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The Association of Organizational Performance and Market Factors with Hospital Acquisition

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The Association of Organizational Performance and Market
Factors with Hospital Acquisition

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy at
Virginia Commonwealth University

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Abstract

THE ASSOCIATION OF ORGANIZATIONAL PERFORMANCE AND MARKET

FACTORS ON HOSPITAL ACQUISITION

Jeffrey P. Harrison, Ph.D

A dissertation submitted in partial fulfillment of the
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This research focuses on the relationship between
hospital acquisition and operational performance, market
factors, and organizational factors following the Balanced
Budget Act of 1997. Resource dependence and financial
theory guided the methodology. According to resource
dependence theory, organizations desire to remain autonomous
until they are faced with scarce resources. This scarcity
of resources is caused by the dynamic interaction with the
external environment. Financial theory recognizes the
organizations ability to be successful by ensuring access to
capital through profitability, strong bond ratings, lines of

credit, and equity financing. The Balanced Budget Act of 1997 reduced hospital Medicare reimbursement and will have an influence on hospital acquisition.

The following research questions guide this study:

- What are the market, operational, and organizational factors that profile the characteristics of hospitals acquired after the Balanced Budget Act?

Underlying research questions evaluate whether acquired hospitals are inefficiently managed and operate financially at a loss. They become targets for takeover because they lack the capital to modernize their plant and to expand their size and services. However, acquired hospitals may have a strong market position.

- Do acquired hospitals operate at a financial loss?

- Do acquired hospitals own aging plant and equipment and lack the financial capital to replace their plant and equipment?

- Do acquired hospitals have facilities located in markets with less competition and fewer HMOs?

- Do acquired hospitals have smaller facilities and provide fewer services?

Given the results of the descriptive statistics and logistic regression, it may be concluded that reductions in Medicare

reimbursement have reduced hospital return on assets, and have resulted in fewer hospital acquisitions. On an individual hospital basis, those facilities with lower occupancy rates, fewer services, older facilities and for-profit status are likely targets for hospital acquisition.

Chapter 1

Introduction

The passage by Congress of the Balanced Budget Act
(BBA) of 1997 had a significant impact on the financial
viability of hospitals. This law, besides responding to the
growing problem of Americans lacking health insurance,
establishes cost-cutting measures to curtail the growth in
Medicare health care expenditures. After passage of the
BBA, hospitals' Medicare profits declined, as did their
overall financial performance. Among other strategies, they
have sought new sources of capital in order to modernize
their facilities and thus expand their market positions. One
option has been acquisition by another hospital or multi-
hospital system.

The aim of the present research is an empirical
analysis of the underlying market, operational, and
organizational factors associated with hospital acquisitions
since BBA. Because previous research has evaluated only
those acquisitions made before BBA, this research will add
to the understanding of hospital acquisitions.

Hospitals and the Changing Healthcare Environment

Two early efforts by Congress to reduce health care expenditures were the HMO Act of 1973 and the TEFRA Act of 1982. Both Acts established innovative approaches to funding health care services.

The HMO Act of 1973 increased funding for managed care, marking a fundamental shift in the payment structure of the health care industry. According to the Bureau of the Census, 119th edition, managed care enrollment grew from 19 percent of the population in 1990 to 35 percent in 1998, when over 64 million Americans were enrolled.

The TEFRA Act of 1982 established the Medicare inpatient prospective payment system (PPS), which set payments to hospitals according to Diagnostic Related Groups (DRGs). Under PPS payment is made prospectively to the hospital for each Medicare discharge. PPS payments are intended to cover all hospital costs, except capital costs, for inpatient services to Medicare beneficiaries. The system leaves hospitals at risk for any patient related expenditure beyond the DRG rate. Thus TEFRA, as well as the HMO legislation, increased at risk capitation.

From 1990 to 1997, hospitals reacted to the new at risk payment structures of Medicare and managed care. The

combination of legislation and reduced payments from private third party payers forced them to reduce costs. To do so, they reduced length of stay, cut operating costs and restructured. Under these pressures to improve efficiency, acute care hospitals indeed did lower their inpatient costs and shortened their lengths of stays. As noted by the Medicare Payment Advisory Commission (2001), from 1990 to 1993 cost per case for all U.S. hospitals increased at an average rate of 5 percent per year. However, from 1994 through 1997, average cost per case declined for every year except 1994, with the largest decline, a negative 2.3 percent occurring in 1997. Hospital length of stay declined an average of 2.4 percent each year from 1990 to 1997. The greatest decline in length of stay was 4.3 percent in 1995.

The steep rise in Medicare expenditures by 1997, lead Congress to enact the Balanced Budget Act in that year. The law not only reduced Medicare inpatient and outpatient payments to hospitals, but also reduced payments for hospitals' post-acute services, for home health care, skilled nursing care, rehabilitation care and psychiatric services. As a result of these reductions and the continued payment pressures of third party payers, overall hospital profit margins in 1999 fell to 2.8 percent. Medicare

inpatient profit margins fell from 16.9 percent in 1997 to 12.0 percent in 1999.

Since the BBA of 1997, hospitals' profit margins have declined and other lines of business such as outpatient services, home health, or skilled nursing facilities also have had significant losses. Thus further deterioration in hospital financial performance occurred in 1998 and 1999.

Significance of the Study

The results of the study will enhance the current body of knowledge about hospital acquisitions. The study will provide understanding of the key variables related to hospital acquisitions after the cost-cutting legislation of the Balanced Budget Act of 1997.

The growth in mergers and acquisitions from 1994 to 1996 supports the premise that major changes in the allocation of resources within the health care industry have increased environmental uncertainty for acute care hospitals. Though reduced since 1997, the continuing merger and acquisitions show hospitals are still contending with environmental uncertainty, and are adapting to survive. In particular, acute care hospitals are agreeing to acquisition

by other health care organizations, to maintain patient volume as well as for access to financial resources.

In addition, as HMOs and other payers continue to migrate to lower cost providers, acute care hospitals may find it difficult to maintain sufficient patient volumes and revenue to finance investments in new technology and physical plant improvements.

This research sets out to advance the understanding of how acute care hospitals that are facing erosion of their patient base as well as restrictive payment systems adapt their organizational structures under such financial pressures. It will explore the relationship between hospital acquisitions and certain factors: market, operating performance, and organizational structure. Insight into these relationships should benefit health care policy makers, economists and hospital executives seeking to understand the changes to the health care environment of the late 1990s. From a policy standpoint, the contribution of this study is its assessment of hospital acquisitions after the passage of the BBA of 1997. The study thus complements previous research on acquisitions prior to the BBA (Starkweather, 1981; Alexander and Morrisey, 1987, 1988, 1989; McCue and Furst, 1986; McCue, 1988; Bogue, et al., 1995).

Purpose of the Study

In the face of increasing uncertainty in the health care industry, the survival of many acute care hospitals is in question. The purpose of this study is to profile market factors, operational performance factors, and organizational characteristics associated with the acquisition of hospitals after the Balanced Budget Act of 1997, in order to add to empirical knowledge about the survival strategy adopted by hospitals.

Hospitals often agree to acquisition to attain a stronger competitive position for managing the uncertainties in the environment. They seek to improve their access to financial resources and thus their opportunity for organizational survival. The acquisition of organizations is well documented in the financial literature. For purposes of this study, the definition of acquisition is as follows: "Whenever one organization is purchased by another organization". This definition is found in the textbook Modern Corporate Finance written by Shapiro (2000) and is accepted within the finance industry.

Research Questions

The primary research question guiding this study is as follows:

- What are the market, operational, and organizational factors that profile the characteristics of hospitals acquired after the Balanced Budget Act?

Underlying research questions evaluate whether acquired hospitals are inefficiently managed and operate financially at a loss. They become targets for takeover because they lack the capital to modernize their plant and to expand their size and services. However, acquired hospitals may have a strong market position. The other research questions are as follows:

- Do acquired hospitals operate at a financial loss?

- Do acquired hospitals own aging plant and equipment and lack the financial capital to replace their plant and equipment?

- Do acquired hospitals have facilities located in markets with less competition and fewer HMOs?

- Do acquired hospitals have smaller facilities and provide fewer services?

Theoretical Approach

The conceptual framework provided by resource dependence theory argues that organizational survival depends on the acquisition of necessary resources from the environment. Since many organizations do not generate all the resources necessary to accomplish their mission, they must interact with the environment to obtain additional resources. One way to do so is to give up some autonomy by being acquired. Use of a conceptual framework based on resource dependence theory is well supported in the health care literature.

Of particular interest is research by Alexander and Morrisey (1989) on the use of resource dependence theory as a framework to evaluate hospital contract management. The analysis by Alexander and Morrisey uses resource dependence theory in demonstrating how organizations often seek an optimum fit with the environment to ensure survival. For organizations facing an environment with high uncertainty, resource dependence provides a solid foundation for developing strategies for organizational improvement by seeking resources externally. In particular, hospital organizations ability to deal with changing patterns of practice and reduced profit creates a concern about their

organizational survival. As discussed by Alexander and
Morrisey, that pressure forces hospitals to interact with
the environment to generate the resources needed for
survival. Such resources may include patients, physicians,
health care technology, or financial capital, depending on a
hospital's situation. The literature also suggests that
hospitals combine to enhance their survival in markets in
which there is excess bed capacity and help ensure access to
financial resources.

Corporate financial theory identifies several
motivating factors that would cause one organization to
acquire another: inefficient management theory, strengthened
market position, economies of scale, information theories,
agency problems, reduced dependence on one business segment,
investment of excess cash, and tax considerations (Copeland
and Weston, 1988; Lloyd, 1997).

Health care acquisition literature suggests that
management inefficiency, market power, and economies of
scale may themselves lead to hospital acquisitions (McCue,
1986; Alexander and Morrisey, 1988; Bogue et al., 1995).
Research by Bazzoli and Andes, (1995) also found that health
systems seek to acquire hospitals that need management
enhancement and improvements in operating efficiency.

Methodology

The study uses a cross-sectional design that examines hospitals acquired in 1999 and 2000 subsequent to the BBA and compares them to hospitals that were not acquired during those time periods. It also includes a pooled model using 1999 and 2000 data. The study examines the relationship between hospital acquisitions and market, operational and organizational factors. The unit of analysis for the study is the individual non-federal, acute-care hospital.

The study performs two types of data analysis. First, descriptive statistics are compiled from the data and analyzed. A univariate analysis test of significance is performed on each independent variable by comparing acquired hospitals to non-acquired hospitals. Correlation analysis was completed to identify potential multicollinearity among the independent variables.

Second, logistic regression analysis is performed, to test the association between the acquired and the non-acquired hospitals, (the dependent variable), and certain market, operational, and organizational factors (the independent variables). The study will also examine the association of the market, operational and organizational

factors with respect to the hospitals acquired by either a for-profit hospital or not-for-profit hospital.

Data are drawn from several sources. According to the nature of the measure, the data are drawn from Modern Healthcare (MHC), the American Hospital Association Survey (AHA), the HCFA Minimum Cost Data Files (HCFA), or the Area Resource File (ARF). These data provide information on market, operational performance, and organizational features associated with hospital acquisition.

Market factors will be analyzed at the county level. Hospital operational performance and organizational characteristics are examined at the hospital level. The data on hospital acquisitions are as reported in Modern Healthcare.

Overview of Following Chapters

Chapter 2 is a review of the pertinent literature, including research related to market factors, organizational performance and hospital mergers. Also reviewed are empirical studies on hospital acquisitions, hospital conversions from not-for-profit to for-profit, and the current health care environment.

Chapter 3 presents the theoretical perspectives and conceptual model for the research. The theories include both the organizational theory of resource dependence and merger and acquisition theories related to corporate finance. These theories are used in developing the hypotheses for the study.

Chapter 4 explains the methodology. It presents the data sources and the variables used for the study. The analysis and statistical procedures are explained in detail.

Chapter 5 presents the results of the analysis. The findings for the variables and their relationships are presented. The chapter includes both descriptive and multivariate findings.

Chapter 6 discusses the results of the research hypotheses. It interprets the results and draws conclusions about the relationships between market factors, operational performance factors, organizational factors and hospital acquisitions. The chapter also points out the implications of the study results for organizational theory and health care policy. Suggestions for further areas of research are offered.

Chapter 2

Literature Review

Recent Trends in Hospital Acquisitions

As recounted by Reardon and Reardon (1995), before 1870 virtually all hospitals in the United States were public or not-for-profit. By 1910, as physician ownership of hospitals increased, 56 percent of hospitals were investor owned. By 1946, however, lower profits and the need to invest in technology had reduced for-profit hospitals to 18 percent of the total. Then the growth of Medicare reimbursement, which began in 1965, led to the resurgence of for-profit hospitals.

The most recent decade, the 1990's, was marked by the trend in hospital ownership toward acquisitions by large for-profit chains. The trend was fostered by hospitals joining networks to gain leverage with managed care companies and to gain access to capital (Kirchheimer, 2001). As shown in Table 1, 88 hospitals were acquired in 1994 and 76 in 1995. The largest acquisition in 1995 was the $5.6 billion acquisition of Health Trust by Columbia HCA (Japsen, 1996). It is noteworthy that both hospital acquisitions and

mergers declined significantly in the years 1998 through 2000, subsequent to the balanced budget act. Reasons for this decline are an important part of the study.

Table 1: Hospital Acquisitions by Year

Year	1994	1995	1996	1997	1998	1999	2000
Number of Acquisitions	88	76	99	42	76	62	63

*Data drawn from Modern Healthcare
Acquisition: Whenever one hospital is purchased by another facility or multi-hospital system.

In 1996, 99 hospitals were acquired which was a record year. It is interesting to note that while the number of facilities acquired increased, the number of multi-facility deals dropped (Bellandi, 1999). In 1996, the growing activity of not-for-profit hospitals was noted with 73 percent of the hospital acquisitions by not-for-profit organizations (Levin, 2001).

In 1997, which saw passage of the Balanced Budget Act (BBA), acquisitions dropped to 42 facilities, a 50 percent reduction from the previous year. Not-for-profit hospitals again dominated the market making 75 percent of the acquisitions (Levin, 2001).

In 1998, reduced Medicare reimbursement, turmoil in the debt markets and lower stock prices all contributed to a low

rate of acquisitions (Levin, 2001). Acquisitions grew slightly, to 76, but were well below the peak of 99 in 1996.

In 1999, hospital acquisitions further declined by 23 percent to 62 facilities. In that year, acquisitions by for-profit organizations dropped 34% from the previous year. At the same time, acquisitions by not-for-profit acquisitions increased 20%. In 1999, a new trend was apparent, for-profit systems were divesting hospital facilities (Bellandi, 2000). Meanwhile, Columbia/HCA Healthcare, the largest for-profit chain, spun off many facilities in two separate divestitures. Tenet Healthcare Corporation, the second largest for-profit chain, also divested hospitals. These two chains reverse consolidations accounted for an increasing number of not-for-profit hospital acquisitions (Bellandi, 2000).

While 2000 saw stock prices rising in the hospital industry, acquisitions grew only slightly to 63 facilities. Acquisitions by for-profit hospitals now comprised 69 percent of the transactions with 31 percent by not-for-profit hospitals (Belandi, 2001). The largest acquisition was the $2.4 billion acquisition of Quorum Health Group by Triad (Levin, 2001). Acquisitions by for-profit hospitals may continue to grow in 2001 if increases in stock prices continue.

Both hospital leadership and national health care policy makers have encouraged the growth in hospital systems through acquisitions, on the assumption that economies of scale provide multi-hospital systems with performance advantages over individual hospitals (Levitz, 1985). Advantages are expected from improved operating efficiency, greater technical expertise, increased market share and more access to capital resources.

The Impact on Hospitals of The BBA of 1997

On August 5, 1997, President Clinton signed the Balanced Budget Act (BBA) of 1997. The BBA was passed in response to double-digit growth in Medicare payments and was intended to help the Medicare trust fund remain solvent. At that time, the Medicare trust fund was expected to remain solvent only until 2008. The passage of the BBA ensured solvency of the Medicare Trust fund until 2025. Since there was a general perception among federal health policy makers that the financial profitability of hospitals was secure, the BBA targeted acute care hospitals as an area in which to reduce Medicare spending.

The Congressional Budget Office (CBO) originally projected the BBA's reduction of Medicare spending to be

$103 Billion from 1998 through 2002. The CBO's revised estimates predicted Medicare reductions greater by $88.5 billion at $191.5 billion (see table 2). Subsequent research by Ernst & Young (2000) projects a reduction in total Medicare spending between 1998 and 2002 of $227 billion.

Table 2: Medicare Spending Projections Under BBA (In billions)

	FY1998	FY1999	FY2000	FY2001	FY2002	Five-Year Difference
Pre-BBA spending	$227.0	$248.2	$273.0	$285.6	$313.7	-
Estimates spending reductions under BBA (12/97)	(6.9)	(15.5)	(27.6)	(17.1)	(35.9)	($130.0)
Estimated spending under BBA (12/97)	220.1	223.7	245.4	268.5	277.8	-
Revised estimated spending under BBA (3/99)	211.0	214.0	229.0	246.0	256.0	-
Additional spending reductions per revised estimate	(9.1)	(18.7)	(16.4)	(22.5)	(21.8)	(88.5)

Source: CBO, "An Analysis of the President's Budgetary Proposals for FY 2000 A Preliminary Report," March 3, 1999; CBO, "Budgetary Implications of the Balanced Budget Act of 1997," December 1997.

A major area of Medicare cost reduction by the BBA was hospital PPS payments. The reductions included: limiting the operating update to an average of 1.7 percent below the market basket; capital payments set at 90 percent of anticipated capital costs; a 29 percent reduction in indirect medical education (IME) payments over 5 years; a 5 percent reduction in the disproportionate share hospital (DSH) payments over 5 years for hospitals that treat large numbers of indigent patients; and the reduction of outlier payments for cases that are excessively expensive (Gutterman, 1995).

The BBA also reduced Medicare spending in the following hospital service lines: outpatient care, skilled nursing facilities (SNFs), home health agencies (HHAs) and psychiatric units.

By 1998, the BBA had brought Medicare spending growth to a halt at $211 billion; in 1999 it was further reduced to $209.3 billion. In 2000 it increased slightly to $216 billion. This period of no growth in Medicare spending sharply contrasted with the 10.1% annual growth for the 6 years before the BBA (Gardner, 2001).

According to Heffler et al. (2001), Medicare spending on hospital services, in particular, reached $124 billion in

1997 and declined $2.3 billion, or by 1.8 percent, in 1998. In 1999, Medicare hospital spending declined by another 0.3 percent. To make up for the losses in Federal funding, hospitals began to aggressively negotiate rates with private health plans. As a result, payments to hospitals by private insurance companies increased from 39 percent of all payments in 1997 to 41 percent in 1999.

Nevertheless, because of the BBA's cap on Medicare expenditures and also lower reimbursements from managed care plans hospital profits fall after 1997. The data show that just before the BBA, Medicare profit margins had increased, from 2.3% in FY 1996 to 3.5% in FY 1997. Following the BBA, Medicare profit margins fell to 2.5% in FY 1998, -0.1% in FY 1999 and –0.5 percent in 2000. Small hospitals (99 beds or less) were hardest hit by the BBA, with Medicare profit margins decreasing from 4.2% in FY 1998 to a - 5.6% in FY 2002, a decrease of 233 percent (Ernst and Young, 1999). However, the same Ernst and Young study projects hospital profit margins to increase to 0.00 percent in 2001 and to 0.5 percent in 2002.

