

AN INTEGRATIVE MODEL OF THE MANAGEMENT OF HOSPITAL PHYSICIAN RELATIONSHIPS

Hospital Physician Relationships (HPRs) are of major importance to the health care sector. Drawing on agency theory and social exchange theory, we argue that both economic and noneconomic integration strategies are important to effective management of HPRs. We developed a model of related antecedents and outcomes and conducted a systematic review to assess the evidence base of both integration strategies and their interplay. We found that more emphasis should be placed on financial risk sharing, trust and physician organizational commitment.

The management of HPRs is an important area of academic research and a main concern of hospital executives, given the impact on quality of provided care (Cortese, & Smoldt, 2007), hospitals' financial success (Goes & Zhan, 1995) and cost-effective health care delivery (Ciliberto & Dranove, 2006). Prior research has offered a number of important insights into the management of HPRs, ranging from the possible role of incentives (Shafrin, 2009) and equity ownership (Mitchell, 2008) to the development of a physician liaison program (Mark, Evans, Schur & Guterman, 1998) and the importance of effective communication (Cohn, 2009). Two distinct approaches to align the medical staff with the hospital have characterized much of the literature on HPRs. The first approach is rooted in the economic literature, building on the model of the homo economicus, in which alignment is realized by financial means (e.g. Bodenheimer, 1996). The second approach represents a more sociological perspective, emphasizing the cooperative nature of their relationship (e.g. Tschannen & Kalisch, 2009). Although both approaches have recently been described as economic and noneconomic integration (Burns & Muller, 2008), up to now there has not been an attempt to integrate both insights. We attempt to fill this research gap by developing a conceptual model resulting in a practical understanding of the management of HPRs. Building on agency theory and social exchange theory we studied economic, noneconomic integration and the potential interaction effect between both. We argue that both strategies should be seen as complementary, rather than a substitution to each other. Consequently this leads to interesting additional propositions as the interesting questions have more to do with the anticipated interaction effect than their single effect on hospital performance. In today's turbulent healthcare environment, providers are confronted with contemporaneous pressures to contain costs and improve

health care quality. As a result, neither hospitals nor physicians will be able to meet the current challenges without closer cooperation and increased integration (Budetti, Shortell, Waters, Alexander, Burns, Gillies et al., 2002). The current study responds to these challenges by increasing the insight in the management of HPRs with a theoretical contribution and a review of the relevant literature. We argue that previous research has oversimplified the relationship between hospitals and physicians. Although our review indicates that economic and noneconomic integration affect HPRs individually, only few studies have focused on the different alignment strategies and further research is needed. However, no empirical study or conceptual article has combined both management approaches. Our aim is thus to increase understanding by proposing a conceptual model, drawing on economic and social explanations of HPRs. Antecedent factors that influence the type of integration strategy used are identified, and the subsequent impact of these strategies on performance outcomes are reviewed. To develop our argument of complementarity, we incorporated the construct of organizational commitment (physician hospital commitment). Specifically, we argue that physician hospital commitment is influenced by both noneconomic and economic integration. Furthermore, we argue that physician hospital commitment is an important intermediate construct influencing hospital performance.

We tested our arguments by a systematic review of the literature on the management of HPRs. Despite the growing popularity of strategies to alter hospital-physician relationships, our review indicates that few studies have evaluated the effectiveness of these strategies in improving hospital performance. Our findings indicate that more research is needed to determine the effect of both economic and noneconomic integration

strategies on physician behavior and hospital performance. This research should focus on both quality and financial aspects of hospital performance. Next to research focusing on the effect of these strategies individually, we argue that more emphasis should be placed on the complementarity view of integration. Future research incorporating this interaction aspect is a future research priority.

NEED FOR INTEGRATION

Over the past several decades, health care providers are confronted with continuous pressures to contain costs and simultaneously improve health care quality. The confluence of these forces increases the importance of cost-effective collaboration, but simultaneously threatens the assumption that physicians and hospitals share common interests creating a greater need for integration (Berenson et al., 2007; Budetti & Zuckerman, 2001). First, the financial relationship between both changed significantly. Traditionally physicians have been relatively independent of hospitals and have used them as workshops in which to carry out their professional services. The HPR was characterized by unique, symbiotic interdependence in which the two parties had compatible incentives to increase the volume of care using the latest technology, while maximizing the professional autonomy of the physician (Pauly & Redisch, 1973). This professional autonomy was reinforced by the fragmented financing system, which ignored the interrelatedness of the actions of physicians and hospitals in the treatment of their patients. Physicians were paid on a fee-for-service basis and hospitals were paid on the basis of costs incurred (Harris, Hicks & Kelly, 1992). However, the financial

relationship between hospitals and physicians has changed dramatically. Not only have hospital margins declined due to increased complexity, rising costs and more restrictive reimbursement schemes (Cardinaels, Roodhooft, & van Herck, 2004), hospitals are also confronted with increased financial accountability for the delivered care, introduced by prospective payment and forms of managed competition (KirkmanLiff, Huijsman, vanderGrinten & Brink, 1997; Schut & van Doorslaer, 1999). Furthermore, recognition that the health care system suffers from serious gaps in quality has stimulated a broad array of public-, and private-sector initiatives to improve performance (Ryan, 2009). Value based purchasing (pay for quality) and public reporting of hospital quality have become the locus of debate and have emerged as the most widely advocated strategies (Lindenauer, Remus, Roman, Rothberg, Benjamin, Ma et al., 2007). As a result, hospitals and physicians are no longer insulated from the cost consequences of their clinical decisions, and the historical separation of administrative and clinical decision making is being eliminated (Goes & Zhan, 1995). Unfortunately, conflicting incentives between physicians and hospitals are often cited as a major obstacle to effective collaboration (Goldsmith, 2007; Mark et al., 1998) and moved HPRs from symbiotic to competitive interdependence (Berenson, Ginsburg & May, 2007; Burns, Andersen & Shortell, 1990). Finally, the fact that many services performed in hospitals can now safely and conveniently be performed in ambulatory settings makes the management of HPRs even more important. Considering this important evolution, physicians become potentially owners of entities directly competing with hospitals for delivering outpatient services, potentially resulting in a new medical arms race and zero-sum competition (Berenson,

Bodenheimer & Pham, 2006a; Berenson et al., 2007; Casalino & Robinson, 2003; Casalino, November, Berenson & Pham, 2008; Porter & Teisberg, 2006).

INTEGRATION STRATEGIES

Based on the findings of the researchers of the Health System Integration Study (Gillies, & Shortell, 1993) and drawing on academic and consulting literature, Burns and Muller (2008) recently have categorized hospital's efforts to better align their medical staff. They make a distinction between 'hard' economic integration strategies such as equity ownership (Mitchell, 2008) and 'soft' non-economic integration strategies such as physician involvement in hospital decision making (Ibay, 2007). On the one hand, economic integration encompasses hospitals provision of monetary payments to physicians to provide, manage or improve clinical services and to perform organizational activities (Burns et al. 2008). The arguments for such linkages are based on the premise that by strengthening the organizational ties between the hospital and physician groups, each can effectively influence the other to promote greater consistency between practice behavior, organizational strategy and the organizational goals (Zuckerman, Hilberman, Andersen, Burns, Alexander & Torrens, 1998; Shortell, Waters, Clarke, & Budetti, 1998). On the other hand, noneconomic integration refers to hospitals' efforts to enlist and retain physicians by making their facilities more attractive and accessible, their operations more efficient and convenient, their decision-making processes more participative and responsive, and their staffing better trained (Burns et al. 2008). These non-economic integration strategies emphasize the needed cooperative behavior in their symbiotic relationship and recognize physicians' professional career needs to build,

maintain, and expand their practices (Shortell, Alexander, Budetti, Burns, Gillies, Waters et al., 2001). It aims at making the hospital more attractive for physicians by improving the hospital's internal environment and addressing physicians' related concerns (Berenson, Bodenheimer & Pham, 2006b; Berenson et al., 2007). This approach is routed in the belief that emphasis should be placed more on the underlying cooperative relationship than on structural, contractual alternatives (Cohn et al., 2007; Gillies, Zuckerman, Burns, Shortell, Alexander, Budetti, et al., 2001).

