

The Association between Provider-Sponsored Health Plans and Nonprofit Hospital Bond Ratings

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Abstract

Objective: To test the association between provider-sponsored health plans (PSHPs) and nonprofit hospital bond ratings.

Background: The passage of the Patient Protection and Affordable Care Act in 2010 has led to changes in both the delivery of care and how and which services are reimbursed. As a result, there has been widespread exploration of new models of care and a redesign of assessing hospital credit-worthiness. All stakeholders in the healthcare environment have been asked to redefine how they operate, including hospitals and health systems, the government, insurance companies, and consumers. Some hospitals and health systems are evaluating whether a PSHP is a tactic that could improve population health by aligning payer and provider financial incentives.

Methods: This retrospective, cross sectional study included 390 nonprofit hospitals and health systems rated by Moody's Investors Services that were categorized as either owning or not owning a PSHP. Hospital bond ratings were categorized into high or low based on high investment grade, medium investment grade, or speculative grade, respectively. A binary logistic regression model was fit to test the association between PSHP ownership and bond rating, controlling for hospital geographic region, organization type and liquidity, leverage and operating performance measures.

Results: Of the 70 hospitals with PSHPs, 55 (79%) had high bond ratings while 168 (53%) of those without PSHPs had high bond ratings ($p < 0.001$). After controlling for region, organization type and financial measures, hospitals that owned a PSHP were 3.1 times as likely to have a high bond rating as those without a PSHP ($OR = 3.1$, $p = 0.004$) with predictive accuracy of 0.87.

Conclusion: Given the strong association between PSHPs and nonprofit hospital bond ratings, hospital senior leadership may consider PSHPs when assessing tactics of payer and provider incentive alignment.

Introduction

The passage of the Patient Protection and Affordable Care Act (ACA) in 2010 marked an important shift from fee-for-service to value-based reimbursement. A main objective of the ACA is to align payments to value and quality of care, and as a result, hospital management and payers are redesigning incentive structures and agreements. The Centers for Medicare and Medicaid Services (CMS), accounted for 36% of total healthcare spending in 2014 (CMS.gov, 2015), and this is projected to increase with the expansion of Medicaid. At the same time, CMS must address declining revenues, due to the increase of the baby boomer population and fewer employed persons paying into the program. Thus, CMS is incentivizing new models of care and reimbursement to address its projected budget shortfall. One such mechanism CMS is incentivizing is accountable care organizations (ACOs), where organizations voluntarily coordinate care for Medicare patients (CMS.gov, 2015). With both shared risk and the opportunity for shared savings from delivering high quality care for less money, hospitals are reviewing the services provided and eliminating those that are non-value added within the system of care delivery. While CMS and the ACA are largely credited with the industry changes, commercial payers have also engaged in risk sharing with hospitals to move to value-based reimbursement, even before the implementation of the ACA (McCue, et al, 1997).

With the shift to population health management, hospitals need capital to finance new models of care (Kates, et al, 2015). Organizations are investing large sums of money in structural improvements, technological advancements, and practice and service expansion to coordinate care across the full spectrum of healthcare services. Hospital leaders often must decide either to use the organization's cash reserves or issue debt to fund these investments. With an industry standard of maintaining adequate cash reserves, most hospitals prefer to issue debt as a means of capital financing (Pascaris, et al, 2015). A nonprofit hospital or health system's bond rating determines the cost of issuing debt (i.e., the interest rate) through a bond offering. Historically, bond ratings have been determined only on financial measures; however, many are revising their rating methodologies to recognize value-based payment structures, increased market share and reach, and the diversification of revenue streams to compensate for taking on more risk.

