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How Do Firms Make Capital Structure Decisions When Facing Big Events? The Case of Hospital Corporation of America (HCA)

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WORKING PAPER
No. 21/2018

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How Do Firms Make Capital Structure Decisions When Facing Big Events? The Case of Hospital Corporation of America (HCA)

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November 2018

Abstract: In this paper we investigate the financing behaviour of Hospital Corporation of America (HCA) for the years 1990 to 2013. We study the variations in HCA’s market and book leverage ratios due to 1) mergers and acquisitions, and divestitures that change a firm’s total assets, 2) buybacks, and 3) leveraged buyouts and public offerings that change the firm’s ownership. We scrutinize HCA’s market and book leverage ratios’ variations independently as well as relative to each other during the same periods of time. We find that i) HCA’s management team used HCA’s excess cash from divestitures to repurchase $1.7 billion of HCA’s stocks and they also called about $1.35 billion of HCA’s debt, ii) HCA’s market leverage ratio tends to stay in a target leverage zone, and iii) in some years HCA’s management team used the book leverage ratio as a tool to keep the market leverage ratio inside a target leverage zone.

Keywords: Capital structure dynamics, share buyback, leveraged buyout, mergers and acquisitions, initial public offerings.

JEL Classifications: G32

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1 Introduction

This study investigates the financing behaviour of Hospital Corporation of America (HCA) for the years 1990 to 2013. In the capital structure empirical studies, the scholars examine the positive or negative sign and the significance of the relationship between capital structure and a variable of interest. In such studies, with thousands of firms in the sample, we do not take a close look at the reasons behind the financing behaviour of firms. By taking a closer look at one firm’s financing behaviour, not only do we understand the sign of the relationship, but also we figure out how management of firms makes their capital structure decisions and how they decide what to do, and how they do it. To do so, this paper focuses on a specific firm, and is a case study on HCA and its financing behaviour for the years 1990 to 2013. HCA is an interesting case to look at in detail because of its history and tremendous growth period. Founded in 1986 with just 150 beds, HCA managed to become one of today’s largest hospital corporations in the USA. HCA currently manages 165 hospitals and 115 freestanding surgery centres in the USA and the UK, which is the results of its vigorous growth strategy.

This case study helps us to understand how firms make capital structure decisions, how they decide between use of debt or equity financing in different events, how the behavior of the accounting-based data is different from the market-based data, and how the management decisions affect the data. In this study, we investigate the capital structure changes of one corporation, HCA, due to 1) mergers and acquisitions, and divestitures that change a firm’s total assets, 2) buybacks and, 3) leveraged buyouts (LBOs) and public offerings that change a firm’s ownership.

The empirical studies on dynamics of capital structure explore whether firms’ capital structures vary over time and what factors affect the capital structure variations. Frank and Goyal (2007) look at leverage ratios in a study spanning 1900-2002 and found that the aggregate balance sheet data show stable leverage ratios. They state that although leverage ratios had been fluctuating during 1900-2002, firms keep their leverage ratios in narrow bounds. Lemmon, Roberts and Zender (2008) find that variations in firms’ leverage ratios are mainly explained by firms’ fixed-effects and they tend to keep their leverage ratios as they are (low or high) for more than 20 years. Graham and Leary (2011) also emphasize the influence of firms’ fixed-effects on the capital structure. Alternatively,
Flannery and Rangan (2006) show that firms have target capital structure and each year they close the gap between the actual and the target capital structure with rapid adjustment speed. Their result is consistent with Jalilvand and Harris (1984) and Leary and Roberts (2005). Fischer, Heinkel and Zechner (1989), Leary and Roberts (2005), and Strebulaev (2007) find that firms have an optimal capital structure range and try to stay in that optimal leverage zone. In addition to the target capital structure literature, a recent paper by DeAngelo and Roll (2015) finds temporary capital structure stability.