RETHINKING PHYSICIAN HOSPITAL INTEGRATION

Our conceptual model builds further on this practical classification of alignment strategies and uses agency theory to study economic integration and social exchange theory to study non-economic integration strategies. The elaboration of both integration forms with the theoretical concepts increases insight and enables us to structure the divergent nature of previous empirical research which helps us to determine an agenda for future research. In our model, as illustrated in figure 1, we argue that risk and trust are two important antecedents to respectively economic and noneconomic integration. We also incorporate a physician group level as physicians often operate as quasi-independent professionals in a physician group setting. This group level results in risk pooling (Gold, 1999) and the blending of financial incentives (Robinson et al., 2004) influencing the risk antecedent and economic integration strategies. Subsequently, we argue that these integration strategies have an impact on hospital performance. In our model, we make a distinction between a direct effect of the various strategies on hospital performance and

an indirect effect through physician hospital commitment drawing on the principle of reciprocity.

In our model, both economic and non-economic integration are included, as there is a potential interaction effect. The theoretical argument is that by strengthening the ties of the medical staff with the hospital, the hospital is more attuned to the interest, values and priorities of physicians (Alexander, Waters, Burns, Shortell, Gillies, Budetti et al., 2001). We argue that by taking into account the physicians' point of view in hospital decision-making there is an effect on the noneconomic integration strategies. However, it should be noted that when HPRs are considered as a development process in a longitudinal sense, performance outcomes can cause feedback and have a recursive relationship with the integration strategies. Similarly, the integration strategies can also have a recursive relationship with the antecedents. Therefore, we note that this model is a partial model and cannot represent all possible antecedents and consequences of HPR management.

Insert Figure 1 about here

METHOD

It is difficult to overstate the importance of theory to management research (Colquitt, & Zapata-Phelan, 2007). To increase understanding of the divergent literature in the studied field, articles were reviewed according to the different theoretical concepts of agency theory and social exchange theory. Several theories or frameworks have been developed that offer useful insights in the complex relation between hospitals and physicians. In particular agency theory helps to understand and manage the cooperative structure of

their relationship (Pontes, 1995). Eisenhardt (1989) highly recommends incorporation of an agency perspective as it provides a unique, realistic and empirically testable perspective on problems of cooperative effort. More specific, the principles of agency theory provide a useful framework to study economic integration strategies (McLean, 1989; Pontes, 1995). Although agency theory can be described as one of the most influential and widely used theories to study problems of relationships with a cooperative structure, additional theories can help to capture the greater complexity and improves understanding (Eisenhardt, 1989). In case of the management of HPRs, the importance of non-economic integration strategies is difficult to capture within the agency theory framework. The assumption of social exchange theory, that organizational treatment leads organizational members to alter their efforts toward helping their organization achieve its goals (Coyle-Shapiro & Conway, 2005; Gouldner, 1960) can be a very useful perspective for the study of these non-economic integration strategies. Finally, based on these theoretical and empirical findings a conceptual framework was developed to increase understanding and to inspire future research. Next to this theoretical contribution we undertook a review of the literature. This study draws upon the analysis of literature from the systematic review perspective and contributes to a more evidence based management of HPRs. Table 1 indicates the overall process of the systematic approach and study parameters. First, the search strategy started with electronic searches of PubMed, Web Of Science and EBSCO databases for studies explicitly linked to HPRs through the development of key search terms. The final search pattern was: [hospital* AND physician* AND (relation* OR alignment OR integration)]. In addition, reference lists of previous reviews, primary studies and key articles were checked. As a final check,

the electronic searches were repeated based on MeSH-term indexation of the studies identified and selected in the first stages. We restricted the studies eligible for inclusion to those published in peer-reviewed journals in English between January 1985 and December 2009. This time frame was selected because in this period new organizational arrangements with tighter affiliation between physicians and hospitals were initiated in Europe and the US (table I). Second, search results were filtered by title and narrowed down according to the inclusion/exclusion criteria. Finally, the researcher read each abstract and judged each article in terms of theory robustness and contribution to the proposed model.

Insert Table 1 about here

THEORETICAL BACKGROUND

Agency Theory

Agency theory helps to understand and manage the cooperative structure of the HPR (Eisenhardt, 1989; Pontes, 1995). In this ubiquitous relationship, one party delegates work to another, who performs the work (Jensen & Meckling, 1976). The ‘principal’ hires an ‘agent’ with specialized skills or knowledge to perform the task in question. The agency problem occurs as agents have not exactly the same objectives and motivations as the principal, and consequently do not necessarily act in the best interest of the principal. The central concern of agency theory is how the principal can best motivate the agent to perform as the principal would prefer (Sappington, 1991). Because the unit of analysis is the contract between the principal and the agent, the focus of the theory is on the agent’s

opportunism and especially on how to determine the most efficient contractual relationship. This problem of cooperative effort is characterized by agency specific attributes on which the choice of alternative management modes depends. Within the classical agency theory, these attributes include risk and information asymmetry (Eisenhardt, 1989). However, to fully understand and capture the complexity of the relationship of hospitals with their medical staff, the classic agency theory should be adjusted for principal-professional exchanges. Professional agency relationships have additional complexity because they are characterized by knowledge asymmetry, which is distinctly different from information asymmetry and compounds the problem of not being able to judge the behavior of the professional agent (Sharma, 1997). As such, hospital management has limited ability to determine the appropriateness and the cost-effectiveness of the decisions made by the clinicians (Pontes, 1995).

These three attributes of the professional agency (risk, information - and knowledge asymmetry) are in turn related to the main assumptions of human behavior: bounded rationality, opportunism and risk aversion (Eisenhardt, 1989). Bounded rationality assumes that decision-makers have limited rationality when making decisions because of constraints on their cognitive capabilities. Simon (1972) distinguishes three limitations of rationality that affect human behavior; (1) uncertain consequences of decisions or behavior, (2) incomplete information about alternatives and (3) complexity of the economic situation. The second assumption about human behavior, opportunism, supposes that agents may be seeking to serve their self-interest and introduces the problem of moral hazard. If the principal cannot determine if the agent has behaved appropriately (due to information or knowledge asymmetry) and given the self-interest of

the agent, the agent may or may not behave as agreed upon. Moral hazard refers to lack of effort on the part of the agent. The argument here is that the agent may not put forth the agreed-upon effort which is called shirking (Eisenhardt, 1989). The third assumption, risk aversion refers to the agent's attitudes towards risk bearing. In general the agent is considered to be more risk averse than the principal because of the (un)ability to diversify the encountered risks (Pontes, 1995).

Social Exchange Theory

Although agency theory can be described as one of the most influential and widely used theories to study problems of relationships with a cooperative structure, additional theory can help to capture the greater complexity and improve understanding (Eisenhardt, 1989). Given the difficulties in monitoring and more importantly evaluating the appropriateness and cost-effectiveness of medical behavior of physicians (Pontes, 1995), contractual arrangements only partly solve the principal agency problem. Sharma (1997) refers to imperfect alignment due to the fact that the more informed professional agent provides knowledge-intensive intangible service goods to a lay principal in which the requisite knowledge not can be purchased. Besides the fact that information asymmetry-reducing monitoring and control have severe limits in the context of principal professional exchange, they also can be counterproductive because of the negative feelings generated among relatively powerful professional agents (Sharma, 1997). More managerial research typically applies a 'relational' logic to the different arrangements (Zheng, Roehrich & Lewis, 2008). Contractual arrangements have been presented as a manifestation of power that can be effective in certain circumstances, but possibly promote conflict (Gaski, 1984)

and defensive behavior (Hirschman, 1984). The relational perspective emphasizes the role of trust in achieving mutually successful outcomes and lays the accent on the needed cooperative structure of their symbiotic relationship. These soft levers of noneconomic integration supplement the 'hard' levers of contractual economic integration proposed in agency theory. The ground rules for HPRs must be rooted in personal contacts that define physician expectations towards the organization in which they work. One compact that clinicians might like is that hospitals should seek management with physicians, not management of physicians. The related academic literature on the effects of psychological contracts concerns exchange agreements between an individual and the organization. Psychological contracts motivate employees to make behavioral commitments to the organizations, and the violation of such contracts leads employees to withdraw their support and perhaps leave (Burns et al. 2008). Social exchange theory suggests that organizational members tend to reciprocate beneficial treatment they receive with positive work-related behavior and tend to reciprocate detrimental treatment they receive with negative work-related behavior (Gouldner, 1960). Consistently with this view, employees' perceptions of organizational support (POS) and perceptions of psychological contract violation (PPCV) are both constructs that are generally thought to be contributing to reciprocity dynamics. Both are firmly rooted in social exchange theory and are based on the assumption that organizational treatment leads organizational members to alter their efforts toward helping their organization achieve its goals (Coyle-Shapiro et al., 2005; Gouldner, 1960). POS is a construct that regards employees' belief that their organization values their contributions and cares about their well-being, (PPCV) is a construct that regards employees' feelings of disappointment (ranging from minor

frustration to betrayal) arising from their belief that their organization has broken its work related promises (Eisenberger, Huntington, Huntington, & Sowa, 1986).