One strategy for managing a defined population's health is a provider-sponsored health plan (PSHP), where the hospital creates and manages its own insurance company. While a small number of hospitals and health systems have had successful PSHPs for years, such as Presbyterian Healthcare Services operating its own since 1986, PSHPs have received greater attention after the ACA as a way to cost effectively manage population health, because they eliminate the need to contract with a third-party payer, thereby eliminating these transactions costs and allow for direct implementation of changes to the care delivery system (Vijayaraghavan and Klitzner, 2010). Little is known about the characteristics of hospitals with PSHPs and whether hospitals with PSHPs are financially stronger, supporting higher bond ratings. If hospitals with PSHPs have higher bond ratings, then they have access to lower cost of capital to further finance new models of care. Even more, hospitals that are implementing new models of care are potentially using capital raised from debt to fund these endeavors. Thus, the purpose of this study was to evaluate the association between PSHP status and hospital bond ratings for nonprofit hospitals in the United States.

Methods

Study Design, Sample and Setting

This study was a retrospective, cross-sectional design. The sample included 390 nonprofit hospitals rated by Moody's Investors Services in 2014 and 2015. The data set came from Moody's US health care online comparative database.

Definition of Measures/Measures of Variables

The dependent variable of interest was bond rating, as determined by Moody's Investor Services, and was categorized as high (investment grade ratings; Aa1, Aa2, Aa3, A1 and A2) or low (medium and speculative grade ratings; A3, Baa1, Baa2, Baa3, Ba1, Ba2, Ba3, B1 Caa1, Caa3) (Moody's Investor Services, 2016). The main independent variable was PSHP status. Hospitals with premium revenue (i.e., premium payments for insured populations) were classified as having a PSHP, and hospitals without premium revenue were classified as not having a PSHP.

Other variables included in the analysis included geographic region of the hospital, organization type, and seven financial measures. Region was categorized by the state in which the hospital was located (Midwest (MW), Northeast (NE), Northwest (NW), Southeast (SE) and Southwest (SW)) (Census.gov, 2015). Organization type included academic medical centers, systems (both single and multi-state), standalone facilities, children's hospitals and specialty hospitals. Children's and specialty hospitals were grouped together. Financial measures used by Moody's to assess hospital liquidity, leverage and operational performance when determining bond ratings included total operating revenue, days' cash on hand, operating cash flow margin, cash to debt ratio, debt to cash flow ratio, total government gross revenue, and three-year operating revenue compound annual growth rate (CGAR).

Statistical Analysis

Descriptive statistics included frequency distributions, means and standard deviations. Chi-square tests were used to test the association between bond rating and PSHP status, geographic region, and organization type. Two independent samples t-tests were used to test the association between bond rating and financial performance. Similar bivariate tests were used to test the association between PSHP and the other independent variables.

A series of binary logistic regression models were fit to test the association between bond rating and PSHP, controlling for the region, organization type and financial measures. We used the receiver operating characteristics (ROC) curves for each model to assess overall model fit. Microsoft Office Excel 2010 and SPSS Statistical Package Software, Version 15.0 were used for data collection, management, and analysis.

Results

Seventy (18%) hospitals and health systems had a PSHP in 2014-2015. PSHP concentration ranged from 9% in the NE to 40% in the NW ($p < 0.001$) (Table 1). Hospitals and health systems that owned a PSHP had significantly stronger financial performance, with three times higher total operating revenue (\$3.5B for hospitals with PSHPs and \$1.1B for hospitals without, $p < 0.001$), lower total government gross revenue (56.4% for hospitals with PSHPs and 59.2% for hospitals without, $p = 0.006$) and higher 3-year operating revenue CAGR (8.3% for hospitals with PSHPs and 5.6% for hospitals without, $p < 0.001$).

Table 1
Description of the Sample by Provider Sponsored Health Plan Status, N = 390

