VERTICAL INTEGRATION AND ORGANIZATIONAL NETWORKS IN HEALTHCARE

by James C. Robinson and Lawrence P. Casalino

Prologue: *Many private and public entrepreneurs are busily building large corporate systems to compete in the rapidly evolving world of managed care. By contrast, California, which has a health insurance market that is dominated by for-profit health maintenance organizations (HMOs), reflects a wide variety of organizational approaches along a continuum that stretches from contractual networks to fully integrated systems. If a trend is emerging, it seems to favor less "vertical integration" and more reliance on "virtual integration" among physician groups, hospitals, and health plans. In this paper Jamie Robinson and Larry Casalino discuss how primary care physicians, specialists, and hospitals in California are reorganizing to become more effective competitors. They place a particular emphasis on capitated medical groups and their marketplace relationships. Unlike more conventional academic methods of literature searches and analyses of past performance, Robinson and Casalino combine information gleaned from extensive interviews (what Robinson has characterized us "shoe-leather social science") with the principles of institutional economic theory to arrive at their conclusions. Robinson is an associate professor of health economics at the University of California (UC), Berkeley, and also obtained his doctorate there. He conducted his work with support from an Investigator Award in Health Policy Research from The Robert Wood Johnson Foundation. Casalino is a clinical assistant professor of family medicine at Stanford University and a community-based family practitioner. He received his medical degree from the University of California, San Francisco, and holds a muster's degree in public health from UC Berkeley, where he is completing a doctorate in organizational sociology and health policy. His doctoral dissertation describes the transformation of California's health care market and the growth of large medical groups within it.*

Abstract: This paper documents the growing linkages between primary care-centered medical groups and specialists and between physicians and hospitals under managed care. We evaluate the two alternative forms of organizational coordination: "vertical integration," based on unified ownership, and "virtual integration," based on contractual networks. Excess capacity and the need for investment capital are major short-term determinants of these vertical versus virtual integration decisions in health care. In the longer term, the principal determinants are economies of scale, risk-bearing ability, transaction costs, and the capacity for innovation in methods of managing care.

Managed care began as a reform in health care financing but will culminate as a revolution in health care organization. Capitation payment dramatically changes provider incentives and creates the potential for population-based, cost-conscious practice styles. Without commensurate organizational changes, however, payment reforms offer too few tools and shift too much risk to providers. As long as physicians remain in solo practice and hospitals remain acute-care citadels, even the most sophisticated payment systems have only limited, one-time effects. In this context of organizational fragmentation, economic gains from lower prices easily are dissipated through increased administrative complexity and heightened adversarial tensions. The professional careers of managers and clinicians alike are solitary, poor, nasty, brutish, and short.[1]

Organizational change is proceeding farthest and fastest in California, where half of privately insured consumers already have joined health maintenance organizations (HMOs), and the other half are in preferred provider organizations (PPOs); unmanaged indemnity insurance has disappeared.[2] Nearly one-third of Medicare beneficiaries in California are enrolled in HMOs, and more than one-half of the state's Medicaid beneficiaries will be in HMOs by the end of 1996.[3] Physicians have coalesced into integrated medical groups and individual practice associations (IPAs), each capable of bearing capitation risk for tens to hundreds of thousands of patients. These groups are developing complex ownership and contractual relationships with hospitals and outside specialists and constitute the core of the emerging capitated delivery system.

The central role played by organized physicians-whether in integrated medical groups or in IPAs-distinguishes the California model of managed care from managed care in other states, in which physicians often are employed by hospitals or contract as individuals with HMOs. California medical groups and IPAs have negotiated with HMOs to receive the part of each capitation dollar that goes for physician services and, in many cases, part or all of the dollars earmarked for hospital and ancillary services as well, which enables them to purchase these services in what they believe is the most efficient way possible. In California organized groups of physicians, rather than HMOs or hospitals, bear much of the financial risk of managed care. HMOs delegate much of the work of managing care to the

physician groups and often play only a relatively inactive oversight role in the management of care.[4]

