

# The Economics of Specialty Hospitals

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Specialty hospitals, particularly those specializing in surgery and owned by physicians, have generated a relatively high degree of policy attention over the past several years. The main focus of policy debates has been in two areas: the extent to which specialty hospitals might compete unfairly with incumbent general hospitals and the extent to which physician ownership might be associated with higher usage. Largely absent from the debates, however, has been a discussion of the basic economic model of specialty hospitals. This article reviews existing literature, reports, and findings from site visits to explore the economic rationale for specialty hospitals. The discussion focuses on six factors associated with specialization: consumer demand, procedural operating margins, clinical efficiencies, procedural economies of scale, economies (and diseconomies) of scope, and competencies and learning. A better understanding of the economics of specialization will help policy makers evaluate the full spectrum of advantages and disadvantages of specialty hospitals.

**Keywords:** *specialty hospitals; specialization; economies of scale; economies of scope; core competencies; diversification; physician ownership*

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**Authors' Note:** This article, submitted to *Medical Care Research and Review* on September 29, 2006, was revised and accepted on January 29, 2008.

This project received partial support from the American Surgical Hospital Association and the South Dakota Association of Specialty Care Providers. The authors would like to thank Alan Pierrot, Molly Sandvig, Randy Fenninger, Martin Gaynor, James Robinson, Regina Herzlinger, and Steve Culler for their very helpful comments on parts of earlier drafts. Lauren Tucker Huber and Janet Benton provided excellent research assistance. The views expressed in this report are those of the authors and do not necessarily reflect the views of the funding organizations.

Specialty hospitals have been the subject of intense policy focus in the past 5 years. In some states, the operation of some types of specialty hospitals is prohibited by law (Burda, 2004), while in others entry by specialty hospitals is significantly limited by regulatory restrictions on hospital capacity expansion associated with state certificate-of-need programs (Choudhry, Choudhry, & Brennan, 2005). At the federal level, in 2003 Congress directed the Centers for Medicare and Medicaid Services (CMS) to cease payments to new physician-owned specialty hospitals for those Medicare and Medicaid patients referred by physicians with a financial interest in the facility.<sup>1</sup> Restrictions on market entry reflect concerns on the part of general hospitals and some policy makers that specialty hospitals may to some extent restrict the ability of general hospitals to internally cross-subsidize unprofitable services by skimming off high-margin patients and increase overall expenditures through self-referral incentives (Berenson, Bazzoli, & Au, 2006; Choudhry et al., 2005; Iglehart, 2005; Mitchell, 2007; Shactman, 2005). Others argue that specialty hospitals offer greater economic efficiency, higher quality, more consumer-responsive products and services, and provide beneficial competition to general hospitals (Cain Brothers & Company LLC, 2003; Casey, 2004; Dobson & Haught, 2005; Domrzalski, 2002; Herzlinger, 2002, 2004c; Walker, 1998).

As policy debates continue to focus primarily on internal cross-subsidization and self-referral, largely absent from the discussions are whether the business model of specialty hospitals per se has merit. Putting aside the larger policy issues, what are the economic advantages or disadvantages associated with hospital specialization? The main objective of this article is to identify and describe some of the key economic aspects of specialty hospitals and to highlight some areas that would benefit from further research. We do not attempt to offer a definitive answer as to whether the specialized model is better or worse than other means of organizing inpatient care. Rather, our narrower goal is to identify and discuss the key determinants of specialization as they apply to specialty hospitals.

We identify and critique six key economic and business attributes of hospital specialization that are said to underpin this model of health care delivery: consumer demand, heterogeneity in procedural margins, clinical efficiencies, economies of scale, economies of scope, and learning and competencies. The remainder of the article is organized in six sections. The following section provides a brief discussion of how this research contributes to the fields of health services research and economics. Next, we provide some background on the structure of the specialty hospital industry. We then briefly describe the methods employed. The next section describes the results of the literature review and case studies. We conclude with a discussion of the implications of the findings.

## **New Contribution**

The issues of hospital specialization have been investigated in a number of disciplines. For the first time, to our knowledge, this article draws together the conceptual and empirical literature from the fields of economics, organizations, medicine, and

health services research and applies it to the specialty hospital business model. To better describe specialty hospitals and to better understand what specialty hospital leadership believes they achieve, the article also incorporates results from a unique survey of these hospitals and five specialty hospital site visits. It then offers a preliminary assessment of where the comparative advantages of these forms of delivery are most likely to rest and encourages more active research to confirm and expand on these tentative conclusions.

## Background

One of the most prominent changes in U.S. industry structure during the latter half of the 20th century was the adoption of lean production, flexible specialization, and focused factories, which resulted in many business establishments becoming less diverse and more specialized (Essletzbichler, 2003; Gollop & Monahan, 1991; Skinner, 1974; Womack, Jones, & Roos, 1990). On a smaller scale, the U.S. hospital industry appears to be following a somewhat similar path, evident in the recent diffusion and growth of free-standing ambulatory surgery centers, specialty hospitals, and specialized units within general hospitals (Bian & Morrissey, 2006; Eastaugh, 2001; Haugh, 2006; Myers, 1998; Robinson, 2005a). A similar trend has been reported in the United Kingdom, where the National Health Service (NHS) has actively encouraged the formation of government-run and private sector specialty hospitals as a means of increasing capacity and improving quality and efficiency (U.K. Department of Health, 2005; U.K. House of Commons, 2006).