The cuts in reimbursement mandated by the BBA reduced health care facilities earnings, and beginning in 1999 their stock prices fell (Levin, 2001). Following the BBA the credit ratings of hospitals fell as well, with a 100 percent

surge in downgrades in 1998 to the highest level in 10 years (Moody's Investors Service, 1999). As credit ratings decline, the cost of capital increases, putting more pressure on a hospital's profits. If hospitals cannot finance technological improvements, their ability to provide quality patient care is compromised and their market share may suffer. Thus, as the cost of capital increases, this domino affect can force hospitals into acquisition.

Among teaching hospitals, clinical services generate 90 percent of hospital revenue. Prior to the BBA, Medicare clinical payments to teaching hospitals represented 29 percent of this segment of the teaching hospital budget (Anderson et al., 1999). In 1997, before the BBA, teaching hospitals had received an additional $6.8 billion of Medicare payments for indirect medical education (IME). Although, the BBA reduced payments for indirect medical education (IME) by $5.6 billion between 1998 and 2002, $4 billion was reallocated back to teaching hospitals for services to managed care enrollees. As a result, teaching hospitals had, on average, a hospital Medicare margin of 19.0 percent in 1997 compared to 6.7 percent for non-teaching hospitals (Medicare Payment Advisory Commission, 2001). Since similar hospital Medicare margins are

projected for teaching hospitals through 2002, the impact of the BBA on teaching hospitals is minimal.

The recently enacted Balanced Budget Refinement Act of 1999 (BBRA) provided some relief, for hospitals suffering financially from the BBA. This relief included: slowing the reductions in IME payments to teaching hospitals, slowing the reductions in DSH payments and increased payments for post acute care and outpatient care. Projections show the BBRA will provide only $11 billion in additional Medicare payments through 2002 (Medicare Payment Advisory Commission, 2001).

In summary, the BBA shifted the financial crisis in health care from the Medicare trust fund, which is now solvent until 2025, to the acute care hospital industry (Ernst and Young, 2000). The CBO clearly underestimated the magnitude of BBA cuts in Medicare spending, which left hospitals with their lowest profit margins since 1984. Indeed, some organizations: small hospitals, SNFs and HHAs have had negative profit margins. In addition, the BBA has shaken the confidence of the financial markets in the hospital industry, resulting in lower credit ratings. As a result many hospitals are unable to maintain adequate capital levels. Given these factors, many hospitals are at risk to close or be acquired.

Differences Between Merger and Acquisition

The definition of hospital merger is: "the combination of two or more hospitals, often through a pooling of interests, where one of the hospitals survives as a legal entity; or when two or more hospitals combine together to form a new operating entity, replacing the originally independent institutions" (Copeland and Weston, 1988; Downes, 1999). This definition is supported in the financial literature and is consistent with healthcare research (Bazzoli, 1995; Bazolli and Andes, 1995; Connor et al., 1997).

In contrast, the definition of hospital acquisition is: "Whenever one hospital is purchased by another facility or multi-hospital system" (Shapiro, 2000). This definition is consistent with the finance literature and is accepted within the health care industry.

The merger decision is often based not so much on profit maximization as on factors related to the local market: improved market share, enhanced reputation, greater cost efficiency and similar charitable missions. Since a merger is often a pooling of interests, no capital outlay is required. As a result, an organization may merge in

situations where low profit and weak market would not support acquisition.

Many mergers have greatly increased the market share of the affected hospitals. In turn, greater market share has led to a 10 percent increase in hospital DRG reimbursement rates following merger (Krishnan, 2001). The literature supports increased DRG payments among consolidated hospitals due to more aggressive billing following consolidation. It is also possible that increased DRG payments are due to a higher intensity level of service caused by the migration of more acute patients to the consolidated facilities. In markets with higher concentration, i.e. an increase in the Herfindahl-Hirschman Index (HHI) of 2000 points after merger or acquisition, the DRG reimbursement rates grew 15.6 percent (Krishnan, 2001). The increase in reimbursement rates is due to increased market concentration (Krishnan, 2001). These findings are consistent with other recent studies (Keller et al., 1999; Dranove and Ludwick, 1999).

Other potential benefits of merger include cost savings from economies of scale, reduction of unused capacity through pooled resources, better access to capital, higher volumes of specialized procedures and broader geographic coverage (Connor et al., 1997).

In contrast to many of the factors facilitating mergers, the acquirer's decision to purchase a facility is normally based on maximizing profits, as occurs when the sale price of the hospital is below the net present value of the hospital's income stream. An acquiring organization will purchase a hospital when its net revenue exceeds its price. In 1998, the median acquisition price per hospital bed was $210,000, with a price-to-revenue coefficient of .88X (Levin, 2001). From the acquirer's position, revenue and profitability are key considerations in the acquisition decision. Since an acquisition involves financing the purchase, access to capital is also a critical component.

The potential hazards to society of both acquisitions and mergers include: decreased competition, higher consumer prices and less access to clinical care, due to consolidation. As a result, governmental decisions to approve acquisition or mergers must evaluate the effects of the consolidation on the community's welfare.

Hospital Conversion from Not-For-Profit (NFP) to For-Profit (FP)

The primary legal distinction between for-profit and not-for-profit is that for-profit organizations can distribute earnings to individual shareholders but not-for-

profit organizations must retain or spend their earnings (Ettner and Hermann, 2001). Not-for-profit organizations have the benefit of tax exemption. From a public policy perspective, neither form of corporate ownership is optimal at all times. Changes in technology, consumer demand, government regulation and financial markets can provide advantages to the organization for a new form of ownership.

The Center for Health Affairs (1997) defines hospital conversion as: "The Conversion of private not-for-profit institutions, 501 c 3 Corporations, to for-profit enterprises which are able to issue stock and distribute profits". The Center's research found that many hospital conversions are driven by poor financial performance as well as by the necessity to upgrade hospital facilities and equipment. Hospitals that converted from not-for-profit to for-profit were smaller, had lower profit margins, and had higher staffing expenditures than the industry averages (Needleman et al., 1999).

Concern has increased that as not-for-profit health care facilities are acquired by for-profit organizations, charitable assets are being converted to for-profit use and the public is not being compensated for the value represented by the past tax subsidies and other public support. This fact plus the significant impact on market

competition and other issues of public interest have brought increasing scrutiny of for-profit acquisitions by state and federal agencies.

Historically, not-for-profit hospitals raised capital from philanthropic grants, public grants, and their tax subsidized operating surpluses (Robinson, 2000). Since many of these sources are dwindling, the current hospital industry is pursuing other financing sources: venture capital, public equity, convertible bonds, and taxable corporate debt. Not-for-profit organizations are borrowing more heavily in the tax-exempt bond markets and are meeting issues about their solvency and credit ratings. Thus, not-for-profit hospitals' need for alternative sources of capital may be encouraging their conversions to for-profit status.

Significant growth in for-profit hospital firms began in the 1970's with the rise of Hospital Corporation of America (HCA), American Medical International (AMI), National Medical Enterprises (NME), and Humana, among others. By 1983, the Hospital Corporation of America (HCA) owned 349 hospitals. The three other for-profit hospital chains mentioned owned an additional 206 facilities. Together those for-profit chains accounted for 10 percent of

the acute care hospitals in the United States (Dranove, 1998).

McCue and Furst (1986) profiled the pre-acquisition financial condition of not-for-profit hospitals prior to being acquired by for-profit companies. Their results found that for-profit corporations tend to acquire financially distressed hospitals with the following characteristics: small size, an aging physical plant, low profitability and minimal owners equity.

By 1989, the percentage of U. S. hospitals that were for-profit had increased to 14.6 percent, subsequently decreasing to 12.7 percent in 1996 (Yafchak, 2000). Since these conversions entailed, changing tax status from exempt, as not-for-profits, to taxable, as for-profits, they required government approval.

Pre and Post BBA Environments of Hospital Acquisitions

According to Robinson's (2000) analysis, the health care industry displays the components of the Industry Life Cycle. Of particular interest is the hospital industry's movement from Emerging, to Growth, to Maturity and now to facing Decline.

The Pre BBA Environment of Hospital Acquisitions

Initially, not-for-profit organizations populated the Emerging and Growth periods when philanthropy and government grants were available to minimize risk. This phase included the early growth of public hospitals and continued through the funding of new hospital construction by the Hill Burton Act of 1946. The movement from Emerging to Growth, however, increases the requirement for investment capital including stock offerings and bond financing.

According to Alexander and Morrisey (1985), for-profit organizations frequently acquired unprofitable hospitals in urban localities. These were acquired with the intent of relocating the facility to areas of higher growth. McCue and Furst (1986) also found that for-profit organizations are more likely to acquire hospitals with poor profitability, high levels of debt, and old facilities. Since many of the acquired facilities were small not-for-profit hospitals, smaller size was also positively associated with acquisition. In sum, for-profit chains acquired facilities with the characteristics of a financially distressed hospital. Since the acquired hospitals were unable to generate an operating profit, they were forced to rely on debt to finance operations and capital improvements. When

debt levels became excessive the financially distressed
hospitals became targets for acquisition.

According to McCue (1988), for-profit hospital
acquisitions reflected a higher level of debt financing.
This was due to interest payments being tax deductible thus
providing an incentive for the use of debt financing by for-
profit organizations. For-profit hospitals also distributed
more earnings to the owner's thus reducing cash levels.
McCue also found that hospitals acquired by for-profit
organizations had lower occupancy rates and newer facilities
then not-for-profit hospitals. In addition, acquired for-
profit hospitals were located in more affluent communities
with fewer individuals below the poverty level. In many of
these communities, the primary motive for acquisition was to
acquire additional capital for service expansion. Since
for-profit organizations have greater access to the capital
markets, they were frequently involved in hospital
acquisitions.

According to Ermann and Gabel (1984), for-profit and
not-for-profit organizations have grown primarily through
the acquisition of financially troubled independent
hospitals. Alexander and Morrisey (1987) identified
differences in the reasons that for-profit and not-for-
profit facilities enter into acquisitions. According to

their research, for-profit organizations acquire facilities to increase profits. This goal differs from that of not-for-profit organizations, whose mission is community-related. Their acquisition motivations may include religious commitments, care for the indigent or ensuring healthcare for the community. As a result, not-for-profit organizations are more likely then for-profits to acquire hospitals in less economically favorable environments. More importantly, not-for-profit organizations are willing to acquire facilities operating at a loss. Alexander and Morrisey also found that for-profit hospitals are more likely to be acquired by for-profit organizations, and not-for-profit hospitals are more likely to be acquired by not-for-profit organizations.

In 1983, local government owned 29 percent of all hospitals, however, they represented only 9 percent of hospital acquisitions. These facilities were frequently managed by contract but were not targets for acquisition. Low capitalization, high levels of charity care, and control by government authorities made them unattractive for acquisition (Bogue et al., 1995).

Pfeffer and Nowak (1976) found that at intermediate levels of industry concentration, organizations experience high levels of competitive uncertainty and are likely to

enter into joint ventures to mitigate the risk. According to Gulati (1998), hospital acquisitions are catalysts that provide the financial and human capital necessary to pursue new business opportunities. His research also found that the relationship of size and performance of an organization is a critical factor in the acquisition decision.

The Post BBA Environment of Hospital Acquisitions

Mature industries face slower growth, and must find financing from a wide range of sources. In particular, when organizations are in vulnerable strategic positions due to increased competition or investment in pioneering technology, they develop alliances (Eisenhardt and Schoonhoven, 1996; Burns, Bazzoli, Dyan, and Wholey, 2000). In such situations, resources are scarce, profits are stressed and survival is threatened. Organizations are themselves bundles of resources (e.g. financial assets, technology, reputation, managerial skills), and so acquisitions are driven by some organizations strategic resource needs and other's corresponding resource opportunities.

As reported by Kirchheimer (2001), for-profit hospital systems are purchasing aging hospitals and turning them into

state-of-the-art facilities. The for-profits chains target communities with growing populations and under-utilized hospitals. Since not-for-profit hospitals have limited cash and suffer from lower credit ratings, they are at an inherent disadvantage in competing for financial resources. For-profit chains have funds from stock offerings, bond issues and lines of credit that are available for hospital acquisitions. In acquiring hospitals that lack the resources to fund capital improvements, the for-profit chains assert that they are providing a community service.

As market competition increases, hospitals embark on acquisitions to reduce costs, share risks, and enhance their reputations. There is also evidence that acquisition can increase an organization's market share by combining the two organizations bargaining power and distribution channels (Gulati, 1998).

Goldberg (1999) also found that hospital acquisitions increased because of greater competition in the market place. As managed care increasingly dominated the market and insurance companies continued pressure to control costs, hospitals were forced into acquisitions as a mechanism to improve efficiency.

Robinson (2000) described how reduced hospital profit margins are raising fears of insolvency and causing the

downgrade of many hospitals' bond ratings. The changes in technology and the shift to managed care are among the reasons for believing that the hospital industry is now in the mature phase of the industry cycle. Robinson believes that not-for-profit organizations are at their greatest disadvantage in mature industries, where access to equity financing may be a key to organizational survival.

A recent article by Kirchheimer (2000) examined the increase in hospital acquisitions by for-profit corporations in Pennsylvania. The major reason identified for this increase is the pressure to update hospital facilities. Because for-profit chains have access to capital markets through debt financing and stockholder equity, they can obtain the money to finance renovations. Kirchheimer also found that the not-for-profit hospitals become more cost-efficient and profitable after acquisition by for-profit corporations. They accomplish that by recruiting new physicians, implementing more sophisticated cash management, and acquiring more investment capital. Their capital sources include venture capital, public equity, convertible bonds, and taxable corporate debt. Since not-for-profit hospitals are excluded from venture capital funds and the stock market, they are at a competitive disadvantage.

Organizations in declining industries redirect cash flow into growth sectors, as can be seen in hospital investments in home health care and other alternative services. Hospitals in this phase also look to consolidation of facilities and technology to achieve greater efficiency and increase their profits.

As technology and changing patterns of practice reduce the demand for hospital services, for-profit companies may reallocate funds into areas of higher growth such as outpatient care, rehabilitation services, and long term care. Thus, the acute care hospital industry may be evolving from maturity to decline. As Medicare and other payers reduce payment levels because of BBA and managed care, reimbursement levels for these growth areas have been reduced.

Unfortunately, the BBA has limited the profits not only of the hospital industry, but of other, growth-related health care industries, such as outpatient care, rehabilitation services, and long-term care. Hospital acquisitions also appear to be shifting to the geographic areas where profits can be increased by dominating local markets.

According to Yafchak (2000), the number of hospitals in the United States declined 18% from 1989 to 1997. This drop

was caused by increased competition and reduced profit

margins. His research identifies five factors that can

force an industry to consolidate: regulatory change,

technological development, fluctuations in financial

markets, leadership and tension between scale and

simplification. These factors are seen in the passage of

the BBA, changes in the use in technology increasing the use

of outpatient services, drops in the credit rating of many

individual hospitals and attempts to reach an economically

efficient level of production all have contributed to

consolidation in the hospital industry. Hospital

consolidation is expected to continue at a rapid pace even

as the U.S. Department of Justice looks more closely at the

anti-trust issues it raises.

Summary of Chapter 2

Chapter 2 is a review of pertinent literature related

to the present study. The major categories of the

literature reviewed are: recent trends in hospital

acquisitions, the Balanced Budget Act of 1997, differences

between mergers and acquisitions, and hospital conversions

from not-for-profit (NFP) to for-profit. This chapter also

reviews empirical research that assisted in the development of the study.

Literature on recent trends in hospital acquisition supports the present study by addressing hospital acquisitions in the context of an increasingly complex market. This literature finds that hospitals are increasingly involved in acquisitions due to the highly competitive market environment. Hospital acquisition is also related to operational factors such as facility age and debt as well as organizational factors such as size and for-profit ownership.

The Balanced Budget Act literature shows the impact on hospitals of legislative efforts to reduce Medicare expenditures. The BBA literature suggests that hospitals are experiencing lower profit margins and reduced access to financial capital. This will affect market factors and organizational performance as well as their association with hospital acquisition.

The literature on the differences between merger and acquisition distinguishes between these forms of organizational consolidation. By understanding the advantages and disadvantages of each, the study is able to more effectively address issues related to market competition and operational performance.

Finally, the hospital conversion literature highlights issues related to not-for-profit hospitals being acquired by for-profit hospitals. The literature reveals that for-profit hospitals have an inherent advantage accessing the financial markets and may affect hospital acquisitions.

The major limitation of the literature reviewed is that there is no known multivariate study that has examined the association between hospital acquisition and market factors or operating performance since the BBA. The present study is intended to build on the existing literature and assist in further understanding the impact of the BBA on hospital acquisition.

Chapter 3

Resource Dependence Theory

Resource dependence theory argues that organizational survival depends on the acquisition of necessary resources from the environment. Since hospitals are open systems, they are subject to the influence of organizations outside their boundaries (Levine and White, 1961; Pfeffer and Salancik, 1978). In this context, a key concern is locating the boundaries of an organization and building a structure for bounding transactions that will support activities of varying complexity and interdependence. The theory suggests that organizations manage interdependency by balancing resources complementary to their economic needs (Richardson, 1972).

The level of resource scarcity will influence an organization's willingness to give up autonomy. According to Scott (1993), organizational structure functions as a governance system to manage the exchange of resources. Since organizations want to control the inputs and outputs necessary for survival, they tend to increase governance and

bring transactions fully within their boundaries. Faced with shortages of critical resources, organizations will increase coordination while also trying to maximize organizational power and autonomy.

The theory states that an organization responds to the interaction between external resource requirements and changes in the environment. Acute care hospitals face a complex and changing environment created by competition, the BBA's reductions in Medicare reimbursement and increased HMO penetration. Under these pressures, many organizations cannot generate all the resources necessary to accomplish their mission and so must interact with the environment to generate additional resources. The more important the resources are to a hospital's mission and the greater their scarcity, the more likely the hospital is to sacrifice autonomy to obtain resources (Cook et al., 1983; Alexander and Morrisey, 1989). Since organizations desire to remain autonomous and are reluctant to enter into inter-organizational relationships, they must carefully weigh the advantages gained through acquisition against their loss of independence.

According to the viewpoint of resource dependency, to improve an acute care hospital's chances for survival, the hospital can try to dominate a market through inter-

organizational relationships, which will improve efficiency, contain costs and promote access to resources (Kogut, 1991). Such relationships provide tangible resources: patients, technology, personnel, and capital; and intangible resources: reputation and managerial skills. Thus, cooperative relationships are driven by the need for strategic resources and the opportunities to obtain them. Inter-organizational relationships also buffer environmental uncertainty and allow for future expansion (Eisenhardt and Schoonhoven, 1996).

Given that resource dependence theory presumes that organizations seek an optimum fit with the environment, it is reasonable to expect that an environment characterized by high uncertainty could result in changing inter-organizational relationships. The hospital industry, facing a dynamic and changing environment, must continually balance internal organizational factors with the requirements for external resources.

Corporate Financial Theory

Corporate financial theory identifies several motivating factors that would cause one organization to acquire another: inefficient management theory, strengthened

market position, economies of scale, information theories, agency problems, reduced dependence on one business segment, investment of excess cash, and tax considerations (Copeland and Weston, 1988; Lloyd, 1997).

Health care acquisition literature suggests that management inefficiency, market power, and economies of scale may themselves lead to hospital acquisitions (McCue, 1986; Alexander and Morrisey, 1988; Bogue et al., 1995). This was further supported in research by Bazzoli and Andes, (1995), which also found that health systems seek to acquire hospitals that need management enhancement and improvements in operating efficiency.

Management Inefficiency

As discussed by Scott (1993), heightened competition, complex regulatory requirements and additional fiscal controls have forced management staff to develop specialized knowledge. According to Copeland and Weston (1988), organizations need to compete for the best managerial talent and growth through acquisition results in broader responsibilities. Failure to maintain a continued inflow of able executives is likely to result in reduced operating efficiency and a decline in organizational value.