Along with the dynamics of capital structure studies’ diversified results, the way that these studies define their leverage ratios in terms of using market or book values is different. Frank and Goyal (2009) review different arguments on using the book or the market leverage ratios and provide their concluding remarks based on the market leverage ratio. They state the book leverage ratios take into account what took place in the past, not in the present or in the future. The supporters of market leverage ratios claim that the book value of equity is just a balance sheet number and it could be negative in some cases (Welch, 2004). On the other hand, the supporters of the book leverage ratios argue that, first, book leverage ratios are widely employed by firms’ managers as a firm’s debt is guaranteed by assets already in place, rather than by future growth opportunities (Myers, 1977). Second, large market fluctuations stop firms’ managers from making their capital structure decisions based on market value of equity. We consider both stances towards the leverage measures and scrutinize both HCA’s market and book leverage ratios’ variations independently as well as relative to each other during the same periods of time.

As we know, debt is a part of capital structure and it disciplines managers because making interest payments to debt holders is a firm’s obligation. Through this obligation firms can control managers. Although a firm’s management team has the option to use the excess cash to decrease the amount of corporate debt or payout dividend, in some cases they prefer to use the excess cash to repurchase the firm’s share. Our evidence of how HCA’s management team used HCA’s excess cash from divestitures to repurchase stock rather than pay off debt or dividends is consistent with Stephens and Weisbach (1998) and Brav, Graham, Harvey and Michaely (2005).
Harford, Klasa and Walcott (2009) show that firms have target capital structure and when it comes to finance mergers and acquisitions, over leveraged firms prefer equity financing rather than debt financing to stay close to their target capital structure. Consistent with Harford et al. (2009), our finding shows that HCA’s management team kept HCA’s leverage ratio in the target leverage zone and financed the HCA deals by the combination of debt and equity. Not being over-leveraged let HCA’s management team increase the firm’s long-term debt.

All in all, our evidence indicates that i) HCA’s management team used HCA’s excess cash from divestitures to repurchase HCA’s stocks rather than pay off HCA’s debt, ii) During 1998-2000, the HCA’s market leverage ratio was decreasing while the book leverage ratio was increasing, iii) HCA’s market leverage ratio tends to stay in a target leverage zone, and iv) in some years HCA’s management team used the book leverage ratio as a tool to keep the market leverage ratio inside a target leverage zone.

This paper proceeds as follows: Section 2 reviews the history of Columbia Hospital Corporation (CHC) and HCA. Section 3 reviews the data, constructs the variables, and shows the market and book leverage ratios’ decompositions. Section 4 reports the findings of the paper. Section 5 provides discussion on the findings and presents concluding remarks.

2 History of Columbia Hospital Corporation (CHC) and Hospital Corporation of America (HCA) after their 1994 merger

In October 1993, Columbia and HCA jointly announced their $5.7 billion stock swap merger. The merger was completed in February 1994 and made a $10 billion corporation (Flower, 1995). The newly formed company was renamed the Columbia/HCA Healthcare Corporation, Scott was named CEO, and Frist, Jr. became chairman. Pursuing Scott’s joint ventures and acquisitions strategies, Columbia/HCA acquired the Cedars Medical Center of Miami which was followed by purchasing Medical Care America, Inc. in May 1994 (Myerson, May 24, 1994). Columbia/HCA also created

\footnote{Readers may refer to Appendix A for history of CHC and HCA before their 1994 merger.}
\footnote{Readers may refer to “International Directory of Company Histories” as a general source for the history of CHC and HCA.}
joint ventures with several teaching hospitals and medical schools. Scott’s next big step was to acquire Healthtrust for $5.6 billion which was announced in October 1994 and was completed in April 1995 (Flower, 1995). The Healthtrust merger increased Columbia/HCA hospitals to 311 (Associated Press, October 05, 1994). Along with the Healthtrust merger, Columbia/HCA acquired several other hospitals from 1994 to 1995. Scott also announced acquisition of several hospitals in different states. Columbia/HCA growth continued from 1996 through 1997 by several acquisitions.

The company’s growth strategy stopped when a Columbia/HCA facility in El Paso became the subject of a federal healthcare fraud investigation in March 1997 (Reuters News, March 21, 1997c). Following the fraud investigation, Scott was forced to resign in July 1997 and Frist, Jr., who was the CEO of HCA Corporation before its merger with Columbia, was named the CEO. Scott was paid $9.88 million to settle and kept 10 million shares of Columbia/HCA stock worth over $350 million (Reuters News, July 26, 1997b).

The new CEO, who was against Scott’s growth strategies, immediately guided Columbia /HCA in a new direction, and sold Columbia/HCA’s home care division, which was investigated during the fraud investigation (Reuters News, August 7, 1997a).