Specialty hospitals are typically defined as those that treat patients with specific medical conditions or those in need of specific medical or surgical procedures.<sup>2</sup> The former describes hospitals specializing in psychiatric care, rehabilitation, cancer care, long-term care (excluding nursing homes and skilled nursing facilities), women's care, children's care, and other hospitals focused on certain chronic diseases; the latter describes hospitals specializing in cardiac, orthopedic, and general surgery. These groups can also be generally described as nonsurgical and surgical, although in some cases rehabilitation and psychiatric hospitals may perform a very limited scope of surgeries. Taken together, there were 1,902 specialty hospitals in 2000 and 2,199 in 2005, a growth rate of about 16% over the 5-year period. This represents an expansion rate nearly four times higher than the rate of growth in the number of general hospitals (4%) over the same period. The number of nonsurgical specialty hospitals (rehabilitation, psychiatric, and long-term care) grew from 1,856 in 2000 to 2,108 in 2005—a growth rate of about 14% (Table 1). Growth in the nonsurgical group was driven primarily by a sharp increase in the number of long-term care hospitals.

Growth in the number of surgical specialty hospitals far outpaced their nonsurgical counterparts, but counts remain far below nonsurgical specialty hospitals and represent only a very small fraction of the number of short-term general hospitals (Table 1). The number of surgical specialty hospitals nearly doubled from 2000 to

**Table 1**  
**Trends in Numbers of Specialty Hospitals, 2000-2005**

Hospital Type	2000	2005	Percentage Change, 2000-2005
General hospitals			
Short-term community	4,915	4,936	4.3
Specialty hospitals			
Nonsurgical			
Rehabilitation	1,102	1,235	12.1
Psychiatric	491	481	-2.0
Long-term care	263	392	49.0
Total nonsurgical	1,856	2,108	13.6
Surgical			
Orthopedic surgery	27	53	96.3
Cardiac surgery	12	25	108.3
General surgery	7	13	85.7
Total surgical	46	91	97.8
Total specialty hospitals	1,902	2,199	15.6

Source: Kaiser Family Foundation (2007) and Medicare Payment Advisory Commission (2005a, 2006, 2007).

2005, and has likely continued growing since the expiration of the CMS moratorium in June 2005. The most common types of surgical specialty hospitals are those specializing in orthopedic procedures, such as hip and knee replacement.<sup>3</sup> Cardiac surgical hospitals—which typically perform heart bypass, valve replacement, angioplasty, and alike—are the next largest subset and the group that has grown the fastest. Many cardiac hospitals are owned by a single for-profit hospital chain, the MedCath Corporation. In total, there were 91 cardiac, orthopedic, and general surgery specialty hospitals in existence as of 2005.<sup>4</sup>

Recent political controversies surrounding specialty hospitals have focused primarily on those facilities specializing in surgery—mainly cardiac, orthopedic, and general surgery. According to the U.S. Government Accountability Office (GAO) and others, the reason for this focus is mainly concern over the effects of physician ownership and self-referral (Medicare Payment Advisory Commission [MedPAC], 2005b, 2006; Mitchell, 2007; U.S. General Accounting Office, 2003a, 2003b; U.S. Government Accountability Office, 2006). Approximately 70% of specialized surgical hospitals<sup>5</sup> have at least some level of physician ownership (U.S. General Accounting Office, 2003a). Most of these facilities are located in states without certificate-of-need programs, which restrict market entry by regulating the construction and augmentation of health care facilities (MedPAC, 2006). States with the highest concentrations of surgical specialty hospitals are South Dakota, Kansas, Oklahoma, Texas, Louisiana, Arizona, and California (U.S. General Accounting Office, 2003b).

## Methods

Given the intensity of the ongoing debates over surgical specialty hospitals, the focus of this study is on surgical specialty hospitals. The research methodology consists of three components: a comprehensive literature review, a mail and e-mail survey of surgical specialty hospitals, and exploratory site visits of five surgical specialty hospitals to provide some context and insight into the perceptions of the administrators and physicians who work in these facilities. Rather than provide a separate literature review section, we integrate the combined findings of the literature review, surveys, and site visits in the results section.

The literature review focused on research from four disciplines: medicine, health services research, economics, and organizations. Searches were conducted primarily in Medline, PubMed, ABI Inform, Business Source Premier, EconLit, and Lexis-Nexis Academic. Additional government and Internet searches were conducted to obtain reports and other materials not published in peer-reviewed journals. We also obtained reports from other organizations that had studies of specialty hospitals underway at the time of our study, including MedPAC, the Centers for Medicare and Medicaid Services, and Mathematica Policy Research, Inc.

In addition to the literature review, we administered a short e-mail survey to 70 surgical specialty hospitals belonging to the American Surgical Hospital Association (ASHA) or National Surgical Hospitals, Inc. (NSHI).<sup>6</sup> The survey obtained information on several operational characteristics, including years in business, number of beds, level of physician ownership, volume of inpatient and outpatient surgeries, number of inpatient discharges, revenue sources, nurse staffing ratios, and use of patient satisfaction surveys. The ASHA and NSHI membership at the time of this study represented approximately 85% of all surgical hospitals in the United States. The survey achieved a 50% response rate ( $n = 35$ ), but incorporating additional data from ASHA and examinations of surgical hospital Web sites resulted in item-level completion rates ranging from 50% to 90%. Descriptive statistics from the survey are shown in Table 2.