Management inefficiency assumes that managerial performance is not optimal and that management of the acquiring hospital is operating more efficiently than the acquired hospital. Thus, by purchasing the acquired hospital the management of the acquiring hospital can raise the efficiency of the acquired hospital (Ermann and Gabel, 1984). Hospital research supported this theory and found that multi-hospitals systems were purchasing inefficient hospitals (McCue, 1986; McCue, 1988; Alexander and Morrisey, 1988).

Other financial distress studies have found that inefficient hospitals seek acquisition by a financially stronger hospital in order to maintain their operations. The inability to be acquired by another hospital may cause these facilities to remain independent through bankruptcy protection, or to cease operations (Cameron, Kim and Whetten, 1987; Bazzoli and Cleverly, 1994). Research shows that hospitals involved in acquisitions or mergers have improved productivity and have more favorable indicators of financial performance.

With the increased economic power created through acquisition, the acquired hospital is able to fund replacement facilities (Cleverley, 1981; Levitz, 1985; Friedman and Shortell, 1988). A replacement facility

provides technology for new clinical services, enhances the organization's image, and enables improvements in operational efficiency. These benefits may be offset by the cost of new debt to finance the acquisition and by the risk associated with increased financial leverage (Coyne, 1983). Research on financially distressed hospitals has found negative cash flows, lower occupancy rates, higher levels of debt and negative profitability (Rizzo, 1990; McCue, 1991; Harmatta and Bogue, 1997). In addition, financially distressed hospitals are more highly leveraged, and have older physical plants and significantly higher rates of acquisition and hospital closings (Bazzoli and Andes, 1995).

Market Power

The acquisition of a firm implies increased size, increased market power and some elements of monopoly control (Copeland and Weston, 1988). Hospital organizations strive to improve their profits through not only greater efficiency but also increased market share. The key to this process is spreading the fixed costs of plant and equipment over larger production volumes. This is done by acquiring facilities to enter new markets or shifting production to a single location (Dranove, 1998; Grossman, 2000). According to

Kirchheimer (2001), for-profit chains acquire hospitals in areas of population growth and then focus on increasing market share.

According to Alexander & Morrisey (1988), multi-hospital systems acquire hospitals in order to add specialty physicians, expand patient networks, increase service area and strengthen market share. They found that systems prefer to acquire hospitals in strong markets with a growing population, high per capita income, and low Medicare populations. In those situations where control of the hospital market or location is not critical, management contracts can control internal factors, such as staffing, pricing, collections and management. Therefore, hospital management companies would target hospitals with dominant markets positions and strong payer mix but poor management. As discussed by Eisenhardt and Schoonhoven (1996), firms prominent in the local market enjoy high status and reputation, which increase their value as an acquisition.

This theory supports why systems would target hospitals that are not in markets with high HMO penetration. Since HMO's are major purchasers of hospital services due to the flow of premium dollars, they affect hospital competition in many markets. As discussed by Weinick and Cohen, (2000), HMO Penetration has affected hospital utilization by

restricting hospital use as a method of reducing costs and keeping premiums competitive. Their research documented fewer hospital admissions and shorter length of stays for individuals enrolled in managed care plans. Research shows reduced hospital profitability in markets characterized by high number of HMOs (Wholey, Feldman, and Christiansen, 1995).

Markets with high number of HMOs reduce health care premiums by pressing providers for discounts. These pricing discounts then become a stimulus for organizational change leading to greater marketing power through consolidation, geographic expansion and diversification (Ginsburg et al., 2000). Also, hospitals may sponsor an HMO organization to compete for patient volume and to control the premium dollar (McCue, 2000a). The bargaining power of hospitals is driven by the level of excess capacity and hospital competition in the local market relative to a high number of HMOs (Grossman, 2000).

A highly competitive market increases the vulnerability of the firm's strategic position by reducing margins and making product differentiation more difficult (Burns et al., 2000). As a result, firms engage in cooperative activity to reduce costs, share risks and develop products as market competition increases. Those firms most prominent in local

markets are more likely to enjoy high status and reputation thus increasing their value as potential partners (Eisenhardt and Schoonhoven, 1996; Grossman, 2000). Less prominent firms are frequently acquired and their acute care functions are redirected to other sub-acute functions. This restructuring allows for horizontal growth spanning larger geographic areas (Bogue et. al., 1995).

Economies of Scale

The number of acute care hospitals in the United States declined 18 percent from 1989 to 1997. For-profit chains keep acquiring and consolidating hospitals in order to create operating efficiencies and strengthen managed care contracting (Yafchak, 2000).

Acquisitions can provide economies of scale by concentrating productive assets and reducing administrative overhead and the cost of capital. Increased market share, caused by acquisition, also reduces operating costs and improve brand awareness among consumers (Starkweather, 1981; Ermann and Gabel, 1984). According to Bogue et al. (1995), hospital acquisition leads to a reduction in clinical services at the acquired facility. This reduction in

services allows for greater operating efficiencies,
consolidation of services and improved financial condition.

Copeland and Weston (1988) point out that a hospital
would be acquired because it lacks economies of scale in
such areas as marketing, finance or strategic planning.
Acquisition allows for more efficient flow of information
and improved methods of conducting transactions. It also
provides additional management skills to augment its present
capabilities. Therefore, one would expect smaller hospitals
that lack these departments to have a greater likelihood of
being acquired.

According to Copeland and Weston (1988), the cost of
capital and organizational structure of the firm are linked.
In the area of capital financing, economies of scale can be
achieved by issuing greater amounts of debt and equity.
Financial synergy results from a smaller percentage of
flotation costs associated with larger bond issues and a
lower cost of capital due to reduced risk of bankruptcy. By
acquiring the target hospital, the acquiring organization
will increase its asset size, thus allowing access to
greater amounts of debt and equity. As a result, the
acquired hospital can benefit from a greater access to
capital at a reduced cost.

Corporate financial theory emphasizes the importance of acquisitions resulting in greater size, increased market share and improved operational efficiency (Andrews, 1971; Yafchak, 2000). The theory also stresses that the stronger a firm's competition is, the more it must enhance its management skills and business strengths. As a result, a firm's strategic action is the outcome of matching its existing competence and the availability of new opportunities. The lack of competence may propel a firm into new alliances (Andrews, 1971). Organizations with inefficient management and poor operating performance are more likely to be acquired (McCue, 1988). Thus corporate restructuring is often a mechanism for weak organizations to survive in a highly competitive environment. Theoretically, increasing its size through acquisition should enable an organization to increase productivity by coordinating activities, specializing services and improving operating efficiency (Zuckerman, 1979; Copeland and Weston, 1988; Dranove and Shanley, 1995).

For organizations in financial distress, corporate financial theory identifies these options: seek acquisition by a financially stronger organization, remain independent through bankruptcy protection, or cease operations (Cameron, Kim and Whetten, 1987; Bazzoli and Cleverly, 1994). Among

these alternatives, acquisition by a more financially secure organization is preferred. Research shows that hospitals involved in acquisitions or mergers have improved productivity and have more favorable indicators of financial performance. With the increased economic power, they have been better able to fund replacement facilities (Cleverley, 1981; Levitz, 1985; Friedman and Shortell, 1988).

Replacement facilities provide technology for new clinical services, enhance the organization's image, and enable improvements in operational efficiency. These benefits may be offset by the cost of new debt to finance the acquisition and by the risk associated with increased financial leverage (Coyne, 1983).

Hospital Organizations and Profitability

According to Cleverly (1995), a financially successful organization is one that can generate the resources needed to meet its mission. Resources can be financed through either debt or equity, and a successful organization must be able to generate funds through both. Since not-for-profit hospital's primary sources of equity funding are net income and contributions, they are especially vulnerable to reduced operating margins.

As hospital organizations deal with the lower reimbursement rates under BBA and the changing patterns of practice, they are forced to interact with the environment to obtain the resources for survival. From an individual hospital perspective, such resources are patients, physicians, health care technology, and financial capital. The analysis of financial performance data from individual hospitals and health care systems is well supported in the literature (Levitz and Brooke, 1985; McCue and Lynch, 1987).

Research on financially distressed hospitals has found negative cash flows, lower occupancy rates, higher levels of debt and negative profitability (Rizzo, 1990; McCue, 1991; Harmatta and Bogue, 1997). In addition, financially distressed hospitals are more highly leveraged, and have older physical plants and significantly higher rates of acquisition and hospital closings (Bazzoli and Andes, 1995).

Between 1980 and 1990, 558 hospitals, or 10 percent of U.S. hospitals, closed. Factors such as declining financial performance, low occupancy rates, and poor payer mix led to bankruptcy and hospital closings. Most bankrupt hospitals had negative equity positions and aging physical plants that they could not renovate because they lacked capital (Bazzoli and Cleverley, 1994). Williams, Hadley and Pettengill (1992), in their model of hospital closings and profits,

found that hospitals with poor financial performance were
more likely to close.

In 1997, 38 acute care hospitals closed, an increase
over the previous two years. Ninety percent of the
hospitals that closed had fewer beds than the national
average of 154. In addition, occupancy rates for closed
hospitals were well below the national average. The
research showed that hospitals closed because of declining
occupancy, reduced revenues and rising costs (Department of
Health and Human Services, 1999). Rural hospitals also
experienced a high rate of acquisition and closing due to
their small size, low occupancy, less-intensive service mix
and weak local economies (Harmata and Bogue, 1997). The
weakening of any one factor may begin a chain reaction
leading to acquisition or closing.

Hospitals that survived five years of financial losses
without closing underwent major financial and organizational
restructuring. These financially distressed hospitals were
smaller, had higher unit costs, lower occupancy rates, older
facilities, and lower capital investment. Many distressed
hospitals were acquired; thus poor financial performance is
correlated with both acquisitions and closings (Duffy and
Friedman, 1993; Bazzoli and Cleverley, 1994).

In addition, hospitals with negative profit margins are less technologically advanced and invest less in medical technology or their physical plants (Duffy and Friedman, 1993). Financial analysts conclude that hospitals need profits of at least 5% to fund investments in new technology and capital projects (Jaklevic, 2001). As shown in table 3, overall hospital profitability was 4.3% in 1998 and 2.8% in 1999, still well below the 5 percent threshold necessary to support re-investment.

Table 3: Selected Hospital Data

Year	1994	1995	1996	1997	1998	1999
Number of Hospitals*	5,321	5,110	4,852	5,093	4,824	4,755
Occupancy*	45.4%	45.1%	43.8%	42.8%	41.8%	42.6%
For-Profit Hospitals by Percent*	12.7%	12.9%	12.7%	12.8%	12.9%	12.5%
Average Length of Stay*	6.0	5.7	5.5	5.3	5.3	5.2
Profit Margin**	5.0%	5.8%	6.1%	5.9%	4.3%	2.8%

*Data applied to acute care general hospitals and were drawn from American Hospital Association

**Source: MedPAC analysis of Medicare Case Report data from HCFA

Hospital organizations strive to improve their profits through greater efficiency and increased market share. This involves spreading the fixed costs of plant and equipment over larger production volumes (Dranove, 1998; Grossman, 2000). This is done by acquiring facilities and shifting production to a single location. Starkweather (1981) claims that acquisitions can provide economies of scale by concentrating productive assets, reducing administrative overhead, and lowering the cost of capital. The resulting increased market share may also reduce operating costs and improve brand awareness among consumers.

Marmor, Schlesinger, and Smithey (1986) found that although for-profit hospitals have daily expenses that are similar to, or even higher than those of not-for-profit hospitals, they also have shorter lengths of stay, and therefore gain more revenue per patient. Research by Silverman (1999) also found that Medicare spending was higher in markets dominated by for-profit organizations. Medicare spending rose rapidly in markets where hospitals converted to for-profit status, which contributed to improved hospital financial performance following acquisition.

Despite dire predictions about the BBA, teaching hospitals have since performed well financially. In 1997,

Medicare payments for medical education provided $6.8 billion in additional funding to teaching hospitals (Anderson, 1999). These payments have allowed teaching hospitals to maintain higher operating margins than those at non-teaching hospitals. In addition, many states have provided DSH funding to cover the high cost of indigent care. While teaching hospitals had higher profits and more cash on hand than non-teaching hospitals did, they also had more long-term debt and more assets per bed (Anderson, 1999). Fortunately, Medicare and Medicaid have been a stable source of funding that has allowed teaching hospitals to maintain financial health and good access to the capital markets. As a result, teaching hospitals have not been affected as drastically as non-teaching hospitals.

Credit rating agencies view hospital systems as more financially sound than individual hospitals, because health systems are more able to acquire debt financing in the capital markets. As a result, individual hospitals acquired by a multi hospital health system can more effectively leverage their assets (Levitz, 1985). As discussed by Coyne (1983), for-profit hospitals use such financial leverage more aggressively and therefore they have higher returns on equity and higher profit margins than not-for-profit hospitals do.

Acquisitions in Corporate Finance

The contemporary hospital industry clearly is conducted as an economic activity; however, it continues to be viewed as a social service. This dichotomy is evident in both federal and state regulations affecting hospital acquisitions.

As Whitesell and Whitesell (1995) explain, federal antitrust regulation of acquisitions is based upon Section 1 of the Sherman Act. This prohibits contracts, combinations and conspiracies in restraint of trade. Section 7 of the Clayton Act, also prohibits acquisitions that may substantially lessen competition or create a monopoly.

Traditional federal antitrust enforcement relies on a competitive marketplace to produce optimal prices. In 1982 and 1984, the Department of Justice announced new merger guidelines and adopted the Herfindahl Index as a measure of market concentration. The use of this measure shows greater concern about the high market share of one or more firms and high market concentration leading to monopolistic returns (Copeland and Weston, 1988).

Although research has not shown that increased size correlates with improved efficiency in the hospital industry (Clement et al., 1997), there is an impression among

regulators that increased size does enhance efficiency.
Hence the possible existence of economies of scale in the
hospital industry has been an effective defense for
expanding hospital systems in cases concerning acquisitions.
Moreover, if an acquired hospital is in financial distress,
the failing firm defense can be presented as a response to
allegations of competitive harm created by an acquisition.

In 1992, the Department of Justice published further
guidelines on hospital acquisitions and set forth "safety
zones" of presumable approval. Chief among the safety zones
were acquisitions involving hospitals with fewer than 100
beds and an average inpatient census below 40 (Bazzoli,
1995; Bogue, 1995; Deloitte and Touche, 1997).

State regulators have been concerned with the loss of
public benefit when for-profit-chains acquire not-for-profit
hospitals. The American Hospital Association takes the
position that hospitals should collaborate in ways that will
reduce costs and improve resource allocation yet maintain
high quality hospital services. The Association includes
hospital acquisition among those ways, as well as other
methods of hospital consolidation.

Hospital organizations, like other institutions, react
to the environments in which they operate. In the 1980s,
the health care environment had increased political and

public pressures to contain costs, as well as to cover the uninsured and improve the quality of care. These pressures created a great deal of uncertainty and turbulence for health care providers.

During this period, the health care literature focused on efficiency as a reason for hospital acquisitions (Alexander and Morrisey, 1987; Ermann and Gabel, 1984). Their studies found that access to administrative staff, referral networks, and low cost capital were key to successful financial performance. According to Alexander et al. (1985), hospital acquisitions are based on a careful analysis of the local market conditions and the presence of unfavorable market factors frequently results in a decision not to acquire the hospital.

From 1989 to 1997, hospital acquisitions increased under the pressures of lower reimbursements, reduced utilization and shifts toward ambulatory care. The average length of stay during that period dropped from 6.4 days to 5.3 days, and hospital occupancy rates dropped from 48 percent to 42 percent (Yafchak, 2000). Research showed that hospital acquisition leads to lower prices and cost increases, and that it puts more pressure on those hospitals that remain unaligned (Lynk, 1995; Connor et al., 1997).

As shown by Westphal, Gulati and Shortell (1997), mergers and acquisitions have encouraged innovation among hospitals. Their research found that acquired hospitals develop new programs, improve internal processes and adopt new medical technology. This match between acquisition and the application of technology improves efficiency in the provision of health care. Other areas of gain identified by the authors were staff training, clinical effectiveness, best practices, and information technology.

According to Pfeffer & Salancik (1978), inter-organizational relationships make key resources available while allowing some autonomy. In addition, acquisition serves as a method of reducing competition and expanding the geographic base of service offerings. If managed correctly, such relationships can increase the market power of participating hospitals and thus support their survival.

Small rural hospitals are particularly vulnerable to acquisition and closing with a 14.4 percent reduction in the number of rural hospitals between 1980 and 1990 versus only a 1.0 percent reduction in urban hospitals during the same period (Bogue, 1995). In addition, small rural hospitals that have been acquired have increased efficiency and profitability (Sinay, 1998).

Conceptual Model

The conceptual model is a graphic representation of the study and tests the association of market factors, operational performance factors, and organizational factors as they relate to hospital acquisitions. The study will also include measurement of the for-profit status and not-for-profit status subsequent to acquisition. Figure 1 displays the conceptual model.
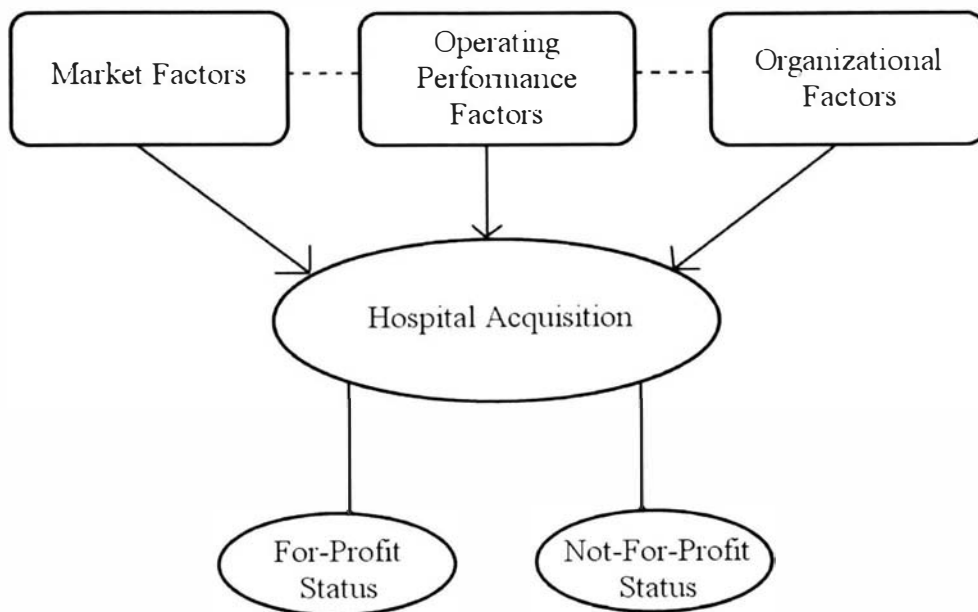
_____: Relationship tested in study

- - -: Relationship not tested

Figure 1. Conceptual Model: The Relationship of Market Factors, Operational Performance Factors and Organizational Factors to Hospital Acquisition

Hypotheses

This study presents six hypotheses to evaluate the association of hospital acquisitions with market factors, operating performance factors, and organizational factors. The most likely determinant of a hospital's acquisition is its overall financial performance.

From a resource dependence perspective, the independence of a hospital is threatened if it is not performing financially to market standards. In addition, corporate financial theory addresses issues related to inefficient management, greater market power, and the potential for achieving economies of scale. In situations when a hospital is not generating the resources necessary for organizational viability, organizational change is likely (Bazzoli and Cleverly, 1994). The situation may lead to acquisition and a loss of independence (Duffy and Friedman, 1993; Bazzoli and Andes, 1995). In addition, inefficient management theory suggests that acquired hospitals may be operating inefficiently (Copeland and Weston, 1988). Research shows that acquired hospitals have a lower occupancy rate and higher expenses (McCue, 1986; Rizzo, 1990; McCue, 1991; Harmatta and Bogue, 1997). Therefore, the study predicts the following:

H_1:   Given existing market and organizational factors, those hospitals with poor operating performance (lower return on assets and lower occupancy rate) are more likely to be acquired than other hospitals.