As a result of Frist’s modifications, Columbia/HCA became smaller in size and more focused in markets. By January 1999 the corporation sold more than 33 surgery centres, 44 hospitals and all its home care related centres. In 1999, Frist changed the name of the corporation back to HCA Inc. In 2002, HCA’s fraud case was settled with a $1.7 billion payment which made it the largest fraud settlement in the USA history (Department of Justice, June 26, 2003).

This was not the end of HCA’s lawsuit story. In July 2005, two weeks before reporting HCA financial results to the market, senator Frist (Frist, Jr.’s brother) sold all his HCA shares, as did other executives. Two weeks later, after the disappointing financial results, HCA was sued by shareholders claiming that the company increased the price of stocks by false claims about HCA’s

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3For example the University of Louisville, University of Miami, Emory University, Tulane University, the Medical College of Virginia, and the Medical University of South Carolina (Columbia/HCA Healthcare Corporation, 1996).

4Including St. Francis Hospital of Charleston, Colorado-based Rose Healthcare System, West Virginia, and Angelo Community Hospital of San Angelo, Texas (Pederson, 2001).

5Central Health Services, Inc. was acquired in November 1996 (PRNewswire, November 5, 1996), and Value Health, Inc. merger was completed in August 1997 (BIIDEP, July 18, 1997).

6HCA was shrinking in size for the years 1998 to 2000.
profit. The case was settled in 2007 by paying $20 million to the shareholders (Modern Healthcare, August 15, 2007).

In November 2006, a group of investors, including the Frist family, acquired the company for $31.6 billion, making HCA privately held again after its first public offering in 1992. The company was privately held during 2006 through 2011, and went public in March 2011. HCA currently manages 165 hospitals and 115 freestanding surgery centres in the USA and the UK (HCA History, 2015).

3 Sample and Variable Construction

3.1 Sample

We study CHC and HCA from 1990 through 2013. We obtain data from different databases. For the stock data we use the Compustat CRSP Daily Stock database and for the debt issuance data we use the Bloomberg database. We also obtain HCA and CHC news releases from Factiva and their financial statements or any other reports or news from their SEC filings.

Due to the merger of HCA and CHC in 1994, no data are available for HCA for 1993; the 1993 and 1992 reported data in Compustat for HCA are the CHC data.\textsuperscript{7} It looks like HCA and CHC merged in 1994, and then Compustat goes back and overwrites the data in the years 1993 and 1992 based on CHC data. Despite overwriting HCA data on 1992, we find both HCA and CHC data for the years 1990 to 1992. In addition, for the years when HCA was privately held (2006-2011), no market data are available and we obtain the book data from the HCA’s annual reports.

3.2 Variable Construction

To study variations in HCA’s capital structure over time, we use market and book long-term leverage ratios. We define this study’s variables as follows:

\textsuperscript{7}We could not find HCA annual reports before 1994, therefore for the years 1990-1994, we trust the Compustat database; for 1994-2013, we check both annual reports and the Compustat data.
i) \((L_t)_{Market}\) is the ratio of long-term market debt over the total long-term debt plus market value of equity at \(t\).\(^8\)

\[
(L_t)_{Market} = \frac{D_t}{D_t + N_t \cdot P_t}
\]

ii) \((L_t)_{Book}\) is the ratio of total long-term debt over total long-term debt plus common share holder equity at \(t\).

\[
(L_t)_{Book} = \frac{D_t}{D_t + ceq_t}
\]

iii) \(D_t\) is the firm’s long-term debt at \(t\).\(^9\)

iv) \(P_t\) is the price per share at \(t\).\(^10\)

v) \(N_t\) is the number of shares outstanding at \(t\).\(^11\)

vi) \(Ceq\) is the the common/ordinary equity and \(Ceq = cstk + caps + re - tstk\), where \(cstk\) is common /ordinary stock (capital), \(caps\) is capital surplus/share premium reserve, \(re\) is retained earnings and \(tstk\) is total treasury stock.

vii) \(SHEquity\) is the market value of shareholders’ equity and \(SHEquity = P_t \cdot N_t\).

viii) \(Diffshrout\) is the number of the buy-backed shares and \(Diffshrout = N_{t-1} - N_t\).

