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Physician-Hospital Integration and the Economic Theory of the Firm

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Physicians and hospitals are pioneering new and more coordinated organizational forms under pressure from market competition. Arms-length "doctor's workshop" relationships are yielding to integrated delivery systems and contractual delivery networks. This article analyzes organizational change in health care through the conceptual lens of institutional economics, defined broadly as including agency theory, transactions cost economics, and the dynamic capabilities view of the firm. These theoretical frameworks highlight three distinct functions of organization under managed care: coordination, governance, and innovation.

The long-awaited moment of physician-hospital integration appears to have come at last. Economists, sociologists, and historians have argued for decades that the organizational separation of the two key components of the health care delivery system is artificial, inefficient, and symptomatic of deeper power struggles. Now the medical landscape is blooming with physician-hospital organizations, integrated delivery systems, capitated physician networks, and the other organizational flora of the single bottom line. Cautious observers predict cooperation, rationalization, and the reduction of excess capacity. Enthusiasts proclaim the era of cost control, enhanced access for the underserved, and population-based health care.

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The imperative to coordinate physician and hospital behavior raises the question of the organizational form of the health care delivery system for the twenty-first century. The conventional wisdom in health policy currently predicts unified ownership, with physicians subordinated as employees of the hospital system. This "vertical integration" is emerging in regions of the nation where physicians remain fragmented in solo and small group practices and where hospital systems have taken the initiative. Less well recognized but equally important, however, is "virtual integration," based on contractual mechanisms, which is emerging in regions with strong physician organizations. Virtually integrated physician and hospital systems are best conceptualized as "contractual networks," emphasizing the creative tension between financial interdependence and ownership independence.

NEW CONTRIBUTION

This article interprets physician-hospital integration through the conceptual lens of institutional economics, defined broadly as including agency theory, transactions cost economics, and the dynamic capabilities view of the firm. It outlines the principal structures combining physicians and hospitals in the United States, emphasizing the evolution from the organizational autonomy of the doctor's workshop to the vertically integrated "integrated delivery system" and the virtually integrated "contractual network." This article then analyzes the conventional economic model of the firm as a production function, the agency view of the firm as a nexus of contracts, the transactions cost view of the firm as a mechanism of governance, and the dynamic capabilities view of the firm as an engine of innovation. These theories are used to illuminate the comparative advantages of unified ownership and contractual networks, respectively, as means of coordinating behavior in competitive economic environments.

FORMS OF INTEGRATION

For much of the twentieth century the relationship between physicians and hospitals has been characterized by an arms-length informality in which physicians used hospital facilities, but there was neither unified ownership nor a formal contract between the two. This doctor's workshop is succumbing rapidly to the growth of managed care and is being replaced by more tightly coordinated structures. Two alternatives dominate the landscape. One relies on vertical integration and unified ownership between the hospital and the physician practice and goes under the title of the integrated delivery system. The other uses complex contractual linkages and virtual integration to coor-

dinate physician and hospital activities and may be denoted as the contractual network. This structural choice between integration through ownership and integration through contract is a key feature of organizational relationships and has been subjected to extensive analysis by economists outside the health care sector. Before investigating this literature and its potential applicability to the health care organization, key structural differences among the doctor's workshop, the integrated delivery system, and the contractual network need to be highlighted.

THE DOCTOR'S WORKSHOP

In the traditional doctor's workshop, the organizational relationship between physicians and hospitals has been one of formal autonomy. The physicians have owned their own practices and have not been employees of the hospital. Conversely, the hospital has been owned by a nonprofit organization or a for-profit corporation but not by its physicians. The traditional community hospital manifests a dual structure of authority, with administrative matters under the control of hospital management and clinical matters under the control of the physicians and their loosely organized medical staff structure (Starr 1982; Stevens 1989). The autonomy of the two components of the system is symbolized most clearly by the dual structure of payment. The hospital and the physicians bill separately for the services each provides to the hospitalized patient.

Despite the formal symmetry of the dual system of authority, some prominent observers argue that true control of the community hospital rests with the physicians. At least since the 1920s, hospitals have been dependent on patient fees rather than public or private subsidies to cover expenses and thus have been beholden to the physicians who control the patient's choice of the institution. Any attempt by the hospital administration to impose financial discipline on the physicians has been met both by organized opposition from the medical staff and, more important, by shifts in patient admissions to competing institutions. Despite its official status as being community-owned and operated, the nonprofit hospital may have functioned as a physician's cooperative. The formal separation between ownership and control in the doctor's workshop permits the physicians to use the institution's facilities, capital, and staff in the same way they would if they owned them but without paying the cost. In Pauly and Redisch's (1973) account, the physicians structure their relationship to the nonprofit hospital in a manner that allows them to maximize their personal revenues, socializing the costs of production while privatizing the net revenues. Despite considerable differences in tone and a greater appreciation for the symbolic dimensions of professional autonomy,

sociological accounts, such as those of Roemer and Friedman (1971), Freidson (1970), and Starr (1982), ultimately reach the same conclusion. For these authors, the conventional image of physician-hospital cooperation is a veil covering a reality of professional dominance and a stunted, "blocked" hospital institution.