According to corporate financial theory, access to capital is critical to a hospital's survival including the replacement of existing plant and equipment and the financing of new services. The economies of scale theory would propose that acquiring hospitals target facilities that lack the capital to finance these capital investments, particularly hospitals that have a limit on their debt capacity. Since a large percentage of existing hospital beds were added with funds from the Hill-Burton Act of 1946, it is anticipated that they soon must be replaced. Hospitals will have to fund these capital improvements through operating resources or capital reserves. In this situation and facing reduced profitability partly due to the BBA and the increasing cost of capital, hospitals with aging facilities are more likely than others to be acquired (Ernst and Young, 1999; Kirchheimer, 2001a and 2001b). Therefore, the second hypothesis of the study is:

H_{2a}: Given existing market and organizational factors, those hospitals with limited debt capacity (i.e

higher debt position) are more likely to be
acquired than other hospitals.

H_{2b}: Given existing market and organizational factors,
those hospitals with an aging plant are more
likely to be acquired than other hospitals.

The market power theory within corporate finance is
another underlying reason for acquiring an organization.
From the acquirer's perspective, hospitals may be purchased
in markets with dominant positions in order to improve their
overall market strength. According to Alexander & Morrisey
(1988) multi-hospital systems are acquiring hospitals in
strong markets with ineffective management. Since the
acquiring hospital cannot directly control external market
factors of: population, per capita income, payer mix, and
the number of HMOs; it focuses on the following local
hospital attributes: staffing, pricing, and the number of
services. From the acquirer's perspective, the potential
for improvement in these management factors may support a
hospital's acquisition in situations where market factors
are less desirable.

Thus, the third and fourth hypotheses are as follows:

H_3: Given operational performance and organizational
factors, those hospitals located in less

competitive markets (high Herfindahl-Hirschman

Index) are more likely than others to be acquired.

H_4: Given operational performance and organizational

factors, those hospitals located in markets with

fewer HMOs are more likely than others to be

acquired.

Resource dependence theory states that because
organizations prefer to remain autonomous, they will modify
their internal cores before being acquired. Since large
hospitals have more resources in their internal cores, they
can adapt more flexibly to a changing environment. It
follows that smaller hospitals with limited internal cores
are more likely to be acquired (Needleman et al., 1999).
Also, the economy of scale theory proposes that the
acquisition of smaller hospitals may generate internal
operating efficiencies. Therefore, the study's fifth
hypothesis is:

H_5: Given existing market factors and operational

performance, those hospitals with fewer beds and

fewer total services are more likely than others

to be acquired.

The theory of economies of scale in terms of greater
access to capital may be an underlying motive why not-for-

profit hospitals have a greater likelihood to be acquired than for-profits. Since not-for-profit hospitals do not have access to stock equity capital, they are at a disadvantage when compared to for-profit hospitals. Therefore, the greater replacement needs of the not-for-profit hospital to finance future renovation the greater likelihood of it's being acquired.

Therefore, the study's final hypothesis is:

H_6:   Given existing market factors and operating performance, those hospitals with not-for-profit ownership are more likely than others to be acquired.

Summary of Chapter 3

This chapter has examined theoretical and empirical literature on the acquisition of hospital organizations, and has presented the conceptual model for the study research. Drawing upon resource dependence theory, the study assumes that organizations try to remain autonomous until they must cope with scarce resources. The scarcity of resources occurs through dynamic interaction with the external environment. Resource dependence theory states that

hospitals agree to be acquired in order to gain essential resources from the external environment.

This study also uses corporate finance theory to address the following issues related to hospital acquisition: inefficient management theory, strengthened market position, economies of scale, information theories, agency problems, reduced dependence on one business segment, investment of excess cash, and tax considerations. Financial theory also recognizes an organization's ability to succeed by ensuring access to capital through profitability, strong bond ratings, lines of credit, and equity financing as appropriate.

To address the relationships between hospital acquisition and market, operational, and organizational characteristics, the following hypotheses will be tested. As discussed by Alexander and Morrisey (1988), the acquiring organization, whether for-profit or not-for-profit, is expected to have similar expected directions in the hypothesis. Consistent with Alexander and Morrisey, the only exception is not-for-profit organizations are more likely to acquire hospitals in unfavorable markets because of their mission being different then for-profit organizations. Due to their charitable mission, not-for-

profit organizations are willing to acquire hospitals with negative profitability.

H$_1$: Given existing market and organizational factors, those hospitals with poor operating performance (lower return on assets and lower occupancy rate) are more likely to be acquired than other hospitals.

H$_{2a}$: Given existing market and organizational factors, those hospitals with limited debt capacity (i.e higher debt position) are more likely to be acquired than other hospitals.

H$_{2b}$: Given existing market and organizational factors, those hospitals with an aging facility are more likely to be acquired than other hospitals.

H$_3$: Given operational performance and organizational factors, those hospitals located in less competitive markets (high Herfindahl-Hirschman Index) are more likely than others to be acquired.

H$_4$: Given operational performance and organizational factors, those hospitals located in markets with fewer HMOs are more likely than others to be acquired.

H_5: Given market factors and operational performance, those hospitals with fewer beds and fewer total services are more likely than others to be acquired.

H_6: Given existing market factors and operating performance, those hospitals with not-for-profit ownership are more likely than others to be acquired.

Chapter 4 presents the study design, data sources and data used to test the hypotheses. Chapter 5 presents the results of the study, and chapter 6 discusses the findings.

Chapter 4

Methodology

This chapter explains the study design, data sources and data used in the research. The measurement of variables and sources of data for each variable are discussed. The methods used to test the proposed hypotheses and statistical procedures used for model estimation are described.

Research Design

The study uses a cross-sectional design that examines hospitals acquired in 1999 and 2000 subsequent to the BBA and compares them to hospitals that were not acquired during those time periods. The study examines the relationship between hospital acquisitions and others factors.

The hospital is the unit of analysis in the study. The study population consists of nonfederal acute care hospitals in the United States in 1999 and 2000. Hospitals owned by the federal government such as the Veterans Administration

and the Department of Defense were omitted. The investigation also omitted specialty hospitals such as psychiatric hospitals. Hospitals meeting those criteria in 1999 were the 1999 observations. Hospitals meeting those criteria in 2000 were the 2000 observations.

The first analysis was a cross-sectional study of the 1999 study period, which used logistic regression to determine the market, operational and organization factors that are related to hospital acquisitions. All the independent variables were lagged one year to imply a causal direction between the independent and dependent variable. To test this relationship, the following expression is used:

$ACQUIRED_{1999} = f(MKT_{1999}, OPER_{1999}, ORG_{1999})$

The following definitions apply: Acquisition ($ACQUIRED_{1999}$) is defined by those hospitals acquired during 1999 related to those hospitals that were not acquired. The market factors (MKT) are: per capita income, percentage of elderly, unemployment rate, number of HMOs, Herfindahl-Hirschman Index. The operational factors (OPER) are: hospital admissions, occupancy rate, return on assets, operating margin, operating expenses per discharge, facility age and long term debt to equity. The organizational

factors (ORG) are: size, number of services, for-profit status, and not-for-profit status.

The 1999 acquired facilities, which numbered 62, were analyzed to determine differences from the national norms. Using a random sample of hospitals not acquired during the 1999 study period as a baseline, the coefficients of the independent variables were interpreted for significance and direction of effect on hospital acquisition. These tests addressed all six hypotheses. A second version of this model will also estimate two separate regression models by the ownership category of the acquiring hospital, for-profit or not-for-profit. This model will examine the association of these market, operational performance and organizational factors with respect to the hospitals acquired by either a for-profit hospital or not-for-profit hospital. The results and other analysis are included in Chapter 5.

The second analysis was a cross-sectional study of the 2000 study period, which used logistic regression to determine the market, operational and organization factors that are related to hospital acquisitions. All the independent variables were lagged one year to imply a causal direction between the independent and dependent variable. To test this relationship the following expression is used:

$$ACQUIRED_{2000} = f(MKT_{2000}, OPER_{2000}, ORG_{2000})$$

As before, the following definitions apply:
Acquisition ($ACQUIRED_{2000}$) is defined by those hospitals
acquired during 2000 related to those hospitals that were
not acquired. The market factors (MKT) are: per capita
income, percentage of elderly, unemployment rate, number of
HMOs, HMO penetration, and Herfindahl-Hirschman Index. The
operational factors (OPER) are: hospital admissions, return
on assets, occupancy rate, operating margin, operating
expenses per discharge, facility age and long term debt to
equity. The organizational factors (ORG) are: size, number
of services, for-profit status, and not-for-profit status.
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separate regression models by the ownership category of the
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analyzed to determine differences from the national norms.
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these tests addressed all six hypotheses. This model will also examine the association of these market, operational performance and organizational factors with respect to the hospitals acquired by either a for-profit hospital or not-for-profit hospital. The results and other analysis are included in Chapter 5.

The third analysis was a combined model using 1999 and 2000. This analysis pooled the data from both periods and thus creates a pooled model. The cross-sectional study of the pooled 1999 and 2000 data uses logistic regression to determine the market, operational and organization factors that are related to hospital acquisitions. All the independent variables were lagged one year to imply a causal direction between the independent and dependent variable. To test this relationship the following expression is used:

$$\text{ACQUIRED}_{1999\&2000} = f(\text{MKT}_{1999\&2000}, \text{OPER}_{1999\&2000}, \text{ORG}_{1999\&2000})$$

As stated previously, the following definitions apply: The market factors (MKT) are: per capita income, percentage of elderly, unemployment rate, number of HMOs, HMO penetration, Herfindahl-Hirschman Index. The operational factors (OPER) are: hospital admissions, return on assets, occupancy rate, operating margin, operating expenses per discharge, facility age and long term debt to equity. The

organizational factors (ORG) are: size, number of services, for-profit status, and not-for-profit status.

The 1999 and 2000 acquired facilities, which numbered 125, were analyzed to determine differences from the national norms. Using the combined random samples of not acquired hospitals during the 1999 and 2000 study period as a baseline, the coefficients of the independent variables were interpreted for significance and direction of effect on hospital acquisition. Once again, these tests addressed all six hypotheses. A second version of this model will also estimate two separate regression models by the ownership category of the acquiring hospital, for-profit or not-for-profit. This model will examine the association of these market, operational performance and organizational factors with respect to the hospitals acquired by either a for-profit hospital or not-for-profit hospital. The results and other analysis are included in Chapter 5.

Data Sources and Sampling Process

Four sources of data were used to measure the indicators for this study. Based upon the nature of the indicator, the sources were as follows: Modern Healthcare (MHC), the American Hospital Association Annual Survey of

Hospitals (AHA), the HCFA Minimum Cost Data Files (HCFA), and the Area Resource File (ARF). The detailed listing of data sources is as follows:

Modern Healthcare (MHC), 1999 and 2000

AHA Annual Hospital Survey data, 1998 and 1999

HCFA Minimum Cost Data Files, 1998 and 1999

Area Resources File (ARF), 1998 and 1999

Modern Healthcare was used to identify hospital acquisitions. These data are drawn from legal filings by hospital organizations and are compiled in MHC's annual article on hospital mergers and acquisitions. The use of this data source is consistent with other hospital studies on merger and acquisitions (Ermann and Gabel, 1984; McCue and Furst, 1986; McCue, 1988; McCue et al. 1988; Krishnan, 2000). The American Hospital Associations (AHA) Annual Survey also indicates hospital ownership and was used to verify MHC data.

The American Hospital Association Annual Survey of Hospitals collects detailed information annually for all hospitals in the United States. The AHA survey provides extensive organizational data on individual hospitals including: staffing, operational performance, market area, ownership and other organizational features. The AHA data has been used extensively in research about hospital finance

and acquisitions (Ermann and Gabel, 1984; Levitz and Brooke, 1985; Alexander and Morrisey, 1988; Alexander and Morrisey, 1989; McCue, 1991a; Clement et al., 1997; Connor et al., 1997; Needleman et al., 1999).

The Area Resource File (ARF) has extensive information related to hospital market structure including: demographics, economics, and other measures of the hospital environment. The data are complied by the Bureau of Health Professions and has been used in previous health care research (Bazzoli and Andes, 1995; Burns et al., 2000; McCue, 2000; McCue et al., 2000) and research on hospital mergers and acquisitions (Alexander and Morrisey, 1988; Alexander and Morrisey, 1989).

The Health Care Financing Administration's Medicare Cost Report is completed annually and is a requirement to participate in the Medicare program. As a result, it is one of the most comprehensive data sets available for hospitals in the United States that see Medicare patients. The Medicare Cost Report provides information from the hospital financial statements as well as detailed data on staffing, hospital utilization, and operating efficiency. Since the Medicare Cost Report is comparable across the hospital industry, it is used extensively in hospital research (Duffy

and Friedman, 1993; Bazzoli and Cleverley, 1994; Clement et al., 1997; McCue, 2000; McCue et al., 2000; Yafchak, 2000). The data were drawn from the American Hospital Association Data Files for all hospitals with service code 10 representing non-federal acute care hospitals.

Examining hospital acquisitions in contrast to the control group of approximately 4,000 non-federal acute care hospitals creates a problem in estimation efficiency. To overcome this problem, a choice based sampling strategy was utilized which involved drawing all hospitals acquired in the study year plus a random sample of non-acquired hospitals numbering three times the number of hospitals acquired in the respective study year as the control group.

Since 62 hospitals were acquired in 1999, the 1999 control group of non-acquired hospitals based on a random sample of three times the number of hospitals acquired in 1999 results in a control group of 186. Since 63 hospitals were acquired in 2000, the 2000 control group of non-acquired hospitals based on a random sample of three times the number of hospitals acquired in 2000 results in a control group of 189. The 1999 and 2000 pooled study control group of non-acquired hospitals consists of the combined control groups from 1999 and 2000 and results in a control group of 375. This sampling approach is supported

within the hospital acquisition literature (Alexander and Morrisey, 1988).

Measurement of Dependent Variables

A dependent variable is defined as the choice variable that an event will take place. In contrast, independent variables are interpreted as contributors to the choice variable or event occurring. Variables were selected from the data files based upon the literature review, theoretical relevance and face validity. The rationale for variable selection is described below.

The dependent variable of interest in this study is hospital acquisition. A number of previous studies have examined mergers and acquisitions among hospitals (Levitz and Brooke, 1985; McCue and Furst, 1986; Morrisey and Alexander, 1987; Connor et al., 1997; Krishnan, 2000; Yafchak, 2000). These studies evaluated a wide range of issues including economies of scale, improved operating performance, market changes, access to capital and organizational control. The constructs, variables, measurements and data sources are provided in Table 4.

Table 4: Constructs, Variables, Measures and Data Sources

Construct	Variable	Measure	Source
Acquired	*Dependent Variable:* Hospital Acquisition	1, if Acquired, 0 if Not Acquired	1999, 2000 MHC
Market	*Independent Variables:* Per Capita Income	Per Capita Income in the Market Area	1998, 1999 ARF
Market	Percentage of Elderly	Population Age 65 and Higher	1998, 1999 ARF
Market	Unemployment Rate	Unemployment Rate in Market Area	1998, 1999 ARF
Market	Number of HMOs	Number of HMOs	1998, 1999 ARF
Market	HMO Penetration	HMO Penetration	1998, 1999 ARF
Market	Herfindahl-Hirschman Index	Herfindahl-Hirschman Index	1998, 1999 AHA
OPER	Hospital Admissions	Total Facility Admissions per Bed	1998, 1999 AHA
OPER	Return on Assets	Revenue/ Total Assets	1998, 1999 HCFA
OPER	Occupancy Rate	Facility Occupancy Rate	1998, 1999 AHA
OPER	Operating Margin	Operating Income / Operating Revenue	1998, 1999 HCFA
OPER	Operating Expense/Discharge	Operating Expenses per Discharge	1998, 1999 HCFA
OPER	Facility Age	Age of Plant Ratio	1998, 1999 HCFA
OPER	Long-Term Debt to Equity	Long-term Debt/Fund Balance	1998, 1999 HCFA
ORG	Size: Staffed Beds	Staffed Beds	1998, 1999 AHA
ORG	Number of Services	Total Number of Services Offered by Hospital	1998, 1999 AHA
ORG	For-profit	1, if For-profit; 0, otherwise	1998, 1999 AHA
ORG	Not-for-profit	1, if Not-for-profit; 0, otherwise	1998, 1999 AHA

Measurement of Independent Variables

Independent variables are defined as contributors to a
choice variable or event occurring. As noted previously,
the constructs, variables, measurements and data sources for
the independent variables are provided in Table 4. All the
independent variables were lagged one year to imply a causal
direction between the independent and dependent variable.
The theoretical constructs and independent variables related
to hospital acquisition are well supported in the literature
and are discussed below.

Market Factors

The Market construct reflects the demand for hospital
services and includes the following variables: income per
capita, percent of the population age 65 and older, the
unemployment rate, the Number of HMOs, HMO Penetration, and
the Herfindahl-Hirschman index. Since the market is external
to the hospital, it is measured at the County level. The
use of County as a definition of hospital markets has been
used extensively in hospital research (Alexander and
Morrisey, 1988).

High per capita income reflects a sound economic community where individuals hold well paying jobs. This is expected to increase demand for hospital services and have a positive effect on hospital profitability. Improved profitability is caused by greater health insurance coverage, an increased ability to pay for care, and reduced indigent care. Thus, higher income per capita should reduce environmental uncertainty and lower the rate of acquisition (Friedman and Shortell, 1988; McCue et al, 1988; Alexander and Morrisey, 1989). In addition, acquiring organizations are willing to pay a higher price per bed for facilities located in high-income communities (McCue et al, 1988).

Due to reductions in the Medicare reimbursement rates, a high percentage of Medicare patients, aged 65 and older, may result in an inability to cover operating expenses. This poor payer mix weakens profitability, creates financial distress and may lead to hospital acquisition (Bazzoli, 1994). A high percentage of Medicare patients make a facility less desirable for acquisition because of lower and slower Medicare payments (McCue, 1988).

The unemployment rate serves as a proxy measure of a community's financial ability to purchase health insurance and pay for health care services (McCue et al., 2000). Reductions in a community's unemployment rate should

generate additional demand for hospital services and
increase the probability of hospital acquisition (Alexander
and Morrisey, 1988).

The number of HMO's is defined as the number of HMOs
operating within the respective county. This variable is a
measure of managed care within the community. The variable,
HMO penetration, is defined as total HMO enrollment divided
by total population in the county (Bureau of the Census,
1999; Burns et al., 2000). In 1987, 15 percent of Americans
under the age of 65 were enrolled in managed care plans. By
1996, 54 percent of this population was enrolled in managed
care (Weinick and Cohen, 2000). Their research showed that
both the number of hospital admissions and length of
hospital stay are lower for managed care enrollees,
therefore reducing hospital profitability.

The Herfindahl-Hirschman index (HHI) is defined as the
sum of squares of the market measured as a percentage of the
firms operating in the market. This index allows
measurement of the extent of concentration in the local
hospital market. Thus, a hospital with a small market share
located in a highly concentrated market may have little
influence on its competitive environment. The higher the
Herfindahl-Hirschman index (HHI), the more concentrated the
market; an HHI of 10,000 is a monopoly. The Herfindahl-

Hirschman index (HHI) has been used extensively in hospital research (Clement et al, 1997; Krishnan, 2001). Alexander & Morrisey (1988) found that systems target hospitals in strong markets.