### 3.3 Decomposition of leverage measure

Generally, the capital structure of a firm is measured by its leverage ratio, defined as debt over debt plus equity of a firm. By this definition any variation in the numerator or the denominator changes the capital structure. To find how public offerings, share buyback programs, LBOs, and mergers and acquisitions affect capital structure, we decompose the market and book leverage measures into different components following Fahlenbrach and Stulz (2009).\(^12\) This study focuses on long-term

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\(^8t\) can represent both year and day.

\(^9\)Compustat item \(dltt\).

\(^10\)Compustat item \(prcc\_f\).

\(^11\)Compustat item \(csho\).

\(^12\)Fahlenbrach and Stulz (2009) look at the separate effects of changes in numerator and denominator of the CEO’s percentage ownership stake. We use their model to show the separate effects of total assets and total liabilities on leverage changes.
debt ratios:

\[ L_t = \frac{D_t}{D_t + E_t}, \tag{1} \]

where \( L_t \) is either market or book long-term leverage ratio, \( D_t \) is the long-term debt value and \( E_t \) is the equity value of a firm at \( t \). \( E_t \) is \( SHEquity = P_tN_t \) for market leverage ratio where \( P_t \) is the price per share and \( N_t \) is the number of shares outstanding, and \( E_t = Ceq_t \) for book leverage ratio, where \( Ceq \) is the common/ordinary equity.\(^{13}\) Recalling from Section 3.2,

\begin{align*}
(L_t)_{Market} &= \frac{D_t}{D_t + P_tN_t} \\
(L_t)_{Book} &= \frac{D_t}{D_t + Ceq_t}
\end{align*}

where \((L_t)_{Market}\) is the market leverage ratio and \((L_t)_{Book}\) is the book leverage ratio.

By definition, the change in leverage ratio from \( t \) to \( t + 1 \) (\( \Delta L_t \)) is:

\[ \Delta L_t = \frac{D_{t+1}}{D_{t+1} + E_{t+1}} - \frac{D_t}{D_t + E_t}, \]

\[ \Delta L_t = \frac{D_{t+1}}{D_{t+1} + E_{t+1}} - \frac{D_t - \Delta D}{D_t + E_t} \\
= \frac{\Delta D}{D_t + E_t} + \frac{D_{t+1}(D_t + E_t)}{(D_{t+1} + E_{t+1})(D_t + E_t)} - \frac{D_{t+1}(D_{t+1} + E_{t+1})}{(D_{t+1} + E_{t+1})(D_t + E_t)} \\
= \frac{\Delta D}{D_t + E_t} - \frac{(D_{t+1} + E_{t+1})(D_{t+1} + E_{t+1})}{(D_{t+1} + E_{t+1})(D_t + E_t)} - \frac{(D_{t+1})\Delta E}{(D_{t+1} + E_{t+1})(D_t + E_t)} \\
= \Delta D \left( \frac{1}{D_t + E_t} - \frac{(D_{t+1} + E_{t+1})(D_t + E_t)}{(D_{t+1} + E_{t+1})(D_{t+1} + E_{t+1})} \right) - \frac{(D_{t+1})\Delta E}{(D_{t+1} + E_{t+1})(D_t + E_t)} \\
= \Delta D \left( \frac{D_{t+1} + E_{t+1} - D_{t+1}}{(D_{t+1} + E_{t+1})(D_t + E_t)} \right) - \frac{(D_{t+1})\Delta E}{(D_{t+1} + E_{t+1})(D_t + E_t)} \\
= \frac{\Delta D}{(D_{t+1} + E_{t+1})(D_t + E_t)} - \frac{(D_{t+1})\Delta E}{(D_{t+1} + E_{t+1})(D_t + E_t)}, \tag{2} \]