This paper investigates the logic of organizational transformation under managed care, with special emphasis on capitated medical groups and their marketplace relationships in California. We begin with a discussion of the primary care-centered medical group and its advantages over a system of solo and small-group practices. We analyze the potential advantages of large physician organizations in terms of economies of scale, enhanced risk-bearing ability, reduced transaction costs, and the capacity for innovation in methods of managing care. We evaluate the linkages between primary care-centered medical groups and specialist physicians and between medical groups and hospitals. We then consider the two competing forms of organizational coordination under managed care: "vertical integration," based on unified ownership; and "virtual integration," based on contractual networks. We highlight excess capacity and the need for external sources of investment capital as major short-term determinants of vertical versus virtual integration decisions. The paper concludes by comparing the advantages and disadvantages of unified ownership and contractual relationships as means of achieving cooperation and coordination in health care.

Medical Groups And IPAs: The Core Of The Delivery System

Under retrospective fee-for-service payment, every component of the health care delivery system is both a cost center and a revenue center. Services are reimbursed a la carte, with more cost bringing in more revenue. The profit centers are those services and facilities that can price highest above cost; historically, this glory has accrued to specialist physicians and acute care hospitals. Under prospective capitation payment, however, every component of the delivery system is a cost center and none a revenue center. Revenues are received on a monthly per capita basis regardless of the level of services used. The profitability of the health care provider organization now depends on its ability to win contracts from HMOs, to attract patients, and to manage care so that expenditures are held below the capitated payment rate. All three of these objectives require that the organization have an adequate number of primary care physicians and that these physicians cooperate in managing the costs and the quality of care.

Competition for primary care physicians. Exhibit 1 lists some of the largest integrated medical groups and IPAs in California.[5] All of the medical groups and IPAs are aggressively seeking to bring in more primary care physicians while virtually ceasing to hire new specialists. Integrated groups are growing mainly by merging in small primary care practices as well as by merging with other integrated groups. IPAs are shifting from being domi-

Exhibit 1
Large Integrated Medical Groups And IPAs In California, According To Nature Of Ownership Relations With Hospitals

Majority ownership by a hospital system	HMO patient?	Physician mix	Inpatient services[b]	System relations
Facey Medical Group	57,000	Multispecialty group	Contracts	UniHealth
Harriman Jones Medical Group	50,000	Multispecialty group	Integrated	UniHealth
Huntington Provider Groups	195,000	Multispecialty IPA	Contracts; integrated	UniHealth
San Jose Medical Group	85,000	Multispecialty group	Contracts	UniHealth
Gould Medical Foundation	49,000	Multispecialty group	Contracts; integrated	Sutter
Palo Alto Medical Clinic	59,000	Multispecialty group	Contracts	Sutter
Sutter Medical Group	42,000	Multispecialty group	Integrated	Sutter
MedClinic	70,000	Multispecialty group	Integrated	CHW
Scripps Clinic Medical Group	72,000	Multispecialty group	Integrated	Scripps
Sharp Rees-Stealy Medical Group	140,000	Multispecialty group	Integrated	Sharp
Sharp Mission Park Medical Group	50,000	Multispecialty group	Integrated	Sharp
Sharp Community Medical Group	70,000	Multispecialty IPA	Integrated	Sharp
Good Samaritan Medical Group	62,000	Multispecialty group	Integrated	Health Dimensions
Partial ownership by a hospital system				
Beaver Medical Group	60,000	Multispecialty group	Contracts	UniHealth
Bay Physicians Medical Group	125,000	Multispecialty IPA	Contracts	Alta-Bates
California Pacific Medical Group	109,000	Multispecialty IPA	Contracts	California Pacific Medical Center
Hill Physicians Medical Group	225,000	Multispecialty IPA	Contracts	CHW

nated by specialists toward giving more power and income to primary care physicians. Since most primary care physicians belong to more than one IPA, competition for their loyalty is fierce.

