending by 12.7 percent.

What accounts for these differences? There is some variety in the empirical techniques employed by the literature; most papers use fixed-effects estimators, while Hellinger (2009) uses generalized estimating equations and Lanning, Fottler, and Frimpong (1991) use two-stage least squares. Some papers use a binary definition of CON, while others test the effect of CON stringency; moreover, different authors allow different lag times for the introduction or repeal of CON to take effect. But while these differences in specification can lead to different results, I argue that most of the previous literature uses reasonable empirical strategies. The key reason they find different results is that they set out to measure different things.

First, the effect of CON may change over time; the previous literature uses a variety of time periods, anywhere between 1969 and 2003. Second, the literature has used a variety of expenditure measures. It is reasonable to expect that CON will have different effects on nursing homes or independent physicians than on hospitals and different effects on Medicare than on Medicaid. The limitation of the previous literature was not in its estimation techniques but in its theory—or rather, the lack thereof.

Previous work has only rarely come close to providing explicit mathematical or graphical models of how CON laws should affect spending.[1] An explicit model of how CON affects total expenditures is necessary, however. My model helps to explain why the empirical literature on the effect of CON has found wildly varying results.

[1] The closest previous work is from Ford and Kaserman (1993), who state that CON shifts the supply of regulated services to the left, which is likely to increase spending, and from Nyman (1994), who models CON for nursing homes as a constraint on bed capacity that creates excess demand and leads to increased prices and markups.

III. Modeling the Effects of Certificate-of-Need Laws

In this section, I describe how CON laws affect basic supply and demand, how CON laws are likely to affect health care spending, the welfare implications of the basic model and moral hazard, and CON's effect on markets for substitutes.

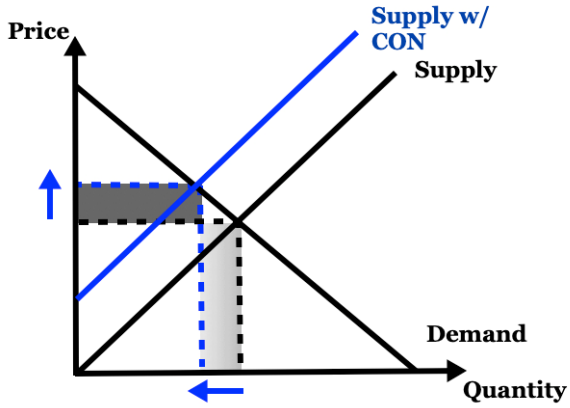
A. Basic Supply and Demand

While the market for health care is infamously complex, confounded by third-party payment and possibly supplier-induced demand, basic supply and demand can still describe the market well to a first approximation. I argue that CON laws are best represented as causing a leftward shift in the supply curve.[2] Seeking CON approval is time consuming and expensive, increasing the cost of production. Some facilities are entirely denied the opportunity to open or expand as CON boards try to prevent "duplication" of services, reducing the number of firms operating in the relevant markets. This should lead to a lower quantity produced at any given price—a classic supply shift.

How do CON laws affect spending in this model? The reduction in supply will reduce quantities and increase prices; which effect predominates depends on the elasticity of demand (see figure 2). If demand is perfectly elastic, prices will remain the same while quantities drop, and CON laws will be effective tools for reducing total spending. If, on the other hand, demand is perfectly inelastic, prices will increase while quantities stay the same, meaning that CON laws will increase total spending (see figure 3). Applying the total revenue test, we can see that CON will reduce spending when demand is elastic and increase spending when demand is inelastic.

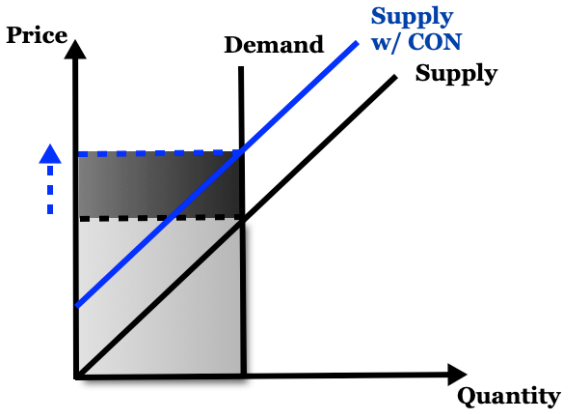
[2] To be more precise, CON laws prevent supply from shifting rightward when it would otherwise do so; the repeal of CON laws should cause a rightward shift in the supply curve. In the graphs and arguments to follow, I elide this distinction in favor of simplicity and say that CON causes a leftward shift in supply.