ANTECEDENTS OF INTEGRATION

Risk

At the heart of principal-agent theory lays the problem of transferring risk from the principal to the agent (Eisenhardt, 1989). To fully capture the role of risk in the HPR we need to broaden our focus with a second important principal, the purchaser of care (the government or health insurer). Boadway, Marchan & Sato (2004) refer to the two-tier hierarchy of principal agent interactions in hospital care delivery. The top one involves the government as principal to the hospital and medical doctors; the second involves the hospital (management) as principal to the medical staff. To be fully complete, additional relationships can be identified (Figure 2). A third principal agent relationship is the relationship of the physician and the patient, a fourth is the government that acts as agent for the patients or population. However, we make abstraction from these two last relationships by assuming that the latter are passive to the risk sharing problem (Boadway, Marchand, & Sato, 2004). Many countries have adopted reforms in which providers are placed at financial risk. Internationally, health care systems are currently reformed in order to provide social health insurers (or health authorities in countries with a national health service) with incentives and tools to contain costs while maintaining quality and universal access, resulting in 'risk shifting' of financial responsibility for the delivered care towards hospitals (KirkmanLiff et al., 1997). The different reimbursement methods result in various risk allocation between the three parties. In general, health care

systems evolved from cost-reimbursement, in which hospitals are fully reimbursed for all their medical costs, to prospective financing systems, making hospitals financially responsible for any extra expenditure above the fixed price per patient treated. Additionally, health care policy debate in many countries has concentrated on the pros and cons of introducing some form of ‘managed competition’ or ‘internal markets’ (Schut et al., 1999). In these managed care systems, pressures on hospitals were altered dramatically as underlying contract parameters and payment rates were no longer fixed, but determined by negotiation (Casalino et al., 2003). Due to these reforms, providers are confronted with a new type of risk, the price-risk. At the same time, recognition that the health care system suffers from serious gaps in quality has stimulated a broad array of initiatives to improve performance by fostering greater accountability on the part of providers and the development of value based purchasing (Lindenauer et al, 2007). The basic principle of a pay for quality program is to offer explicit financial incentives to health and health care providers in order to achieve predefined quality targets (Young, White, Burgess, Berlowitz, Meterko, Guldin et al., 2005). Physicians enjoy a monopoly in several major decision areas. Since they control so many patient care decisions that influence hospital costs and quality, and by extension hospital financial performance various organizational models were developed resulting in variable risk sharing (Dyan, Bazzoli & Burns, 1998).

As a professional agent, physicians may see little value added from their ties to health care organizations without any risk condition. They even may view such connections as burdensome, if not antithetical to the traditional values of autonomy and freedom of

external control (Alexander, Waters, Boykin, Burns, Shortell, Gillies et al., 2001). Consequently the risk problem can be extended with the risk assumption of the physician. The risk assumption of physicians can be brought back to two of the main assumptions of human behavior in agency theory; bounded rationality and risk aversion. As outcomes in health care may not be influenced just by a physician's actions, but also by factors that are beyond the physician's control (e.g. individual differences in response to treatment, patient's treatment compliance) consequences of medical decisions or some medical behavior may not be certain and uncertainty appears (Simon, 1972; Pontes, 1995). Agency theory assumes also that agents are risk averse (Harris & Raviv, 1979). This gives the possibility of shifting risk from the hospital to the professional agent who takes the clinical decisions. It is assumed that individuals are more risk averse than organizations (e.g. hospitals) because such organizations can diversify their risk (Pontes, 1995). Consequently, if physicians are confronted with risk based payment schemes whereby the physicians are put at risk for at least part of the cost of patient's care (e.g. capitation) they are more likely to strengthen their ties with the hospital. Physicians or physician groups who assume risk may have a greater need for the type of management services and supporting infrastructure that would enable them to manage this risk in an effective fashion. Under this view, risk assumption increases the degree of interdependence between physicians and systems, which in turn leads to greater alignment (Alexander et al., 2001). Similarly physicians operate as quasi-independent professional agents in a physician group setting. They often assign their financial arrangements to intermediary organizations. This results also in 'risk pools' which can be defined as the number of individual physicians that are paid collectively and thus share

financial risk for the cost of patient care (Gold, 1999). Therefore, a distinction can be made by risk assumption at the individual physician level and the physician-group level because risk assumption may operate at different levels in organizational settings (Kralewski, Rich, Bernhardt, Dowd, Feldman & Johnson, 1998). Bounded rationality and risk aversion have also consequences for the internal financial agreement of the hospital and the medical specialist. In general within agency theory two types of compensation contracts can be distinguished; outcome-based control systems in which compensation is contingent primarily upon specified outcomes and behavior based control systems in which compensation is contingent primarily upon specified behaviors. As there may be considerable variation in health outcomes even when the amount and quality of the physician's effort are high, outcome-based control systems that force them to absorb risk that their income may vary due to factors beyond their control is difficult. Also a very important is the effect on equity as outcome-based compensation systems may discourage physicians from accepting patients for treatment when they feel that these patients may not have favorable outcomes (Pontes, 1995). A second potential risk condition is the price risk within a managed competition environment. In search of increased bargaining leverage and hopefully, better contracts medical specialists and hospitals bundle their negotiation power (united we stand, divided we fall) by jointly going to the managed care market (Burns, Nash & Wholey, 2007).

Insert Figure 2 about here

Trust

Next to risk, trust has always been at the heart of the management field and is vital in examining the principal-professional exchange (Sharma, 1997). In case of the HPR, it is considered to be a social antecedent and critical concern of both hospitals and physicians (Shortell, Alexander, Budetti, Burns, Gillies, Waters, et al., 2001). Trust can be described as the willingness to be vulnerable to actions of another party, irrespective of the ability to monitor or control that other party (Mayer, Davis & Schoorman, 1995). Economic integration strategies have previously been described as relatively weak and impersonal substitutes for trust. Although they may bring organizational legitimacy, they are often ineffective (Sitkin & Roth, 1993) and possibly promote conflict and defensive behavior (Hirschman, 1984). In our model, we conceptualized non-economic integration strategies as a complementary management approach, primarily rooted in social exchange theory. Trust has emerged as a central concept within this theory (Purunam & Vanneste, 2009) and it has been consistently mentioned as a predictor or antecedent of co-operative behavior (Zaheer, McEvily & Perrone, 1998) Agents are more likely to reciprocate beneficial treatment as their confidence grows that the other party can be trusted to exchange treatment equitably (Blau, 1964). Therefore, we argue that by including trust as an antecedent to the management of HPRs we increase significantly the explanatory power of our model. This statement is empirically confirmed by the research of Succi, Lee & Alexander, 1998. As such, we consider trust as a necessary condition for the development of non-economic integration strategies. In the longitudinal sense, trust can also be an outcome of non-economic integration strategies. For instance, by making their decision-making processes more participative and responsive and better inform clinicians

about management decisions to increase understanding, the hospital can build trust with their medical staff (Burns & Muller, 2008; Ibay, 2007).

HOSPITAL PERFORMANCE OUTCOMES

Economic Integration

Building further on the agency framework and the risk antecedent, we now concentrate on shared risk and gains in order to realize alignment. It is widely believed that the method of payment of physicians may affect their clinical and professional behavior (Gosden, Forland, Kristiansen, Sutton, Leese, Giuffrida et al., 2000). Accordingly, there are numerous articles in the literature examining the impact of various economic integration strategies on physician behavior (Armour, Pitts, Maclean, Cangialose, Kishel, Imai et al., 2001). However, the analysis of financial incentives cannot be separated from the base compensation scheme by which the providers are paid (Chaix-Couturier, Durand-Zaleski, Jolly & Durieux, 2000). This base compensation scheme creates its own incentives, which the supplemental economic incentives reinforce or counteract to realize increased alignment (Magnus, 1999). Consequently, the effect and use of economic incentives varies according to this base compensation. Given the variance in base compensation, this makes a review and interpretation of the findings about the effect of economic integration strategies difficult. We respond to this challenge by incorporating the macro level into the model by the risk antecedent. Based on agency theory, we argue that the base compensation scheme results in a varying risk distribution to the hospital and physician, creating the degree of needed supplementary economic alignment realized by an internal financial agreement.