In those situations where acquisition creates a large increase in market concentration, as measured by HHI, the Department of Justice and Federal Trade Commission may raise anti-trust objections (Copeland and Weston, 1988). Research shows that hospital acquisitions are more likely in markets with low concentration as shown by an HHI below 1,665 (Connor et al., 1997; Burns et al., 2000).

Operating Performance Factors

The operating performance construct is measured at the individual hospital level and includes the following variables: hospital admissions, return on assets, occupancy rate, operating margin, operating expense per discharge, facility age and long-term debt to equity. Hospital admissions as measured by the number of admissions per bed is an indicator of revenue potential. Hospital admissions have been used in previous healthcare research (Ginn and Young, 1992).

Hospital occupancy is defined as the total number of inpatient days divided by the beds in service (Deloitte and Touche, 1997; Yafchak, 2000). According to Yafchak, (2000), occupancy has been dropping as care shifts away from inpatient acute care to outpatient services, with less than 50 percent of all beds in operation occupied. Hospitals with high occupancy rates indicate a strong market demand for services and may generate higher acquisition prices (McCue et al., 1988). As discussed by the Department of Health and Human Services (1999), the occupancy rates for rural hospitals averaged 32% nationally in 1977. The occupancy rate for urban hospitals averaged 48% nationally. Hospitals with occupancy rates lower than the national average have an increased likelihood of acquisition (Bogue et al., 1995; Burns et al., 2000). Hospitals with low occupancy rates also generated greater post acquisition efficiencies due to the conversion of portions of those facilities to non-inpatient services (Harmata and Bogue, 1997; Connor et al., 1997).

Operating Margin is measured by operating income divided by operating revenue (Levitz and Brooke, 1985; McCue and Furst, 1986; Deloitte and Touche, 1997). Operating margin is included because it measures the operating performance of the hospital.

Age of physical plant is defined as accumulated
depreciation divided by depreciation expense (Levitz and
Brooke, 1985; Deloitte and Touche, 1997; McCue et al.,
1998). The age of physical plant is a measure of the
physical stature of the hospital with a modern facility
representing higher quality of clinical care. It is also an
indicator of an organization's capital needs, with higher
values indicating an older facility.

As discussed by Kirchheimer (2001) many community
hospitals were constructed in 1946 using federal funding
from the Hill-Burton Act. The funds resulted in a 40%
increase in the number of hospital beds from 1950 to 1960.
Since many of these facilities are now over 50 years old,
they require replacement. Unfortunately, an aging hospital
facility increases operating costs and many organizations
lack the capital to fund renovation (Alexander, Lewis, and
Morrisey, 1985; Friedman and Shortell, 1988). A
deteriorating hospital facility combined with low
profitability and an inability to fully fund its capital
reserve is a primary reason for hospital acquisition (McCue
and Furst, 1986; Department of Health and Human Services,
1999). Since many hospitals have no equity capital and are
unable to obtain loans or bond financing to renovate an

aging physical plant, they are candidates for acquisition or bankruptcy (Bazzoli, 1994).

According to Jaklevick (2001), most hospitals need operating margins of at least 5% to invest in capital projects. Operating margins substantially below 5% may force an organization to merge or close unless it has significant reserves. Individual hospitals in need of renovation are hard pressed to generate the capital to replace aging physical plants. As a result, they are candidates for acquisition by large for-profit chains that have greater accessibility to the capital markets (McCue, 1988; McCue, 1991). Research shows that acquiring organizations paid less for aging facilities because they require major capital improvements after purchase (McCue et al., 1998).

Long-term debt to equity is defined as long-term debt divided by fund balance (Levitz and Brooke, 1985; McCue and Furst, 1986; Deloitte and Touche, 1997). According to Levitz and Brooke (1985), the industry benchmark for long-term debt to equity is .57. Cleverly (1981) found that a long-term debt to equity ratio of 2.0 is a maximum beyond which additional debt would not be granted. Subsequent research shows that the higher an organizations level of

debt, the more likely a facility will be acquired (McCue and Furst, 1986; McCue, 1988).

Organizational Factors

The organizational construct is measured at the individual hospital level and includes the following variables: size (staffed beds), number of clinical services, for-profit ownership, and not-for-profit ownership. The number of staffed beds is a measure of the size and complexity of acute care hospitals. According to Alexander and Morrisey (1989), larger hospitals are able to adapt to environmental uncertainty and are less likely to be acquired. In addition, the number of staffed beds is positively associated with revenue, expenses and cash flow (Clement et al., 1997).

In 1997, the average number of hospital beds in the United States was 154 (Department of Health and Human Services, 1999). Their research showed that 90% of closed hospitals had fewer beds than the national average and 50% of all closed hospitals had fewer than 100 beds.

According to Castrey (1998), HMO's are steering privately insured patients to large tertiary care hospitals.

This combined with reduced payments under BBA is placing increased financial pressure on smaller hospitals.

The number of hospital services is an indicator of the complexity of acute care hospitals and is measured by sum of all the services provided by the hospital as listed in the AHA annual survey. Since a broad range of clinical services increases market potential, it has a positive correlation with hospital financial performance (Friedman and Shortell, 1988). In contrast, a less intensive range of services is a predictor of hospital conversion or closure (Harmata and Bogue, 1997). According to Bogue et al. (1995), acquisition can result in the discontinuation of some services through consolidation and may lead to increased economies of scale and improved financial position.

Ownership was measured at the hospital level by the following variables: for-profit status and not-for-profit status. The distinction between for-profit and not-for-profit ownership is a legal one and has taxation consequences. It is also reasonable to expect that differences in ownership structure could affect a hospital's willingness to be acquired. According to Alexander and Morrisey (1987), 96 percent of for-profit hospitals were acquired by for-profit organizations, while 80 percent of religious hospitals were acquired by not-for-profit

organizations. Since for-profit healthcare organizations have greater access to equity funding, they are positively correlated with acquisition (Bazolli, 1994).

Based upon the literature review and the hypotheses development of Chapter 3, Table 5 shows the expected relationship of the independent variables to the dependent variable, hospital acquisition.

Table 5: Expected Direction of Relationships of Independent Variables with Dependent Variables in the Model

Variable	Dependent Variable	Expected Direction
Per Capita Income	Hospital Acquisition	-
Percentage of Elderly	Hospital Acquisition	-
Unemployment Rate	Hospital Acquisition	+
Number of HMOs	Hospital Acquisition	-
HMO Penetration	Hospital Acquisition	-
Herfindahl-Hirschman Index	Hospital Acquisition	-
Hospital Admissions	Hospital Acquisition	-
Return on Assets	Hospital Acquisition	-
Occupancy Rate	Hospital Acquisition	-
Operating Margin	Hospital Acquisition	-
Operating Expenses per Discharge	Hospital Acquisition	+
Facility Age	Hospital Acquisition	+
Long-Term Debt to Equity	Hospital Acquisition	+
Size	Hospital Acquisition	-
Number of Services	Hospital Acquisition	-
For-profit	Organizational Status	+
Not-for-profit	Organizational Status	+

Analytical Methods: Descriptive and Multivariate

The analytic approach for this study is to use univariate and multivariate analysis to assess the factors associated with hospital acquisition. Univariate analysis is used to examine each variable in isolation. Correlation analysis was completed to identify potential multicollinearity among the independent variables.

In multivariate analysis, the model simultaneously analyzes the independent variables to identify relationships to the dependent variable. The multivariate model allows the relationships between the dependent variable and explanatory variables to be examined. This isolates the estimated effect of the explanatory variable after statistically adjusting for the distribution and effect of the other independent variables in the model. Thus, it can be determined if the covariates have a positive, negative, or neutral effect on, the probability of a hospital being acquired.

Regression analysis is a powerful multivariate technique that helps summarize the relationship between these variables. Though linear regression works well with continuous variables, problems emerge when dependent variables are dichotomous. When this occurs, instead of a

normal distribution, linear regression produces a bimodal
distribution that leads to unreliable standard errors and
estimators. Also, with a dichotomous dependent variable,
the numerical value of the variable is arbitrary and is not
intrinsically interesting. Instead of trying to predict the
arbitrary value with linear regression, it is more important
to predict whether the case will fall into one or the other
category of the dependent variable using logistic regression
(Menard, 1995).

Logistic regression is used to fit a model to a binary
dependent variable and is an appropriate statistical
technique that produces consistent estimators regardless of
how the dependent variables are distributed. When working
with dichotomous dependent variables the logistic regression
model provides better predictions than the linear regression
model. Since all six hypotheses for the present study have
the dichotomous dependent variable of hospital acquisition
as the event of interest, the preferred analytical procedure
to model the relationship is logistic regression.

Logistic regression is widely used in medical research
and is accepted in hospital related studies. For example,
Alexander and Morrisey (1989) used logistic regression to
estimate the association of market conditions, regulatory
climate and management effectiveness with contract

management. Friedman and Shortell (1988) used logistic regression to estimate the influence of organizational and market factors on the financial performance in hospitals before and after implementation of the Medicare Prospective Payment System.

Additionally, Clement et al. (1997) used logistic regression to estimate the association of market and environmental factors, with the financial performance of strategic hospital alliances. More recently, McCue et al. (2000b) used logistic regression to estimate the association of market, mission, and financial factors with hospital cash reserves.

Several studies analyzing hospital mergers and acquisition have been conducted using logistic regression. McCue and Furst (1986) used logistic regression to estimate the association of financial performance and organization factors with hospital acquisitions by for-profit-hospital chains. Alexander and Morrisey (1988) used logistic regression to assess the role of market and mission on hospital acquisition. Finally, Krishnan (2000) used logistic regression to determine the impact of hospital mergers and acquisition on the pricing of hospital clinical services.

Logistic regression provides an estimate of the relationship between the dependent and independent variables. The probability function is as follows:

$$P \text{ (event)} = 1/(1+e^{Bo + BiXi})$$

where:

P is the probability of Hospital Acquisition;

B_o and B_i are coefficients estimated from the data;

X_i is the characteristic of the ith hospital; and

e is the base of the natural logarithms, or approximately 2.718.

In logistic regression, the log-likelihood is the criterion for selecting parameters in the logistic regression model. Because the log-likelihood is negative, the -2LL statistic is positive, and larger values indicate worse prediction of the dependent variable. The log-likelihood test shows how well the model fits the data and tests for statistical significance (Menard, 1995).

To test hypotheses **H$_1$** through **H$_6$**, logistic regression uses maximum-likelihood estimation to determine the relative odds that a hospital will be acquired, given various combinations of independent variables. The maximum-likelihood estimation works best for large samples, where it tends to produce estimators with the smallest possible variance.

The statistical significance of the coefficient estimate is tested using the likelihood ratio chi-square test. If the likelihood ratio chi-square is statistically significant (p less than .10) we conclude that information about the independent variables allows the model to make better predictions. The Pseudo R Square is a measure of the predictive power of the model.

Summary of Chapter 4

Chapter 4 described the research design, data sources, variables, and analytic methods used in the study. Univariate and multivariate analysis was used to determine the association of hospital acquisition with the independent variables.

The study design is a cross-sectional analysis of hospitals acquired in 1999 and 2000. It also includes an analysis with a combined model using 1999 and 2000. This combined analysis pools the data from both periods and thus creates a pooled model. Since the study uses a dichotomous dependent variable, logistic regression is chosen as the statistical tool for multivariate analysis. Logistic regression is used to test all six of the hypotheses and the association with hospital acquisition.

Chapter 5 presents the results of the study and Chapter 6 presents the findings, implications, and areas for future study.

Chapter 5

Results

This chapter presents the results of the empirical analysis used to evaluate the hypotheses and research questions. It begins with a comparison of selected characteristics of acquired hospitals and not-acquired hospitals. It follows with an analysis of each study period.

The descriptive statistics include the mean, standard deviation and frequency for the independent variables. Multivariate analyses that tested the hypotheses and research questions using logistic regression, are presented, analyzed, and discussed.

Results with P-values between .05 and .10 level will be viewed as marginally significant. Results with P-values of .05 and .01 level are statistically significant. The statistical significance of the results is discussed. The chapter concludes with the results pertaining to whether a hospital is acquired by a for-profit organization or a not-for-profit organization.

1999 Hospital Acquisition Study Period

Descriptive Findings

The sample for the 1999 hospital acquisition study
period originally included 62 acquisitions. However, 4
acquired facilities had missing data and were eliminated.
As a result, the sample for the 1999 hospital acquisition
study period included 58 acquired hospitals and a control
group of 174. Preliminary analysis of the variables of
interest used the univariate measures of mean and standard
deviation for each variable. These were reviewed to assess
the distribution of the data and see if any values appeared
unusual or indicated possible problems with the data. The
descriptive statistics were reviewed for acquired and non-
acquired hospitals, and then compared to the same statistics
for the subsequent study periods.

Descriptive statistics of continuous variables for the
1999 study period are shown in Table 6. From a market
perspective, acquired hospitals had higher per capita income
and higher number of HMO's. From an operational performance
perspective, acquired hospitals had lower occupancy rates
and higher long-term debt.

Table 6: **Descriptive Statistics of Continuous Variables for the 1999 Study Period (N = 232)**

Variable	Acquired Hospitals N = 58		Not Acquired Hospitals N = 174	
	Mean	Standard Deviation	Mean	Standard Deviation
Market Per Capita Income	$24,398*	$6,560	$21,818*	$5,674
Percentage of Elderly	12.789%	3.609	14.031%	4.017
Unemployment Rate	4.748	2.371	5.342	2.873
Number of HMOs	11.72*	6.974	7.69*	6.082
Competition: Herfindahl-Hirschman Index	.46	.36	.61	.35
Operating Performance Return On Assets	-.049	.379	-.006	.222
Occupancy Rate	.453**	.144	.482**	.196
Operating Expenses per Discharge	$10,662	$3,449	$11,410	$6,202
Facility Age	10.07	6.00	9.15	4.70
Long-Term Debt to Equity	.662**	.751	.358**	.524
Organizational Factors Size	156	187	137	157
Number of Services	21.66	16.36	25.07	16.78

***   significant at p = .01
**   significant at p = .05
*   significant at p = .1

An analysis of frequency was completed for the categorical variables concerning ownership. The results are presented in Table 7, Descriptive Statistics of Categorical Variables for the 1999 Study Period.

Table 7: Descriptive Statistics of Categorical Variables for the 1999 Study Period (N = 232)

Variable	Category	Acquired Hospitals N = 58		Not Acquired Hospitals N = 174	
		Frequency	Percentage	Fre-quency	Perce-ntage
For-profit	Organization	36**	62%	27**	16%
Not-for-profit	Organization	17	29%	103	60%
Governmental	Organization	5	9%	44	24%

Note: all variables were measured at the hospital level.

```
***   significant at p = .01
**    significant at p = .05
*     significant at p = .1
```

As noted in Table 7, for-profit hospitals are more likely than the not-for-profit or government owned to be acquired. In the 1999 study period, 62% of the acquired hospitals were for-profit, whereas they are a significantly smaller percentage of the overall hospital population.

Correlation Analysis

Correlation is the linear association between two random variables. To test for multicollinearity, Pearson's correlation coefficients, r, were examined for combinations of independent continuous variables. Multicollinearity among independent variables in regression analysis results in parameters that are unreliable, weakening the predictive value of the analysis.

Pearson's correlation coefficients range from –1 to 1. A positive coefficient means that the association is positive; a negative value means it is negative. The greater the absolute value of the coefficient, the stronger the linear association. Among the variables included in the analysis, most had low correlations, suggesting no collinearity problem. However, the correlation data revealed the following correlations that indicated multicollinearity problems:

- Hospital size with hospital admissions (.89)
- Number of HMOs with HMO penetration (.73)
- Return on assets with operating margin (.63)

On the basis of this information, three variables: hospital admissions, HMO penetration and operating margin were deleted from the analysis.

Multivariate Findings

Multivariate logistic regression is the preferred analytic technique when the dependent variable is dichotomous. After deleting the highly correlated variables, logistic regression was used to model the data and identify significant relationships between the independent variables and the dependent variable, hospital acquisition.

Table 8 provides the variable, beta coefficients, parameter estimates, standard error and probability values for the logistic regression model. The signs of the model coefficients are interpreted as follows:

- When coefficients are negative, a lower value of the variable increases the probability of hospital acquisition.
- When coefficients are positive, a higher value of the variable increases the probability of hospital acquisition.

As noted in Table 8, two of the five operational variables, occupancy rate and long-term debt to equity, are related to hospital acquisition. Both occupancy rate and long-term debt to equity are marginally significant at the .10 level.

Table 8: **Logistic Analysis of Acquisition for the 1999 Study Period (dependent variable: 1 = acquired; 0 = not acquired) (N = 232)**

Variable	Parameter Estimate	Standard Error	Probability
Market Per Capita Income	.000	.000	.403
Percentage of Elderly	-.057	.048	.235
Unemployment Rate	.000	.086	.996
Number of HMOs	.030	.043	.485
Herfindahl-Hirschman Index	-1.16	.811	.150
Operating Performance Return on Assets	-.079	.757	.917
Occupancy Rate	-2.750	1.423	.053*
Operating Expenses per Discharge	.000	.000	.780
Facility Age	.058	.039	.132
Long-Term Debt to Equity	.552	.315	.079*
Organizational Factors Size	.000	.001	.723
Number of Services	-.024	.012	.047**
For-profit	2.824	.691	.000***
Not-for-profit	1.058	.660	.109

*** significant at p = .01
** significant at p = .05
* significant at p = .1

- Model chi-square = 71.680
- -2 Log likelihood = 189.24
- Pseudo R Square = .394

Since occupancy rate has a negative coefficient, hospitals with lower occupancy have a greater likelihood of being acquired. Since long-term debt has a positive coefficient, the greater the long-term debt, the more likely a hospital is to be acquired.

Two of the four organizational variables, number of services and for-profit ownership, are related to hospital acquisition. Since the number of services has a negative coefficient, hospitals with fewer services are more likely to be acquired. The number of services is significant at the .05 level. Since the for-profit ownership variable has a positive coefficient, hospitals with for-profit ownership are more likely to be acquired. For-profit ownership is significant at the .01 level.

The pseudo R squared of .394 indicates a moderate predictive power for the 1999 logistic regression model. In summary, hospitals with lower occupancy rates, higher debt, fewer services, and for-profit ownership are more likely to be acquired.

The 1999 study examines the association of market, operational performance and organizational factors with whether the hospitals were acquired by for-profit organizations or not-for-profit organizations. It includes a total sample of 58 acquired hospitals and 174 non-acquired

hospitals during the 1999 study period. The study represents 27 hospital acquisitions by for-profit organizations, and table 9B represents 31 acquisitions by not-for-profit organizations.

Table 9 reveals that the findings differ considerably for acquisitions by for-profit organizations and those by not-for-profit organizations during the 1999 study period. The columns marked as for-profit 9A explain the acquisition behavior of for-profit organizations. During the 1999 study period, for-profit status was the only statistically significant variable for predicting acquisitions. For-profit status is significant at the .01 level. Since the for-profit ownership variable has a positive coefficient, for-profit organizations are more likely to acquire hospitals with for-profit ownership.

The columns marked as not-for-profit 9B explain the acquisition behavior of not-for-profit organizations. The following variables are statistically significant for hospitals acquired by not-for-profit organizations: number of HMOs, occupancy rate and long-term debt.

One of the five market variables, the number of HMOs, is related to acquisitions by not-for-profit organizations. The number of HMOs has a positive coefficient and is significant at the .05 level.