Figure 2. Effect of CON on price, quantity, and total spending



Note: The dark rectangle represents the increase in spending caused by CON (due to higher prices). The light rectangle represents the decrease in spending caused by CON (due to lower quantities).

Figure 3. Effect of CON when demand is perfectly inelastic



Note: The light gray square represents total spending on health care before CON. The dark rectangle represents the additional health care spending generated by CON.

B. Probable Implications Given Realistic Elasticities

Most estimates of the elasticity of demand for health care find it to be inelastic, often close to zero.[3] This finding suggests that CON laws

[3] Ringel (2002) reviews the literature on the elasticity of demand for medical care and finds that estimates center around −.17, close to the famous RAND Health Insurance Experiment estimate. The literature has taken great pains to cancel out

are likely to increase total spending, rather than decreasing it as intended.

Health care, however, is not a single, homogenous good. While the demand for goods and services in the health care sector is inelastic on average, it is certainly elastic in particular cases. Demand for certain services, such as plastic surgery, is elastic (Krieger and Shaw 1999). Certain payers may also have elastic demand. Most estimates of the elasticity of demand focus on elasticity with respect to the out-of-pocket costs faced by consumers—even though this spending only accounts for 12 percent of the market in the United States. But insurers also have some ability to choose what treatments and providers they are willing to cover, and these choices are price sensitive.

Medicare Parts A and B in the modern era set prices each year using a complex formula.[4] Their demand would now seem to be nearly perfectly elastic, given that Medicare will not reimburse charges above its set rates. Charging a lower price than that set by Medicare could still attract additional patients, given that Medicare enrollees often face substantial coinsurance. Furthermore, the formula Medicare uses to set prices still accounts for provider costs (through "geographic practice cost indices"). Therefore, Medicare patients' demand may still be inelastic, meaning that CON would result in increased spending. Indeed, Ho and Ku-Goto (2013) found that repealing CON for cardiac surgery led to lower costs and lower Medicare reimbursements.

Medicaid also sets prices, making its demand perfectly elastic over a one-year horizon. Medicaid enrollees, in contrast to Medicare enrollees, pay little to nothing in the way of deductibles and

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the effects of insurance and estimate the elasticity of demand consumers have with respect to out-of-pocket costs. This is unfortunate when considering demand elasticity, as this exercise does, from the perspective of a health provider. Providers are interested in the quantity response of all payers, insurers as well as consumers, to an increase in price. The effect of insurance is discussed further in the following section.

[4] Medicare operated very differently during its first two decades than it does today, using retrospective cost-based reimbursement rather than the current prospective-payment system that began in 1983. Under the old system, Medicare would pay providers for whatever costs they incurred in caring for Medicare patients—a system that made their demand close to perfectly inelastic. Under this system, a supply-and-demand model suggests that CON would increase spending rather than decrease it. Between 1983 and 2001, Medicare transitioned to prospective payment based on the expected cost for a patient with a given diagnosis (see Acemoglu and Finkelstein 2008 for details).

coinsurance. Medicaid reimbursement rates do eventually move upward to reflect increased costs, but are known to do so slowly, leading many providers to turn down Medicaid patients. Therefore, CON is more likely to reduce spending by Medicaid than by Medicare or private insurance.

C. Welfare Implications of the Basic Model and Moral Hazard

In a standard market, a leftward shift in supply will reduce both consumer and producer surplus.[5] With such a straightforwardly negative welfare implication coming out of such a straightforward model, why were CON laws ever passed in the first place? Clearly, it is unusual for laws to have the goal of "reducing spending"; more often, the government aims to increase GDP.

