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Effect of nursing home ownership on the quality of post-acute care: An instrumental variables approach☆

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ABSTRACT

Given the preferential tax treatment afforded nonprofit firms, policymakers and researchers have been interested in whether the nonprofit sector provides higher nursing home quality relative to its for-profit counterpart. However, differential selection into for-profits and nonprofits can lead to biased estimates of the effect of ownership form. By using "differential distance" to the nearest nonprofit nursing home relative to the nearest for-profit nursing home, we mimic randomization of residents into more or less "exposure" to nonprofit homes when estimating the effects of ownership on quality of care. Using national Minimum Data Set assessments linked with Medicare claims, we use a national cohort of post-acute patients who were newly admitted to nursing homes within an 18-month period spanning January 1, 2004 and June 30, 2005. After instrumenting for ownership status, we found that post-acute patients in nonprofit facilities had fewer 30-day hospitalizations and greater improvement in mobility, pain, and functioning.

1. Introduction

Two defining features of the nursing home market are the predominance of for-profit facilities and the perception of low quality care in many facilities. The nursing home sector is roughly two-thirds for-profit, while the hospital sector, by comparison, is approximately two-thirds non-profit. Quality of care has been a longstanding concern in the nursing home sector with policymakers, researchers, media and the public all identifying low quality care (Institute of Medicine, 1986; U.S. Government Accounting Office, 1998). Policymakers and researchers alike have been interested in linking these two ideas by suggesting a causal relationship between ownership status and quality of care.

A large literature examines this issue, but a potential problem with these earlier studies is that unobserved characteristics may be correlated with both an individual's ownership choice and the quality of their nursing home care. For example, an individual in poorer health may be more likely to choose a nonprofit nursing home and also may have worse outcomes. If so, simple comparisons of quality in for-profits and nonprofits, controlling for observable characteristics, may yield misleading estimates. Moreover, few studies examining ownership and quality have focused on the short-stay (post-acute) nursing home population.

When randomization is not feasible, as in this case, instrumental variables estimation can be used to account for unobserved differences across study populations if a series of assumptions are met. One "instrument" that has been frequently and successfully used in health care is the differential distance from the patient's home to different providers. By using "differential distance" to the nearest nonprofit nursing home relative to the nearest for-profit nursing home (and assuming that this distance is uncorrelated to unobserved quality), we mimic randomization of residents into more or less "exposure" to nonprofit homes when estimating the effects of ownership on quality of care for the post-acute nursing home population.

Using national Minimum Data Set assessments linked with Medicare claims, we use a national cohort of short-stay residents

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who were newly admitted to nursing homes within an 18-month period spanning January 1, 2004 and June 30, 2005. Because of the concern that unobservables such as patient health will be correlated with the admission to a nonprofit and the quality of care, we use instrumental variables analysis to examine the effect of ownership on risk-adjusted, person-level short-stay measures of quality. After instrumenting for ownership status, we found that post-acute quality of care was generally poorer in for-profit facilities. Specifically, post-acute patients in nonprofit facilities were less likely to be hospitalized within 30 days and more likely to experience improvement in mobility, pain status, and activities of daily living (ADL) functioning. Importantly, the instrumental variables models generate dramatically different results relative to the standard models that treat ownership as exogenous, with the direction of the bias consistent with the idea that individuals in worse health choose nonprofit nursing homes. As discussed below, this negative selection may relate to both demand and supply factors.

2. Background and related research

2.1. U.S. nursing home sector

The most recent National Nursing Home Survey counted 1.5 million Americans living in approximately 16,100 nursing homes nationwide in 2004 (National Center for Health Statistics, 2006). It has been projected that in the next twenty years, 46% of Americans who survive to age 65 will use a nursing home at some point in their lives (Spillman and Lubitz, 2002). Nursing home expenditures totaled $137 billion in 2009, which represented 5.5% of national health expenditures (Martin et al., 2011). The nursing home market consists of both chronic (long-stay) and post-acute (short-stay) residents. Medicaid is the dominant payer of long-stay nursing home services, accounting for roughly 50% of all nursing home expenditures and 70% of all bed days. Medicare covers post-acute nursing home care, which accounts for 12% of total nursing home expenditures. The remainder of care is financed primarily by private out-of-pocket payments.