The doctor's workshop contained the seeds of its own demise. The clinical autonomy and de facto budgetary control exerted by the procedure-oriented physicians who dominated the medical staffs produced a feeding frenzy when the Medicare and Medicaid programs loosened the pecuniary limits on what could be done and at what price. Hospitals competed among themselves for physician affiliations, and thereby for patient admissions, by acquiescing to physician demands for new capital equipment, excess bed capacity, and an attitude of deference. The market implications of this nonprice competition was the "medical arms race": the greater the number of hospitals in the local community, the greater the duplication of services and the higher the costs of care (Joskow 1980; Robinson 1988; Robinson, Garnick, and McPhee 1987; Robinson and Luft 1985). The resulting spiral of utilization, intensity, and expenditures led to a backlash from the payers through what is now known as managed care. Health plans rather than individual physicians have come to stand between hospitals and their prospective patients. Rather than compete for physician affiliations on the basis of technology and amenities, hospitals must compete for managed care contracts on the basis of price and service. Physicians themselves are at risk because health plans offer patient volume to networks of clinicians willing to discount charges and cooperate in utilization review or, at the limit, take on the risk and the responsibility of capitation. As consumers vote with their feet in favor of managed care plans with lower premiums, the traditional edifice of physician-hospital relations is collapsing.

THE INTEGRATED DELIVERY SYSTEM

The integrated delivery system (IDS) combines physicians and hospitals into a vertically integrated organization with a single ownership structure, a single chain of authority, and a single bottom line (Robinson and Casalino 1996). Formally, the IDS takes on a multidivisional structure, having a corporate umbrella and a set of subsidiary divisions, including a physician division, one or more hospital divisions, and other divisions for services such as nursing homes or home health care. Some integrated delivery systems, such as Kaiser-Permanente and Group Health Cooperative of Puget Sound, also contain an insurance component. Most of the IDSs currently under formation contract with multiple health plans without owning or being owned by any one.

The physicians can be employed directly by the IDS through its clinic division or indirectly through an affiliated nonprofit foundation (especially prevalent in states with "corporate practice of medicine" laws). Physicians in an integrated delivery system receive all their patients through the system and do not belong to multiple competing organizations (the IDS often receives patients through multiple competing health plans). The IDS can invest directly in the improvement of physician services without violating its nonprofit status, increase compensation for primary care physicians relative to specialists, and develop a culture of cooperation. It can negotiate with payers for global capitation contracts, covering the full spectrum of inpatient, outpatient, subacute, and home health care, thereby positioning itself as the center of the managed care delivery system. The IDS has been a favorite among health policy analysts, the "ultimate destination for most major U.S. health systems" (Advisory Board 1993).

The integrated delivery system should offer clear advantages over the doctor's workshop in an environment of price competition and capitation. Experiences to date have been mixed, however, with leading systems failing to manifest the degree of functional integration, cost savings, and clinical innovations that have been predicted (Shortell, Gillies, and Devers 1995). The usual explanation for the observed shortcomings is that these systems are still in their infancy and must struggle with an inheritance of excess hospital capacity, a surplus of specialists as well as a deficit of primary care physicians, and a cultural mix that only partly embraces managed care. Yet the weaknesses of the IDS may stem from deeper structural origins, based on its core as a hierarchical system.

The potential problems confronting the integrated delivery system are evident in the ambivalent treatment in many analyses of the role of the medical group as distinct from the individual physician. The semiautonomous medical group, buffered from direct hierarchical control via a foundation structure or a professional corporation, is hailed at times as incubating a new physician culture focused on primary care and de-emphasizing inpatient services. At other times, however, the relative autonomy of the medical group is seen as an obstacle to full alignment of incentives throughout the IDS and to the needed changes within the physician component (weeding out uncooperative specialists, changing relative incomes, close monitoring of utilization and quality). The Advisory Board (1993), for example, sees the staff model variant of the IDS, which employs physicians as individuals, as offering strong advantages over the foundation model, which contracts on an exclusive basis with an affiliated medical group. The staff model leaves top management free to intervene directly in decisions over resource allocation, compensation, hiring, and firing, whereas the foundation serves as a barrier that shields

noncooperative physicians from discipline, preventing the full integration of the system.