One possibility is that legislators are serving special interests at the expense of the public. Certificates of need are required in order to expand, but purchases and construction done by incumbents before the advent of CON are grandfathered in, meaning that CON could give a competitive advantage to incumbent providers. Regulators on CON boards could also be captured by industry, fast-tracking the applications of favored providers (perhaps expanding incumbents) while denying others (perhaps new entrants).

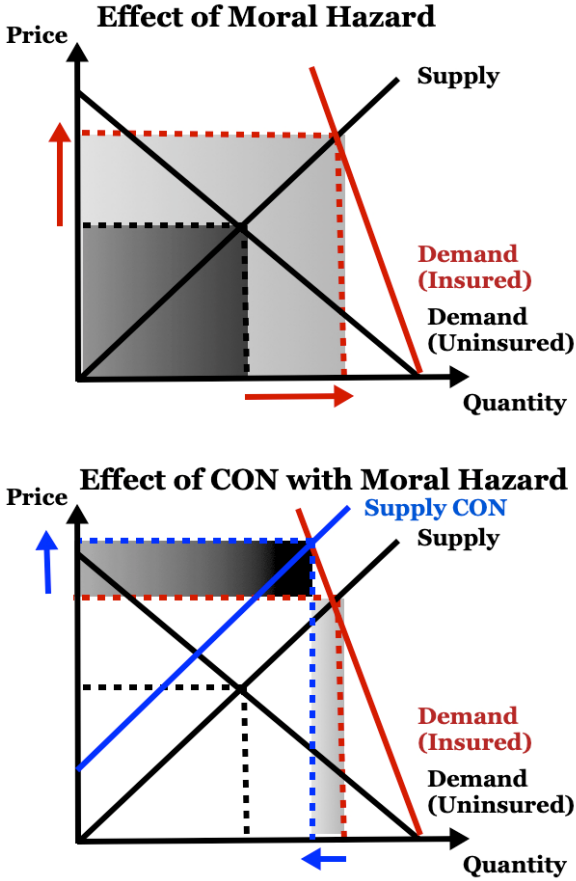
On the other hand, legislators and regulators may be acting for the perceived public interest, to correct market failures that are particularly likely in health care. They may perceive overspending on health care caused by the moral hazard of the third-party-payer system, and they may believe that CON could reduce this overspending. CON laws became much more popular following the introduction of Medicare, which Finkelstein (2007) found led to a large increase in total spending on health care. In a standard moral-hazard model, as shown in figure 4, insurance means that consumers face a price below the market price and thus have a demand higher than their willingness to pay, leading to an inefficiently high consumption of health care.[6] A CON law that shifts supply left reduces the quantity of care back toward an efficient level. However, it still increases prices. So, once again, the effect on total spending

[5] Except in the case of perfect elasticities or inelasticities—but total surplus is always reduced, and neither consumer nor producer surplus is ever increased.

[6] More recently, some authors have argued that much of the increased consumption caused by moral hazard is in fact efficient; in this case, there would be no market failure for CON to correct. The following analysis gives CON proponents the benefit of the doubt by assuming moral hazard to be inefficient.

depends on the elasticity: CON laws will only reduce total spending if demand is elastic.