\(^{13}\) Compustat item \( Ceq = cstk + caps + re - tstk \), where \( cstk \) is common/ordinary stock (capital), \( caps \) is capital surplus/share premium reserve, \( re \) is retained earnings and \( tstk \) is total treasury stock.
where $\Delta D = D_{t+1} - D_t$, and $\Delta E = E_{t+1} - E_t$, and for market leverage ratio,

$$\Delta E = E_{t+1} - E_t \quad \text{where} \quad E_t = P_t N_t$$

$$\Delta E = P_{t+1} N_{t+1} - P_t N_t$$

$$\Delta E = P_t \Delta N_t + N_t \Delta P_t + \Delta P_t \Delta N_t$$

By plugging $\Delta E = P_t \Delta N_t + N_t \Delta P_t + \Delta P_t \Delta N_t$ into the last line of Equation (2),

$$\Delta (L_t)_{Market} = \frac{\Delta D}{(D_{t+1} + P_{t+1} N_{t+1})(D_t + P_t N_t)}$$

$$- \frac{\Delta N}{(D_{t+1} + P_{t+1} N_{t+1})(D_t + P_t N_t)}$$

$$- \frac{\Delta P}{(D_{t+1} + P_{t+1} N_{t+1})(D_t + P_t N_t)}$$

$$- \frac{\Delta P \Delta N}{(D_{t+1} + P_{t+1} N_{t+1})(D_t + P_t N_t)}$$

Equation (4) shows changes in market leverage are related to variations in debt, the number of shares outstanding, and price per share of a firm. The first term explains the changes in leverage due to variations in long-term debt ($\Delta D$), the second term explains the changes in leverage due to variations in the number of shares outstanding ($\Delta N$), the third term explains the changes in leverage due to variations in price per share ($\Delta P$), and the fourth term explains the changes in leverage due to the interaction between variations in price per share and the number of shares outstanding ($\Delta P \Delta N$). The effects of the number of shares outstanding and share price are trivial for small changes in the number of shares outstanding and price but are remarkable in the following two circumstances: 1) when a firm repurchases or offers a large number of shares; and 2) when there is a notable increase (decrease) in share price. Therefore, we study different causes that change long-term debt, the number of shares outstanding, and the price per share to scrutinize variations in HCA’s market leverage ratios over time.

![Figure 1](image)

Figure 1 plots the first to the fourth terms of Equation (4). As can be seen in the figure, the fourth term, which is the interaction between changes in the share price and the number of shares...
outstanding, is close to zero. Therefore, we can simplify Equation (4) as:

$$\Delta(L_t)_{Market} = \frac{\Delta D}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)}$$

$$- D_{t+1}P_t \frac{\Delta N}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)}$$

$$- D_{t+1}N_t \frac{\Delta P}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)},$$

(5)

To find book leverage ratio variations, we plugged $\Delta E = \Delta Ceq = Ceq_{t+1} - Ceq_t$ into the last line of Equation (2),

$$\Delta(L_t)_{Book} = \frac{\Delta D}{(D_{t+1} + Ceq_{t+1})(D_t + Ceq_t)}$$

$$- D_{t+1} \frac{\Delta Ceq}{(D_{t+1} + Ceq_{t+1})(D_t + Ceq_t)}.$$  

(6)

Equation (6) shows changes in book leverage are due to changes in long-term debt ($\Delta D$) and changes in common/ordinary equity ($\Delta Ceq$). Therefore, we study different causes that change long-term debt and common/ordinary equity to study variations in book leverage ratios over time.

Figure 2 plots the first and second terms of Equation (6). The figure shows that the effect of the first term (variations in the long-term debt) is more than the second term (variations in the shareholders’ equity) on the book leverage ratio changes.

Figure 3 plots the changes in the HCA’s market leverage ratio of Equation (4), and the changes in the HCA’s book leverage ratio of Equation (6). The figure shows that the changes in market and book leverage ratios ($\Delta L = L_{t+1} - L_t$) were bounded between - 0.2 and + 0.2 for the years 1993-2004, no public offerings or LBOs period.

Overall, considering the fact that the changes in long-term debt are due to both debt issuance and debt retirement, the dynamics of capital structure (taking into account both market and book leverage ratios) occur due to variations in the number of shares outstanding either through
the stock buyback program (decrease in the number of shares outstanding - equity repurchases) or share offerings (increase in the number of shares outstanding - equity issuance), share price increase or decrease, changes in common/ordinary equity, debt issuance and debt retirement.\textsuperscript{14}