The current situation in San Mateo County, just south of San Francisco, is an example of the intensity and the complexity of the competition. The San Mateo IPA, formed in 1979 to compete with Kaiser Permanente, includes most of the primary care physicians and specialists in the county. The Serra IPA was a specialist-dominated organization whose creation was largely financed by Seton Medical Center. Serra was centered in the northern part of the county and was composed of virtually the entire medical staff of the hospital (many of whom were also members of the San Mateo IPA). In 1987 an entrepreneurial physician created the Camino Real Medical Group, an IPA that included nearly all of the primary care physicians in the

Exhibit 1
Large Integrated Medical Groups And IPAs In California (cont.)

No hospital ownership	HMO patientsa	Physician mix	Inpatient services[b]	System relations
Bay Care	22,000	Primary care IPA	Contracts	Independent
Bristol Park Medical Group	110,000	Primary care group	Contracts; integrated[C]	Independent
HealthCare Partners Medical Group	240,000	Multispecialty group	Contracts	Independent
Permanente Medical Group	4,617,000	Multispecialty group	Contracts	Independentd
San Mateo IPA	56,000	Multispecialty IPA	Contracts	Independent
CIGNA Medical Group[e]	307,000	Multispecialty group	Contracts	Caremark
Friendly Hills Medical Group	110,000	Multispecialty group	Integrated; contracts[f]	Caremark
FHP Medical Associateg	151,000	Multispecialty group	Contracts	FHP CompreCare
Foundation Health Medical Group	65,000	Primary care group	Contracts	Foundation Health HMO
Mullikin Medical Centers	320,000	Multispecialty group	Contracts; integrated[h]	MedPartners
Mullikin IPA	55,000	Multispecialty IPA	Contracts; integrated[h]	MedPartners
Pacific Physician Services (PPS)	290,000	Multispecialty group	Contracts; integrated'	Independent

Source: Case studies by authors.
Notes: IPA is individual practice association; HMO is health maintenance organization.
[a] These figures represent number of enrollees within California in early 1995. They were published in *Northern California Medicine* 6, no. 5, and cross-checked with data from our interviews, from the trade literature, and from the Unified Medical Group Association and the Independent Practice Association of California.
[b] "Contracts" implies that the physician group contracts with one or more hospitals for hospital services for most of its patient enrollees. "Integrated" implies that the physician group uses one or more hospitals from the hospital system that "owns" the physician group for most of its patient enrollees.
c Some use of Coastal Community Hospital, which is 50 percent owned by Bristol Park.
[d] Physicians are employed by the Permanente Medical Group, which has an exclusive contract to provide physician services to Kaiser Foundation Health Plan and Hospitals.
[e] Until 1995, when the group was sold to Caremark, the physicians were employees of the CIGNA HMO. CIGNA also owned a hospital, which it sold in 1992.
[f] Most Friendly Hills patients go to Friendly Hills Regional Medical Center, which is owned by Caremark.
[g] Until 1995, when FHP spun off its physicians into a separate entity to be owned by FHP's CompreCare Medical Services Organization, physicians were individual employees of FHP. In 1995 FHP sold its four hospitals.
h Some Mullikin patients go to Pioneer Hospital, which is owned by MedPartners.
[i] Some PPS patients go to Doctors Hospital of Montclair, which is owned by PPS.

other two IPAs, but a much smaller subset of specialists. In 1993 the IPA arm of the Mullikin integrated medical group, the Mullikin Independent Practice Association (MIPA), purchased the Serra IPA and signed up many of the primary care physicians and a limited number of specialists in the southern part of the county. In 1994 Mullikin began building an integrated medical group in the county, in addition to its IPA. American Health International (AHI), a publicly traded IPA management company, purchased the Camino Real IPA. Mills Hospital provided financial support for

a primary care integrated group to purchase other integrated groups and also to form a primary care IPA. Sixty primary care physicians formed the Bay Care IPA, which now has 22,000 patients. Stanford University Medical Center purchased three primary care practices. At present, most of the primary care physicians in San Mateo County belong to most of the IPAs, while specialist membership is more restricted.