Bonuses and Withholdings The use of explicit financial incentives to change physicians' behavior towards individual patients is common within managed care organizations (Gold, 1999; Gosden et al., 2000). In a managed care organization financial incentives usually take the form of bonuses paid over and above the physician's base income from fee-for-service payments, capitation, or salary (Grumbach, Osmond, Vranizan, Jaffe & Bindman, 1998). These bonus payments are often drawn from surpluses in risk pools funded by "withholds" that is, funds deducted from physicians' base payments or otherwise reserved under contracts in which physicians bear financial risk (Bodenheimer & Grumbach, 1996). We argue that, similarly, these payments can possibly encourage physicians to exert greater effort on behalf of the hospital. Our review indicates that, despite the growing popularity of strategies, few empirical studies have concentrated on the effectiveness of incentives in altering physician behavior. In addition, most studies have concentrated on primary care or preventive services. Although the treatment of specialist services has been inadequate (Shafrin, 2009), the findings of previous research indicate that the use of incentives can alter physician behavior. Firstly, there is evidence that implicit financial incentives, induced by the base compensation scheme (fee-for-service, capitation, salary), has an impact on physician resource use and quality of care; (Manning, Wells & Benjamin, 1987; Shen, Andersen, Brook, Kominski, Albert, & Wenger, 2004; Shrank, Ettner, Slavin & Kaplan, 2005; Hickson, Altemeier, & Perrin, 1987). Secondly, physician perceptions have indicated indirectly that they respond to incentives (Grumbach et al, 1998; Hadley, Mitchell, Sulmasy & Bloche, 1999). Finally, there is limited evidence that physicians respond to explicit incentives (Debrock & Arnould, 1992; Hillman, Pauly & Kerstein, 1989).

Gainsharing The ability to share savings resulting from cost-effective physician practice is an alternative bonus strategy that might reduce costs by aligning hospital and physician incentives (Wilensky, Wolter & Fischer, 2007). However, concerns remain about quality and access (Ketcham & Furukawa, 2008). A distinction can be made between physician gainsharing, in which the physician(group) receives payments, and service-line gainsharing, in which the savings are (partially) directed back to the hospital service line or program where they were realized (Wilensky et al. 2007). Although it is a frequent advocated strategy to alter physician preference items (Burns, Housman, Booth & Koenig, 2009; Montgomery & Schneller, 2007) and has potential to align incentives in a pay for performance environment (Safavi, 2006a) empirical evidence remains scarce. Due to initial legal restrictions limiting or prohibiting diverse gainsharing initiatives in the US (Torgerson, 2008) we could only retrieve one empirical investigation of the effect of gain sharing programs. Ketcham and Furukawa (2008) found that gain sharing reduced hospital costs and patient outcomes did not change. The majority of savings resulted primarily from lower prices for devices and secondarily from fewer devices per patient. However, the patients' treatment did not become more standardized.

Participating Bond Transactions Recently, participating bond transactions were positioned as an alternative to traditional bonuses and gain sharing. These tax exempt high-yield bonds use a specific performance trigger in which the interest is only paid if certain targets are met. These goals that have been used include quality goals, financial and efficiency goals, and even cooperation with procedures goals such as use of a computerized order-entry systems (Safavi, 2006b). Unfortunately, we could not retrieve empirical evidence regarding this instrument.

Physician Ownership Financial incentives linked to ownership make physician potentially more sensitive to the quality and financial aspects of the entity. Next to the professional fees for performing their medical duties, physicians are also entitled to share in the costs and facility fees generated by the center in which they have invested (Strope, Daignault, Hollingsworth, Ye, Wei & Hollenbeck, 2009). This creates a direct link between ownership and costs (Ford & Kaserman, 2000), making physicians no longer isolated from the cost consequences of their clinical and operational decisions. Next to this financial aspect, researchers have argued that there is also a link between ownership and quality of delivered care. Proponents have argued that joint ventures are often undertaken to increase access for underserved groups (Ahern & Scott, 1994). Also, by severing the physician dual roles as both the residual claimant and the primary enforcer of quality of care, physician ownership could possibly lead to improved quality of care (Ford et al., 2000). The review of the literature shows that financial incentives linked to ownership do affect physicians' practice patterns. However, previous research has mainly focused on the ambulatory setting and the related self-referral issues when physician have ownership in facilities in which they not practice (e.g. anti-kickback and stark laws). The findings indicate that the supply-induced demand results in an increase in number of procedures, a shift to more lucrative procedures and that there is an adverse effect on patient's access to care. However, up to now there is no empirical research on the effect of financial incentives linked to ownership on financial performance within a hospital setting (e.g. a service line).

Medical group Previous research on physician incentives within a medical group identified the size and compensation structure of the medical group as an important

matter. Newhouse (1973) provided early evidence of 'behavioral diseconomies of scale' (or shirking) under equal-sharing arrangements as size increases. Given the 'free-rider' aspects of distributing of equal shares (group-based), this type of compensation has a substantially smaller effect on productivity than individual production based methods (Conrad, Sales, Liang, Chaudhuri, Maynard, Pieper et al., 2002). Unfortunately it is argued that the focus on personal performance creates a culture that places primary emphasis on the individual and their actions rather than on a group-centered culture that focuses on the synergistic benefits of individual and group successes. It is however important to note that compensation based on group level performance can be difficult to implement because of the perception by physicians that they lack individual control of group performance (Alexander et al., 2001).

Noneconomic Integration

Theoretically rooted in social exchange theory, noneconomic integration strategies aim at optimizing the working relationship between the hospital and the medical staff. Research focusing on these strategies suggests that more emphasis should be placed on the underlying cooperative aspects of HPRs instead of the contractual, economic ties (Shortell et al., 2001). Within previous research, a distinction can be drawn between administrative linkages related to shared decision making and operational linkages focusing on supporting physicians in performing their profession (Alexander et al., 2001).

Administrative linkages It is argued that the traditional dual hierarchy (Harris, 1977; (Scott,1982), where the hospital is managed by administrators and the physicians' role is limited to practicing medicine, is no longer able to meet the needs of the fast-evolving

health care market (Lega & DePietro, 2005). Physicians are considered to be a source of critical information and exclusive knowledge about the performance of their tasks. Consequently their input can improve hospital decision making, strategic planning and hospital performance (Ashmos, Huonker & McDaniel, 1998; Ashmos & McDaniel, 1991). Next to this direct effect resulting in better decision making, it can be argued that there are also important indirect effects on hospital performance. More specific, involving physicians in hospital decision making increases their fiduciary responsibility and exposure to tough decisions, both of which are likely to increase physician sensitivity to hospital performance (Smith, Reid & Piland, 1990). Moreover, involving physicians in hospital decision making may help to blend physician and management cultures (Montague, 1993). The physician-manager relationship has previously been described as ‘a divide’ and an unhealthy ‘them and us’ culture (Atun, 2003). Involvement in decision making can contribute to the creation of a more cooperative decision-making environment and helps to build physician hospital commitment (Smith et al., 1990). Finally, greater affective or social-psychological involvement in hospital decision making is thought to build physician trust and loyalty in integration efforts (Montague, 1993), thereby decreasing conflict (Burns & Wholey, 1992). As a result it has been argued that physician involvement in planning and policymaking holds a great promise for aligning hospital and physician interests (Gregory, 1992).