3.4 HCA’s Market versus Book Leverage

Table 1 shows the components of HCA’s book and market leverage ratios from 1990 to 2005 and from 2011 to 2013. There are three sets of accounting information in this table. The first set is HCA’s data from 1990 to 1992. The second set is CHC’s accounting information from 1990 to 1992. The third set includes the consolidated accounting information of HCA and Columbia in 1993 one year before their merger, and the accounting information of the merged Columbia/HCA from 1994 to 2013. The common component in the market and the book leverage ratios is the long-term debt ($D$). The main components of the book leverage ratio are common shareholders’ equity or deficit ($ceq$) where, $ceq = cstk + caps + re - tstk$. $cstk$ is the common stock, $caps$ is the capital surplus, $re$ is the retained earnings, and $tstk$ is the treasury stock.\textsuperscript{15}

Figure 4 shows HCA’s annual market and book leverage ratios from 1990 to 2013. Annual market leverage ratios are missing from 1990 to 1992 and from 2007 through 2011, when HCA was privately held. The book leverage ratios are available for all years from 1990 to 2013 as the book leverage ratio components can be found in annual reports. Figure 4 shows that HCA’s market leverage ratio had been between 0.2 and 0.4 from 1992 up to 2006, and has been decreasing since the 2011 IPO to get to the 0.2 to 0.4 zone. This HCA market leverage ratio behaviour could be seen as HCA’s tendency to stay in a target market leverage ratio zone. The decreasing trend of the leverage ratio after a big jump is consistent with Denis and McKeon (2012). In addition, Figure 4 shows that HCA’s market and book leverage ratios appear to follow a similar trend from 1992 to 2006.

\textsuperscript{14}Debt retirement includes both calling the callable bonds before their maturity date and debt repayment at maturity.

\textsuperscript{15}HCA’s $tstk$ is equal to zero for the years 1990 to 2013.
except for the years 1998 to 2000. The figure also shows neither leverage ratio experienced dramatic fluctuations from 1992 to 2006. Then, the book leverage ratio increased drastically in 2006 as a result of the LBO.

Figure 4 also shows HCA’s book debt ratio increased to 1.67 after the 2006 LBO, and has been more than one since then. The unusual HCA book leverage ratio is a result of the negative common equity in its balance sheets after the 2006 LBO.\footnote{Book value of equity could be negative sometimes (Welch, 2004).} When the group of private equity firms and the Frist family acquired HCA in 2006, they paid the total market value of assets which was far more than HCA’s book value of assets. Generally, LBOs are financed by a large amount of debt. In HCA’s case, more than 75% of the $21.5 deal (excluding HCA’s $11.7 billion existing debt) was financed by borrowings and the rest was financed by cash.

\[
\text{BookValueofAssets} = \text{Liabilities} + \text{CommonEquity}
\]
\[
\text{CommonEquity} = \text{BookValueofAssets} - \text{Liabilities}
\]

Note that here the value of liabilities is equal to the sum of 75% of the market value of assets and HCA’s current debt. Therefore, the amount of HCA’s liability is much greater than its book value of assets, which makes the common equity (\(ceq\)) of HCA a negative number. When \(ceq\) is negative, it makes the numerator of the book leverage ratio greater than its denominator and makes the book leverage ratio greater than one.

Baker and Wurgler (2002)’s market timing theory suggests that historical market value significantly affects a firm’s current capital structure. In other words, firms’ managers repurchase the stock when they perceive their stock is undervalued, and alternatively they tend to issue equity rather than debt when they believe their stock is overvalued. The market value measure of leverage is a function of share price, the number of shares outstanding, and long-term debt which could be affected by both outsiders’ valuation as well as a firm’s decision to signal information to the market. On the other hand, the book measure of leverage is a function of long-term debt and common/ordinary equity which is not affected by the variations in market share price or the number of shares outstanding and is only affected by a firm’s decisions. Therefore, in our discussion about
capital structure changes we should consider the differences in market and book leverage ratios and if they will be changed by firms' managers' decisions, or by the market effects due to outsiders' valuation. If the management team of a firm intentionally decides to vary the firm’s leverage ratio, the managers may use individual market or book leverage ratio components listed in Table 1 to change the market or book leverage ratios. By looking at each component’s behavior when there is an upward or downward jump in the leverage ratios, we understand what exactly HCA did in order to manage its leverage ratios for the years 1990-2014.