Figure 4. Effect of CON on spending in the presence of moral hazard



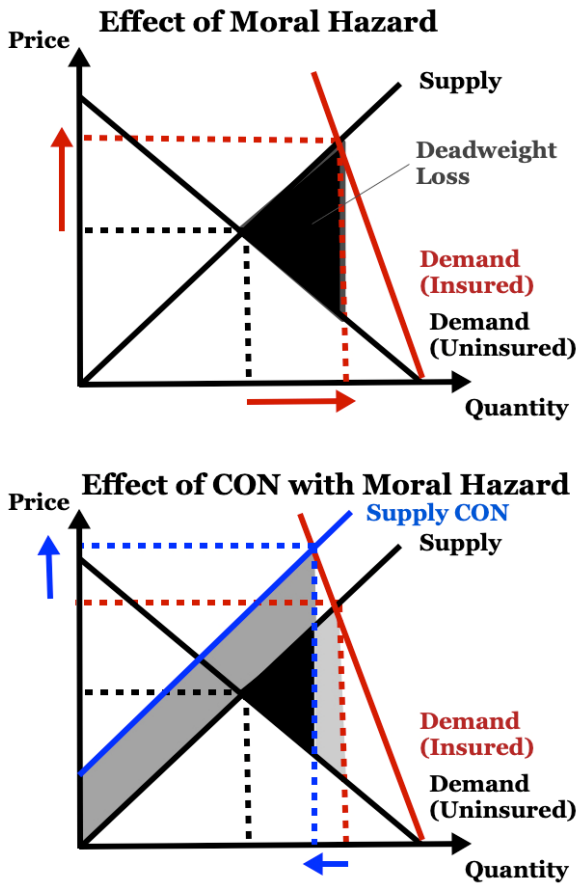
Note: On the top, the small dark square represents total spending without moral hazard, whereas the light gray area represents the increase in spending caused by moral hazard. On the bottom, the dark rectangle on top represents the increase in spending caused by CON (due to higher prices), whereas the light rectangle to the right represents the decrease in spending caused by CON (due to lower quantities).

In the case of insurance-induced moral hazard, however, effective demand is much more likely to be inelastic because consumers do not bear the full cost of price increases. In the case of 80 percent coinsurance (assuming for the moment that CON laws do not change insurance plan design), consumers only pay 20 cents of each $1 price increase—so their true elasticity of demand would have to

be above five for their insured elasticity of demand to be above one. This coinsurance system makes it quite likely that CON laws will actually result in increased total spending by insured patients.

In this model, CON laws can reduce the deadweight loss of moral hazard, but only by simultaneously increasing deadweight loss through added inefficiency of production. It is not enough to push the quantity back down toward the efficient level because the shift in supply shows that CON laws increase the cost of providing a given quantity of care (see figure 5).

Figure 5. Effect of CON on welfare in the presence of moral hazard



Note: In both figures, the black area represents the deadweight loss caused by moral hazard. On the bottom, the light gray area shows the extent to which CON reduces the deadweight loss from moral hazard by reducing quantity; the dark gray area shows the extent to which CON creates its own deadweight loss by increasing costs.

D. Hospital vs. Nonhospital Care: CON's Effect on Markets for Substitutes

CON laws do not affect all parts of the health care sector equally. The laws most commonly charge CON boards with reviewing hospitals and nursing homes that wish to open or add beds. Some CON programs also review large capital expenditures on health equipment or providers wishing to open a new type of service, such as open-heart surgery or burn care. Many states target nonhospital providers, such as dialysis, rehabilitation, or home health facilities. Physicians are generally able to open practices without needing a CON,[7] though they may have to go through the CON process to obtain capital equipment such as an MRI machine, and they may find it more challenging than hospitals do to navigate this process (Stratmann and Baker 2016).

While CON boards may not directly regulate every type of provider (for instance, family-medicine clinics), CON restrictions on other providers could still affect them. For instance, nonhospital providers are a partial substitute for hospitals. CON restrictions on hospitals could increase the demand for nonhospital services by increasing the price of a substitute.[8] In a standard supply-and-demand model, an increase in demand leads straightforwardly to an increase in spending.

E. Summary of Empirical Predictions

The main conclusion of the baseline model is that CON laws will increase spending when demand for the regulated service is inelastic and decrease spending when demand is elastic. Because health care is generally estimated to be quite inelastic, the baseline model means we should generally expect CON to lead to increases in spending driven by price increases. Empirical work should examine whether spending changes are driven by changes in quantity or price, especially as price data are increasingly available (Bailey, Hamami, and McCorry 2017).

The simplest baseline model does not consider insurance and thus applies only to those paying out of pocket. Adding insurance to the model makes it even more likely that patient demand will be inelastic and that CON will result in increased spending on the

[7] As of 2011, only the Vermont and Washington, DC, CON programs directly restrict medical offices, though it is more common for CON to regulate ambulatory surgery centers.