Concurrently with the survey, we conducted five site visits of surgical specialty hospitals, the primary goal of which was to gain a more thorough understanding of the structure and operations of the selected facilities. The hospitals selected for visits—two in California and three in South Dakota—vary according to urbanicity, bed size, years of operation, degree of physician ownership, and market structure. All five provided comparable ranges of surgical services. Based on structural characteristics, the five hospitals are broadly representative of the population of surgical specialty hospital nationwide. Site visits employed case-study data gathering techniques (e.g., Yin, 2003) and generally involved question and answer sessions with all levels of the management team (including physician owners) at each facility, followed by tours of the physical environment. Also provided were documents on management strategy, quality assurance, consumer satisfaction, physician ownership, and cost management.

**Table 2**  
**Means and Standard Deviations of Selected Items From a**  
**Survey of Surgical Hospitals, 2004**

Variable	Mean	<i>SD</i>
Staffed inpatient beds	19.3	13.8
Percentage of facilities with ER	42.1%	50.0%
Total number of facility owners	32.7	27.1
Number of physician owners	31.6	23.2
Number of physician owners admitting $\geq 5$ patients/year	20.6	13.7
Percentage with 0% to 1% ownership stake	33.6	17.9
Percentage with 2% to 5% ownership stake	44.7	9.2
Percentage with 6% to 9% ownership stake	12.4	3.0
Percentage with $\geq 10\%$ ownership stake	6.8	1.9
Inpatient discharges per year	835.1	796.9
Inpatient days per year	3,395.7	4,732.4
Inpatient surgeries (overnight stay) per year	717.7	512.7
Outpatient surgeries (no overnight stay) per year	3,105.5	2,849.0
Percentage Medicare revenue	32.4	19.1
Percentage Medicaid revenue	3.7	3.8
Percentage commercial revenue	46.4	25.1
Percentage other revenue	18.1	20.5
Percentage revenue as charity care	2.1	2.7
Total taxes paid (previous tax year; in millions)	\$1.9	\$3.6
Patient-to-RN ratio	3.4	1.0
Percentage with patient satisfaction data	92.1	27.3

Note: ER = emergency room; RN = registered nurse. Data based on authors' analysis of a 2004 survey of American Surgical Hospital Association and National Surgical Hospitals, Inc. membership (refer to text for more detail).

Again, the main goal of the site visits was to use information developed through these visits to formulate a provisional understanding of the layout and functioning of surgical specialty hospitals.

## Results

The literature and site visits point to six key economic and business attributes of hospital specialization. These include consumer demand, heterogeneity in Medicare procedural margins, clinical efficiencies, economies of scale, economies of scope, and core competencies. The following sections review the theory and evidence on each of these factors. The discussion is based primarily on published literature, supplemented by government reports, data from the specialty hospital survey, and insights from the five site visits.

## Consumer Demand

Demand for specialized inpatient and outpatient services has been growing rapidly in the past decade (Casalino, Pham, & Bazzoli, 2004; Liebhaber & Grossman, 2007; Nallamothu et al., 2006; U.S. General Accounting Office, 2003b). The increase in demand is most likely due to a combination of factors, including increased incidence of specific diseases, new treatment processes and technologies, and changes in consumer preferences. Analogous to non-health care industries, the hospital industry has been the subject of renewed emphasis on quality of care and customer satisfaction (Herzlinger, 2004b; Institute of Medicine, 2001; Mehrotra, Bodenheimer, & Dudley, 2003; Shaller et al., 2003). Defined-contribution benefit plans, consumer-directed insurance plans, and health savings accounts may have begun to encourage consumers to become more involved in choosing health care plans and providers, facing incentives to seek the highest quality at the lowest price (Agrawal, Ehrbeck, Packard, & Mango, 2005; Chao, 2005; Robinson, 2005b; Tazioli, 2008). In response, general and specialty hospitals alike have developed consumer-oriented centers of care focused on providing a limited range of services tailored to the specific needs of patients (Baum, 1999; Eastaugh, 2001; Herzlinger, 2004a; Lo Sasso, Rice, Gabel, & Whitmore, 2004; Romano & Kirchheimer, 2001; Smith, 2002; Urquhart & O'Dell, 2004).

Specialty hospitals appear to offer levels of quality at least comparable with and in some cases better than their general hospital counterparts. Cram, Rosenthal, and Vaughan-Sarrazin (2005) found no significant differences in mortality for cardiac patients treated at specialty hospitals and general hospitals, after adjusting for lower severity and higher procedure volume at specialty hospitals. A more recent study by Cram, Vaughan-Sarrazin, Wolf, Katz, and Rosenthal (2007) reached similar conclusions for orthopedic hospitals. After adjusting for patient severity and procedural volume, they found that the odds of adverse outcomes were significantly lower for patients treated in specialty hospitals undergoing primary joint replacement or revision joint replacement.<sup>7</sup> A study commissioned by CMS observed similar patterns: Cardiac and orthopedic surgical hospitals consistently performed better than expected in patient safety and quality indicators given the mix of patients treated (CMS, 2005; Greenwald et al., 2006). Moreover, the CMS study found that specialty cardiac hospitals performed better than their general hospital competitors on three of the four cardiac inpatient quality indicators.

Higher differential specialty hospital quality was also evident when the market area was taken as the unit of analysis. Barro, Huckman, and Kessler (2006) analyzed Medicare claims data at the hospital referral region level and found that specialty hospital entry leads to both a reduction in expenditures and a decrease in mortality.<sup>8</sup> A consistent theme in these and other studies is that cardiac and orthopedic specialty hospitals have higher procedural volumes on average<sup>9</sup> and are therefore well positioned to exploit the positive outcome effects associated with higher volume (Bachmann et al., 2003; Birkmeyer et al., 2003; Nallamothu et al., 2006).