Operational linkages Aiming at providing value-added contributions to the physician(group), operational linkages can be valuable instrument to increase alignment. Operational support allows the group and its individual physicians to operate more effectively and efficiently in a complex and changing healthcare environment in which

they have to deal with a myriad of demands. These operational linkages create true interdependence by providing valued resources to the group, which results in increased organizational commitment from the physicians receiving these resources (Alexander et al. 2001). Next to this internal importance, it is argued that by improving the hospital's internal environment, hospitals can dissuade physicians from taking their business outside the hospital. Consequently, direct competition with physician owned entities is avoided by making the hospital more attractive (Berenson, Ginsburg & May, 2007; Zuckerman, Hilberman, Andersen, Burns, Alexander & Torrens, 1998). However, notwithstanding these important aspects influence hospital performance, our review indicates that empirical research about these noneconomic integration strategies focusing on physician support is limited and inconclusive. Gilies et al. (1993) studied the effect of physician support on performance of organized delivery through their perceived effectiveness. These researchers developed the concept of functional integration referring to the extent that key support functions and activities are coordinated across operating units. They found a relationship between perceived integration and physician perceived effectiveness. Unfortunately, due to the cross-sectional design causality could not be assessed. Although this study was performed in an organized delivery system and performance was measured indirectly, these findings are potentially also relevant to the HPR. The findings of this study were more recently confirmed by an extended field investigation, highlighting the importance of operational linkages. More specific, this study found that violation of the hospitals' administrative and professional obligations to support physicians in their practice increased the turnover of physicians and reduced satisfaction, productivity and commitment (Bunderson, 2001).

Physician Organizational Commitment

Within the last 20 years, organizational commitment has emerged as a central concept in the study of work attitude and behavior. As our research focuses on hospital physician relationships and more specific alignment of the medical staff within the hospital, organizational commitment can be considered a useful construct to incorporate in our conceptual model. Furthermore, by placing organizational commitment within the wider conceptual framework we contribute to an increased understanding of the relationship between organizational commitment and various organizational behaviors (Solinger, Van Olffen & Roe, 2008). Although there are variable definitions of organizational commitment, they all build on the notion of the individual's attachment or linkage to an organization (Swales, 2002). Traditionally the management literature has analyzed these relations as individual-organization linkages, in which individuals exchange professional contributions and effort for psychological and material inducements. These psychological contracts are generally viewed as committing individuals to the relation (Allen & John, 1990). The research community has largely adopted this view such that high commitment has effectively become equated with positive feelings towards the organization and its values. In essence, it can be described as an assessment of the congruence between an individual's own values and beliefs and those of the organization (Swales, 2002). As such it is possible that physician commitment is a necessary foundation for achieving the anticipated benefits of the various integration strategies. Consequently, physician-hospital commitment acts as an intermediate hospital performance outcome resulting in revenue enhancement, cost containment and quality improvement (Burns et al., 2008). In our

conceptual model, we follow this view in which commitment is the outcome of the linkages of physicians and the organization, and not the linkages per se. We consider commitment as an intermediate outcome of non-economic integration strategies and economic integration strategies, which ultimately leads to higher hospital performance. Theoretically, the dominant model in organizational commitment was conceptualized by Allen and Meyer (1990). They developed the three-component model of organizational commitment, on the basis of the idea that organizational commitment comes in three distinct forms; affective, continuance and normative commitment. Initially a distinction was made between affective and continuance commitment, and the affective component defined as the emotional attachment to, identification with and involvement in the organization and continuance commitment defined as the perception of costs associated with leaving the organization (Meyer & Allen, 1984) Later they added the third distinguishable component, normative commitment which refers to the feelings of obligation to remain with the organization (Allen et al., 1990). This model has received considerable empirical support (Meyer, Stanley, Herscovitch & Topolnytsky, 2002; Wasti, 2005). The most important rationale for the development of this model is that, all three forms of commitment relate differently to measures of other work-related behaviors (e.g. organizational citizenship behavior). In general, affective commitment is expected to have the strongest positive relation, followed by normative commitment; continuance commitment is expected to be unrelated, or even to have a small negative relation, to desirable work behaviors and performance (Meyer et al. 2002). Based on these findings, it can be argued that there is little to be gained by fostering continuance commitment in employees. The limited empirical research about the influence of economic integration

strategies on physician organizational commitment supports this argument. Several studies conclude that equity ownership (Alexander et al., 2001), risk sharing (Alexander et al., 2001) and the use of incentives results in few differences in organizational commitment (Alexander et al. 2001; Burns, Alexander, Shortell, Zuckerman, Budetti, Gillies et al., 2001; Burns et al., 1992). These findings question the utility of economic integration strategies in directly increasing physician commitment to the hospital. More importantly, Alexander and colleagues (2001) found bonuses and withholds that hold individual physicians accountable for their behaviors, generate the opposite results, reducing behavioral commitment of physicians to hospitals. This is consistent with the reported small negative effect of continuance commitment on desirable work behaviors and performance (Meyer et al., 2002). In light of these findings, It is important for future research to investigate the extent to which high levels of continuance commitment weakens the positive impact of both affective and normative commitment (Wasti, 2005; Burns et al., 2001). If there is an important negative effect, hospital management may be faced with the choice of realizing short-term productivity benefits, realized by incentives, versus benefits of long term commitment. If this is the case, in the long run these economic alignment mechanisms may backfire on organizations that wish to promote long term relations between the physicians and the organization.

DIRECTIONS FOR FUTURE RESEARCH

The above theoretical arguments and model combined with the results of previous research indicate directions for future research that need to be explored further. First, compared to economic integration, few research studies have focused on noneconomic

integration strategies. It has been argued that approaches that recognize and meet physicians' professional career needs to build their practices appear to be successful in achieving greater alignment (Shortell et al., 2001). Taking into account the rule of reciprocity of social exchange theory, we argue that future research should focus on the effects of noneconomic integration. More specifically the constructs of perceived organizational support and perceived psychological contract violation may prove to be fertile ground for future research (Coyle-Shapiro & Conway, 2005).

Second, little is still known about the effects of economic integration strategies in realizing direct hospital physician alignment. Recent research suggests that explicit financial incentives coincided with a significant change in practice (e.g. Ketcham and Furukawa, 2008). These findings should be tested empirically within a hospital context. Future research should investigate the difference between the different instruments and the effect of the size of payment (Magnus, 1999). In addition, this research should incorporate both the individual and the physician-group level and investigate the appropriate mix of financial arrangements within these groups (Alexander et al., 2001; Gold, 1999).

Third, when investigating physician-hospital integration, both economic and noneconomic integration strategies should be included. While a few researchers do incorporate both integration strategies to investigate their impact on overall integration (Mark et al. 1998), they generally do not incorporate the interrelationship between these integration strategies. Moreover, they do not use the more recent and practical classification scheme proposed by Burns & Muller (2008), used within our conceptual framework. Considering the possible interaction effect, future research should investigate

both integration strategies simultaneously. We argue that the construct of organizational commitment could increase understanding of the interplay between both approaches. More specifically, the three component model of Allen and Meyer (1990) provides the possibility to measure the effect of both types of integration strategies. Although organizational commitment is a major focus of research (Meyer et al. 2002), little is known about physician organizational commitment. As indicated above, previous research is scarce and concentrated mainly on personal characteristics instead of organizational factors. Future research needs to clarify the importance of the construct and the influence on physician performance and ultimately on hospital performance. This highly needed research would make an important contribution in the practical understanding of HPRs and would clarify the inter-relationship between economic -, noneconomic integration and performance outcomes in a hospital setting.

CONCLUSION

In this study we aimed to rethink the management of HPRs. It extends current research by developing a conceptual model incorporating both economic and noneconomic integration. In doing so, this study challenges scholars and practitioners to consider the complexity inherent to the management of HPRs more holistically. Specifically, we argue that both strategies should be seen as complementary, rather than a substitution to each other. However, no empirical study or conceptual article has combined both management approaches. Our model provides a parsimonious structure for integrating both approaches. On the one hand, building on agency theory we incorporated risk as an important antecedent to economic integration. We emphasize the importance of the

physician group level resulting in risk pooling (Gold, 1999), the blending of financial incentives (Robinson et al., 2004) and the associated behavioral diseconomies of scale (Conrad et al. 2004). On the other hand, we incorporated trust as an important antecedent to noneconomic integration strategies (Zuckerman et al., 1998). Building on social exchange theory we apply the principle of reciprocity to HPRs. We operationalized this indirect effect on hospital performance by incorporating the construct of physician hospital commitment. Although effective relationships are built on trust and commitment (Gillies et al., 2001) there has been little research focusing on noneconomic integration strategies. We suggest future research should primarily focus on noneconomic integration strategies and the interaction effect with economic integration.