[8] Economists have recognized since at least 1980 that noncomprehensive CON programs could lead to increased costs in uncovered sectors; see Sloan and Steinwald (1980) for one example.

regulated service. This conclusion, though, is sensitive to how exactly the insurer will react to increasing prices. To the extent that insurers respond to CON-induced price increases by raising copays and deductibles, narrowing networks, or denying procedures, they effectively raise the elasticity of demand and make it more likely that CON reduces spending. To the extent that insurers do not react and simply keep paying the increasing prices, CON will increase spending by insurers. The Affordable Care Act, together with older state health-insurance regulations, limits the ability of insurers to react in these ways, making an increase in spending more likely.

Finally, to the extent that CON laws target certain types of providers, those providers will increase their prices. This will lead in turn to an increase in demand for and spending on substitute services not covered by CON.

IV. Alternative Models: Beyond Supply and Demand

In the following section, I consider whether the simple supply-and-demand model I put forward in section 3 is adequate or whether it misses some crucial considerations.

A. Supplier-Induced Demand

Overspending on health care may be caused by supplier-induced demand rather than by moral hazard. Perhaps there is no real need for a new hospital or MRI machine in a city, but once it exists, doctors will find a way to talk patients into using it. In this case, by restricting supply, CON also shifts demand to the left. The leftward shifts in supply and demand imply that CON will reduce quantity while having an indeterminate effect on price. As in the basic model, CON could increase or decrease total spending depending on elasticities; with supplier-induced demand, the effect of CON on total spending now also depends on the relative size of the supply and demand shifts. The presence of supplier-induced demand makes CON more likely to succeed in reducing spending. It also improves the welfare case for CON, as it now moves demand closer to its "true" level.[9] Unfortunately, supplier-induced demand is incredibly

[9] Auster and Oaxaca (1981) go so far as to call supplier-induced demand the only possible reason CON could be in the public interest: "Current certificate of need (CON) plans require new hospitals, even if private and for profit, to be approved on the basis of planners' assessments of community needs. If SID [supplier-induced demand] is not present, the only purpose such plans serve is to prevent

difficult to identify in practice because its implications for observed prices and quantities do not differ from more standard models (see Auster and Oaxaca 1981). The exogenous supply shift provided by CON improves matters: a finding that CON leads to lower prices would provide strong evidence for the presence of supplier-induced demand. However, a finding that CON increases prices would not rule out the possibility of supplier-induced demand.

B. CON as Monopoly Maker

So far, I have been modeling the market for health care as perfectly competitive, when in fact it is often characterized by a high degree of market power. Suppose that there is currently only one hospital in a market, but a second hospital plans to enter and engage in price competition. This entry will dissipate the monopoly rents of the existing provider, unless CON laws can be used to prevent the second hospital from entering the market. In this case, CON laws hurt consumers and society but benefit incumbent providers.

However, in a market with moral hazard, the market may be producing an inefficiently high amount of health care. In this case, the reduced quantity that a monopoly produces may not be so bad, as it would push the market back toward the efficient level of care. When considered as a monopoly creator, CON has a better chance to improve total welfare than when considered as a supply shift. When modeled as a supply shift, CON increases the cost of care for all providers. But in an alternative model where an incumbent monopolist is grandfathered in and incurs no costs related to seeking or being denied certificates of need, the monopolist will provide a quantity below the competitive equilibrium. In this monopoly case, CON does not directly increase costs, and there is no shift in the supply curve (though it will lead the monopolist to charge prices higher than marginal cost, and costs could increase indirectly if an incumbent protected by CON engages in *X*-inefficiency). Absent a reaction by insurers, this reduction in the quantity of care may move the market back toward the efficient level that would exist with competitive supply and no moral hazard. This scenario may describe the market for care for Medicare and Medicaid patients. Of course, the monopoly will charge higher prices than a competitive market and could still increase total spending even as it restricts quantity.

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competition through which the efficient may take business away from the nonefficient." Oddly, CON proponents rarely consider SID as a justification for it.