Data gathered from our site visits mirror these findings. Managers of surgical specialty hospitals consistently reported two factors that they believed to be critical to achieving high-quality patient outcomes: high volume and high nursing intensity. Consistent with the findings of higher procedure volume in specialty hospitals, managers of surgical hospitals strongly believed that they were improving care through ongoing learning and process improvement. Surgical hospitals also reported nurse-to-patient ratios higher than the national average, which suggests that they may be able to capture some of the positive quality and outcome effects associated with richer nurse staffing (Kovner, Jones, Zhan, Gergen, & Basu, 2002; Lang, Hodge, Olson, Romano, & Kravitz, 2004; Mark, Harless, McCue, & Xu, 2004; Stanton & Rutherford, 2004). For example, Kovner et al. (2002) found that the median number of registered nurse per adjusted patient day was 6.43 in a sample of 534 hospitals. For the five specialty hospitals we visited, registered nurse hours per adjusted patient day ranged from 10 to 15 hr per patient day.<sup>10</sup>

Site visit respondents argued that offering a limited scope of services was likely to increase accountability associated with the smaller set of procedures. For example, a specialty hospital leader at one of the visited hospitals remarked that “four procedures account for 70% of our business; if we develop any kind of quality problem in one or more of those procedures it’s a huge problem for our organization.” In addition, specialty hospitals typically engage in extensive collection of data on quality and patient satisfaction and use these data to modify care processes (Iqbal & Taylor, 2001; Walker, 1998). Among the hospitals surveyed, 92% reported that they engage in regular assessments of customer satisfaction (Table 2). A recent study commissioned by CMS also found that specialty hospitals exhibited higher levels of patient satisfaction compared with general hospitals in the same market (CMS, 2005; Greenwald et al., 2006).

From an organizational ecology perspective (Carroll & Hannan, 2000), growth in specialty hospitals may to some extent reflect inertia on the part of established general hospitals in adapting to changes in consumer preferences, technology, and other market effects. In their discussion of the adaptive capabilities of dominant firms and organizational models, Carroll and Hannan note that,

As the largest firms attempt to make their products appeal to a larger, more diverse consumer base, they lose their appeal to those with unusual tastes. This untapped part of the market becomes attractive to entrepreneurs, and they start specialist firms targeted to it. (p. 9)

## **Procedural Margins**

An additional motivation for market entry is likely to be the existence of above-average profit margins on certain procedures. Prospective administered pricing mechanisms create incentives for general and specialty hospitals alike to focus on

diagnosis categories and procedures where administered prices exceed average costs. In general, Medicare's prospective pricing system has been shown to affect the scope of services offered by acute care hospitals. The prospective pricing system employs a fee schedule based on approximately 500 diagnosis-related groups (DRGs); each DRG is mapped to a price, with some hospital-specific adjustments. Payment by DRG provides strong incentives to hospitals to specialize in those DRGs for which they have relatively low production costs (Dranove, 1987; U.S. General Accounting Office, 1992). In the context of specialty hospitals, Robinson (2005a) posits that "the success enjoyed by the specialized firms reflects astute selection of services and markets as much as efficiency in delivering care" (p. 58). As long as hospitals are able to earn above-average margins on some procedures, there will be incentives for incumbent general hospitals to increase their share of discharges for those procedures and for entrepreneurs to form hospitals specializing in high-margin procedures (Dobson & Haught, 2005; Hadley & Zuckerman, 2005).<sup>11</sup>

Although general hospitals can, and do, focus on profitable DRGs (Dranove, 1987; U.S. General Accounting Office, 1992), general hospitals typically view the provision of less profitable services as a large part of their mission. Depending on the market, less profitable services may include maternity care, oncology, substance abuse treatment, behavioral health, and, in some cases, transplants (e.g., American Hospital Association, 2004). Thus, general hospitals' incentives to focus on profitable DRGs may be driven as much by the need to internally cross-subsidize less profitable services as the desire to make a profit or to develop a core business focus for the purposes of learning, positive volume-outcome effects, and other production economies.<sup>12</sup>

## Clinical Efficiencies

Clinical efficiencies include the ability of physicians to directly control the quality of care, scheduling, triaging patients to most appropriate settings, and equipment usage and purchasing (Casalino, Devers, & Brewster, 2003; Casalino et al., 2004; Casey, 2004; MedPAC, 2003; Rohack, 2004; Walker, 1998). In some cases, the existence of competing clinical objectives impedes physician decision making and productivity. According to our site visits, in the surgical specialty hospital setting physicians believe they have substantially more control over decisions made regarding patient care and their work environment. This differs from the experiences of the same physicians in general hospitals, where physicians report that the decision-making process is "less efficient" and "overly bureaucratic."<sup>13</sup> These differences are to some extent analogous to the differences between large multispecialty versus single-specialty practices. For example, Casalino et al. (2004) report that one of the motivating factors for single-specialty medical groups was to "avoid the complicated governance and operational issues engendered by having primary care and specialty physicians in the same organization" (p. 86). Similar thoughts are expressed in a recent report on specialty hospitals compiled by the American Medical Association (Rohack,

2004), “[physicians] want a greater involvement in governance and management, reinvestment of profits to maintain state-of-the-art care and equipment, and greater control over scheduling and types of cases performed in the operating room” (p. 3). The British NHS has similar hopes for its new specialty hospital initiative, which explicitly states enhanced adoption of best practices and clinical innovation as strategic goals in encouraging the development of specialty hospitals (U.K. House of Commons, 2006).