Table 9: **Logistic Analysis Results: Hospital Acquisition by For-Profit or Not-For-Profit Organizations for the 1999 Study Period (N = 232)**

Variable	For-Profit (9A)			Not-For-Profit (9B)		
	Parameter Estimate	Standard Error	Probability	Parameter Estimate	Standard Error	Probability
Market Per Capita Income	.000	.000	.290	.000	.000	.982
Percentage of Elderly	-.058	.069	.402	-.028	.054	.601
Unemployment	.069	.112	.540	-.034	.110	.755
Number HMOs	-.095	.060	.111	.114	.050	.023**
Herfindahl-Hirschman Index	-1.667	1.060	.116	-.181	1.007	.857
Operating Return on Assets	.822	.850	.333	-.647	.816	.428
Occupancy Rate	-.547	1.721	.751	-3.34	1.726	.052*
Operating Expenses per Discharge	.000	.000	.688	.000	.000	.788
Facility Age	.057	.044	.194	.021	.041	.613
Long-Term Debt to Equity	.101	.326	.756	.570	.322	.077*
Organizational Size	-.002	.003	.523	.001	.001	.380
Number of Services	-.026	.016	.103	-.008	.014	.551
For-profit	3.847	1.257	.002***	1.180	.740	.111
Not-for-profit	1.742	1.231	.157	.581	.749	.437

*** significant at p = .01
** significant at p = .05
* significant at p = .1

9A: Model chi-square = 39.34.
  -2 Log likelihood = 127.643.
  Pseudo R Square = .303.

9B: Model chi-square = 33.490.
  -2 Log likelihood = 148.96.
  Pseudo R Square = .247.

Two of the five operating performance variables, occupancy rate and long-term debt, are related to hospital acquisitions by not-for-profit organizations. Hospitals with lower occupancy rates are more likely to be acquired by non-profit systems. The occupancy rate is marginally significant at the .10 level. Hospitals with higher long-term debt are more likely to be acquired by non-profit systems. The long-term debt is marginally significant at the .10 level.

The equation depicting acquisitions by not-for-profit organizations shows three of the fourteen independent variables are significant with a pseudo R square of .247. In summary, hospitals in markets with many HMOs, those with lower occupancy rates, or those with high debt are more likely than others to be acquired by not-for-profit organizations.

2000 Hospital Acquisition Study Period

Descriptive Findings

The 2000 hospital acquisition study period originally included 63 acquisitions. However, 4 acquired facilities had missing data and were eliminated. As a result, the

sample for the 2000 hospital acquisition study period

included 59 acquired hospitals and a control group of 177.

Table 10 shows the descriptive statistics.

Table 10: Descriptive Statistics of Continuous Variables for the 2000 Study Period (N = 236)

Variable	Acquired Hospitals N = 59		Not Acquired Hospitals N = 177	
	Mean	Standard Deviation	Mean	Standard Deviation
Market				
Per Capita Income	$24,440	$6,061	$25,572	$7,411
Percentage of Elderly	13.20%	3.502	13.88%	4.29
Unemployment Rate	4.867	2.997	4.391	1.797
Number of HMOs	10.83*	7.382	9.31*	6.548
Competition: Herfindahl-Hirschman Index	.539	.377	.554	.347
Operating Return on Assets	-.129***	.285	.023***	.115
Occupancy Rate	.447*	.153	.535*	.184
Operating Expenses per Discharge	$10,018	$4,546	$11,099	$4,260
Facility Age	11.52**	14.26	9.07**	4.91
Long-Term Debt to Equity	.82*	1.122	.48*	.543
Organizational Size	117**	92	172**	150
Number of Services	22.97	16.11	27.92	16.51

*** significant at p = .01
** significant at p = .05
* significant at p = .1

As shown in Table 10, during the 2000 study period, the following descriptive statistics were statistically significant. From a market perspective, acquired hospitals had higher number of HMO's. From an operating performance perspective, acquired hospitals continued to have lower return on assets, lower occupancy rates, higher long-term debt levels, and older facilities.

Table 11 shows the descriptive statistics of categorical variables for the 2000 study period.

Table 11:   Descriptive Statistics of Categorical Variables for the 2000 Study Period (N = 236)

Variable	Category	Acquired Hospitals N = 59		Not Acquired Hospitals N = 177	
		Frequency	Percentage	Frequency	Percentage
For-profit	Organization	24**	41%	31**	17%
Not-for-profit	Organization	28	47%	113	63%
Governmental, non-federal	Organization	7	12%	33	20%

Note: all variables were measured at the hospital level
*** significant at p = .01
** significant at p = .05
* significant at p = .1

As shown in Table 11, for-profit hospitals are more likely than not-for-profits to be acquired. In the 2000 study period, 41% of acquired hospitals were for-profit, whereas they are a significantly smaller percentage of the overall hospital population.

Correlation Analysis

Correlation is the linear association between two random variables. To test for multicollinearity, Pearson's correlation coefficients, r, were examined for combinations of independent continuous variables. Among the variables selected for inclusion in the analysis, most had low correlations, suggesting no collinearity problem. However, the correlation data revealed the following correlations that indicated multicollinearity problems:

- Hospital size with hospital admissions (.95)
- Return on assets with operating margin (.63)
- Number of HMOs with HMO penetration (.57)

On the basis of their high correlations, the hospital admissions variable and the operating margin variable were deleted from the analysis. Because of the high correlation as well as other interactions, the HMO penetration variable was also deleted from the analysis.

Multivariate Findings

Multivariate logistic regression is the preferred analytic technique when the dependent variable is dichotomous. After deleting the highly correlated variables, logistic regression was used to model the data and identify significant relationships between the independent variables and the dependent variable, hospital acquisition. The results of the multivariate logistic regression analysis for the 2000 hospital acquisition study period are presented in Table 12.

The equation for the 2000 hospital acquisition study period shows that five of the fourteen independent variables are significant. One of the five market factors, number of HMOs, is related to acquisition and is marginally significant at the .10 level. The number of HMOs has a positive coefficient, which indicates that hospitals in markets with more HMOs are more likely to be acquired. Two of the four organizational variables, size and for-profit ownership, are related to hospital acquisition. Hospitals with smaller size are more likely to be acquired. Size is marginally significant at the .10 level.

Table 12: **Logistic Analysis of Acquisitions for the 2000 Study Period (dependent variable: 1 = acquired; 0 = not acquired) (N = 236)**

Variable	Parameter Estimate	Standard Error	Probability
Market Per Capita Income	.000	.000	.405
Percentage of Elderly	-.068	.052	.187
Unemployment Rate	.003	.102	.976
Number of HMOs	.075	.046	.100*
Herfindahl-Hirschman Index	-.300	.769	.697
Operating Performance Return on Assets	-4.001	1.253	.001***
Occupancy Rate	-1.407	1.314	.284
Operating Expenses per Discharge	.000	.000	.425
Facility Age	.082	.032	.010**
Long-Term Debt to Equity	.243	.320	.446
Organizational Factors Size	-.004	.002	.085*
Number of Services	-.004	.014	.177
For-profit	1.355	.629	.031**
Not-for-profit	.247	.539	.647

*** significant at p = .01
**   significant at p = .05
*   significant at p = .1

- Model chi-square = 66.527.
- -2 Log likelihood = 198.895.
- Pseudo R Square = .364.

Two of the five operational variables, return on assets and facility age, are related to hospital acquisition. Return on assets has a negative coefficient and is significant at the .001 level. Since return on assets has a negative coefficient, hospitals with lower returns on assets are more likely to be acquired. Facility age is significant at the .05 level. Since facility age has a positive coefficient, hospitals with older facilities are more likely to be acquired.

The for-profit variable is significant at the .05 level. Since the for-profit ownership variable has a positive coefficient, hospitals with for-profit ownership are more likely to be acquired. The equation depicting hospital acquisitions during the 2000 study period shows that five of the fourteen independent variables are significant with a pseudo R square of .364. In summary, hospitals that are in markets with high numbers of HMOs, or that have low return on assets, aged physical plant, smaller size, or for-profit ownership are more likely to be acquired.

Table 13 examines the associations of market, operational performance and organizational factors with hospitals that were acquired by for-profit organizations or not-for-profit organizations during the year 2000.

Table 13: **Logistic Analysis Results: Hospital Acquisition by For-Profit and Not-For-Profit Organizations for the 2000 Study Period (N = 236)**

Variable	For-Profit (13A)			Not-For-Profit (13B)		
	Parameter Estimate	Standard Error	Probability	Parameter Estimate	Standard Error	Probability
Market Per Capita Income	.000	.000	.683	.000	.000	.644
Percentage of Elderly	.000	.062	.999	-.111	.064	.080*
Unemployment Rate	.021	.121	.865	.012	.122	.920
Number of HMOs	.041	.058	.477	.072	.055	.193
Herfindahl-Hirschman Index	-.610	1.00	.544	-.049	.933	.958
Operating Return on Assets	-2.29	1.099	.037**	-2.392	1.061	.024**
Occupancy	.086	1.767	.961	-2.188	1.569	.163
Operating Expenses/ Discharge	.000	.000	.089*	.000	.000	.447
Facility Age	-.019	.030	.527	.106	.037	.004***
Long-Term Debt	.243	.310	.433	-.241	.316	.446
Organizational Size	-.009	.004	.037**	-.002	.003	.470
Number of Services	.039	.023	.091*	-.023	.015	.122
For-profit	.108	.763	.888	1.834	.825	.026**
Not-for-profit	-.476	.703	.498	.725	.728	.319

```
***    significant at p = .01
**     significant at p = .05
*      significant at p = .1
```

```
13A: Model chi-square = 25.635.      13B: Model chi-square = 44.93.
-2 Log likelihood = 129.554.         -2 Log likelihood = 153.195.
Pseudo R Square = .214.              Pseudo R Square = .305.
```

Table 13 includes a total sample of 59 acquired hospitals and 177 non-acquired hospitals. Table 13A represents 24 hospital acquisitions by for-profit organizations, and table 13B represents 35 acquisitions by not-for-profit organizations.

Table 13 shows, the findings from the 2000 study period differ from those from the 1999 study period for acquisitions by for-profit organizations and not-for-profit organizations. The columns marked as for-profit 13A explain the acquisition behavior of for-profit organizations. The following variables are statistically significant for acquisitions by for-profit organizations: return on assets, operating expenses, size, and number of services. It is interesting to note that those variables are not statistically significant for for-profit acquisitions in the 1999 study period.

Two of the five operational variables, return on assets and operating expenses are related to hospital acquisitions by for-profit organizations. The return on assets is significant at the .05 level. Since return on assets has a negative coefficient, hospitals with lower returns on assets are more likely to be acquired. In contrast, operating expenses per discharge has a positive coefficient and is marginally statistically significant at the .10 level.

Since operating expenses has a positive coefficient, hospitals with higher operating expenses are more likely to be acquired.

Two of the four organizational variables, size and number of services, are related to hospital acquisition. Size is significant at the .05 level. Since size has a negative coefficient, smaller hospitals are more likely to be acquired. Number of services is marginally significant at the .10 level and has a positive coefficient. Since number of services has a positive coefficient, hospitals with more services are more likely to be acquired. The equation depicting acquisitions by for-profit organizations shows that four of the fourteen independent variables are significant with a pseudo R squared of .214.

The columns marked as not-for-profit 13B explain the acquisition behavior of not-for-profit organizations during the 2000 study period. The following variables are statistically significant for acquisitions by not-for-profit organizations: percentage of the elderly, return on assets, facility age, and for-profit status.

One of the five market variables, percentage of elderly, is related to hospital acquisitions by not-for-profit organizations. The percentage of elderly is marginally significant at the .10 level. Since percentage

of elderly has a negative coefficient, hospitals with lower percentages of elderly are more likely than others to be acquired by not-for-profit organizations.

Two of the five operating variables, return on assets and facility age, are related to hospital acquisitions by not-for-profit organizations. Return on assets is significant at the .05 level. Since return on assets has a negative coefficient, hospitals with lower returns on assets are more likely to be acquired by not-for-profit organizations. Facility age is significant at the .01 level. Since facility age has a positive coefficient, hospitals with older facilities are more likely than hospitals with newer facilities to be acquired by not-for-profit organizations.

One of the four organizational variables, for-profit status, is related to hospital acquisitions by not-for-profit organizations. For-profit status is significant at the .05 level. Since for-profit status has a positive coefficient, for-profit hospitals are more likely than others to be acquired by not-for-profit organizations. The equation depicting acquisitions by not-for-profit organizations shows that four of the fourteen independent variables are significant and have a pseudo R square of .305.

1999 and 2000 Pooled Hospital Acquisition Study

Descriptive Findings

The 1999 and 2000 pooled hospital acquisition study combines the two study periods. The resulting sample included 117 acquired hospitals and a control group of 351 non-acquired hospitals. As in the other two studies, preliminary analysis of the variables of interest used the mean and standard deviation for each variable. They were reviewed to assess the distribution of the data and to see if any values appeared unusual or indicated possible problems with the data.

The descriptive statistics were reviewed for acquired and for non-acquired hospitals, and then compared to the same statistics for the previous study periods. The results were consistent with the prior periods.

As shown in Table 14, during the pooled study, the following descriptive statistics were statistically significant. From a market perspective, acquired hospitals had higher number of HMO's. From an operating performance perspective, acquired hospitals had lower return on assets, lower occupancy rates, higher long-term debt levels, and older facilities.

Table 14: **Descriptive Statistics of Continuous Variables for the 1999 and 2000 Study (N = 468)**

Variable	Acquired Hospitals (N = 117)		Not Acquired Hospitals (N = 351)	
	Mean	Standard Deviation	Mean	Standard Deviation
Market Per Capita Income	$24,419	$6,286	$23,711	$6,860
Percentage of Elderly	12.99	3.54	13.95	4.152
Unemployment Rate	4.80	2.69	4.86	2.43
Number of HMOs	11.27*	7.16	8.46*	6.36
Competition: Herfindahl-Hirschman Index	.473	.375	.586	.350
Operating Performance Return on Assets	-.089***	.336	.008***	.177
Occupancy Rate	.450**	.148	.509**	.192
Operating Expenses per Discharge	$10,337	$4,036	$11,253	$5,307
Facility Age	10.21**	6.23	9.14**	5.66
Long-Term Debt to Equity	.765**	.940	.403**	.535
Organizational Factors Size	136	148	154	104
Number of Services	22.32	16.18	27.01	16.73

```
***   significant at p = .01
**    significant at p = .05
*     significant at p = .1
```

Table 15, shows the descriptive statistics of
categorical variables for the pooled study.

Table 15: Descriptive Statistics of Categorical Variables for the 1999 and 2000 Pooled Study (N = 468)

Variable	Category	Acquired Hospitals		Not Acquired Hospitals	
		Frequency	Percentage	Frequency	Percentage
Hospital Acquisition	Acquire	117		351	
For-profit	Organization	60***	51%	58***	17%
Not-for-profit	Organization	45	38%	216	62%
Governmental, Non-federal	Organization	12	11%	77	21%

Note: all variables were measured at the hospital level.

```
***    significant at p = .01
**     significant at p = .05
*      significant at p = .1
```

As noted in Table 15, for-profit hospitals have an
increased likelihood of being acquired. In the pooled study
period, 51% of acquired hospitals were for-profit and only
38% were not-for-profit.

Correlation Analysis

Correlation is the linear association between two
random variables. To test for multicollinearity, Pearson's

correlation coefficients, r, were examined for combinations

of independent continuous variables. Among the variables

selected for inclusion in the analysis, most had low

correlations, indicating no collinearity problem. However,

the correlation data for the pooled analysis revealed the

following correlations, which indicate multicollinearity

problems:

- Hospital size with hospital admissions (.92)
- Return on assets with operating margin (.61)
- Number of HMOs with HMO penetration (.58)

Because of their high correlations, the hospital

admissions variable and the operating margin variable were

deleted from the analysis. Due to high correlation and

problems with interactions, the HMO penetration variable was

deleted from the analysis.

Multivariate Findings

Multivariate logistic regression is the preferred

analytic technique when the dependent variable is

dichotomous. After deleting the highly correlated

variables, logistic regression was used to model the data

and determine significant relationships between the

independent variables and the dependent variable, hospital

acquisition. The results of the multivariate logistic

regression analysis for the pooled study are presented in

Table 16.

Table 16:   Logistic Analysis of Acquisitions for the 1999 and 2000 Pooled Study (dependent variable: 1 = acquired; 0 = not acquired) (N = 468)

Variable	Parameter Estimate	Standard Error	Probability
Market Per Capita Income	.000	.000	.901
Percentage of Elderly	-.057	.033	.081*
Unemployment Rate	-.007	.062	.909
Number of HMOs	.050	.029	.085*
Herfindahl-Hirschman Index	-.530	.526	.313
Operating Performance Return on Assets	-1.352	.535	.012**
Occupancy Rate	-2.42	.927	.009**
Operating Expenses per Discharge	.000	.000	.412
Facility Age	.058	.019	.002***
Long-Term Debt to Equity	.437	.195	.025**
Organizational Factors Size	-.001	.001	.616
Number of Services	-.013	.008	.124
For-profit	1.998	.430	.000***
Not-for-profit	.686	.405	.11

```
***    significant at p = .01
**     significant at p = .05
*      significant at p = .1
```

- Model chi-square = 110.606.
- -2 Log likelihood = 415.740.
- Pseudo R Square = .312.

The equation for the pooled hospital acquisition study

shows that seven of the fourteen independent variables are

significant.   Two of the six market variables, percentage of

the elderly and the number of HMOs, are related to hospital acquisition.   Percentage of the elderly is negatively related to acquisition and is marginally significant at the .10 level.   Since the percentage of elderly has a negative coefficient, hospitals with fewer elderly are more likely to be acquired.   Number of HMOs is positively related to acquisition and is marginally significant at the .10 level. Since the number of HMOs has a positive coefficient, hospitals in markets with a greater number of HMOs are more likely to be acquired.

Four of the five operational variables, return on assets, occupancy rate, facility age, and long-term debt are related to hospital acquisition.   As in both the 1999 and the 2000 study periods, return on assets has a negative coefficient.   In the pooled study, it is significant at the .05 level.   Since return on assets has a negative coefficient, hospitals with lower return on assets are more likely to be acquired.

As in both the 1999 and the 2000 study periods, occupancy has a negative coefficient.   In the pooled study, occupancy is significant at the .05 level.   Since occupancy has a negative coefficient, hospitals with lower occupancy are more likely to be acquired.

As in both the 1999 and the 2000 study periods, facility age has a positive coefficient. In the pooled study period, facility age is significant at the .01 level. Since facility age has a positive coefficient, hospitals with older facilities are more likely to be acquired.

As in both the 1999 and the 2000 study period, long-term debt to equity has a positive coefficient. In the pooled study period, long-term debt to equity is significant at the .05 level. Since long-term debt to equity has a positive coefficient, hospitals with higher long-term debt to equity are more likely to be acquired.

One of the four organizational variables, for-profit ownership, is related to hospital acquisition. As in both the 1999 and the 2000 study periods, for-profit ownership has a positive coefficient. In the pooled study, for-profit ownership is significant at the .01 level. Since the for-profit ownership variable has a positive coefficient, hospitals with for-profit ownership are more likely to be acquired.

In summary, in the pooled study, hospitals in markets with a low percentage of elderly or many HMOs, or that have lower returns on assets, lower occupancy rates, older facilities, higher long-term debt to equity or for-profit status are more likely to be acquired. The equation shows

that seven of the fourteen independent variables are significant with a pseudo R square of .312.

Table 17 examines the association of market, operational performance and organizational factors with whether the hospitals were acquired by for-profit organizations or not-for-profit organizations during the pooled study. It includes a total sample of 117 acquired hospitals and 351 non-acquired hospitals during the pooled study. Table 17A represents 51 hospital acquisitions by for-profit organizations, and Table 17B represents 66 acquisitions by not-for-profit organizations.