REFERENCES

- Ahern, M. & Scott, E. 1994. Regional and individual differences in physician practices for joint-ventured versus non-joint-ventured physicians. *Health Services Research*, 28(6): 785-801.
- Alexander, J. A., Waters, T. M., Boykin, S., Burns, L. R., Shortell, S. M., Gillies, R. R., Budetti, P. P., & Zuckerman, H. S. 2001. Risk assumption and physician alignment with health care organizations. *Medical Care*, 39(7): 46-61.
- Alexander, J. A., Waters, T. M., Burns, L. R., Shortell, S. M., Gillies, R. R., Budetti, P. P., & Zuckerman, H. S. 2001. The ties that bind - Interorganizational linkages and physician-system alignment. *Medical Care*, 39(7): 30-45.
- Allen, N. J. & John, P. M. 1990. The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, 63(1): 1-18.
- Armour, B. S., Pitts, M. M., Maclean, R., Cangialose, C., Kishel, M., Imai, H., & Etchason, J. 2001. The effect of explicit financial incentives on physician behavior. *Archives of Internal Medicine*, 161(10): 1261-1266
- Ashmos, D. P., Huonker, J. W., & McDaniel, R. R., Jr. 1998. Participation as a complicating mechanism: the effect of clinical professional and middle manager participation on hospital performance. *Health Care Management Review*, 23(4): 7-20.
- Ashmos, D. P. & McDaniel, R. R., Jr. 1991. Physician participation in hospital strategic decision making: the effect of hospital strategy and decision content. *Health Services Research*, 26(3): 375-401.
- Atun, R. A. 2003. Improving the doctor-manager relationship. Doctors and managers need to speak a common language. *British Medical Journal*, 326(7390): 655.
- Berenson, R. A., Bodenheimer, T., & Pham, H. H. 2006a. Specialty-service lines: Salvos in the new medical arms race. *Health Affairs*, 25(5): 337-343.
- Berenson, R. A., Ginsburg, P. B., & May, J. H. 2007. Hospital-physician relations: Cooperation, competition, or separation? *Health Affairs*, 26(1): 31-43.
- Blau, P. M. (1964). *Exchange and Power in Social Life*. New York: John Wiley & Sons.
- Boadway, R., Marchand, M., & Sato, M. 2004. An optimal contract approach to hospital financing. *Journal of Health Economics*, 23(1): 85-110.
- Bodenheimer, T. 1996. The HMO backlash - Righteous or reactionary? *New England Journal of Medicine*, 335(21): 1601-1604.

Bodenheimer, T. S. & Grumbach, K. 1996. Capitation or decapitation: keeping your head in changing times. *Journal of the American Medical Association*, 276(13): 1025-1031.

Budetti, P. P., Shortell, S. M., Waters, T. M., Alexander, J. A., Burns, L. R., Gillies, R. R., & Zuckerman, H. 2002. Physician and health system integration. *Health Affairs*, 21(1): 203-210.

Bunderson, J.S. 2001. How Work Ideologies Shape the Psychological Contracts of Professional Employees: Doctors' Responses to Perceived Breach. *Journal of Organizational Behavior*, 22:717-41

Burns, L. R., Alexander, J. A., Shortell, S. M., Zuckerman, H. S., Budetti, P. P., Gillies, R. R., & Waters, T. M. 2001. Physician commitment to organized delivery systems. *Medical Care*, 39(7): 9-29.

Burns, L. R., Andersen, R. M., & Shortell, S. M. 1990. The effect of hospital control strategies on physician satisfaction and physician-hospital conflict. *Health Services Research*, 25(3): 527-560.

Burns, L. R., Housman, M. G., Booth, R. E., Jr., & Koenig, A. 2009. Implant vendors and hospitals: competing influences over product choice by orthopedic surgeons. *Health Care Management Review*, 34(1): 2-18.

Burns, L. R. & Muller, R. W. 2008. Hospital-physician collaboration: landscape of economic integration and impact on clinical integration. *Milbank Quarterly*, 86(3): 375-434.

Burns, L. R., Nash, D. B., & Wholey, D. R. 2007. The evolving role of third parties in the hospital physician relationship. *American Journal of Medical Quality*, 22(6): 402-409.

Burns, L. R. & Wholey, D. R. 1992. Factors Affecting Physician Loyalty and Exit - A Longitudinal Analysis of Physician-Hospital Relationships. *Health Services Research*, 27(1): 1-24.

Cardinaels, E., Roodhooft, F., & van Herck, G. 2004. Drivers of cost system development in hospitals: results of a survey. *Health Policy*, 69(2): 239-252.

Casalino, L. & Robinson, J. C. 2003. Alternative models of hospital-physician affiliation as the United States moves away from tight managed care. *Milbank Quarterly*, 81(2): 331-334.

Casalino, L. P., November, E. A., Berenson, R. A., & Pham, H. H. 2008. Hospital-Physician Relations: Two Tracks And The Decline Of The Voluntary Medical Staff Model. *Health Affairs*, 27(5): 1305-1314.

Chaix-Couturier, C., Durand-Zaleski, I., Jolly, D., & Durieux, P. 2000. Effects of financial incentives on medical practice: results from a systematic review of the literature

and methodological issues. *International Journal for Quality in Health Care*, 12(2): 133-142.

Ciliberto, F. & Dranove, D. 2006. The effect of physician-hospital affiliations on hospital prices in California. *Journal of Health Economics*, 25(1): 29-38.

Cohn, K., Friedman, L. H., & Allyn, T. R. 2007. The tectonic plates are shifting: cultural change vs. mural dyslexia. *Frontiers Health Services Management*, 24(1): 11-26.

Cohn, K. H. 2009. A practicing surgeon dissects issues in physician-hospital relations. *Journal of Healthcare Management*, 54(1): 5-10.

Colquitt, J. A. & Zapata-Phelan, C. P. 2007. Trends in theory building and theory testing: A five-decade study of the Academy of Management Journal. *Academy of Management Journal*, 50(6): 1281-1303.

Conrad, D. A., Sales, A., Liang, S. Y., Chaudhuri, A., Maynard, C., Pieper, L., Weinstein, L., Gans, D., & Piland, N. 2002. The impact of financial incentives on physician productivity in medical groups. *Health Services Research*, 37(4): 885-906.

Cortese, D. & Smoldt, R. 2007. Taking steps toward integration. *Health Affairs*, 26(1): 68-71.

Coyle-Shapiro, J. A. M. & Conway, N. 2005. Exchange relationships: Examining psychological contracts and perceived organizational support. *Journal of Applied Psychology*, 90(4): 774-781.

Cuellar, A. E. & Gertler, P. J. 2006. Strategic integration of hospitals and physicians. *Journal of Health Economics*, 25(1): 1-28.

Debrock, L. & Arnould, R. J. 1992. Utilization control in HMOs. *Quarterly Review of Economics and Finance*, 32(3): 31-53.

Dynan, L., Bazzoli, G. J., & Burns, L. R. 1998. Assessing the extent of integration achieved through physician-hospital arrangements. *Journal of Healthcare Management*, 43(3): 242-261.

Eisenhardt, K. M. 1989. Agency Theory - An Assessment and Review. *Academy of Management Review*, 14(1): 57-74.

Ford, J. M. & Kaserman, D. L. 2000. Ownership structure and the quality of medical care: Evidence from the dialysis industry. *Journal of Economic Behavior & Organization*, 43(3): 279.

Gaski, J. F. 1984. The Theory of Power and Conflict in Channels of Distribution. *Journal of Marketing*, 48(3): 9-29.