According to the site visits, surgeons value specialty hospitals because there is more opportunity to maintain “control over the investments in their workplace.” In addition, surgeons in the surgical specialty hospital setting “feel they are treated more like customers, their surgical equipment tends to be newer, and the operating rooms tend to run more efficiently.” Reasons for improved operating room efficiency ranged from “shorter turnover times” to “the fact that cases do not get moved to accommodate emergencies.” Surgeons at the visited hospitals also believed that the quality of nursing care is better at specialty hospitals relative to general hospitals. They indicated that “specialty hospitals usually attract the best nurses because of the good work environment, which in turn leads to a better nurse-to-patient ratio and a higher quality of care.” According to managers at visited hospitals, patients prefer specialty hospitals over the traditional hospital for a number of reasons, including more intensive nursing care, perceptions of higher quality, and a higher level of structural and functional hospitality (e.g., larger rooms with more amenities; friendlier staff).

## Economies of Scale

Economies of scale exist if the average costs of producing a product or service decline as the volume of production increases.<sup>14</sup> The evidence on economies of scale in the production of hospital services, while highly variable, indicates that U.S. general hospitals typically experience scale economies up to approximately 10,000 discharges per year (Cowing, Holtmann, & Powers, 1983; Dranove, 1998; Gaynor & Anderson, 1995; Keeler & Ying, 1996; Li & Rosenman, 2001a; Vita, 1990). However, the same evidence suggests that scale economies vary significantly by product and service line. To assess the potential role of scale economies in specialty hospital efficiency, scale economies for specific services in specialty hospitals versus general hospitals would need to be compared. We are not aware of any study that does so. However, for many specific surgical procedures, the volume of specific services performed at specialty hospitals typically exceeds that performed in general hospitals within the same market area (Cram et al., 2005, 2007; Mitchell, 2005; U.S. General Accounting Office, 2003b). Thus, given the higher procedural volume in some services, to the extent economies of scale exist in these specific procedures they are likely to be realized to a greater degree in specialty hospitals compared with general hospitals with lower procedural volume.

## Economies of Scope

In some cases the joint production of two or more products or services can be accomplished at lower cost than the combined costs of producing each individually. This is often the case when production relies on common resources, such as technology, workers, inputs, and general overhead. Cases where the costs of conjoint production are lower than the costs of separate production are said to exhibit economies of scope (Panzar & Willig, 1981). The decision to specialize will depend in part on the extent to which firms' existing scope of products and services exhibit diseconomies of scope (i.e., where joint production is more costly than separate production). Conversely, the decision to diversify will in part be based on the extent to which joint production costs are less than separate production costs.

Evidence on economies of scope in the U.S. hospital industry is inconclusive. Menke (1997) found limited evidence of inpatient–outpatient scope economies in chain and nonchain hospitals. Similarly, Fournier and Mitchell (1992) found significant scope economies among select outpatient services and surgery services, but their study is based on 20-year old data from one state. Sinay and Campbell (1995) examined 262 merging acute care hospitals in the United States during the period 1987 to 1990. Of the service pairings studied, evidence of economies of scope was found between acute care and subacute care (in merging hospitals) and between intensive care and outpatient visits (in control hospitals); all other pairings showed either diseconomies of scope (e.g., acute care and outpatient care, intensive care and subacute care) or were statistically insignificant. Rozek (1988) failed to observe scope economies in general hospital diversification into psychiatric services, and Li and Rosenman's (2001b) study of hospitals in the state of Washington reached inconclusive findings on scope economies. One of the core assumptions of the British NHS specialty hospital initiative is that there are diseconomies of scale between emergent and elective surgeries, the latter (they argue) more effectively organized in specialty care settings.<sup>15</sup> While economies of scope in theory should be an important determinant of the scope of hospital service offerings, the lack of consistent findings limits the ability to assess the role of scope economies in the hospital industry.

## Competencies and Learning

The extent to which firms organize and strengthen their “core business” has been shown to be an important determinant of organizational design, function, and performance (Chandler, 1990, 1992; Helfat et al., 2007; Teece, 1982; Teece & Pisano, 1994; Teece, Rumelt, Dosi, & Winter, 1994; Wruck & Jensen, 1994). Core competencies refer to firms' existing stock of knowledge assets (including tacit knowledge and know-how), skills, and resources. By diversifying and expanding into activities that are related to core competencies and capabilities, firms are typically able to take better advantage of the learning process and improve managerial efficiency (Danneels, 2002;

Helfat et al., 2007; Hill, 1994). For example, focusing on core competencies has been associated with improved supply chain management (primarily through standardization), simplified human resource management, and streamlined production scheduling. In addition, limiting expansion into related business lines is likely to minimize some of the negative trade-offs associated with growth in firm size, such as influence costs and other forms of incentive attenuation (Hill, 1994; Milgrom & Roberts, 1990).