As shown in Table 17, in the pooled study the findings differ for acquisitions by for-profit organizations and those by not-for-profit organizations. The columns marked as for-profit 17A explain the acquisition behavior of for-profit organizations. The columns marked as for-profit 17B explain the acquisition behavior of not-for-profit organizations.

In the pooled study, the following variables are statistically significant for acquisitions by for-profit organizations: Herfindahl-Herschman index and for-profit status. One of the five market variables, Herfindahl-Herschman Index, is related to acquisition and is marginally significant at the .10 level.

Table 17: **Logistic Analysis Results: Hospital Acquisition by For-Profit and Not-For-Profit Organizations for the Pooled Study Period (N = 468)**

Variable	For-Profit (17A)			Not-For-Profit (17B)		
	Para-meter Esti-mate	Stand-ard Error	Proba-bility	Para-meter Esti-mate	Stand ard Error	Proba-bility
Market Per Capita Income	.000	.000	.847	.000	.000	.834
Percentage of Elderly	-.032	.043	.455	-.055	.039	.151
Unemployment Rate	.016	.080	.844	-.016	.076	.828
Number of HMOs	-.027	.037	.475	.091	.035	.009***
Herfindahl-Hirschman Index	-1.26	.672	.060*	.290	.635	.648
Operating Return on Assets	-.619	.600	.302	-1.098	.586	.061*
Occupancy	-.740	1.194	.535	-2.713	1.09	.013**
Operating Expenses/ Discharge	.000	.000	.205	.000	.000	.754
Facility Age	.000	.020	.997	.062	.018	.001***
Long-Term Debt	.266	.185	.152	.117	.185	.528
Organiza-tional Size	-.003	.002	.133	.001	.001	.543
Number of Services	-.002	.012	.890	-.016	.010	.099*
For-profit	1.523	.559	.006***	1.604	.532	.003***
Not-for-profit	.333	.560	.552	.809	.514	.116

*** significant at p = .01
** significant at p = .05
* significant at p = .1

17A: Model chi-square = 41.50.   17B: Model chi-square = 62.29.
-2 Log likelihood = 280.82.   -2 Log likelihood = 318.491.
Pseudo R Square = .170.   Pseudo R Square = .224.

The Herfindahl-Hirschman Index has a negative
coefficient, which indicates that in markets with less
concentration, i.e. more competitors, hospitals are more
likely to be acquired. One of the four organizational
variables, for-profit status, is related to hospital
acquisitions by for-profit organizations.

For-profit status is significant at the .01 level. As
in the 1999 and 2000 study periods, for-profit ownership has
a positive coefficient, which indicates that hospitals with
for-profit ownership are more likely than others to be
acquired by for-profit organizations. The equation shows
that two of the fourteen independent variables are
significant with a pseudo R squared of .170.

The columns marked as not-for-profit 17B explain the
acquisition behavior of not-for-profit organizations during
the pooled study. The following variables are statistically
significant for acquisitions by not-for-profit
organizations: number of HMOs, return on assets, occupancy
rate, facility age, number of services, and for-profit
status.

One of the five market variables, the number of HMOs,
is related to acquisition. The number of HMOs is
significant at the .01 level. As in both the 1999 and 2000
study periods, the number of HMOs has a positive

coefficient. The positive coefficient indicates that hospitals in markets with more HMOs are more likely than others to be acquired by a not-for-profit organization.

Three of the five operational variables, return on assets, occupancy rate, and facility age, are related to hospital acquisition. As in both the 1999 and 2000 study periods, return on assets has a negative coefficient. This indicates that hospitals with lower returns on assets are more likely to be acquired by not-for-profit organizations. In the pooled study, return on assets is marginally significant at the .10 level.

As in both the 1999 and 2000 study periods, occupancy rate has a negative coefficient. Therefore, hospitals with lower occupancy rates are more likely than others to be acquired by not-for-profit organizations. In the pooled study, occupancy rate is significant at the .05 level.

As in both the 1999 and 2000 study periods, the facility age variable has a positive coefficient. The positive coefficient indicates that hospitals with older facilities are more likely than others to be acquired by not-for-profit organizations. In the pooled study, facility age is significant at the .01 level.

Two of the four organizational variables, number of services and for-profit status, are related to hospital

acquisition by not-for-profit organizations. As in the 1999
and 2000 study periods, the number of services has a
negative coefficient. This indicates that hospitals with
fewer services are more likely than others to be acquired by
not-for-profit organizations. In the pooled study, the
number of services is marginally significant at the .10
level.

For-profit ownership has a positive coefficient. This
indicates that hospitals with for-profit ownership are more
likely than others to be acquired by not-for-profit
organizations. In the pooled study, the for-profit status
is significant at the .01 level. The equation shows that six
of the fourteen independent variables are significant with a
pseudo R square of .224.

Summary of Findings of the Three Analytical Models

The following tables summarize the expected
hypothesized direction as compared with the actual direction
of the association of the independent variables with the
dependent variable, acquisition. Chapter 6 will discuss the
comparison in detail. Table 18 presents the expected
direction and actual directions of relationships of
independent variables with the dependent variables.

Table 18: Expected Directions and Actual Directions of Relationships of Independent Variables with Dependent Variables in the Acquisition Model

Variable	Dependent Variable	Expected Direction	A1 [a]	A2 [b]	A3 [c]	Actual Direction
Market Per Capita Income	Hospital Acquisition	-	+	+	+	
Percentage of Elderly	Hospital Acquisition	-	-	-	-*	-
Unemployment Rate	Hospital Acquisition	+	+	+	-	
Number of HMOs	Hospital Acquisition	-	+	+*	+*	+
Herfindahl-Hirschman Index	Hospital Acquisition	-	-	-	-	
Operating Performance Return on Assets	Hospital Acquisition	-	-	-***	-**	-
Occupancy Rate	Hospital Acquisition	-	-*	-	-**	-
Operating Expenses per Discharge	Hospital Acquisition	+	+	+	+	
Facility Age	Hospital Acquisition	+	+	+**	+***	+
Long-Term Debt to Equity	Hospital Acquisition	+	+*	+	+**	+
Organizational Factors Size	Hospital Acquisition	-	+	-*	-	
Number of Services	Hospital Acquisition	-	-**	-	-	-
For-profit	Hospital Acquisition	+	+***	+**	+***	+
Not-for-profit	Hospital Acquisition	+	+	+	+	

*** Significant at p = .01	[a] Analysis 1:	1999 study period
** Significant at p = .05	[b] Analysis 2:	2000 study period
* Significant at p = .1	[c] Analysis 3:	Pooled model

Table 18 shows the following statistically significant relationships within the variables for the acquisition model. The market variable of number of HMOs is positively associated with hospital acquisition. The market variable of percentage of the elderly is negatively associated with hospital acquisition.

The operating performance variables of return on assets and occupancy rate are negatively associated with hospital acquisition. The operating performance variables of facility age and long-term debt to equity are positively associated with hospital acquisition.

The organizational variable of number of services is negatively associated with hospital acquisition. In all three studies, the organizational variable of for-profit status is positively associated with hospital acquisition and is significant at the .05 level or higher.

Table 19, presents the expected directions and actual directions of relationships of independent variables with dependent variables in the for-profit acquisition model for the 1999, the 2000, and pooled studies. Chapter 6 will discuss the comparison in detail. The relationships that are marginally significant at the .10 level and statistically significant at the .05, and .01 level are starred.

Table 19: **Expected Directions and Actual Directions of Relationships of Independent Variables with Dependent Variables in the For-Profit Acquisition Model**

Variable	Dependent Variable	Expected Direction	A1[a]	A2[b]	A3[c]	Actual Direction
Market Per Capita Income	Hospital Acquisition	-	+	+	+	
Percentage of Elderly	Hospital Acquisition	-	-	+	-	
Unemployment Rate	Hospital Acquisition	+	+	+	+	
Number of HMOs	Hospital Acquisition	-	-	+	-	
Herfindahl-Hirschman Index	Hospital Acquisition	-	-	-	-*	-
Operating Performance Return on Assets	Hospital Acquisition	-	+	-**	-	
Occupancy Rate	Hospital Acquisition	-	-	+	-	
Operating Expenses per Discharge	Hospital Acquisition	+	+	+*	+	+
Facility Age	Hospital Acquisition	+	+	-	+	
Long-Term Debt to Equity	Hospital Acquisition	+	+	+	+	
Organizational Factors Size	Hospital Acquisition	-	-	-**	-	-
Number of Services	Hospital Acquisition	-	-	+*	-	
For-profit	Hospital Acquisition	+	+***	+	+***	+
Not-for-profit	Hospital Acquisition	+	+	-	+	

*** Significant at p = .01
** Significant at p = .05
* Significant at p = .1

[a] Analysis 1: 1999 study period
[b] Analysis 2: 2000 study period
[c] Analysis 3: Pooled model

As seen in Table 19, the following relationships are statistically significant in the for-profit acquisition model. In the model, the market variable Herfindahl-Hirschman index is negatively associated with for-profit hospital acquisition.

The operating performance variable return on assets is significant at the .05 level in the 2000 study period. Consistently with the results from the acquisition model, the operating performance variable of return on assets is negatively associated with for-profit hospital acquisition. The organizational variable size is negatively associated with for-profit hospital acquisition. Consistently with the results from the acquisition model, the organizational variable of for-profit status is positively associated with for-profit hospital acquisition and is significant at the .001 level.

Table 20 presents the expected directions and actual directions of relationships of independent variables with dependent variables in the not-for-profit acquisition model for the 1999, the 2000, and the pooled studies. The relationships that are marginally significant at the .10 level and statistically significant at the .05, and .01 level are starred.

Table 20: **Expected Directions and Actual Directions of Relationships of Independent Variables with Dependent Variables in the Not-For-Profit Acquisition Model**

Variable	Dependent Variable	Expected Direction	A1 [a]	A2 [b]	A3 [c]	Actual Direction
Market Per Capita Income	Hospital Acquisition	-	+	+	+	
Percentage of Elderly	Hospital Acquisition	-	-	- *	-	-
Unemployment Rate	Hospital Acquisition	+	-	+	-	
Number of HMOs	Hospital Acquisition	-	+**	+	+***	+
Herfindahl-Hirschman Index	Hospital Acquisition	-	-	-	+	
Operating Performance Return on Assets	Hospital Acquisition	-	-	- **	- *	-
Occupancy Rate	Hospital Acquisition	-	- *	-	- **	-
Operating Expenses per Discharge	Hospital Acquisition	+	+	+	+	
Facility Age	Hospital Acquisition	+	+	+***	+***	+
Long-Term Debt to Equity	Hospital Acquisition	+	+*	-	+	
Organizational Factors Size	Hospital Acquisition	-	+	-	+	
Number of Services	Hospital Acquisition	-	-	-	- *	-
For-profit	Hospital Acquisition	+	+***	+**	+***	+
Not-for-profit	Hospital Acquisition	+	+	+	+	

*** Significant at p = .01	[a] Analysis 1: 1999 study period
** Significant at p = .05	[b] Analysis 2: 2000 study period
* Significant at p = .1	[c] Analysis 3: Pooled model

As seen in Table 20, the following relationships are statistically significant in the not-for-profit model. Consistent with the results from the acquisition model, the market variable number of HMOs is positively associated with not-for-profit hospital acquisition and is significant at the .01 level. In addition, the market variable percentage of the elderly is negatively associated with not-for-profit hospital acquisition and is marginally significant at the .10 level.

The operating performance variable return on assets is negatively associated with not-for-profit hospital acquisition and is significant in both the 2000 and the pooled study periods at the .05 level. Also, consistently with the results from the acquisition model, the operating performance variable occupancy rate is negatively associated with not-for-profit hospital acquisition and is significant at the .05 level. Facility age has a positive coefficient and is statistically significant at the .01 level.

The number of services is negatively associated with not-for-profit hospital acquisition and is marginally significant at the .10 level. The organizational variable for-profit status is positively associated with not-for-profit hospital acquisition and is significant at the .01 level.

Summary of Chapter 5

Chapter 5 has presented the results of the analysis. They included the descriptive and multivariate findings for the 1999, the 2000, and the pooled studies. The relationships of the variables to the acquisition model, the for-profit acquisition model, and the not-for-profit acquisition model also were presented.

Chapter 6:

Discussion and Conclusions

This chapter presents a summary and explanation of significant findings related to hospital acquisition. Results of the analysis of hospital acquisition and analyses of the constructs are used to answer the research questions. Implications for hospital managers and policy makers are also outlined. Limitations of the research are described. The chapter concludes with suggestions for areas of future research.

The purpose of this study is to explore the relationship between hospital acquisition and other factors subsequent to the Balanced Budget Act of 1997. The literature suggests that the Balanced Budget Act of 1997 and the increase in HMOs have generated greater competitive pressure on hospitals. These competitive pressures create more environmental uncertainty and have prompted strategic hospital acquisitions.

The market construct, which reflects the demand for hospital services, includes the following variables: income

per capita, percent of the population age 65 and older, the unemployment rate, the number of HMOs, and the Herfindahl-Hirschman index.

The operating performance construct is measured at the individual hospital level and includes the following variables: return on assets, occupancy rate, operating expenses per discharge, facility age and long-term debt to equity. The organizational construct is measured at the individual hospital level and includes the following variables: size, number of clinical services, for-profit ownership, and not-for-profit ownership.

Discussion of Hypotheses and Research Questions

The following section addresses the hypotheses and research questions based upon the overall acquisition model.

Research Question 1:

- *What market, operational, and organizational factors profile the characteristics of hospitals acquired after the Balanced Budget Act of 1997?*

The results of this study show a positive association between the market factor number of HMOs and hospital

acquisition. Hospitals in markets with higher numbers of HMOs are more likely to be acquired. This supports Claxton (1997), who found that hospitals build networks that will guarantee patient flow and increase bargaining power with managed care plans.

The results also show a negative association between the market factor percentage of elderly and hospital acquisition. This finding indicates that hospitals located in markets with high percentages of the elderly are less likely to be acquired. This is consistent with Bazzoli (1994), who found that because of reductions in the Medicare reimbursement rates, a high percentage of Medicare patients may result in the inability to cover operating expenses. Such a poor payer mix reduces a hospital's profit, creates financial distress and may lead to hospital acquisition.

The study shows a negative association between the operating performance variable return on assets and hospital acquisition. This is consistent with research by Bazzoli and Cleverley (1994), who found that hospitals with low profitability or operating losses are more likely to be acquired or close. More recently, Phillips (1999A) found that not-for-profit hospitals with poor financial performance are likely candidates for acquisition.

The study shows a negative association between the operating performance variable occupancy rate and hospital acquisition. This supports Lee and Alexander's (1999) research, which found a reduction in occupied beds to be associated with a change in ownership.

The study also found positive associations between facility age and long-term debt and hospital acquisition. Hospitals with older facilities are more likely to be acquired. According to Kirchheimer, (2001B) many hospital's facilities are old and require replacement. Since these hospitals have less debt capacity and also marginal profitability, they lack the debt and equity capital to support their operations or finance growth in services. The lack of capital forces them to consider selling their facilities to other organizations, especially to for-profit organizations that have access to stock equity capital.

This study's results support McCue and Furst (1986), who found that hospitals with more long-term debt are more likely candidates for hospital acquisition. More recently, Phillips (1999A) found that the economic pressures on hospitals caused by reduced third-party payments and increased competition have increased their debt levels leading to acquisition.

The organizational variable number of services has a negative association with hospital acquisition. This is consistent with Alexander and Morrisey (1988), who found limited clinical service to be associated with hospital acquisition. More recently, Phillips (1999A) found that many stand-alone hospitals lack the breadth of services to negotiate favorably with physicians, insurance companies and suppliers and thus frequently end up being acquired.

The following research question is restated in terms of hypothesis H_1.

Research Question 2:

- *Do acquired hospitals operate at a financial loss?*

    H_1: *Given existing market and organizational factors, those hospitals with poor operating performance (lower returns on assets and lower occupancy rates) are more likely than other hospitals to be acquired.*

As expected, the relationship addressed in Research Question 2 and predicted by H_1 is supported for return on assets. The study indicates that hospitals with lower returns on assets, which equates to lower profits, are more

likely to be acquired. This is consistent with previous research by McCue (1986) and Harmatta and Bogue (1997), which found that hospitals that have low profit margins and are in financial distress are more likely to be acquired. The finding implies that poorly performing hospitals will seek potential buyers to survive.

In further support of H_1, the study found that hospitals with lower occupancy rates are more likely to be acquired. Since occupancy measures management's ability to market its services and fill its available beds, lower occupancy rate is indicative of weak management (Alexander and Morrissey, 1988). Hence, facilities with low occupancy are likely candidates for acquisition. More recent research by Burns et al. (2000) found that hospitals with occupancy rates lower than the national average of 48% are more likely to be acquired.

Research Question 3:

- *Do acquired hospitals own aging plant and equipment and lack the financial capital to replace their plant and equipment?*

The following restates this research question in terms of hypotheses H_{2a} and H_{2b}.

H_{2a}: *Given existing market and organizational factors,*
those hospitals with limited debt capacity (i.e.
higher debt position) are more likely than other
hospitals to be acquired.

This study found a positive association between long-term debt and the likelihood of acquisition. This clearly indicates that the higher the level of debt, the greater the likelihood of acquisition. The finding is consistent with research by Bazzoli (1994), which found that hospitals with high debt cannot obtain loans or bond financing to renovate their aging physical plants and so become candidates for acquisition. Subsequent research by Mark (1999) also found that acquired hospitals had higher levels of debt than did similar but non-acquired hospitals.

H_{2b}: *Given existing market and organizational factors,*
those hospitals with aging plants are more likely
than other hospitals to be acquired.

Facility age was found to be positively associated with hospital acquisition. This support is statistically significant and shows that hospitals with older physical plants are more likely to be acquired. The finding supports Alexander and Morrisey (1988), who found that acquired hospitals had older facilities. More recently, Kirchheimer

(2001) found that for-profit organizations are increasingly purchasing hospitals that lack the capital to replace or update aging plant and equipment.

Research Question 4:

- *Do acquired hospitals have facilities located in markets with less competition and fewer HMOs?*

The following restates this research question in terms of hypotheses H_3 and H_4.

H_3: H*ospitals located in less competitive markets (high Herfindahl-Hirschman Index) are more likely to be acquired.*

This study found no statistically significant relationship between the Herfindahl-Hirschman Index and hospital acquisition.

H_4: *Hospitals located in markets with fewer HMOs are more likely to be acquired.*

This study found a statistically significant positive relationship between the number of HMOs and hospital acquisition. Therefore, it can be concluded that the more HMOs in a market, the greater the likelihood for hospital

acquisition. This finding is consistent with previous studies by Connor et al. (1997), who found that acquisitions occur in less concentrated markets, with more HMOs. This finding indicates that acquisitions occur in response to multiple competitors and to pressure from price-sensitive managed care organizations. It differs from the finding in the Alexander and Morrisey (1988) acquisition study that indicated that hospitals in favorable markets were more likely to be acquired.

Research Question 5:

- *Do acquired hospitals have smaller facilities and provide fewer services?*

The following restates this research question in terms of hypothesis H_5.

H_5: *Given existing market factors and operational performance, those hospitals with fewer beds and fewer total services are more likely than others to be acquired.*

As expected, a statistically significant negative association was found between hospital services and

acquisition. This means that hospitals with fewer services are more likely to be acquired. The finding is consistent with previous empirical studies by McCue and Furst (1986) and Alexander and Morrisey (1988), which also found that hospitals with limited services were more likely to be acquired. The likely explanation is that hospitals with fewer services may seek buyers in order to expand their services. In addition, fewer services limit the ability of a hospital to generate patient revenue and may result in lower profitability.

While not addressed in the research questions, H_6 considers the association between not-for-profit ownership and hospital acquisition.