- Gregory, D. 1992. Strategic alliances between physicians and hospitals in multihospital systems. *Hospital Health Services Administration*, 37(2): 247-258.
- Gillies, R. R., Zuckerman, H. S., Burns, L. R., Shortell, S. M., Alexander, J. A., Budetti, P. P., & Waters, T. M. 2001. Physician-system relationships stumbling blocks and promising practices. *Medical Care*, 39(7 Suppl 1): 92-106.
- Gillies, R. R., Zuckerman, H. S., Burns, L. R., Shortell, S. M., Alexander, J. A., Budetti, P. P., & Waters, T. M. 2001. Physician-system relationships: stumbling blocks and promising practices. *Medical Care*, 39(7 Suppl 1): 92-106.
- Gillies, R. R. & Shortell, S. M. 1993. Conceptualizing and measuring integration: Findings from the health systems integration study. *Hospital & Health Services Administration*, 38(4): 447.
- Goes, J. B. & Zhan, C. 1995. The effects of hospital-physician integration strategies on hospital financial performance. *Health Services Research*, 30(4): 507-530.
- Gold, M. 1999. Financial incentives: current realities and challenges for physicians. *Journal of General Internal Medicine*, 14 (Suppl 1): 6-12.
- Goldsmith, J. 2007. Perspective - Hospitals and physicians: Not a pretty picture. *Health Affairs*, 26(1): 72-75.
- Gosden, T., Forland, F., Kristiansen, I. S., Sutton, M., Leese, B., Giuffrida, A., Sergison, M., & Pedersen, L. 2000. Capitation, salary, fee-for-service and mixed systems of payment: effects on the behavior of primary care physicians. *Cochrane Database Systematic Reviews*,(3)
- Gouldner, A. W. 1960. The Norm of Reciprocity - A Preliminary Statement. *American Sociological Review*, 25(2): 161-178.
- Grumbach, K., Osmond, D., Vranizan, K., Jaffe, D., & Bindman, A. B. 1998. Primary care physicians' experience of financial incentives in managed-care systems. *New England Journal of Medicine*, 339(21): 1516-1521.
- Hadley, J., Mitchell, J. M., Sulmasy, D. P., & Bloche, M. G. 1999. Perceived financial incentives, HMO market penetration, and physicians' practice styles and satisfaction. *Health Services Research*, 34(1 Pt 2): 307-321.
- Hariri, S., Prestipino, A. L., & Rubash, H. E. 2007. The hospital-physician relationship - Past, present, and future. *Clinical Orthopaedics and Related Research*,(457): 78-86.
- Harris, J.E., 1977. The internal organization of hospitals: Some economic implications. *Bell Journal of Economics*, 8: 467-482.
- Harris, C., Hicks, L. L., & Kelly, B. J. 1992. Physician-hospital networking: avoiding a shotgun wedding. *Health Care Management Review*, 17(4): 17-28.

- Hekman, D. R., Bigley, G. A., Steensma, H. K., & Hereford, J. F. 2009. Combined Effects of Organizational and Professional Identification on the Reciprocity Dynamic for Professional Employees. *Academy of Management Journal*, 52(3): 506-526.
- Hickson, G. B., Altemeier, W. A., & Perrin, J. M. 1987. Physician reimbursement by salary or fee-for-service: effect on physician practice behavior in a randomized prospective study. *Pediatrics*, 80(3): 344-350.
- Hillman, A. L., Pauly, M. V., & Kerstein, J. J. 1989. How do financial incentives affect physicians' clinical decisions and the financial performance of health maintenance organizations? *New England Journal of Medicine*, 321(2): 86-92.
- Hirschman, A. O. 1984. Against Parsimony: Three Easy Ways of Complicating Some Categories of Economic Discourse. *American Economic Review*, 74(2): 89.
- Ibay, E. 2007. Hospital-physician informed consent: new use for an old doctrine. *Journal of Healthcare Management*, 52(4): 235-245.
- Jensen, M. C. & Meckling, W. H. 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4): 305-360.
- Ketcham, J. D. & Furukawa, M. F. 2008. Hospital-physician gainsharing in cardiology. *Health Affairs*, 27(3): 803-812.
- KirkmanLiff, B. L., Huijsman, R., vanderGrinten, T., & Brink, G. 1997. Hospital adaptation to risk-bearing: Managerial implications of changes in purchaser-provider contracting. *Health Policy*, 39(3): 207-223.
- Kralewski, J. E., Rich, E. C., Bernhardt, T., Dowd, B., Feldman, R., & Johnson, C. 1998. The organizational structure of medical group practices in a managed care environment. *Health Care Management Review*, 23(2): 76-96.
- Lachman, R. & Noy, S. 1996. Reactions of salaried physicians to hospital decline. *Health Services Research*, 31(2): 171-190.
- Lega, F. & DePietro, C. 2005. Converging patterns in hospital organization: beyond the professional bureaucracy. *Health Policy*, 74(3): 261-281.
- Lindenauer, P. K., Remus, D., Roman, S., Rothberg, M. B., Benjamin, E. M., Ma, A., & Bratzler, D. W. 2007. Public reporting and pay for performance in hospital quality improvement. *New England Journal of Medicine*, 356(5): 486-496.
- Loughry, M. L. & Elms, H. 2006. An Agency Theory Investigation of Medical Contractors versus Member Physicians. *Journal of Managerial Issues*, 18(4): 547-569.
- Magnus, S. A. 1999. Physicians' financial incentives in five dimensions: a conceptual framework for HMO managers. *Health Care Management Review*, 24(1): 57-72.

Manning, W. G., Jr., Wells, K. B., & Benjamin, B. 1987. Use of outpatient mental health services over time in a health maintenance organization and fee-for-service plans. *American Journal of Psychiatry*, 144(3): 283-287.

Mark, T. L., Evans, W. N., Schur, C. L., & Guterman, S. 1998. Hospital-physician arrangements and hospital financial performance. *Medical Care*, 36(1): 67-78.

Mayer, R. C., Davis, J. H., & Schoorman, F. D. 1995. An integrative model of organizational trust. *Academy of Management Review*, 20(3): 709-734

McKinstry, B., Hanley, J., Heaney, D., McCloughan, L., Elton, R., & Webb, D. J. 2006. Impact on hypertension control of a patient-held guideline: a randomised controlled trial. *British Journal of General Practice*, 56(532): 842-847.

McLean, R. A. 1989. Agency costs and complex contracts in health care organizations. *Health Care Management Review*, 14(1): 65-71.

Meyer, J. P. & Allen, N. J. 1984. Testing the 'Side-Bet Theory' of Organizational Commitment: Some Methodological Considerations. *Journal of Applied Psychology*, 69(3): 372-378.

Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnysky, L. 2002. Affective, Continuance, and Normative Commitment to the Organization: A Meta-analysis of Antecedents, Correlates, and Consequences. *Journal of Vocational Behavior*, 61(1): 20-52.

Mitchell, J. M. 2008. Do financial incentives linked to ownership of specialty hospitals affect physicians' practice patterns? *Medical Care*, 46(7): 732-737.

Montague, J. 1993. Straight talk. Doctor-driven systems tell how they've gained physician allies. *Hospital & Health Networks*, 67(13): 22-27.

Montgomery, K. & Schneller, E. S. 2007. Hospitals' strategies for orchestrating selection of physician preference items. *Milbank Quarterly*, 85(2): 307-335.

Newell, A., & Simon, H.A. 1972. *Human Problem Solving*. Englewood Cliffs, NJ: Prentice-Hall

Newhouse, J.P. 1973. The Economics of Group Practice. *The Journal of Human Resources*. 8(1):37-56

Pauly, M. & Redisch, M. 1973. Not-For-Profit Hospital As A Physicians Cooperative. *American Economic Review*, 63(1): 87-99.

Pontes, M. C. 1995. Agency Theory - A Framework for Analyzing Physician Services. *Health Care Management Review*, 20(4): 57-67.

- Porter, M. E. & Teisberg, E. O. 2006. *Redefining Health Care: Creating Value-Based Competition on Results*. Harvard Business School Press.
- Purunam, P. H. A. N. & Vanneste, B. S. 2009. Trust and governance: untangling a tangled web. *Academy of Management Review*, 34(1): 11-31
- Ryan, A. M. 2009. Effects of the Premier Hospital Quality Incentive Demonstration on Medicare Patient Mortality and Cost. *Health Services Research*, 44(3): 821-842.
- Safavi, K. 2006a. Aligning Financial Incentives. *Journal of Healthcare Management*, 51(3): 146-151
- Safavi, K. 2006b. Pay for performance: finding common ground. *Journal of Healthcare Management*, 51(1): 9-12.
- Sappington, D. E. M. 1991. Incentives in Principal-Agent Relationships. *Journal of Economic Perspectives*, 5(2): 45-66.
- Schoorman, F. D., Mayer, R. C., & Davis, J. H. 2007. An Integrative Model of Organizational Trust: Past, Present and Future. *Academy of management review*. 32(2): 344-354
- Schut, F. T. & van Doorslaer, E. K. A. 1999. Towards a reinforced agency role of health insurers in Belgium and the Netherlands. *Health Policy*, 48(1): 47-67.
- Scott, W. R. 1982. Managing professional work: three models of control for health organizations. *Health Services Research*, 17(3): 213-240.
- Shafrin, J. 2009. Operating on commission: analyzing how physician financial incentives affect surgery rates. *Health Economics*
- Sharma, A. 1997. Professional as agent: Knowledge asymmetry in agency exchange. *Academy of Management Review*, 22(3): 758-798.
- Shen, J., Andersen, R., Brook, R., Kominski, G., Albert, P. S., & Wenger, N. 2004. The effects of payment method on clinical decision-making: physician responses to clinical scenarios. *Medical Care*, 42(3): 297-302.
- Shortell, S. M., Alexander, J. A., Budetti, P. P., Burns, L. R., Gillies, R. R., Waters, T. M., & Zuckerman, H. S. 2001. Physician-system alignment: introductory overview. *Medical Care*, 39(7 Suppl 1): 1-8.
- Shortell, S. M., Waters, T. M., Clarke, K. W., & Budetti, P. P. 1998. Physicians as double agents: maintaining trust in an era of multiple accountabilities. *Journal of the American Medical Association*, 280(12): 1102-1108.
- Sitkin, S. B. & Roth, N. L. 1993. Explaining The Limited Effectiveness of Legalist Remedies For Trust/Distrust. *Organization Science*, 4(3): 367-392