Variable	With PSHP N = 70 (17.9%)	Without PSHP N = 320 (82.1%)	p-value
Region, n (%)			<0.001
Midwest	23 (21.3%)	85 (78.7%)	
Northeast	9 (9.1%)	90 (90.9%)	
Northwest	19 (40.4%)	28 (59.6%)	
Southeast	10 (9.3%)	98 (90.7%)	
Southwest	9 (32.1%)	19 (67.9%)	
Organization Type, n (%)			<0.001
Academic Medical Centers	14 (28.0%)	36 (72.0%)	
Systems	34 (27.6%)	89 (72.4%)	
Standalone Facilities	17 (8.9%)	174 (91.1%)	
Children's and Specialty Hospitals	5 (19.2%)	21 (80.8%)	
Financial Measures, M \pm SD			
Total Operating Revenue (\$millions)	3,526 \pm 3,338	1,054 \pm 1,547	<0.001
Days' Cash on Hand	239.5 \pm 106.6	241.8 \pm 132.9	0.891
Operating Cash Flow Margin (%)	10.0 \pm 3.8	10.4 \pm 4.4	0.489
Cash to Debt (%)	185.1 \pm 95.7	181.7 \pm 143.2	0.852
Debt to Cash Flow (x)	2.9 \pm 1.5	3.2 \pm 3.2	0.503
Total Government Gross Revenue (%)	56.4 \pm 6.6	59.2 \pm 8.0	0.006
3 Yr. Operating Revenue CAGR (%)	8.3 \pm 4.1	5.6 \pm 5.2	<0.001

Note: Compound Annual Growth Rate

Of the 390 hospitals and health systems in the analysis, 223 (57%) had a high bond rating (Table 2). While 55 (79%) of hospitals with a PSHP had a high bond rating, 168 (53%) of those without a PSHP had a high bond rating ($p < 0.001$). More than two-thirds of academic medical centers and children's and specialty hospitals had high bond ratings (70% and 89% respectively). Hospitals and health systems with high bond ratings had significantly better financial performance across all financial measures ($p < 0.001$).

Table 2
Description of the Sample by Bond Rating, N = 390

Variable	Low Bond Rating N = 167 (42.8%)	High Bond Rating N = 223 (57.2%)	p-value
Provider Sponsored Health Plan, n (%)			<0.001
Yes	15 (21.4%)	55 (78.6%)	
No	152 (47.5%)	168 (52.5%)	
Region, n (%)			0.001
Northeast	58 (58.6%)	41 (41.4%)	
Northwest	20 (42.6%)	27 (57.4%)	
Southeast	47 (43.5%)	61 (56.5%)	
Southwest	9 (32.1%)	19 (67.9%)	
Midwest	33 (30.6%)	77 (69.4%)	
Organization Type, n (%)			<0.001
Academic Medical Centers	15 (30.0%)	35 (70.0%)	
Systems	42 (34.1%)	81 (65.9%)	
Standalone Facilities	107 (56.0%)	84 (44.0%)	
Children's and Specialty Hospitals	3 (11.5%)	23 (88.5%)	
Financial Measures, M ± SD			
Total Operating Revenue (\$millions)	762 ± 1,132	2,048 ± 2,610	<0.001
Days' Cash on Hand	177.7 ± 79.2	289.0 ± 137.4	<0.001
Operating Cash Flow Margin (%)	8.8 ± 4.5	11.5 ± 3.7	<0.001
Cash to Debt (%)	133.2 ± 117.0	219.2 ± 137.4	<0.001
Debt to Cash Flow (x)	3.9 ± 4.1	2.5 ± 1.4	<0.001
Total Government Gross Revenue (%)	61.2 ± 7.7	56.8 ± 7.4	<0.001
3 Yr. Operating Revenue CAGR (%)	5.0 ± 4.5	6.9 ± 5.4	<0.001

Note: Compound Annual Growth Rate

Table 3 reports the results of the binary logistical regression analysis. The first model included geographic region, organization type and the financial measures that were not significantly associated with PSHP in the bivariate analysis. This model had high predictive accuracy, with an area under the ROC curve of 0.86. In the second model, PSHP was added as a predictor of bond rating. In this model, hospitals with a PSHP were 3.1 times as likely to have a high bond rating as hospitals without a PSHP (p = 0.004). The predictive accuracy increased to 0.87. In the final model (model 3), which added the two financial measures that were associated with PSHP in the bivariate analysis, PSHP was no longer associated with bond rating.