The problem with this perspective, of course, is that it assumes that the managerial authority of the IDS will be wielded in ways that promote efficiency rather than impair it. Yet there is nothing in the staff model structure that prevents the hospital-based managers from enforcing a culture centered around maintenance of inpatient capacity. (How many primary care physicians do we need to keep our hospitals full?) The economic literature refers to this issue under the rubric of the "impossibility of selective intervention" and interprets it as a major reason for the dysfunction of excessively large firms (Williamson 1985). The attempt by large companies to incorporate dynamic and innovative subsidiaries often has floundered as top management proves incapable of respecting its original commitment to a hands-off attitude. At their worst, vertically integrated delivery systems can manifest a managerial arrogance at the top, a civil service mentality among the physicians, and a corporate culture of growth, merger, and acquisition as ends in themselves.

THE CONTRACTUAL NETWORK

The imperative to coordinate behavior while avoiding organizational hypertrophy creates the primary competitor to the IDS as the delivery system model for the future. This alternative is centered around the primary care-based medical group, which assumes contractual responsibility for managing inpatient as well as outpatient care without being owned by a hospital system. Physicians and hospitals are virtually integrated through contractual relationships rather than vertically integrated through unified ownership (Advisory Board 1993; Robinson and Casalino 1995).

In this model of physician-hospital relations, the two central components of the delivery system are organizationally autonomous yet financially interdependent. The physicians are members of a tightly structured medical group and negotiate detailed contractual agreements with the hospital for inpatient care and for ancillary services such as ambulatory surgery. Health plans pay medical groups on a capitation basis for professional services and, in some instances, for hospital services as well. The hospital serves as a subcontractor to the medical group. In areas with legal constraints on global capitation for medical groups or where the groups lack the sophistication to handle this level of financial responsibility, the medical groups and health plans negotiate for a hospital risk pool that reimburses hospitals on the basis of negotiated prices, with the savings from efficient hospital utilization management shared between the medical group and the health plan (and only rarely with the hospital).

The virtually integrated delivery system is frequently referred to as the “physician equity” model, emphasizing for-profit status and physician ownership and contrasting it to the nonprofit, hospital-owned IDS. This term is misleading because it implies that physicians are the sole or even the principal holders of the organization’s ownership shares. Medical groups traditionally have been saddled with a partnership culture according to which net revenues are divided among the physicians rather than being reinvested in the organization. (There are also strong tax advantages for this behavior.) Over time, this dispersion of net revenues leads to an underaccumulation of capital within the firm and a need for external sources of investment funds to finance growth, information systems, and other infrastructure improvements. The capital thirst in the medical groups has created a niche for physician practice management companies (PPMC) such as PhyCor and MedPartners. These publicly traded companies purchase the tangible assets of the medical group and contract with the physicians’ professional corporation for clinical services. The management companies offer personnel management, the upgrading of physical facilities and information systems, and other administrative services but do not change the relationships between the medical group and the nearby hospitals, which continue to be contractual rather than based on unified ownership.

The essential features of the virtually integrated delivery system, for purposes of understanding physician-hospital relations, are the financial interdependence that stems from capitation payment and the organizational independence permitted by contractual ties. With its combination of clinical culture from the medical group and capital resources from the management company, the virtually integrated network is a formidable competitor to the vertically integrated IDS. It can bid successfully for capitation contracts with payers and force the hospital to accept subcontracts for inpatient services. It can refuse to subsidize the hospital system’s inability to reduce excess capacity. It can direct referrals to a tight panel of specialists, who are selected on the basis of efficiency and loyalty, and need not help support the rest of the hospital’s medical staff.

THE FRAMEWORK OF INSTITUTION-FREE ECONOMICS

The neoclassical model of the firm as a production function, found in every intermediate and advanced economics textbook, is silent concerning the structure and boundaries of the organization. It may be termed *institution-free* economics. Emphasis is placed on the transformation of inputs into outputs based on technologies, factor prices, and consumer preferences. In recent

years, the model has been adumbrated to consider the technological underpinnings of the multiproduct firm, using the concept of economies of scope (Panzar and Willig 1981; Willig 1979). A production process is characterized by economies of scope if the joint production of two services is cheaper than the production of those two services independently. Textbook examples include the joint production of mutton and wool and of cars and trucks. Underlying scope economies is a common and indivisible asset that is useful in the production of both services and cannot be used to full capacity in the production of just one.

At an appropriately high level of abstraction, the production function model and the concept of scope economies are relevant to understanding the organizational integration of physicians and hospitals because they share the common asset of the inpatient facility and its ancillary services. But the usefulness of the model is very limited. Most obvious, technology-based explanations for physician-hospital integration must confront the fact that the technological interdependence of physicians and hospitals has been declining for years. Breakthroughs in diagnostic and therapeutic techniques are permitting an ever greater portion of medical care to occur on an outpatient basis, in a subacute care facility, or in the patient's home (Robinson 1994). The financial incentives of capitation payment strongly motivate physicians to substitute away from hospital services. This contrasts directly with the financial incentives underpinning the doctor's workshop, in which the physician benefited by shifting the cost of production onto the hospital budget. Rates of hospital admission and lengths of stay after admission now are declining rapidly (American Hospital Association 1994; Robinson 1996). We are observing the deinstitutionalization of medical care, not an increase in economies of scope.