Advantages of large medical groups. Small independent practices cannot stand alone in San Mateo County or elsewhere in California; the advantages of belonging to a large integrated medical group or IPA are overwhelming. The immediate reason why primary care physicians link their fate to that of larger organizations is that contracts with health plans are available only through these organizations. Beyond this, however, we suggest four reasons why integrated medical groups and IPAs have advantages over small independent practices: economies of scale; ability to spread the financial risk of capitation payment; reduction in the transaction costs of negotiating, monitoring, and enforcing agreements; and creation of an organizational context for continuous process innovation.

Economies of scale. Physician practices traditionally have been able to achieve modest economies of scale by sharing facilities, jointly purchasing supplies, and coordinating administrative services.[6] The average cost of these overhead services declines as more physicians join a group, but only up to some point, after which the diseconomies of bureaucracy begin. Managed care adds new administrative responsibilities, such as verifying enrollment, managing use of services, encouraging use of preventive services, and monitoring patient satisfaction. These new functions require sophisticated, multimillion-dollar information systems. These new management requirements add to the traditional economies of scale in medical practice and help to explain why medical groups seek to continue growing.

Risk shifting through capitation. Capitation payment shifts the risk of unexpected health care needs from the health plan to the provider. With the risk, of course, comes the potential reward for developing cost-effective methods of treatment. The pure financial risk is unbearable, however, for a primary care physician acting alone. The individual physician often is unwilling to be capitated for any services beyond those he or she provides directly. This undermines the fundamental premise of managed care-namely, that primary care physicians should "manage" the full continuum of care-and drives the system back toward price discounting and arm's-length utilization review.[7] Medical groups, however, are better able to bear the risk of capitation, since the variability of expenditures can be spread over a larger base of revenues. The "law of large numbers" protects the organization with large numbers. As they grow, medical groups also can assume capitation risk for a larger set of services, extending from primary

care services to specialty referrals, hospitalization, pharmaceutical services, and ultimately out-of-area and, tertiary care services. Emphasis should be placed on the concept of being "actuarially able" to assume capitation risk, which differs from being "able to make a profit from capitation." Largeness of scale spreads risk but does not by itself provide the means for developing more cost -effective styles of practice.

Lower transaction costs. The third principal advantage of large medical groups derives from the group's ability to more efficiently negotiate, monitor, and enforce agreements with other components of the delivery system.[8] The transaction costs of establishing and implementing agreements with HMOs, specialist physician panels, and hospitals are tremendous yet essential in a capitated world in which the medical group must manage a fixed supply of dollars available for providing all forms of care. In part this is a matter of scale and scope economies, since larger medical groups are able to invest in more sophisticated information systems. In part, however, reduction of transaction costs requires the pioneering of new ways to coordinate the activities of each component in the network: new payment incentives, new joint ventures, and new performance measures.

Potential for innovation. The fourth advantage of integrated medical groups lies in the potential for innovation in the process of managing care.[9] The early gains from managed care are easy: lower fees for specialists, shorter lengths-of-stay for hospital patients, and fewer high-cost tests for the worried well. But the marketplace pressure to economize persists after all of this low-hanging fruit has been picked. The delivery systems that maintain their advantage under managed care have the ability to innovate continually in evaluating their own performance, improving their own quality of care, and controlling their own costs. The medical group provides the organizational context within which to develop a culture that promotes quality and cost-consciousness through internal peer review, combining economic efficiency with a culture of professionalism. Integrated medical groups traditionally have achieved a more conservative style of medical practice, which is strengthened by the financial incentives of capitation.[10]

Comparing medical groups with IPAs, While the advantages of integrated medical groups and IPAs over small independent practices are overwhelming, the advantages and disadvantages of integrated medical groups compared with IPAs are more balanced. For example, the numbers of capitated patients in some of the largest IPAs are comparable to those of large integrated groups (Exhibit 1). The IPA is best conceptualized as a network form of physician organization, performing many of the administrative and contractual functions pioneered by integrated groups but without unified ownership and an internal group culture. Three of the four advantages of integrated groups also are potentially available to small

physician practices if they link together through an IPA. That is, well-managed IPAs can provide scale economies through shared administrative functions, spread the risk of capitation payment, and reduce the transaction costs of negotiating with hospitals and payers. But IPAs face structural limitations in seeking to create a physician group culture and the innovation in clinical dimensions of care that such a culture can facilitate. Typically, California IPA physicians belong to multiple IPAs and do not necessarily have a strong allegiance to any one group.