> H_6:   *Given existing market factors and operating*
>
> *performance, those hospitals with not-for-profit*
>
> *ownership are more likely than others to be*
>
> *acquired.*

This study found no support for an association between not-for-profit ownership and acquisition but does show support for a positive association between for-profit ownership and acquisition. Gray (1997) enumerates the social benefits of not-for-profit hospital ownership: charity care, mission, and community trust. The limited

potential for profiting from community benefits makes
acquisition of not-for-profit hospitals unattractive to for-
profit organizations. In addition, as the conversion
literature explains, regulatory constraints may apply to the
transfer of public benefits. Thus, state regulators may
restrict the ability of not-for-profit hospitals to transfer
their ownership to for-profit companies.

Claxton et al. (1997), point out that because the not-
for-profit organizational form is designed to facilitate
community benefits, public participation in any conversion
process must be significant. Consumer groups, community
organizations and the state attorney general are all likely
to participate. Not surprisingly, recent research by
Needleman et al. (1999) found that most corporate
acquisitions of not-for-profit hospitals take place in
states with no process of public oversight. The literature
on conversion shows that to protect the public benefits
found in non-profit organizations state regulations make it
difficult for non-profit hospitals to transfer their
ownership to for-profit companies.

Recent studies by Phillips (1999A) and Kirchheimer
(2001), suggest that, despite the obstacles, for-profit
chains are acquiring a limited number of not-for-profit
hospitals. Initially, the not-for-profit acquisitions were

those with poor financial performance that were facing closure. However, more recently for-profit systems have been acquiring more successful not-for-profit hospitals.

The results of this study demonstrate a significant positive association between for-profit status and hospital acquisition. This finding indicates that for-profit hospitals are likely candidates for acquisition. As discussed by Robinson (2002), the high rate of for-profit acquisitions may be due partly to the limited number of not-for-profit acquisition candidates. Instead, the acquiring corporation looks to acquiring for-profit hospitals as a means of increasing its revenue and profits.

Discussion of the For-Profit Acquisition Model

The for-profit acquisition model analyzes the sample hospitals that were acquired by for-profit organizations within each study. As indicated in Table 19, the following variables: Herfindahl-Hirschman Index, operating expenses, hospital size, and for-profit status are statistically significant in the for-profit model.

The for-profit model supports H_3, demonstrating a negative association between the Herfindahl-Hirschman Index and hospital acquisition by for-profit organizations. As

expected, hospitals in competitive markets are more likely than others to be acquired by for-profit organizations. This is consistent with research by Burns et al. (2000), which found that hospital acquisitions are more likely in markets with low concentration as shown by an HHI below 1,665.

The for-profit study supports H_5 finding a negative association between size and hospital acquisition by a for-profit organization. The finding means that smaller hospitals are more likely to be acquired. In terms of market power, acquisition increases the company's size and thus its market power (Copeland and Weston, 1988). Hospital organizations strive for more profits not only through greater efficiency, but also by increasing market share, which spreads the fixed costs of plant and equipment over larger production volumes. This view of acquisitions was supported by Needleman's (1997) research, which found that for-profit acquisitions focused on organizations with smaller size and lower occupancy rates.

The for-profit study found a positive association between operating expenses and hospital acquisition by for-profit organizations. This finding means that hospitals with high operating expenses are more likely than others to be acquired by a for-profit organization. Similarly,

Phillips (1999B) found that for-profit organizations acquire hospitals with the intent of improving efficiency and making as much profit as possible. According to Kirchheimer (2001B), for-profit organizations expect to aggressively cut expenses, thus raising their profits.

Finally, the for-profit study found a positive association between for-profit status and hospital acquisition. This finding means that for-profit organizations are more likely to acquire for-profit than not-for-profit hospitals. The finding is consistent with research by Alexander and Morrisey (1987), which found that 96 percent of acquired for-profit hospitals were acquired by for-profit organizations. More recently, research by Phillips (1999A) found that stand-alone hospitals were frequently acquired by for-profit organizations, because they had lacked the size and breadth of services to compete effectively in the market place.

In summary, as discussed by Robinson (2002), for-profit organizations are acquiring smaller facilities in either rural or urban communities where the acquiring organizations can strengthen their market position. Many such acquisitions involve older facilities with high operating costs. For-profit organizations hope to make them more profitable through efficiency and aggressive pricing.

Discussion of the Not-For-Profit Acquisition Model

The not-for-profit model analyzes sample hospitals that were acquired by not-for-profit organizations within the studies. As shown in Table 20, the following variables are statistically significant in the not-for-profit model: percentage of elderly, number of HMOs, return on assets, occupancy, facility age, number of services, and for-profit status. The not-for-profit model supports the following hypotheses: H_1, H_{2b}, H_4, H_5.

The not-for-profit model supported H_1, finding a negative association between return on assets and acquisition. The finding means that not-for-profit organizations are acquiring hospitals with low profits. This is consistent with research by Alexander and Morrisey (1988), which found that hospitals with low profits were more likely to be acquired by not-for-profit organizations. Bazzoli and Cleverly (1994) also found that hospitals with poor financial performance were likely candidates for organizational change. More recently, Phillips (1999B) found that acquisitions by not-for-profit organizations were linked to low profits and low efficiency in the acquired hospitals.

Also in support of H_1 the not-for-profit study found occupancy rate to be negatively associated with acquisition by not-for-profit organizations. This finding means that hospitals with lower occupancy rates are more likely than others to be acquired by not-for-profit organizations. The finding is consistent with research by Lee and Alexander (1999), which found that lower occupancy rates in community hospitals are negatively associated with organizational change. Needleman (1997) also found that not-for-profit organizations focused on hospitals with lower occupancy rates for acquisitions.

The not-for-profit model supported H_2 finding that acquired hospitals have older facilities. In other words, hospitals with older facilities are more likely than others to be acquired by not-for-profit organizations. Hospitals fund replacements or capital improvements through operating resources or capital reserves. Facing such necessities and reduced profits due to the BBA and the increasing cost of capital, hospitals with aging facilities are more likely than others to be acquired. This finding is consistent with research by Ernst and Young (1999), and with the analysis by Kirchheimer (2001A) on the growing number of hospitals with old facilities that are being acquired by not-for-profit

organizations. From an efficiency perspective, a replacement facility provides technology for new clinical services, enhances the organization's image, and improves operational efficiency. Since hospitals with older facilities would require significant investments through operating funds or new debt, to achieve those goals, they are more likely to be acquired.

The not-for-profit model supports H_4, finding that hospitals in markets with more HMOs are more likely than others to be acquired by not-for-profit organizations. The finding suggests that the greater number of HMOs in a market, the more likely not-for-profit acquiring hospitals will purchase hospitals in order to expand their network of facilities.

The not-for-profit model supports H_5, finding that the number of services is negatively associated with acquisition by not-for-profit organizations. The finding means that hospitals with fewer services are more likely than others to be acquired by not-for-profit organizations. This study is consistent with research by Alexander and Morrisey (1988), which also found that hospitals with fewer services were more likely to acquired by not-for-profit organizations.

While not addressed by a hypothesis, the not-for-profit study found a positive association between for-profit status and acquisition by a not-for-profit organization. This finding means that not-for-profit organizations are more likely to acquire for-profit hospitals than others. This is consistent with research by Alexander and Morrissey (1988), which also found that not-for-profit organizations are more likely to acquire for-profit hospitals.

Implications of the Present Study: Theoretical, Managerial, and Policy

There are theoretical, managerial and policy implications that evolved from this empirical analysis of hospital acquisitions.

Theoretical Implications

From a theoretical perspective, resource dependence posits that organizations that cannot generate enough revenue to accomplish their mission must interact with the environment to generate more. The more important the resources are to a hospital's mission and the greater their scarcity, the more likely the hospital is to sacrifice autonomy to obtain them. Therefore, organizations that are

acquired are more likely to be those with lower financial performance.

The results of this study are consistent with resource dependence theory in showing that hospitals with fewer resources are more likely to be acquired. The study shows that resource scarcity due to negative return on assets and high debt leads to increased acquisitions. These findings support resource dependence theory and provide an understanding of the relationship between hospital acquisitions and the association with profitability, market structure, and hospital ownership.

Corporate financial theory emphasizes the importance of acquisitions for increasing size and market share and improving management efficiency (Copeland and Weston, 1988). The theory also stresses that the stronger a hospital's competition, the more it must enhance its management skills and business strengths. In terms of market power, purchasing hospitals increased the size of the acquiring hospitals, and thereby increased their market power. Market power implies a market dominant position and some elements of monopoly control (Copeland and Weston, 1988). Greater market power allows hospital managers to make more profits through greater internal efficiency and by exploiting their favorable market position.

In terms of market structure, the studies found hospitals in markets with more HMOs were more likely to be acquired. As discussed by Burns et al. (2000), markets with many HMOs create more uncertainty, which prompts formation of more physician and hospital alliances. Krishnan (2001) also found that payer-driven markets and selective contracting by HMOs may have reduced hospital's prices, profit margins and occupancy rates. Thus, the pricing pressures and reduced hospitalization from the onset of managed care may have lowered hospital profits and occupancy rates. By affiliating with a multi-hospital system, acquired hospitals enhance their market positions to gain market leverage over competing HMOs.

Management inefficiency theory posits that acquiring organizations target inefficient or poorly managed hospitals, expecting that their own management expertise will improve the overall financial performance of the target hospital (Copeland and Weston, 1988). The purchase of financially distressed hospitals by an external organization was found by this study, which supports the management inefficiency theory of corporate finance. Financial theory (Copeland and Weston, 1988) also recognizes the importance of financial success to an organization's ability to replace existing plant and equipment and to finance new services.

In this study, acquired hospitals had fewer services and were operating at a loss. They lacked the internal capital to maintain plant and equipment and to fund new services. In addition, the acquired hospitals had higher long-term debt than the non-acquired hospitals did. In targeting hospitals with limited debt capacity, acquiring organizations can provide economies of scale for accessing capital and thus lower the cost of capital. This study supports the potential for economies of scale as a motive for hospital acquisition.

Managerial Implications

These results have important managerial implications as the hospital industry faces a more competitive environment. The Balanced Budget Act of 1997 has significantly reduced hospitals' profits. Lower profits and increased competition among HMOs are placing hospitals with low occupancy rates at an even greater disadvantage. Many independent hospitals are being forced into acquisition, bankruptcy, or closure. Meanwhile, evidence suggests that acquiring organizations do not hesitate to enter highly competitive markets or markets characterized by high numbers of HMOs.

For hospital managers, this study suggests that hospital acquisition is strongly associated with poor operating performance as shown by low profits and occupancy rates.   Therefore, hospital managers are challenged to improve organizational performance if they wish to avoid acquisition.   If unsuccessful in doing so, hospital managers in facilities with fewer clinical services can anticipate acquisition.   In addition, this study shows that declining occupancy rates among acquired hospitals may have contributed to their lower profits.   In turn, lower profits reduce capital investment, technological innovation, and clinical services.   Those factors increase the likelihood of a hospital acquisition.

Policy Implications

In terms of policy, this study analyzed hospital acquisitions subsequent to the Balanced Budget Act of 1997. The impact of reduced Medicare reimbursement after the Balanced Budget Act of 1997 placed greater financial pressure whereby the proportion of hospitals operating at a loss rose to 37% in 1999 compared to 21% in 1996 (MedPac, 2001).   Although the study did not analyze the financial condition of hospital acquisitions before the BBA of 1997,

recent studies that evaluated the acquisition of hospitals
prior to BBA, Phillips (1999) and Mark (1999) found that
acquired hospitals were operating at a loss. The outcome of
this study also found operating losses among acquired
hospitals relative to non-acquired facilities after BBA.
Thus, a weak financial condition was a contributing factor
in a hospital selling out to an acquiring facility in the
time periods prior to and subsequent to BBA.

However, prior to BBA hospital acquisitions peaked at
99 acquisitions in 1996, and then declined to 63 in the year
2000. The decline suggests that the acquiring health care
organizations are becoming more selective after BBA in the
types of hospitals they purchase. They may be selecting the
hospitals that are located in markets with many competing
HMOs and fewer Medicare patients, so they can bolster their
network and negotiate more favorable payment rates. Thus
acquiring hospitals may be selective in avoiding markets
with large Medicare markets that would place them at risk to
changes in Medicare reimbursement.

The pool of potential acquisition candidates may be
reduced, as well, because acquiring organizations find the
operating and financial problems of many target hospitals to
be of such magnitude that turnaround is unlikely. When such
hospitals close, the effects on the health status of

community residents and also on the local economies are matters of urgent public concern. The closure of hospitals in communities with aging populations will reduce elderly people's access to care.

The findings of this study indicate that for-profits are more likely than non-profits to be acquired. Needleman et al. (1997) point out the increased public scrutiny of not-for-profit hospital conversions has limited their acquisition by for-profit organizations. That has accelerated the acquisition of for-profit hospitals by for-profit organizations. The phenomenon may reflect public skepticism about the long-term commitment of for-profit owners to protecting full community access to health services. Increasingly, as well, communities fear losing local control over hospital policy.

In view of these issues, policy makers should consider whether the public is better served by more investments in outpatient care or by hospital acquisitions as a way of keeping inpatient services in a community. The issue is of particular concern if the acquiring corporation sees that providing inpatient services through its acquisition drains its financial resources.

Low occupancy levels usually mean low demand for inpatient services. It is important to understand occupancy

and level of services as they relate to operating efficiency and organizational stability. As policy makers seek increased efficiency in the healthcare delivery system, they should monitor the effect of hospital acquisition on subsequent organizational performance. They should also monitor access to critical health services within local communities.

More importantly, health care policy makers and state regulators have legitimate concerns about converting hospitals from not-for-profit ownership to for-profit ownership. The dangers they fear include the loss of community benefits, reductions in charity care, limitations on services, and unreasonably low selling prices. As analyzed by Gray (1997), acquisitions by for-profit organizations seem to be driven by low acquisition prices, lax regulatory oversight and the hope of obtaining sufficient market share to negotiate effectively with large healthcare purchasers.

Consistently with Gray's findings, this study shows that for-profit hospitals are more likely than not-for-profits to be acquired. Since fewer not-for-profit hospitals are being acquired by for-profit companies, the societal benefits of non-profit hospital ownership are being preserved. For-profit organizations may have decided not to

acquire not-for-profit hospitals because of the scrutiny they face from community leaders and state regulators. Unfortunately, however, these financially weak non-profit hospitals that need capital to continue to provide care may thus lose the option of selling their facilities. As a result they may close.

Limitations of the Present Study

This research is a cross-sectional study of the relationships between hospital acquisition and market conditions, operating performance, and organizational factors after passage of the Balanced Budget Act of 1997. Thus, the study assesses the relationship of the independent variables on the dependent variable, hospital acquisition, at one point in time. However, the conceptual model suggests that time may influence hospital acquisitions. A longitudinal study would show the changes in the variables over time. Such a longitudinal study would enhance testing of the conceptual model used in the present study. Expansion of the study to include periods prior to the Balanced Budget Act of 1997 would highlight changes from the earlier periods. It would also evaluate the impact of subsequent legislation including the BBRA of 1999 and the

BIPA of 2000, which counteracted some of the negative effects of the BBA.

A second limitation of the study concerns the limitations of the secondary data sources in terms of their accuracy and completeness. The dependent variable, hospital acquisition was abstracted from Modern Healthcare for the respective study periods. This represents a comprehensive database of independent hospital acquisitions but the study did not evaluate variations related to for-profit corporate takeovers. Pertaining to the independent variables, the American Hospital Association data is derived from annual survey data and is subject to interpretation as the hospital submits the data. In addition, the Medicare Cost Reports are reviewed by the Center for Medicare Services (CMS) but are not audited by an independent external organization. As a result, there are limitations in the ability of the data to measure the constructs and theory employed in the study.

A third limitation of the study is the contrast between acquisitions in rural and urban localities. The variables number of HMOs and percent of the elderly, were analyzed within the market construct and may be affected by rural versus urban variation.

A final limitation of the study is variation caused by
geographic location. This study did not analyze the
acquired hospitals according to geographic locality.

Areas for Future Research

The present study has provided important information
about hospital acquisitions following the Balanced Budget
Act of 1997. However, further research is suggested in the
following areas. As noted in the conceptual model, this
study does not address the causal relationships among the
independent variables. Further research using path analysis
or linear structural equation modeling would help identify
the complex relationships between market factors,
operational performance factors, organizational factors, and
hospital acquisition.

By incorporating data from before the Balanced Budget
Act of 1997, future research using longitudinal analysis
would enhance understanding of hospital acquisitions. Such
a study would measure hospital acquisitions over time and
could help relate hospital acquisitions to changes in the
environment. Such a longitudinal study might also show
whether the effect the BBRA of 1999 and BIPA 2000 have
altered the acquisition profile.

By adding other market variables, future research would improve understanding of the competitive environment driving hospital acquisition. For example, it would be useful to better understand how local markets that are dominated by major teaching hospitals may affect hospital acquisitions.

Given the number of acquisitions and their effect on public welfare, the application of federal anti-trust policy continues to be debated. Further analysis using the Herfindahl-Hirschman index and other measures may provide key information leading to more effective application of government anti-trust policy.

Hospital financial performance after being acquired is an area of ongoing concern. As a result, future research should focus on the ability of hospital acquisition to improve the competitive position of the organization. Such research would address the ability to reduce costs, increase profits and fund capital improvements. By examining hospital costs and price structure following acquisition research could identify efficiencies of scale.

This study provides evidence that some hospitals, particularly those with poor profitability and locations in weak market areas do not attract acquisition. Since such facilities may well face bankruptcy and closure, future research should examine issues concerning closed hospital

facilities. This research should assess the differences between acquisition and hospital closure. Additionally, it should evaluate the impact of acquisition or closure on access to care within local communities.

Finally, since this study focused on hospital acquisitions, a natural extension would be to analyze factors associated with divesture of previously acquired hospitals. This would show if certain sets of hospitals are repeatedly involved in acquisitions by for-profit organizations or have ongoing characteristics associated with poor performance.

Conclusions

The study examined the influence of market factors, organizational performance, and operational characteristics on hospital acquisitions. The results show that acquired hospitals are those located in markets with more HMOs and low percentages of elderly patients. In addition, acquired hospitals have the common operating performance characteristics of low profits, low occupancy rates, older facilities, and higher long-term debt. Acquired hospitals also have common organizational factors: fewer clinical services, and for-profit status. These findings are

consistent with recent empirical studies about mergers and acquisitions by McCue and Furst (1986) and Alexander and Morrisey (1988).

More recent research by Mark (1999) also found that acquired hospitals had negative returns on assets. The results suggest that hospital acquisition is a response to a hospital's poor financial health. It seems clear that, policy makers must weigh the risks associated with for-profit ownership against the risk of a hospital closing down if it does not convert to being for-profit. Mark's research shows that hospital financial performance improves following acquisition. The improved performance is related to better management and more access to resources.

The present study's results support the use of both resource dependence and corporate financial theory as theoretical frameworks explicating hospital acquisition. The study also documents the important role of for-profit status in predicting future hospital acquisitions.

Chapter Summary

This chapter has summarized the study findings and interpreted them. In addition, the implications of the study findings for both healthcare managers and policy

makers were described. Limitations of the study and areas
for future research were identified.

   The findings of this study are useful in that they
contribute to understanding hospital acquisitions in
relation to a wide variety of independent variables. The
study results support its conceptual model, suggesting that
hospital organizations respond to various factors leading to
hospital acquisition. Therefore, hospital managers can
exert influence on whether their hospitals are acquired.
Policy makers can use the study to predict the incidence of
hospital acquisition and to study the possible effects of
acquisition on operating efficiency and access to care. In
summary, the study provides a conceptual model supported by
resource dependence theory and financial theory that has
good predictive power.

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