The production function model of the firm is silent on the choice between vertical integration through unified ownership and virtual integration through contractual relationships. As argued by Teece (1980), the presence of technical economies of scope is neither a necessary nor a sufficient condition for ownership integration. The presence of common and indivisible assets requires that two services be produced jointly, not by the same firm. The producer of one service could own the common asset and lease out the excess capacity to the producer of the other service. Alternatively, a third entity could own the common asset and lease it to the producers of the two services. An obvious example of this behavior occurs in shopping malls, where the common assets of location, physical facilities, security, and ambiance are shared by all stores, none of which is owned by the mall itself. Another and more relevant example is posed by the doctor's workshop itself, where technological interdependency and common physical assets coexist with ownership autonomy.

THE FRAMEWORK OF INSTITUTIONAL ECONOMICS

The difficulties experienced in seeking to base a theory of the firm on technological considerations alone have propelled attempts to establish a new microeconomics of organization based on considerations of information, motivation, and innovation. Three currents dominate what has come to be called the new institutional economics: agency theory, transactions cost economics, and the dynamic capabilities theory of the firm.

AGENCY THEORY

Agency theory highlights the need to reconcile divergent interests among individuals under conditions of widespread uncertainty and uneven access to information. The paradigmatic relationship is that of the principal and the agent. The principal needs the efforts and expertise of the agent but has only limited ability to monitor the agent's actions or even evaluate whether the final outcome was satisfactory. The agency literature interprets the range of payment and monitoring systems observed in the economy as attempts to align incentives and reward cooperation between self-interested but interdependent individuals (Eisenhardt 1989; Sappington 1991; Stiglitz 1987).

The relationship between the patient and the physician is a classic example of the principal-agent structure (Arrow 1963; Parsons 1952). The patient needs the advice and intervention of the physician but faces great difficulties in evaluating the appropriateness and quality of the actions taken. The physician has superior clinical expertise and works in private settings that are not open to observation by third parties. It is inherently difficult to ascribe either improvement or worsening in the patient's condition to the actions of the physician as distinct from those of other contributors or the natural course of the disease process. Considerations of incentive alignment under uncertainty also permeate relationships among health care providers. Most obvious, physicians and hospital managers have divergent interests and different competencies yet need one another.

The agency interpretation of economic organization was initiated by Alchian and Demsetz (1972) as part of their critique of the one-sided literature on the employment relation. They note the formal similarities between a firm's relationships with inside employees and its relationships with outside suppliers. In both cases, management must structure payment contracts to elicit voluntary participation. Alchian and Demsetz discard the Coasian dichotomy between the market and the firm (Coase 1937), according to which market

relations rely on consent and interorganizational relations rely on managerial authority. Relationships between employers and employees are analyzed as just another form of contract, not different in basic structure from market relationships between separate firms. Firms must design evaluation and reward mechanisms to obtain high-quality performance regardless of whether they are contracting with outside suppliers or with inside employees.

Fama (1980) and Jensen and Meckling (1976) generalize the agency insight from the employment context to the full range of relationships that make up the firm, now conceptualized as a nexus of many contracts. Of particular importance is the relation between suppliers of capital, including equity shareholders and bond debt holders, and the managers of the firm. The rise and subsequent dominance of the publicly traded for-profit corporation is ascribed to its ability to assign control to professional managers, who bear relatively little financial risk, and risk bearing to diversified investors, who need not assume control. The organizational variation in the economy is interpreted as the outcome of a competitive process in which particular forms survive where they best control the technological, informational, and motivational sources of agency failure (Fama and Jensen 1983). The publicly traded corporation, the sole proprietorship, the partnership, and the nonprofit organization each offer distinctive advantages and disadvantages.

TRANSACTIONS COST ECONOMICS

Transactions cost economics begins with the same informational and motivational concerns that underlie agency theory but ends with a very different interpretation of the nature and significance of the firm. Whereas agency theory highlights the versatility of contractual means for aligning incentives, transactions costs economics highlights the limitations of formal contracts and the need for more flexible means of coordinating activity. Because of the cognitive limits of economic agents, their willingness to pursue self-interest with deception and guile, and the unforeseeable changes in the economic environment, every contract, even the most detailed, is inherently incomplete. None can fully anticipate and accommodate future events that will affect in different ways the differing interests of the negotiating parties. Formal contracts need to be supported by organizational means of responding to unforeseen events and adjudicating the problems they create. Firms play this supportive role in many contexts. More generally, vertically integrated organizations, simple "spot" contracts, and the complex contractual forms such as franchises and joint ventures are interpreted by transactions cost economics as discrete structural alternatives, each offering advantages and disadvantages as mechanisms of governance (Williamson 1985, 1989, 1991). This contrasts with the

agency theory of the firm as a nexus of contracts, which downplays the distinctive features of internal organization versus market exchange.