For-profit nursing homes, constituting roughly two-thirds of all facilities, may be owned by an individual, partnership or corporation. Nonprofits make up approximately one-fourth of all facilities and are predominantly church-related or a nonprofit corporation. The remaining nursing homes (6%) are government-owned and may be run by the state, county, city, hospital district or federal government, any of which might contract for management services from proprietary firms.

2.2. Nursing home objectives

For-profit nursing homes are presumed to maximize profits by setting output, quality, inputs and patient mix at levels to achieve this objective. In most industries, profit-maximizing behavior, given a reasonable level of competition, would be expected to yield desirable outcomes, defined as the delivery of the array and quality of services most valued by consumers given the costs of efficient production. However, if nursing home residents (and prospective residents) cannot readily ascertain the level of quality provided by different nursing homes, the profit motive can lead to lower quality than would be chosen by a hypothetical, fully informed resident. Unlike their for-profit counterparts, nonprofits cannot distribute accounting profits to individual equity holders. In return, nonprofits enjoy several government-conferred advantages, including exemption from corporate income and property taxes and a lower cost of capital through tax-exempt donations and bonds.

Medicare prices for short-stay nursing home care do not depend on quality of care, but Medicare recipients may still choose nursing homes on the basis of quality. Clearly, certain aspects of quality are observable to patients and their families, while other aspects are unobservable, even with public report cards and regulatory oversight (Zhang and Grabowski, 2004; Werner et al., 2009a,b). Aspects of post-acute nursing home quality that are unobservable to consumers include workforce quality (Cawley et al., 2006) and various process and outcome measures unreported on government report card websites such as locomotion, bladder incontinence, and infections (Werner et al., 2009a,b). Given that nonprofit and government providers lack a defined shareholder, these firms may have less incentive to maximize profits and a greater incentive to maximize other objectives such as unobservable aspects of quality and the provision of public goods (Newhouse, 1970; Hansmann, 1980). Thus, we hypothesize that short-stay nursing home quality will be higher in nonprofit nursing homes.

2.3. Previous literature

A large health economics literature has considered the role of ownership in health care, with studies focusing on the role of ownership in a number of health care sectors including hospitals (Sloan, 2000), health plans (Town et al., 2004), dialysis centers (Brooks et al., 2006), and home health agencies (Grabowski et al., 2009). In particular, a literature review by Eggleston and colleagues (2008) identified 31 studies of hospital ownership and patient outcomes published over the period 1990 through 2004. The majority of studies included in this review found no statistically significant difference between nonprofit and for-profit hospitals in terms of mortality or other adverse events.

Nursing home ownership (for-profit vs. nonprofit) has also received particular attention in the literature. In a comprehensive review of 38 studies published over the period 1990 through 2002, Hillmer and colleagues (2005) concluded that quality was lower in for-profit nursing homes. Similarly, a systematic review and meta-analysis of 82 studies published over the period 1962 through 2003 by Comondore and and colleagues (2009) suggested nonprofit nursing homes deliver higher quality care than do for-profit nursing homes. However, this previous literature is based entirely on cross-sectional comparisons of nonprofit and for-profit nursing homes that do not account for the possibility that there may be unobservable differences across residents receiving care at different types of facilities. As Konetzka (2009) wrote in an accompanying editorial to the Comondore et al. study, "no review or meta-analysis can overcome the empirical limitations common to all studies reviewed—we still do not know whether not-for-profit status is the reason for higher quality care" (p. 356). Further, the literature on ownership and quality has focused on the long-stay population or on the nursing home population as a whole, with relatively little work differentiating short-stayers (post-acute) and long-stayers. An advantage to studying the short-stay population is that Medicare pays for post-acute nursing home care, thus eliminating price differences for similar patients across ownership types within a common market.

Two previous studies have used alternate methods to examine the role of nursing home ownership. First, Grabowski and Stevenson (2008) exploited approximately 2100 nursing home conversions that occurred between 1993 and 2004 to examine the effect of ownership on quality of care. Given that hospital conversions have been found to be preceded by financial difficulties (Sloan et al., 2003), the study examined nursing home quality in the periods preceding conversion and how it evolved in the periods following conversion. The results found little evidence to suggest a causal relationship between ownership