Skinner (1974) stressed that “simplicity, repetition, experience, and homogeneity of tasks breed competence” (p. 115). Similarly, according to Teece et al. (1994), “if too many parameters are changed simultaneously, the ability of firms to conduct meaningful quasi experiments is attenuated” (p. 17). In other words, concentrating on core competencies is believed to enhance the learning process by assuring that decision-making situations are repeated in sufficiently large numbers. Learning occurs as the experience of production in one time period influences the production in a later time period; that is, the production process is assumed to have some degree of flexibility and can change over the relevant range of output (Greve, 2003; March, 1996; Nooteboom, 2000). The implication is that the costs of producing the first batch of output are greater than the costs of producing a subsequent batch due to the learning that occurred during the production of the first batch. Assuming that experiences of producing the first batch can be applied to the second batch (and other subsequent batches), the average costs of production are expected to decline as output cumulates over time. The learning effect will depend on the ability of the firm to process information during the production process and then apply that information appropriately. The learning process is critical to the formation and adaptation of organizational routines, which include rules of thumb, guidelines, templates, and protocols (Nelson & Winter, 1982). Specialized routines are the subcomponents of organizational “know-how” and core competencies and are often sources of comparative advantage and production economies (Chandler, 1992; Greve, 2003; Wruck & Jensen, 1994).

In health care settings, there also appear to be distinct advantages to focusing production within core competencies.<sup>16</sup> Shortell, Morrison, and Hughes (1989), in their 3-year case study of eight large hospital systems, found that the best performing systems and hospitals were the ones that avoided diversification into “unrelated activities,” thereby minimizing diseconomies of scope and maximizing efficiencies associated with learning. Eastaugh (2001) examined a panel of 219 U.S. acute care hospitals from 1991 to 2000, finding that a 31% increase in specialization over the time period was associated with an 8% decline in costs per admission. Douglas and Ryman (2003) review the theory of core competencies in hospitals and test the theory using data from the 32 largest hospital markets in the United States. They found that the degree to which hospitals focused on core competencies was positively related to hospital financial performance.

Do specialty hospitals have an advantage over general hospitals in terms of core competencies and learning? This is a question for which the literature on the economics of organizations, combined with the survey and site visits, offers some

potentially useful guidance but no definitive answers. Begin by considering the potential advantages on the part of specialty hospitals. First, the smaller size of specialty hospitals may be an advantage. Given the complexities of the learning process, the costs of learning in some cases may be lower for smaller specialized firms. Smaller firms may have the advantage of being able to allocate the majority of the resources available for learning and adaptation to a relatively small set of related production process (e.g., Almeida, Dokko, & Rosenkopf, 2003). Second, specialty hospitals' high procedure volumes across a limited scope of services suggest that they are well positioned to take advantage of the learning process. Our site visits supported this hypothesis. At all five facilities, leaders responsible for quality monitoring and improvement focused on just three or four process and outcome measures. In all cases, data were collected systematically and fed back to the care teams. For example, at a facility specializing in general surgery, leadership was primarily focused on three areas: infection control, anesthesia time, and postoperative pain management. For each of these areas, leadership systematically collected detailed clinical data and had distinct processes in place for feeding results back to each surgical care team.

In addition, in the site visits we consistently observed the claim of a culture supportive of coordination and cooperation aimed at achieving ongoing improvements in efficiency and quality. Surgical specialty hospital managers generally attributed their success in process adaptation to three factors: (a) relatively small size, which enables more rapid and efficient decision making; (b) flat hierarchical structures, which allow decision-making and process improvement to migrate to the most appropriate level; and (c) focused and consistent management goals, which make it easier for team members to learn and practice their roles. Leaders and managers also emphasized the importance of performance feedback, mainly through surveys of customer satisfaction. According to the survey results, 92% of specialty hospitals reported conducting systematic customer satisfaction surveys. Again, leaders and managers indicated that their relatively small size allowed them to spend more time collecting, analyzing, and acting on customer feedback.

When asked why their facility performed one set of procedures or services and not another, specialty hospital managers consistently indicated that they had a strong desire to "not venture too far" from the core of their collective knowledge. Managers and owners emphasized that the key decision makers are typically physician owners, most of whom are likely to feel most comfortable focusing on the delivery of services in their specialty field. One chief executive officer and physician owner stressed that specialty hospitals often attract the most highly trained and skilled physicians in the community by allowing them to essentially redesign the care process based on the state of the art in their field. We found corroborating anecdotal evidence in the trade press (Baum, 1999; Casey, 2004; Walker, 1998; Wolski, 2004).<sup>17</sup>

Can diversified general hospitals achieve similar learning and competency-related production economies? The short answer is yes. At least in theory, there are no technical or structural impediments to creating semiautonomous divisions (i.e.,

clinical lines of business) within general hospitals wherein volumes are sufficiently high to benefit from the positive relationship between volume and outcomes and related production efficiencies. Indeed, general hospitals have increasingly been adding specialized services, creating “centers of excellence” and joint-venturing with specialized facilities and physician specialists (e.g., Betbeze, 2007; Haugh, 2006; Scalise, 2006). However, the extent to which general hospitals can capture the same kinds of production economies within divisions and product lines depends on three factors associated with diseconomies of scope: information-processing constraints, internal politics and influence costs, and incentive attenuation (Hill, 1994; Milgrom & Roberts, 1990; Williamson, 1985). As we argued earlier, factors associated with diseconomies of scale are clearly important but difficult to assess. The latter—incentive attenuation—has been shown to be an important delimiting factor in the scope of firms (Alchian & Demsetz, 1972; Holstrom & Milgrom, 1991; Milgrom & Roberts, 1990; Teece, 1980). As firms broaden their scope of services, they become more susceptible to problems of incentive alignment within divisions and product lines and information impediments between divisions, product lines, and central management. Other challenges include optimal transfer pricing and reward mechanisms. In sum, it is difficult to assess the extent to which competencies play a role in specialty versus general hospitals. However, the balance of literature suggests that limiting the scope of services does have distinct advantages, many of which may be unrealized in diversified general hospitals.