Internal organization arises as a response to the failures of market contracting. The firm substitutes low-powered incentives such as salaried employment for the market's high-powered incentives of profit and loss. Unified ownership permits the details of future relations between suppliers, producers, and distributors to remain unspecified, with the presumption that differences will be adjudicated as events unfold. Unified ownership pools both the risks and the rewards of the various activities undertaken by the firm and can facilitate the sharing of information, the pursuit of innovation, and a culture of cooperation. Transactions cost economics builds in a much more explicit fashion than do other parts of institutional economics on organizational sociology and the works of Max Weber (1978), Chester Barnard (1938), and Herbert Simon (1945).

Needless to say, internal organization suffers from its own characteristic weaknesses as a mechanism of governance. The two most prominent problems are the attenuation of incentives and the accentuation of "influence" activities. Low-powered incentives within the firm reduce the rewards available to individual employees and organized units that work hard, take risks, and innovate. Internal organization spreads both the gains from success and the losses from failure to the entire system and can create a culture of bureaucracy rather than a culture of cooperation. The spreading of gains and losses within the firm also creates the context for influence activities, in which particular individuals or groups struggle to increase their shares of the spoils relative to those available to others (Milgrom 1988). Advancement and reward may accrue more to those skilled in interorganizational politics than to those skilled in production and distribution. The success of market-oriented economies relative to those relying on centralized planning and bureaucratic rationality testifies to the incentive and influence liabilities of internal organization. Despite its focus on incomplete contracting, transactions cost economics views unified ownership as the governance mechanism of last resort. In most economic contexts, contractual networks and virtual integration outperform internal organization and vertical integration.

DYNAMIC CAPABILITIES

Capitalist economies have distinguished themselves from earlier forms of social organization primarily in their capacity for ceaseless experimentation and innovation in methods of production. Although markets have played an invaluable role in this process by facilitating the movement of capital and labor resources to the highest value uses, most innovative activity is performed

within firms and not between them. Joint ventures and other contractual relationships have played only modest roles, as have governmental and university consortia. At its core, capitalism is a process of creative destruction, and the Faustian alchemist is the firm.

The dynamic capabilities view of the economic organization emphasizes precisely this process of technological experimentation, learning, and innovation. Building on the pioneering works of Schumpeter (1942), Penrose (1959), and Chandler (1962, 1990), the dynamic capabilities or "resource-based" theory puts the firm in the center of discourse as the engine of technological progress and the shaper of markets. Successful firms possess unique assets and competencies that distinguish them from other firms and provide the basis for a competitive advantage. By definition, any resources available for purchase in the open market cannot be a source of direct competitive advantage because every purchaser has equal access to them. Unique capabilities thus are developed internally, both through formal research and development and as a learning-by-doing by-product of direct commercial activity (Barney 1986; Dierickx and Cool 1989). Examples include engineering expertise, established brand names and consumer loyalty, patentable technologies, choice commercial locations, and corporate cultures open to self-examination and change. No one source of competitive advantage can be more than transitory because rivals always seek to imitate or substitute for the capabilities that generate above-average profits. Firms thus are forced ceaselessly to seek new resources that yield appropriable benefits and that are not immediately subject to imitation (Nelson 1990; Teece 1993).

A firm possessing a distinctive resource need not use it in the production of goods for a final sale to consumers but may lease its expertise to other producers or engage in joint ventures and "strategic partnerships." The decision over how to commercialize an innovation is central to the competitive strategy and the future viability of the firm. Teece (1986) develops the conceptual framework for evaluating these use, lease, or cooperate choices facing the firm. The motivating insight is that the profits from innovation often do not accrue to innovators because of errors in their strategies for commercialization but rather accrue to competitors who are able to appropriate or imitate the innovation and embed it quickly in marketable products.

The use, lease, or cooperate choice facing firms with unique resources and innovative capabilities is analogous in many ways to the make or buy choices analyzed by transactions cost economics. Product design or service improvement projects that are easy to describe and evaluate are candidates for outsourcing to specialized suppliers. Many product and process innovations, however, involve trial-and-error experimentation, learning by doing, and knowledge that is difficult to codify (Nelson and Winter 1982). Contractual

safeguards against the leaking of these tacit forms of knowledge are difficult to write and enforce, leading to a preference for in-house control. The dynamic capabilities literature interprets the firm as an engine of innovation and technological progress (Nelson 1991; Rumelt 1991) and is poles apart from the agency perspective on the firm as a nexus of contracts. In the capabilities view, firms that actually try to contract for all components of design, manufacture, distribution, and service cannot sustain any competitive advantage and degenerate into the "hollow corporation" (Jonas 1986). Others, however, interpret joint ventures and contractual networks as well suited for industries undergoing rapid technological innovation (Powell 1990). In this view, a loose coupling among firms permits them to be open to new ideas from outside and avoid the intellectual insularity of the hierarchical organization.