IPAs offer strong countervailing advantages, however, at least in the short run. IPAs require less capital to grow, since they do not purchase physician practices or build new clinics. They are attractive to physicians who value professional autonomy and who will work harder if they remain the sole proprietors of their own small businesses than if they become equity owners and/or employees of some larger entity. Most major integrated medical groups now own or manage IPAs as a means of extending their HMO contracts over more enrollees, thereby gaining bargaining leverage with health plans, and as a means of gradually attracting IPA physicians and enrollees to join the integrated groups.

Primary And Specialty Care

As capitation has replaced fee-for-service payment, specialists have changed from being medical groups' major source of revenue to being their major potential source of loss. For the first time, large but exclusively primary care medical groups and IPAs are a viable option. Nevertheless, there continue to be advantages available to multispecialty organizations. The operational question concerns how many specialists and specialties will be brought inside, and how many will be kept outside. The medical group or IPA thus faces a fundamental "make-versus-buy" choice.

Multispecialty medical groups and IPAs include a broad range of specialists as members, often adding new specialties when patient enrollment grows enough to support full-time practitioners (the "make" option). Integrating specialists enables a culture of cooperation and mutual education between primary care physicians and specialists. Specialists who belong to primary care groups are more likely to be concerned with the group's success in attracting patients and with managing costs than are independent specialists under contract. Utilization management for internal patient referral can be informal and cooperative rather than formal and adversarial. The twin cost drivers of unnecessary referrals from primary care physicians and excessive treatment by specialists can be limited by physician compensation mechanisms that are based on overall group performance rather than on charges billed by individual clinicians.

The advantage of contracting for, rather than owning, specialty services (the "buy" option) lies in the enhanced range of specialists and stronger performance incentives. A primary care group can achieve a broader geographic and ethnic panel of specialists if it accounts for 20 percent of the practice of ten outside contractors than if it accounts for 100 percent of the practice of two inside members. Medical groups sometimes find it easier to realign compensation levels and obtain performance guarantees if they have the credible threat of a contract termination than if they must evoke the vaguer and less credible threat of internal review of a member specialist. Cooperation from outside specialists can be achieved by focusing on a limited panel, which receives a significant minority of total referrals from the group, in lieu of contracting with large numbers of specialists who receive few referrals from any one primary care group. In some markets specialists have begun to organize single-specialty group practices and approach primary care organizations offering to accept capitation payment, to develop clinical pathways and more rigorous utilization management for their services, and to teach primary care physicians how to do more themselves and thereby reduce specialty referrals.

The make-versus-buy decision for specialty services can be illuminated in terms of the four basic explanations for ownership versus contractual forms of coordination. Economies of scale and scope shed no light on the topic, beyond explaining why small primary care groups do not hire subspecialists who require a large referral base. (Even here, scale and scope considerations alone would not explain why a subspecialist in a small multispecialty group cannot contract for patient referrals from other groups.)[11] The efficient bearing of capitation risk would inhibit a small medical group from accepting capitation for specialty services but would not explain why a group large enough to bear that risk would choose to employ specialists or contract for their services. Transaction cost factors are important in markets in which specialists are not already organized into single-specialty groups capable of signing capitation contracts. Primary care-based groups face severe difficulties in negotiating myriad individual contracts, monitoring performance, and enforcing agreements. Where specialists are organized, however, these costs decline. The potential for innovation and cross-fertilization between generalists and specialists is the much-touted reason for multispecialty groups and remains the key argument for them. As Exhibit 1 shows, virtually all large California integrated medical groups and IPAs are multispecialty, albeit with a strong primary care base. This is not surprising, given that California is in transition and that today's organizations have evolved from the specialist-dominated organizations of the fee-for-service past. It remains to be seen whether primary care groups and IPAs will emerge that can achieve the type of cooperation and collaboration with outside special-

ists that multispecialty groups can achieve with their members.