## Discussion

All six of the aforementioned factors—consumer demand, procedural margins, clinical efficiencies, economies of scale, economies and diseconomies of scope, and competencies and learning—are likely to play in role in explaining the economic advantages and disadvantages of specialty hospitals. Recent growth in the specialty hospital industry is most likely driven by disparities in procedural margins for some surgical DRGs. There is a substantial body of economics literature showing the link between operating margins and market entry, and we find consistent evidence that the recent growth in surgical hospitals is to some extent attributable to these factors. However, recent changes in the way that CMS risk-adjusts payments by DRG should, at least in theory, reduce payments made for procedures performed on healthier patients, and future modifications to fee schedules will likely include price reductions for high-margin procedures. These changes may in turn make some procedures less profitable.

The second most likely factor underlying specialization appears to be growing demand for more “consumer friendly” treatment venues. From the perspective of the insured consumer, in situations where choice is feasible (i.e., nonurgent care and elective care) but the consumer remains relatively insulated from price differentials, observable amenities like larger and more private recovery rooms, more convenient

parking, and higher nurse-to-patient ratios are likely to attract consumers to specialized surgical hospitals.

The third most likely economic advantage of surgical specialty hospitals is a comparative advantage in redesigning the surgical care process to improve clinical efficiency and physician control. The comparative advantage of surgical specialty hospitals in this regard may be driven primarily by physician ownership, which aligns the incentives of management and care providers in ways that are more difficult to achieve in settings with more diverse stakeholders.

The economic advantages of the specialty hospital model are likely to reside in the remaining factors—economies of scale, diseconomies of scope, and competencies. However, these efficiencies are likely attainable by either specialty hospitals or specialized service units within general hospitals. It is not possible, based on the evidence available to date, to determine whether specialty hospitals enjoy a comparative advantage over general hospitals in capturing these efficiencies. On the surface, the organization of specialty hospitals appears to entail fewer structural barriers likely to impede the capture of these advantages, compared with general hospitals. However, theory suggests that general hospitals could modify production processes to exploit the benefits of a “focused factory,” including economies of scale, scope, and focus on core competencies. A related question is the extent to which specialty hospitals must remain “small” and “focused” to exploit the benefits of specialization, to the extent they exist. We do not know, for example, the threshold level at which adding services may result in diseconomies of scope; rather, we know only that too many unrelated activities has a negative effect on performance.

## Implications and Conclusions

The broad conclusion is that there is much more to be learned about the advantages and disadvantages of specialized inpatient care and specialty hospitals. Current debates over the role of surgical specialty hospitals to date have focused on potential harm to general hospitals and potential over usage associated with physician ownership. Largely absent from the debates has been a discussion of the economic advantages and disadvantages associated with the specialty hospital business model itself and whether that business model differs from that of specialized units within general hospitals. Our review of the literature and site visits to specialty hospitals suggests that there may be some merit to the basic business model, at least for the types of facilities currently observed in the industry. Future research should be aimed at the areas where there is little consensus, particularly in the areas of economies of scope and core competencies in the provision of inpatient care. A better understanding of the potential synergies (or lack thereof) across combinations of inpatient services will inform hospital leadership as they redesign and modify care processes to meet the demands for higher quality and safety (Institute of Medicine, 2001).

As the debates over surgical specialty hospitals continue, the benefits of the business model should be compared and contrasted with potential harm imposed on general hospitals and potential changes in usage attributed to physician ownership incentives. The research to date on these effects has generally shown that surgical specialty hospitals have a minimal impact on the operations and financial performance of general hospitals (Chollet et al., 2006; CMS, 2005; MedPAC, 2006; Schneider et al., 2007; U.S. Government Accountability Office, 2006) and a minimal impact on Medicare expenditures in areas with surgical specialty hospitals (Barro et al., 2006; CMS, 2005). However, more research clearly needs to be done in these areas. Again, our research suggests that a comprehensive policy assessment should include a third dimension focused on the pros and cons of the specialty hospital business model.

Our findings have some implications for a broader theory or conceptual framework of inpatient specialization. Clearly there are some benefits to specialization, but not for all procedures and not necessarily in free-standing facilities. From an organizational ecology perspective, one might (tentatively) conclude that there are advantages to specializing inpatient services in cancer, rehabilitation, psychiatric, children's, women's, orthopedic surgery, and cardiac surgery, but for substantially different reasons. Developing and refining a comprehensive theory or conceptual framework that enables some degree of prediction would enable researchers and policy makers to identify areas in which specialization would result in net benefits to consumers and payers.

## Notes

1. The moratorium was enacted by Congress as part of the Medicare Prescription Drug, Improvement and Modernization Act of 2003. It became effective when the law was signed on December 8, 2003, and following extensive committee-level debate was allowed to expire on June 8, 2005.

2. For example, the General Accounting Office (GAO) imprecisely defines specialty hospitals as those that "tend to focus on patients with specific medical conditions or who need surgical procedures" (U.S. General Accounting Office, 2003b, p.1).

3. Many orthopedic specialty hospitals also perform a variety of general surgical procedures. Hospitals that perform general surgery excluding orthopedic surgery are included in the general surgery category in this discussion and in Table 1.