- Smith, H. L., Reid, R. A., & Piland, N. F. 1990. Managing hospital-physician relations: a strategy scorecard. *Health Care Management Review*, 15(4): 23-33
- Shrank, W., Ettner, S. L., Slavin, P. H., & Kaplan, H. J. 2005. Effect of physician reimbursement methodology on the rate and cost of cataract surgery. *Archives of Ophthalmology*, 123(12): 1733-1738.
- Solinger, O. N., Van Olffen, W., & Roe, R. A. 2008. Beyond the Three-Component Model of Organizational Commitment. *Journal of Applied Psychology*, 93(1): 70-83.
- Strope, S. A., Daignault, S., Hollingsworth, J. M., Ye, Z., Wei, J. T., & Hollenbeck, B. K. 2009. Physician ownership of ambulatory surgery centers and practice patterns for urological surgery: evidence from the state of Florida. *Medical Care*, 47(4): 403-410.
- Swales, S. 2002. Organizational commitment: a critique of the construct and measures. *International Journal of Management Reviews*, 4(2): 155.
- Sharma, A. 1997. Professional as Agent/ Knowledge Assymetry in Agency Exchange. *Academy of Management Review*, 22(3): 758-798.
- Succi, M. J., Lee, S. Y., & Alexander, J. A. 1998. Trust between managers and physicians in community hospitals: the effects of power over hospital decisions. *Journal of Healthcare Management*, 43(5): 397-414.
- Torgerson, P. M. 2008. Gain-sharing with the hospital: what is possible in the current legal environment. *Orthoedic Clinics of North America*., 39(1): 33-6, vi.
- Tschannen, D. & Kalisch, B. J. 2009. The Effect of Variations in Nurse Staffing on Patient Length of Stay in the Acute Care Setting. *Western Journal of Nursing Research*, 31(2): 153-170.
- Wasti, S. A. 2005. Commitment Profiles: Combinations of Organizational Commitment Forms and Job Outcomes. *Journal of Vocational Behavior*, 67(2): 290-308.
- Wilensky, G. R., Wolter, N., & Fischer, M. M. 2007. Gain sharing: a good concept getting a bad name? *Health Affairs*, 26(1): w58-w67.
- Young, G. J., White, B., Burgess, J. F., Berlowitz, D., Meterko, M., Guldin, M. R., & Bokhour, B. G. 2005. Conceptual issues in the design and implementation of pay-for-quality programs. *American Journal of Medical Quality*, 20(3): 144-150.
- Zaheer, A., McEvily, B., & Perrone, V. 1998. Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organization Science*, 9(2): 141-159.
- Zheng, J., Roehrich, J. K., & Lewis, M. A. 2008. The dynamics of contractual and relational governance: Evidence from long-term public-private procurement arrangements. *Journal of Purchasing & Supply Management*, 14(1): 43-54.

Figure 1

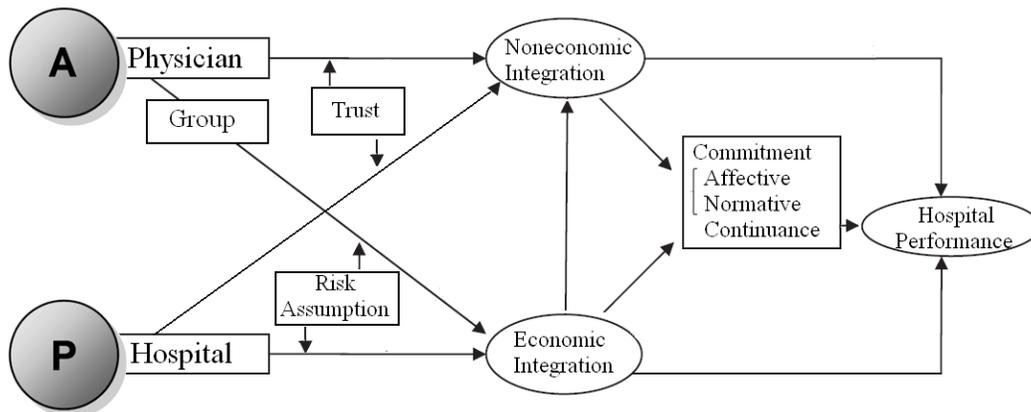


Figure 2

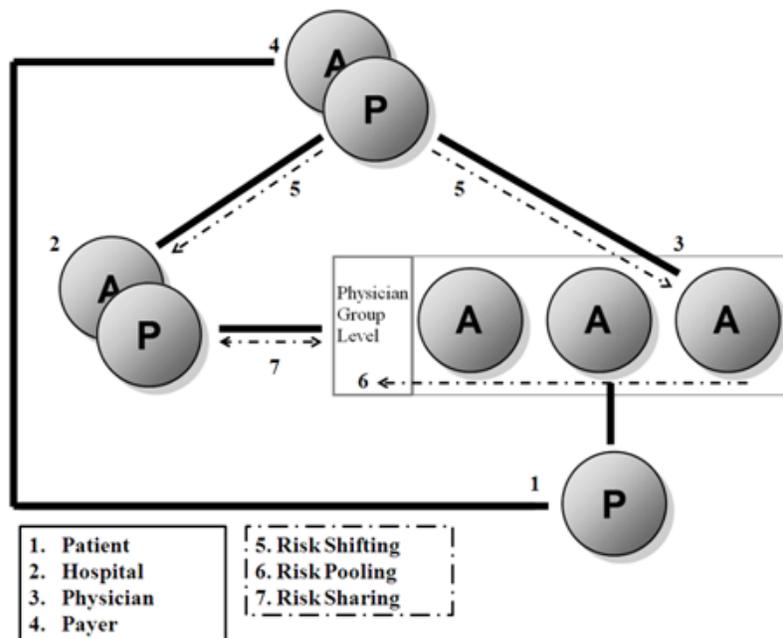


Table 1

Stage 1- Bibliographical databases selected

- Web of Science, Pub Med and EBSCO

Stage 2 – Time frame

- We restricted the studies eligible for inclusion to those published between January 1989 and June 2009. This time frame was selected because in this period new organizational arrangements with tighter affiliation between physicians and hospitals were initiated in the US as a response to managed care (Berenson, Ginsberg & May, 2007; Casalino & Robinson, 2003). In the same period Health Care policy debate in European countries also concentrated on the pros and cons of introducing some form of 'managed competition' or 'internal markets' to enhance efficiency of health care delivery and to contain costs (Schut & van Doorslaer, 1999).

Stage 3 – Search words used for coverage of databases

- 'Physician* AND hospital* AND (relation* OR alignment OR integration)

Stage 4 – Articles filtered

- Search results were narrowed by title. Duplicates were removed, and the search results were further narrowed according to:
 - (1) Inclusion criteria stipulated that citations should be: a peer reviewed English journal, across US or Europe and be conceptual, quantitative or qualitative.
 - (2) Exclusion criteria stipulated that citations cannot be: industry extracts, or scholarly publications focussing the relation between primary care physicians and hospitals or vertical integration to organized delivery systems.

Stage 5 – Analysis

Abstracts of relevant citations were read and classified in two categories (directly relevant and less relevant). Only the directly relevant citations were included for the review.