Physicians And Hospitals

Policy discussions of physician/hospital relationships traditionally have focused on physicians' desire for professional autonomy and hospitals' desire for organizational coordination. In the California context of large integrated medical groups and IPAs, however, this conceptual framework must change. Discussion can no longer focus on the relationship between the hospital and individual clinicians, mediated by a loose hospital medical staff organization, but must shift to the relationship between the hospital and the medical group or IPA. Moreover, given the central role of primary care services and the peripheral role of acute inpatient services under managed care, the discussion should shift from how the hospital can coordinate professional services to how physicians can choose to either "make" or "buy" institutional services.

Some hospital systems in California are investing in medical groups and IPAs in an attempt to develop "integrated delivery systems." Others, however, are being forced to adjust to a new role as price-taking subcontractors in the managed care food chain. Three broad variants of medical group/hospital relationships are emerging, as indicated in Exhibit 1. First, some hospital systems are acquiring both integrated medical groups and IPAs as a means of acquiring managed care expertise and of having a primary care base. For example, the Sharp and Scripps systems in San Diego, the Sutter system in Sacramento, and the UniHealth and Catholic Healthcare West (CHW) systems statewide own combinations of integrated medical groups and IPAs. Second, some hospital systems are purchasing minority ownership shares in medical groups and IPAs to support long-term contractual relationships while maintaining the performance incentives of organizational independence. For example, UniHealth owns a minority share in the Beaver Medical Clinic, while CHW owns part of the organization that manages the Hill Physicians Medical Group.

Third, hospitals that neither own nor are owned by medical groups perform as subcontractors to medical groups or to HMOs. Some medical groups, such as Mullikin, subcapitate hospital contractors, but most insist on paying hospitals on a negotiated per diem basis. Medical groups often avoid hospital capitation under the assumption that hospitals perform very little of the work of managing care and thus should not share the savings generated by physicians' utilization management. It is unusual for hospitals in California to receive capitation payment from an HMO directly, and in no instance will an HMO capitate a hospital without having previously negotiated a capitation contract with a medical group for enrollees.

The potential advantages of integrated delivery systems over systems in which medical groups and hospitals remain autonomous and antagonistic are obvious. Cooperation between physicians and hospitals can encourage efficient use of services for hospitalized patients and a smooth transition to postacute care. Integration can discourage the duplication of clinical services such as radiology and administrative services such as utilization management and discharge planning. Ideally, an integrated organization can function as a seamless system within which patients can move freely from outpatient to inpatient to subacute to home health services. Vertical integration also facilitates cooperation in contexts in which financial incentives are misaligned. Under Medicare's diagnosis-related group (DRG) system, for example, hospitals are rewarded for reducing institutional costs per admission, while physicians are rewarded on a fee-for-service basis for increasing the intensity of services. Conversely, under some HMO contracts, physicians are capitated and hence rewarded for reducing inpatient costs, while hospitals are paid on a per diem basis and thus seek to frustrate early patient discharge. The single bottom line of the vertically integrated delivery system can attenuate the conflicts produced by these transitional payment systems.

However, some of the advantages of cooperation between physicians and hospitals can be achieved through contractual means and "virtual integration." Independent capitated medical groups can achieve performance standards equal to or better than those achieved by capitated medical groups within vertically integrated systems.[12] The independent medical group or IPA can escape paying the maintenance costs of the excess capacity that the hospital systems are unable or unwilling to eliminate. Independent medical organizations can move patients efficiently through the system even without the hospital's cooperation. The major medical groups all employ nurses to follow their inpatients daily. Some have created hospital medical teams, a small subset of the group's physicians that practices exclusively in the hospital.