4. Recent reports and published studies of specialty hospitals appear to rely on somewhat different counts of specialty hospitals. For example, the GAO sidestepped this issue in their most recent specialty hospital report by referring to the approximately 100 specialty hospitals across the nation (U.S. Government Accountability Office, 2006). The discordance in count data is likely due to the presence of general hospitals that have evolved into specialized hospitals, focusing on a limited number of diagnosis-related groups, and perhaps the fact that the industry is growing so rapidly that it is not clear when newly constructed facilities become operational.

5. Hereafter, we use the term *surgical specialty hospital* to refer to those facilities specializing in cardiac, orthopedic, and general surgery. We use the term *specialty hospital* when discussing research that was not targeted specifically at surgical specialty hospitals.

6. Since the time we conducted our research, these organizations have merged to form a new entity named Physician Hospitals of America (PHA). See <http://www.physicianhospitals.org>.

7. Similar results have been found when comparing ambulatory surgery centers and general hospitals (e.g., Mezei & Chung, 1999; Warner, Shields, & Chute, 1993).

8. These findings are based on the assumption that hospital referral regions would have retained their 1993-1999 trend in expenditures and outcomes in the absence of specialty hospital entry.

9. Of the 15 studies of specialty hospitals available at the time of this writing, 5 studies explicitly compared procedural volumes in orthopedic and/or cardiac specialty versus general hospitals. Of those 5 studies, 4 studies found that specialty hospitals had higher procedural volumes (Cram et al., 2005, 2007; Mitchell, 2005; U.S. General Accounting Office, 2003b) and 1 showed no difference (Woods, O'Connor, & Pierce, 2005). These findings are based primarily on studies of orthopedic and cardiac specialty hospitals; there is comparatively little evidence on procedural volume in hospitals specializing in general surgery.

10. These data comparisons are somewhat limited in interpretability. Ideally, nurse staffing ratios should be compared only within particular product and service lines (e.g., orthopedic).

11. The same incentives, which are well established in the economics literature, may also attract entry at the market level. For example, in a recent study, Schneider et al. (2007) found that general hospitals residing in markets with one or more specialty hospital had higher operating margins. Longitudinal models with fixed hospital effects suggested that, consistent with the economic theory, the entry of specialty hospitals was driven in part by higher general hospital operating margins in the market.

12. Early in the recent round of specialty hospital debates, the procedural margin issue was believed to be the most important issue (as opposed to physician ownership), based primarily on the belief that *cream skimming* on the part of specialty hospitals was occurring mainly in high-margin services, such as cardiac and orthopedic surgery and some general surgeries. The issue diminished in importance as Centers of Medicare and Medicaid Services (CMS) began revising payment rules (specifically in the area of risk adjustment). The cream-skimming issue is also confounded by the likelihood that competition for high-margin services occurs in markets with and without specialty hospitals; general hospitals' most lively competition for high-margin services is likely to come from other general hospitals. Direct evidence of such service-specific competition is scant, but would seem to be implicit in the hospital competition literature (e.g., Kessler & Geppert, 2005; Morrisey, 2001; Schneider, 2003; Schneider et al., 2007; U.S. Government Accountability Office, 2005; Zwanziger, Melnick, & Bamezai, 2000).

13. All of the surgeons that we interviewed at the visited hospitals treated patients at the specialty hospital and the general/community hospital in the same geographic area (i.e., dual admitting privileges), which is consistent with the findings of the CMS study (2005). Thus, most of the site visit questions prompted comparative responses.

14. In some cases, economies of scale refer to declining average and marginal costs in the relevant range of production. These cases are generally referred to as natural monopoly and have historically been applied to industries with high fixed costs (e.g., network utilities, such as water, natural gas, electricity, telephone cable television, etc.). Although arguments have been made that the relatively high fixed costs of general hospitals (see Roberts et al., 1999) invite comparisons with natural monopoly (Noll, 1975; Schneider, 2003), it is unlikely that any single surgical procedure exhibits continually declining average and marginal costs over the relevant range of output.

15. According to Bernard Ribeiro, president of the Royal College of Surgeons of England, "We from the college and specialist associations have for the last 10, 12, 15 years been talking about separating emergency from elective work ... if you separate elective from emergency you will get good treatment" (U.K. House of Commons, 2006, p. 7). It is unclear whether the designers of the NHS specialty hospital initiative based this assumption on economic evidence of diseconomies of scale or conjectures.

16. The relationship between core competencies and hospital efficiency has been explored in a relatively small number of studies, most of which show a positive relationship between overall efficiency and focus on areas of competence and experience (e.g., Coddington, Palmquist, & Trollinger, 1985; Douglas & Ryman, 2003; Eastaugh, 1992, 2001; Porter & Teisberg, 2004; Shortell et al., 1989; Snail & Robinson, 1998; Walker & Rosko, 1988).

17. MedCath's description of their facilities is apposite: "Externally, MedCath's heart hospitals appear typical; however, a step inside reveals important differences: Physicians empowered to make decisions about hospital operations; state-of-the-art operating rooms; cutting-edge equipment and technology; centrally located services such as radiology, pharmacy, and laboratories; nursing stations strategically positioned to allow better patient monitoring; and large, single-patient, fully equipped rooms that avoid unnecessary patient moves and permit family members to remain overnight. Above all, physicians and nurses freed from bureaucratic and administrative chores so they can devote a majority of their time and energy directly to caring for their patients" (MedCath Corporation, 2001).

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