Table 3
Description of Multivariate Models by Bond Rating, N = 390

Variable	Model 1		Model 2		Model 3	
	Odds Ratio	p-value	Odds Ratio	p-value	Odds Ratio	p-value
Region						
Northeast	0.384	0.008	0.445	0.029	0.437	0.032
Northwest	0.590	0.259	0.400	0.066	0.350	0.052
Southeast	0.609	0.159	0.684	0.285	0.801	0.541
Southwest	1.024	0.968	0.963	0.952	1.228	0.753
Midwest	Ref		Ref		Ref	
Organization Type						
Academic Medical Centers	1.361	0.723	0.855	0.892	0.470	0.421
Systems	0.802	0.788	0.569	0.507	0.373	0.265
Standalone Facilities	0.257	0.093	0.212	0.063	0.251	0.106
Children's & Specialty Hospitals	Ref		Ref		Ref	
Financial Measures						
Days' Cash on Hand	1.011	<0.001	1.011	<0.001	1.012	<0.001
Operating Cash Flow Margin	1.048	0.195	1.059	0.127	1.048	0.244
Cash to Debt	1.001	0.344	1.001	0.419	1.001	0.481
Debt to Cash Flow	0.853	0.052	0.837	0.042	0.847	0.079
Total Government Gross Revenue	0.934	<0.001	0.941	0.002	0.953	0.016
Total Operating Revenue					1.000	0.001
3 Yr. Operating Revenue CAGR*					1.057	0.086
PSHP			3.106	0.004	1.270	0.594
Area Under the ROC Curve	0.863		0.870		0.891	

Notes: Compound Annual Growth Rate; Ref = Reference; ROC = receiver operating characteristics

Discussion

The purpose of this study was to evaluate the extent to which the presence of a PSHP is associated with hospital bond rating. We found that hospitals with a PSHP were three times as likely to have a high bond rating as hospitals without a PSHP, after controlling for geographic region, organization type, and financial performance. These results suggest that hospitals with PSHPs have lower costs of debt to fund efforts that promote institutional or structural changes. This further supports our notion that PSHPs could be a contributing factor for better debt affordability and capacity.

Past research has demonstrated that health system size has positively impacted financial performance. Larger health systems have better access to capital, stronger operating margins and lower costs of debt than smaller health systems or individual hospitals (Cleverly, et al, 2005; Carpenter, et al, 2001). These financial measures translate to higher revenues and an ability to issue debt at a lower cost.

Results from these studies demonstrate larger health systems are more financially sound and thus have more leverage when raising capital. We also found that hospitals with larger gross revenue had more favorable bond ratings. In addition, we saw that systems and academic medical centers were more likely than standalone facilities and children's and specialty hospitals to own PSHPs and have more favorable bond ratings.

With the transition from volume to value-based reimbursement, CMS now ties hospital reimbursement to hospital performance for certain quality measures. CMS's hospital value-based purchasing program aims to improve clinical outcomes and the patient experience by withholding reimbursement or reimbursing based on clinical processes of care, patient experience of care and patient outcomes (CMS.gov, 2015). Rangnekar et al. (2015) found a positive correlation between hospital bond ratings and total value-based purchasing performance scores that took into account clinical process, patient experience and outcomes. This study highlights one new mechanism focusing on transforming how care was delivered and how it had a positive association with hospital bond ratings. Our study found PSHPs had a similar association.

Additionally, Colla, et al. (2016) found that hospitals with an ACO were more likely to be large nonprofit hospitals and reported advantages in start-up capital funding, data sharing and provider engagement across the care continuum when compared to those without an ACO. Moreover, CMS is utilizing ACOs to incentivize providers to take on the risk of Medicare beneficiaries. Our study shows that PSHPs, which also align payer and provider incentives, also tend to be larger hospitals with better debt financing ability through higher bond ratings.

In a study of PSHPs and financial performance, McCue, et al. (2015) found that plans with strong cash flow margins achieved their financial performance through medical cost management. The strong PSHPs were better at controlling the costs of the covered lives than plans with weak cash flow margins. However, they found that both strong and weak cash flow PSHPs maintained adequate capital within the necessary threshold and that both groups were financially sound and viable. These findings imply that PSHPs may be a model for managing the health of a population in a cost effective manner.