Figure 5 plots HCA annual long-term debt ($D$) and retained earnings ($re$) from 1990 to 2013. Along with the jump in HCA’s leverage in 2006, the total long-term debt ($D$) increased and the retained earnings ($re$) decreased. These two components had not been changing radically between 1993 and 2006 but then experienced considerable change due to the 2006 LBO. The upward trends of HCA’s long-term debt ($D$) and downward trend of its retained earnings ($re$), along with the fairly stable trends of the other market and book leverage components, show that HCA’s managers changed long-term debt and retained earnings more than other components to manage HCA’s leverage ratio and finance 2006 buyout.

4 Findings

In Section 3.3 we show the decompositions of long term book and market leverage ratios. In this section, we look into several events and see how these events change the long-term book and market leverage ratios components. We study HCA’s capital structure changes as a result of 1) mergers and acquisitions (M&As) and divestitures, 2) buybacks, and 3) LBOs and public offerings.

The time-line below shows the major events in Columbia/HCA’s history from 1994 to 2013.
We start our discussion with HCA’s M&As that mostly took place from 1994 up to 1998, followed by a discussion on HCA’s 1998 to 2000 divestitures as well as buybacks which led to a smaller but more focused HCA. Then, we look into the 2006 LBO and 2011 IPO.

### 4.1 Changes in a Firm’s Total Assets

In this section we study a firm’s financing behavior in events like M&As and divestitures, which in fact affect a firm’s total assets.\(^\text{17}\)

Table 2 reports some of the literature on M&As and divestitures. Kummer and Steger (2008) state firms’ tendency to grow, outsiders’ pressure on firms to grow, elimination of competition, and the history of other firms’ successful M&As as reasons why firms tend to merge with other firms or to acquire other firms. Firms continuously search for growth by which they can create value. Therefore, they follow any value creating tactics like M&As to have larger market shares and gain more profit. Although, firms’ managers are supposed to follow value creating M&As, Morck, Shleifer and Vishny (1990) find that a firm’s value may be reduced as a result of an acquisition which has been derived by managerial objectives, not shareholders interests.

\(^{17}\)M&A is a term referring to the act of several firms consolidating either by joining each other or a firm being purchased by another firm. In a merger, two firms combine to jointly form a new corporation. In an acquisition, one firm will be purchased by another firm. On the other hand, divestiture is a technique by which a firm jettisons a business unit or a part of it through exchange, sale or in some other way, in order to focus on its core competencies. A spinoff is a form of divestiture by which the parent company distributes shares of its subsidiaries to the parent company shareholders. Then, shares of the newly independent spun off corporation will be publicly traded in the market.
DeAngelo, DeAngelo and Whited (2011) study the dynamics of capital structure and find that firms permanently diverge from their target capital structure to finance their investments. They show that firms with high investment shock volatility keep their leverage low to preserve their debt capacity to meet their future financing needs. The DeAngelo et al. (2011) results suggest that firms consider the debt issuance as a source of financing to invest in opportunities like M&As. On the other hand, Harford et al. (2009) find that firms have target capital structure and when it comes to financing M&As, over leveraged firms prefer equity financing to debt financing to stay close to their target capital structure. Uysal (2011) shows that over-leveraged firms are less likely to initiate acquisitions; managers in such firms try to re-balance their capital structure if they are aware of a future acquisition opportunity. The Uysal (2011) result is in line with the DeAngelo et al. (2011) finding, as they both suggest that firms preserve their debt capacity to meet future financing needs. Andrade, Mitchell and Stafford (2001) show that most of the M&As during the late 1990s large merger wave, were for stock and that the target firm was mainly in the same industry as the acquirer.

As can be seen in Table 2 and from the literature, there are several factors affecting a firm’s decision to initiate a M&A and how to finance it. In this section we explain how M&As change HCA’s capital structure and how HCA decides about financing its M&As taking account of its circumstances?