The nature of the organizational relations between medical groups and hospitals is one of the central questions for the future of the health care delivery system. Managed care aims to shift the locus of medicine away from the acute inpatient facility to the outpatient office, the subacute facility, and the patient's home. Organizing a delivery system around the hospital has a less compelling logic with each passing year.[13] There exist few scope economies between hospitals and physician services that cannot be achieved through contract; little advantage of integrated systems over contractual partnerships in bearing capitation risk; little if any gain in shifting the transaction costs of negotiating, monitoring, and enforcing agreements from the external market to the internal pseudomarket; and

only modest sharing of core competencies between running a hospital and running a network of primary care clinics.

Excess Capacity And The Thirst For Capital

The long-term determinants of organizational relationships under managed care involve economies of scale, efficient risk bearing, reductions in transaction costs, and the development of capabilities for innovation. In the short term, however, excess hospital capacity and medical groups' need for external sources of capital are exerting a strong influence on make-versus-buy decisions at every level of the delivery system.

The contemporary health care economy has inherited from the era of unmanaged care a vast surplus of hospital beds and clinical subspecialists. The spot market price for the services of these redundant providers has plummeted, which has discouraged vertical integration and encouraged contractual strategies for medical groups. The published figures on the hospital and specialist surplus underestimate, perhaps dramatically, the degree of excess capacity, since they use as the benchmark for comparison the rates of hospital days and specialty referrals reported in traditional staff-model HMOs.[14] Utilization rates continue to fall, however, especially in the more competitive markets. Rates of inpatient days per thousand capitated enrollees are 50 percent lower in the most efficient California medical groups than in the nation's HMO industry as a whole.[15] Excess capacity implies that a fundamental reallocation of revenues will occur to the benefit of primary care physicians and the other delivery system elements that face rising demand (subacute facilities, home health, physician extenders, and so forth) and to the detriment of hospitals and specialists. This reallocation can proceed most easily, from the point of view of primary care-based organizations, if relationships with hospitals and specialists are based on contracts rather than on unified ownership. Bureaucratic hierarchies create numerous possibilities for inertia and coalition formation that can block significant internal change.

A countervailing pressure toward some forms of vertical integration is exerted by the need of physician organizations for external sources of investment capital. To the extent that this capital is obtained from hospital systems, medical groups will become subsumed within hospital-centered delivery systems. Medical groups need capital to merge with other practices, to buy out retiring members, to construct new clinics, and to develop sophisticated information systems. There are now two principal sources of investment capital: hospital systems and publicly traded physician management companies such as PhyCor, Caremark, and MedPartners. As facilities burdened with excess acute care beds, hospital systems are not attractive

organizational partners under managed care. As tax-advantaged, bond-financed multidivisional corporations, however, hospital systems are major players and are succeeding in organizing the delivery system around themselves in some local markets. Investor-owned physician management companies also are eager to offer capital, with strings attached, to medical groups. From the perspective of the medical group, these outside investors are attractive because of their lack of encumbrance with hospital beds, yet are disturbing because of their lack of local community commitment and their strict subordination to the equity markets. Many medical groups prefer a homegrown integrated system to one made on Wall Street.

Vertical And Virtual Integration

Since the 1970s numerous consultant reports and academic treatises have proclaimed the efficiencies achievable by vertically integrated delivery systems that combine hospitals, medical groups, and other elements of the delivery system under one ownership umbrella. The implicit if not explicit premise of this literature is that coordination requires unified ownership. However, California's experience of the past fifteen years sug gests that coordination of health care does not necessarily require vertical integration and unified ownership but may be achieved through contractual networks. The fair market test, for purposes of understanding the organizational trajectory of managed care, is not between vertically integrated delivery systems and the fragmented cottage industry of yesteryear but between vertically integrated systems and virtually integrated structures in which coordination is achieved through contract.