Furthermore, profit-maximizing private insurers are likely to adjust plan design in the face of monopoly providers. Gaynor, Haas-Wilson, and Vogt (2000) show in a very general theoretical model that competitive insurance markets will always adjust plan design in such a way that consumers are better off with competitive health care providers than with monopoly providers, even in the presence of moral hazard. This logic suggests that CON will be relatively more effective at restraining spending by public insurers (though perhaps still not effective in an absolute sense).

C. CON as a Barrier to Excess Entry

In the presence of fixed costs, the free market can yield an inefficiently high level of firm entry (Mankiw and Whinston 1986); Suzumura and Kiyono 1987). Excess entry is most likely in homogenous product markets, but it can still occur in the differentiated product markets that characterize most of health care. Excess-entry theorems have been used to argue for CON-style regulatory entry barriers.[10] The Mankiw and Whinston (1986) model predicts that excess entry and duplication of fixed costs will be greatest in markets where products are more homogenous and where the fixed costs of entry for an individual firm are greater. This latter criterion suggests that CON entry barriers could be more effective for hospitals than for nursing homes or family physicians.

The leap from concluding that markets are imperfect to concluding that regulation can improve upon them must always be

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[10] Mankiw and Whinston (1986) state that "in a homogenous market entry restrictions are often socially desirable. . . . in heterogeneous product markets the direction of any entry bias is generally unclear, although efficient levels of entry remain an unlikely occurrence." Suzumura (2012) states that "the control of excessive competition has been counted as one of the major rationales of interventionist industrial policy. To the extent that the Suzumura–Kiyono excess entry theorem could identify a wide class of industries where social excessiveness of interfirm competition strenuously prevails, it is almost inevitable that industrial policy for the sake of keeping excessive competition under control is construed to be thereby rationalized."

CON laws predate formal economic statements of excess-entry theorems, and to my knowledge, proponents of CON restrictions in particular have not picked up on these papers as potential justifications of CON. Some economists, though, have realized the connection. Cutler, Huckman, and Kolstad (2010) use the excess-entry framework to study the repeal of CON in Pennsylvania. They find that the repeal led many firms to enter the surgery market, leading to excess spending on fixed costs. However, they find that total welfare was not harmed because the increase in fixed costs was offset by an increase in quality.

taken carefully, and there are good reasons to be especially suspicious in this case. Suzumura (2012) warns that "we should be careful enough not to be exploited by those who call for protection from 'excessive' or 'destructive' competition for the hidden cause of their private interests. . . . the Suzumura–Kiyono excess entry theorem . . . does not necessarily mean that regulation by less than omnipotent and down-to-earth government can achieve better performance than competition in the free market place."

Laffont and Tirole (1993) put game-theoretical flesh on the bones of Stigler (1971), detailing how regulators with the power to restrict entry are likely to be captured by industry incumbents to allow an inefficiently low amount of entry, unless they are forced by a benevolent Congress to err on the side of allowing entry. Kim (1997) shows that even a benevolent and well-informed regulator of entry that selects the subgame-optimal level of entry can be tricked by incumbents into allowing too little entry. Incumbents do this by investing in excess capacity, thereby worsening the very problem entry regulation was meant to fix. In Kim's words, "It is not the government payoff but the payoff of the incumbent monopolist that is maximized under entry regulation. As capture theorists predict, entry regulation by the second-best government is captured by and works for the incumbent monopolist, not for the society as a whole."

V. Conclusion

Certificate-of-need laws aim to bend the health care cost curve downward by slowing the entry of new providers and the adoption of new technology. I show that such laws could be effective in a market where demand is price elastic. But in a market with inelastic demand, as our actual market for health care seems to be, my model predicts that CON will increase spending by raising prices. Since the late 1970s, many crude restrictions on supply have disappeared in the United States, most notably in the airline and trucking industries, generally leading to a surge in entry and lower prices for consumers. This change has been relatively slow to come to health care, as only fifteen states have repealed their CON programs. The theoretical work in this paper suggests that these supply restrictions are particularly ineffective when it comes to health care. Enforcing CON imposes certain costs while predicting possible spending reductions that have not materialized. For policymakers looking for a way to reduce health care spending, CON isn't the way to go, though repealing CON might be.

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