The hospitals in our sample that had a PSHP had higher operating revenue, lower percentage of gross revenue from the government, and a higher three-year operating revenue CAGR compared with hospitals that did not have PSHPs. We found no statistical difference between hospitals that did and did not have PSHPs with respect to days' cash on hand, operating cash flow margin, cash to debt, or debt to cash flow ratios. This finding suggests PSHPs were not associated with the hospital's liquidity or leverage. However, this finding could be explained by the fact that the financial industry and rating agencies have set certain standards for these measures and hospitals in our data set had little variation within these limits (Arrick, et al., 2014). We found a statistically significant relationship between bond ratings for each financial measure and hospital characteristic, which implies that the financial measurements we determined to include were associated with the bond rating of the hospital or health system.

Implications

Organizations with PSHPs were larger and had slightly less reliance on Medicare and Medicaid reimbursement than organizations without PSHPs. Our findings suggest there is a statistically significant difference in the bond ratings for hospitals with and without PSHPs. After controlling for financial and hospital measures, PSHPs remained significantly associated with bond ratings. This implies that those that have a PSHP would have the ability to finance debt at a lower cost as well as have more favorable financial performance as compared to those that do not have PSHPs. One plausible explanation for this difference is that the hospital is either financially stable or large enough to open a PSHP and therefore already may have a high bond rating; or alternatively, having a PSHP results in the hospital controlling its costs and diversifying its revenue. However, we must note that this was a correlational study and therefore future work should test those two competing hypotheses.

Despite the cross-sectional nature of our study, it still offers important implications for both senior executives and the hospital industry more broadly. PSHPs have received recent attention as models of care for efficiently managing care of a population, and our findings suggest that their strong financial performance has an additional benefit of issuing debt at a lower cost. Therefore, our study provides senior executives with data supporting the potential strategy of engaging in a new business model by taking on more risk by insuring their patients. The industry is moving towards risk-sharing models despite leadership hesitance, but the PSHP may be a viable mechanism to accomplish this goal. Industry reports project an increase in the number of plans that are established across the country (Arrick, et al., 2015). Given that margins are expected to compress, hospitals and health systems are looking for ways in which they could achieve the new value proposition and the PSHP is one potential advantageous strategy and thus we can feasibly predict that the PSHP will be further explored throughout the country.

Limitations and Potential Future Studies

This study has several limitations. One limitation is the degree to which changes in an organization have an impact on its bond ratings. There are many factors that influence a bond rating, and rating agencies also incorporate subjectivity to their rating decisions, for which we could not account. Furthermore, we only assessed Moody's Investor Services' rated hospitals which represented approximately 13% of the nonprofit US hospitals in 2014 (The Henry J. Kaiser Family Foundation, 2016). Another limiting factor is the number of PSHPs there are in relation to the total number of hospitals and health systems in the US. PSHPs comprise a small percentage of non-profit hospitals overall. However, we assessed nonprofit hospitals with and without PSHPs rated by Moody's, and there was a greater prevalence of PSHPs than in all US non-profit hospitals. Another limitation is that we could not assess either hospital or insurer market concentration, and this could be an important factor that determines whether a health plan can be established based in a certain community. If a hospital is in a market that is largely dominated by a single insurer, then that hospital might avoid establishing a plan because doing so may jeopardize its relationship with that insurer. One final limitation is the lack of information about the PSHP, such as how long the plan has existed, its size, or the degree of alignment between physicians and hospitals could influence comparison. Feasibly, a health plan that has been in operation longer is larger or employs all its physicians may perform better financially.

Our analysis provides useful information for senior executives and the industry, but questions still remain. Future studies should evaluate this relationship using data from other rating agencies as a way to assess generalizability, since rating agencies may have different implicit or explicit weights for the value of PSHPs. Also, future work should evaluate the moderating relationship between market concentration with PSHP and hospital bond rating as well as the PSHP experience, as measured by years of operation, covered lives, or number and mix of physicians.

Conclusion

Given the findings of this study, PSHPs may serve as a tactic to look to for achieving the shift from volume to value as outlined by the ACA. Moving forward, the insights we have identified can be used and shared among hospital and health system executives and across the industry as a whole.

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