The relative advantages of vertical and virtual integration differ in each context but can be summarized based on the extensive economic literature on the firm and the market.[16] The advantage of vertical integration and unified ownership, compared with contractual relations and market bargaining, lies in the potential for coordinated adaptation to changing environmental circumstances. In principle, vertically integrated organizations manifest a unity of control and direction that allows them to focus all of the energies of their subunits on the same goals and strategies. There is a single mission statement, a single hierarchy of authority, and a single bottom line. This unity of purpose and performance is essential under managed care and underlies the drive toward vertically integrated delivery systems that incorporate primary care, specialty panels, and hospitals.

The advantages of virtual integration through contractual relations, compared with vertical integration through unified ownership, lie in the potential for autonomous adaptation to changing environmental circumstances. Organizational independence preserves the risks and rewards for

efficient performance rather than replacing them with salaried employment. Coordination can be achieved through negotiated payments and performance guarantees rather than through managerial authority. Numerous forms of contracts are observed in the market, ranging from arm's-length and anonymous spot contracts to close and complex franchise, multiyear, and "relational" contracts.[17]

In general, contractual relations are strong where ownership relations are weak, and vice versa. If vertical integration worked in practice the way it works in principle, then markets and contracts would be rare. The health care system could be structured as one large administered bureaucracy, with centralized planning and resource allocation, a single purpose, and a single process. However, vertically integrated systems suffer from two weaknesses: incentive attenuation and influence costs. Vertical integration replaces the entrepreneurship of the owner-managed firm with administrative hierarchies in which managers and clinicians are paid largely by salary. Even when supplemented by performance bonuses, salary payment mechanisms provide considerably weaker performance incentives than does the profit incentive. Vertical integration and unified ownership also greatly increase influence costs, defined as the effects of internal struggles for control over resources by the various incumbent constituencies, both managers and nonmanagerial workers. At the extreme, private corporations come to resemble public bureaucracies with a civil service mentality.

In principle, incentive attenuation and influence costs could be controlled by introducing marketlike features within a large firm.[18] For example, particular products or geographic regions could be assigned to separate divisions and subjected to their own profit and loss accounting. Relations among divisions could be structured along contractual lines, with intermediate products traded based on internal "transfer" prices that were keyed to external market prices for similar products. Divisional managers could be paid based on divisional performance. The parent firm could commit itself to a policy of "selective intervention," avoiding interference with its subsidiaries (and the incentive attenuation and influence costs thereby entailed) except in times of need. In practice, however, large firms have proved unable to maintain this commitment to divisional independence; inevitably, some perceived crisis occurs that justifies the reassertion of hierarchical control and thereby undermines the marketlike incentives of the vertically integrated firm. The legal and economic literature on firms and markets thus tends to view vertical integration as the governance mechanism of last resort, to be used only when market and contractual relationships are not feasible. This contrasts with the conventional wisdom in health services research, which apparently considers vertical integration as the governance mechanism of first resort under managed care.

Conclusion

There are multiple possible paths to the coordination of clinical services under managed care. At every interface firms confront a trade-off between the advantages of coordinated adaptation through vertical integration and the advantages of autonomous adaptation through contractual networks. The current turbulence makes it difficult to predict eventual outcomes. At a minimum, however, there will be considerably more contractual relationships and considerably less vertical integration than predicted by some advocates of hospital-centered delivery systems. On the other hand, there will be considerably more cross-ownership, through both minority and majority shares, than would be predicted by those with blind faith in atomistic competition. Market forces are creating both vertically integrated firms and virtually integrated networks. In turn, the new forms of organizations and contracts are transforming markets and the nature of competition in health care.

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NOTES

1. Thomas Hobbes provides an insightful description of first-generation managed care in *Leviathan,* Part 1, Chapter 13 ("Of the Natural Condition of Mankind, as Concerning Their Felicity, and Misery") (1651; reprint, New York: Penguin Books, 1968).
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5. The information in Exhibit 1 on enrollment, ownership, and relations with hospitals was developed through in-person interviews over a two-year period, checked against available information in the trade press.
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