VERTICAL OR VIRTUAL INTEGRATION?

It is impossible to predict with full confidence the outcome of the current competition between the IDS and the contractual network as the dominant form for physician and hospital relations under managed care. Easy answers could only be obtained at the price of a gross simplification of the IDS as a purely hierarchical system with no market features or of the contractual network as reliant on purely atomistic and spot contracts with no firmlike features. Yet both vertically integrated and virtually integrated systems manifest a considerable degree of structural flexibility. Hospital-centered integrated systems are making physician payment methods increasingly contingent on performance and are developing methods to give physicians an ownership stake in at least some part of the system. Contractual networks are developing long-term relationships through partial ownership stakes, joint investments in brand names and reputation, and cooperative methods for managing care. The integrated systems are testing the limits of organizational innovation, and the networks are testing the limits of contractual innovation.

Insights into the future evolution of these organizational forms can be obtained within the conceptual framework of institutional economics if the systems are decomposed into components where they differ and where relative performance can be evaluated. For present purposes, three structural features can be distinguished: the method adopted to coordinate performance among the many components of the delivery system, the structure of organizational governance, and the approach to managing clinical innovation. The vertically integrated IDS relies on unified ownership to coordinate performance, is governed by an often loosely structured nonprofit board without investor representation, and interprets the hospital as a key partner for the physicians in pioneering new methods of managing health care. The virtually

integrated network, on the other hand, relies on contracts to coordinate performance, is governed by a tightly structured for-profit board with strong investor representation, and interprets the hospital as a minor contributor rather than a necessary partner in the process of innovation.

COORDINATION: OWNERSHIP OR CONTRACT?

The demise of the doctor's workshop provides eloquent testimony to the weakness of loose relationships for coordinating health care delivery under managed care. Predicting the outcome of the competition between integrated systems and contractual networks is quite difficult, however, because each provides strong incentives for cooperation and strong sanctions against opportunism. Agency theory focuses on forms of contract as incentive and coordination mechanisms that vary depending on the distribution of information, on relative differences in aversion to risk, and on the divergence or convergence of interests among participants. Transactions cost economics directs attention to the comparative strengths and weaknesses of market contracting and organizational structures as mechanisms of governance in a world where all contracts are incomplete. Governance is conceptualized broadly as the controls over the firm's actions and its ability to adapt and modify its actions when confronted with environmental change.

Bounded rationality and uneven access to information place severe strains on contractual relationships in health care, given the wide variety of possible diagnoses and treatments for any set of presenting symptoms and the diversity of views on appropriate and inappropriate care. It is inherently difficult to specify how particular classes of patients should be handled and to monitor whether treatment does in fact follow the desired path. Explicit protocols and clinical pathways can reduce the variability in practice styles, but they are unable to accommodate every clinical peculiarity. The rapid advances in computer technologies and the emerging possibilities for electronic patient records are greatly enhancing the possibilities for the exchange of information and the coordination of behavior without geographic proximity, as well as organizational integration among providers. Nevertheless, shoulder-to-shoulder medicine, within the context of the integrated medical group and the hospital institution remain important mechanisms for peer review, mutual learning, and successful coordination among clinicians.

Capitation contracting for physician and hospital services shifts the risk of unforeseen and uncontrollable adverse outcomes onto the providers. Although it is often advantageous on clinical grounds to make a single physician or medical group responsible for coordinating the entire process of care for a particular patient, a global capitation payment covering both outpatient and

inpatient care exposes them to financial risks from severely ill patients. Individual physicians cannot responsibly be capitated for more than the services they provide personally, supplemented with risk sharing in referral pools. Groups of physicians can be capitated for a wider range of services, given their enhanced ability to spread risk, but only the largest medical groups can absorb the risk of hospital capitation. The spread of the physician-hospital IDS is due partly to the ability of the larger organization to shelter individual physicians from risk while maintaining for the organization the reward of global capitation.

The clinical and economic benefits of long-term relationships between physicians and hospitals undermine much of the attractiveness of contractual networks, which stem precisely from the relative ease of switching relationships in search of lower prices and better service. In small- and medium-sized markets, physicians have very few choices as to where to admit patients needing hospital care, a conundrum whose prevalence is growing as hospitals continue to close. Even in large urban markets, switching among hospitals is disruptive for primary care physicians and their referral specialists. Patients, especially seniors, often are very concerned about limits on their ability to continue receiving care from accustomed institutions. Limits on switching increase the mutual interdependence among particular physicians and particular hospitals and thereby accentuate the costs of haggling and opportunistic recontracting.

These agency and transactions cost problems of market contracting between physicians and hospitals must be compared with the problems of unified ownership. Integrated delivery systems manifest significant symptoms of both incentive attenuation and influence activities. As physicians sell their practices and merge into larger systems, they risk losing the entrepreneurial, risk-taking spirit and developing the civil service mentality of the hospital employee. Patient visits per day often decline when the physician moves onto salary and away from fee for service; this is especially pronounced when the physician is forced to forgo any ownership stake in the nonprofit organization. Influence costs within hospital-based systems arise from many sources. The independent specialists on the hospital medical staff resist the system's efforts to invest in its primary care medical groups. Facility managers and staff often resist efforts to reduce excess hospital capacity and shift resources to the ambulatory setting because this adversely affects their prospects for employment and advancement. Labor unions and employee attitudes pressure the IDS to extend high wages and staffing levels from the inpatient to the outpatient setting, thereby reducing the organization's ability to compete on cost and price terms with less integrated organizations (Robinson 1994).

The conventional wisdom in health policy decrees that the vertically integrated system, embodying inpatient, outpatient, subacute, and home health services, is the organizational model for the future. This contrasts directly with the presumption in institutional economics, derived from the experiences of many nonhealth industries, that vertical integration is the governance mechanism of last resort. Every hospital-centered IDS now declares its commitment to preventive and primary care and its determination to downsize inpatient capacity. By maintaining the incentives for physician performance within a context of unified oversight and organization, the IDS seeks to do everything the health care market can do, and more. But given the impossibility of "selective intervention," these health care conglomerates may not do everything and more than markets can do, but less.

GOVERNANCE: NONPROFIT OR FOR PROFIT?

Typically, the integrated delivery system is based on a nonprofit hospital system, but the contractual network is based on a for-profit combination of medical groups and equity investors. Nonprofit systems have access to tax-free bond financing but are prohibited from selling ownership shares in equity markets or internally to managers and physicians. As a further implication of its nonprofit status, the IDS must reinvest any operating surplus inside the firm, but the capitated network can distribute the surplus as dividends. These strong interdependencies between ownership, governance, and access to capital have many important implications for system performance. In the immediate future, however, the most important impact may be on the comparative ability of the vertically integrated and virtually integrated systems to reduce excess capacity in hospital beds and specialty services, both of which raise costs without contributing significant value to payers or consumers.

Access to tax-exempt bond financing and capital cost pass-throughs from Medicare have greatly advantaged nonprofit hospital-based systems in years past. In the new environment, however, exclusive reliance on debt financing ties the IDS to strict repayment schedules and deprives it of the flexibility inherent in equity issues. It also impairs the ability of the IDS to attract financial investments on the basis of expectations of future growth rather than the assessed value of existing assets. More important problems may arise, however, from the agency failure latent in nonprofit systems governed by boards and managers lacking clear accountability for the capital they obtain. The strictures on disbursement of operating revenues to owners may be responsible for the overextension of some hospital systems, which expanded across services and geographic areas during the 1980s without enjoying competitive advantages in their new endeavors. Jensen (1986, 1989) has

conceptualized this form of organizational hypertrophy, which is similar to diversification within the for-profit conglomerate, as due to the "free cash flows" of operating surpluses and the lack of effective investor controls. In these contexts, managers fail to account for the opportunity cost of the capital they devote to new projects because they are not subject to oversight from outside capital markets. The IDS in health care may be headed down the same path taken by the diversified conglomerate in manufacturing: euphoric expansion followed by budgetary crisis, organizational implosion, and dismemberment.

The dynamic capabilities view of the firm provides a more optimistic assessment of the capital investment strategies of large diversified firms, compared to firms that manifest a tight linkage between ownership and control. Schumpeter (1942), Chandler (1962, 1990), and more recent scholars emphasize that retained earnings and publicly traded shares, which in Jensen's framework are most susceptible to managerial opportunism and organizational waste, historically have provided the funds invested in the most innovative and remunerative projects. Chandler, in particular, emphasizes that tight linkage between ownership and control often impedes the ability of the firm to attract and fully use high-quality professional managers, as distinct from entrepreneurial dilettantes. The publicly traded corporation, where managers hold no or only a minor ownership stake, has consistently outperformed the family-owned and operated firm. The nonprofit hospital-based IDS bears a structural similarity to the professionally managed corporation, but many medical groups and physician practice management companies are dominated by a few key owner-managers who have trouble delegating authority and knowing when it is time to step down. The accountability of the for-profit networks to venture capitalists and public equity markets, which limits the agency failures identified by Jensen, makes them susceptible to the short-run outlook that plagues many American firms competing with foreign corporations that enjoy institutional capital partners with a long-run outlook.

INNOVATION

An important question for the form of physician-hospital integration is whether profiting from existing competencies and nurturing new ones requires unified ownership or rather can proceed best via contract. It is possible that the majority of benefits from increased coordination can be achieved through close contractual relationships between physicians and hospitals. In this view, very little innovation in the managing of hospital services is performed by the hospital administration, in contrast to the attending physicians. Through tight controls over hospital admission, the use of hospital-based

physician teams to control the intensity of treatment after admission, and aggressive discharge planning in favor of subacute and home health alternatives, the medical group can achieve the benefits of coordination without paying the bureaucratic and excess capacity costs that come with hospital ownership. In the language of dynamic capabilities, this view maintains that the hospital is not a cospecialized asset for physician innovation in managing care but rather is an undifferentiated general asset available on equal terms to all competing groups. Under Teece's (1986) framework, this implies that particular medical groups should contract for inpatient services rather than acquire a hospital or be acquired by a hospital system.

This may be an incorrect assessment of the relationship between hospital assets and physician innovation in managing medical care. Vertical integration and the culture of cooperation that it facilitates may provide important additional efficiencies and potentials for innovation beyond those achievable by contractual means alone. This will be particularly true in the more advanced stages of managed care, after the easy gains from reduced admissions and length of stay already have been achieved and further progress requires controlling the intensity of treatment for patients actually in the hospital facility. The literature on learning by doing and the experience curve suggests that the majority of efficiencies ultimately derivable from a new product or process are obtained in increments over the course of implementation rather than at initial installation (Dosi 1988; Nelson and Winter 1982; Young 1993). The big potential gains in managing care are process innovations, which exhibit precisely the tacit and team features that are difficult to transmit by contract and can serve as an inimitable source of sustained competitive advantage.

CONCLUSION

The dominant perspective in health services research currently equates market contracting with fragmentation and hence predicts that the increasing pressure for health system coordination under managed care will favor unified ownership of hospitals and physician practices. This unified ownership implies a hospital-centered delivery system due to the preexisting institutional advantages in capital and managerial expertise. Hospital systems have responded enthusiastically to this prognosis, interpreting it as the culmination of a century-long quest to coordinate and integrate the medical care system through hospital-based group practice. Hospitals have redefined themselves as diversified health care organizations that provide the full continuum of clinical services rather than as facilities focused primarily on inpatient acute care. They are actively purchasing physician practices and medical groups in

addition to investing in ambulatory surgery suites, skilled nursing facilities, and other ancillary services. In economic parlance, we are witnessing the emergence of the vertically integrated, functionally divisionalized, multiproduct firm.

Almost unnoticed by the health policy analysts, the contractual network has arisen behind and beneath the IDS. Eschewing extensive ownership linkages, networks rely on contracts to coordinate activity among the many system participants. Contractual networks offer the potential for virtual integration, having the advantages of coordination without the disadvantages of bureaucratization. Contractual networks in health care are centered around medical groups rather than hospitals and are strong on primary care culture and information technology while light on bricks and mortar.

The rise of the contractual network has received little attention due in part to its newness and its geographic concentration in regions with a history of medical group activity. However, the neglect by policy analysts is due also to a one-sided intellectual framework that has equated markets with spot contracts and ignored complex relational contracting. Organizational theorists largely have built on the Weberian tradition of rationality through administrative hierarchy. Economists largely have relied on the model of the firm as a production function, which is silent on the boundaries of the organization and has permitted confusion between technological economies of scope and the organizational decisions to make or buy. Institutional economics, however, offers a conceptual framework that illuminates rather than obscures the boundaries of the firm and the market. Agency theory, transactions cost economics, and the dynamic capabilities view of the firm emphasize different aspects of organizations and contracts and compare their relative advantages in different environments.

Despite detailed critiques of market failures under conditions of bounded rationality, opportunism, uncertainty, and specialized assets, institutional economics tends to view the liabilities of the contract as outweighed by the liabilities of the firm. Vertical integration is interpreted as the governance mechanism of last resort. This theoretical perspective has gained many practice-oriented adherents in recent years as the world economy has made a decisive shift away from large corporate hierarchies and toward network forms of organization. A similar process seems under way in the health care sector.

No comprehensive data currently provide a satisfactory empirical assessment of the integrated delivery system relative to the contractual network. The available case studies are fragmentary and ambiguous. At a minimum, however, it is clear that the initial assessments of the IDS were overly optimistic. Many hospital-centered systems have done worse than anticipated, and several prominent examples have floundered completely. This deintegration

of hospital-centered systems echoes the analogous difficulties faced by staff and group model HMOs that combine insurance and delivery functions. These vertically integrated systems have steadily lost a market share to network model HMOs, and several erstwhile leaders have divested themselves completely of their physician components, usually via sale to a physician practice management company.

In light of this recent experience and of the broader literature in institutional economics, a cautious prediction is possible in favor of contractual networks and against the IDS as the future model for the U.S. health care system. Contractual innovation is outrunning organizational innovation. Although vertically integrated systems that are blessed with exceptional assets, managers, and reputations will maintain their positions, most will run through their assets in a futile attempt to buy success, will be bailed out several times by initially sympathetic but increasingly skeptical legislatures, and then will succumb to their lighter, quicker competitors. The vertically integrated hospital-centered organization is the mainframe computer of the medical system, but managed care initiates the era of desktops, laptops, and local area networks.

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