When it comes to acquiring a company, a firm with low debt, a strong cash flow and substantial assets is a good target. By acquiring a target firm, the acquirer capital structure varies due to 1) long-term debt or equity issuance in order to finance the deal, 2) increase in the total debt and the total equity of the acquirer due to consolidation of the acquirer and the target firm. When two firms combine, the newly formed firm’s total book assets and long-term debt will be the sum of the total book assets value and the sum of the total long-term debt value of the two combined firms, respectively. Besides, the market value of the newly formed firm will be the new number of shares outstanding times the new share price. The leverage decomposition in Section 3.3 shows that a
firm’s capital structure changes due to the capital structure component variations as

\[
\Delta(L_t)_{\text{Market}} = \frac{\Delta D}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)} - D_{t+1}P_t \frac{\Delta N}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)} - D_{t+1}N_t \frac{\Delta P}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)}.
\]

(5)

\[
\Delta(L_t)_{\text{Book}} = \frac{\Delta D}{(D_{t+1} + C_{eqt+1})(D_t + C_{eqt})} - D_{t+1} \frac{\Delta C_{eq}}{(D_{t+1} + C_{eqt+1})(D_t + C_{eqt})}.
\]

(6)

Equation (5) shows that M&As might change the market leverage by causing variations in i) the long-term debt \((D)\), ii) the number of shares outstanding \((N)\), and iii) the price per share \((P)\). Alternatively, Equation (6) shows that M&As might change the book leverage ratio due to variations in i) the long-term debt \((D)\), ii) the common/ordinary stock \((cstk)\), iii) the capital surplus/share premium reserve \((caps)\), and iv) the retained earnings \((re)\).

To discuss HCA’s mergers and acquisitions, we divide the period of this study into two periods: first, 1990 to 1994 which is the period before merging with Columbia (the mega merger); and second, 1994 to 1998 which is the period after the mega merger and before HCA period of shrinking in size from 1998-2000. The divestitures period is the period after the 1997 fraud investigation and Scott’s resignation.

The early 1990s’ serious reform in the health care industry was considered to be a great growth opportunity for the main players in the USA health care industry; as a result, the biggest competitors tried to team up with each other to take advantage of the synergistic effect of their mergers. First, HCA went public in a successful IPO in 1992. One year later, CHC merged with Galen Health Care in a $3.2 billion stock swap merger in early 1993 and formed Columbia Healthcare Corporation (COL). Then, HCA and COL jointly announced the largest merger in the history of HCA which was completed in 1994 and created the $10.25 billion Columbia/HCA Healthcare Corporation, the largest hospital chain in the USA (Flower, 1995).

\[^{18}\text{If two firms have quite similar book leverage ratios, the book leverage ratio of the newly formed firm will be close to their book leverage ratios.}\]
Figure 4 shows that from 1990 to 1994 HCA’s book leverage ratio was almost halved from 0.93 to 0.49, despite the large debt issuance in 1993. The reason is HCA’s 1992 IPO after its management buyout in 1988, along with the 1993 debt reduction which is close to the 1993 debt issuance. The figure also shows that HCA’s market debt ratio remained largely unchanged after its merger with Columbia, whereas HCA’s book debt ratio slightly decreased from 0.49 to 0.43 in 1994 after the merger.\(^{19}\)

Figure 3 does not show extreme changes in HCA’s market leverage ratio for 1994 compared to that for 1995. Recalling Equation (5) terms and referring to Figure 1, we can see that the small variation in the market leverage ratio is due to the fact that the increase in the first term of Equation (5) is offset by an increase in the third and second terms of Equation (5). Note that the second and the third terms of Equation (5) have negative signs. Therefore, the market leverage ratio remained largely unchanged. Figure 3 also plots a small increase in HCA’s book leverage ratio in 1994 compared to 1995. Recalling Equation (6) terms and referring to Figure 2, we can see that the variation in Equation (5) is due to the fact that a part of the increase in the first term of Equation (6) is offset by an increase in the second term of Equation (6).\(^{20}\) Therefore, the book leverage ratio did not change as much as the amount of debt increased in 1994.

Considering the available market data and the fact that HCA is not over leveraged, our conjecture is that, consistent with Harford et al. (2009), HCA’s management team kept HCA’s leverage ratio in the target leverage zone and financed the deal by the combination of debt and equity. Not being over leveraged allowed HCA’s management team to increase the firm’s long-term debt.\(^{21}\) Figure 5 shows that HCA’s long-term debt had a decreasing trend from 1990 to 1992. Therefore, we also conclude consistent with DeAngelo et al. (2011) and Uysal (2011), HCA decreased its level of debt to preserve its debt capacity to meet future financing needs.

\(^{19}\) The existence of no considerable variation in market leverage could be due to the fact that the reported accounting information for the year 1993 is extracted from the consolidated Columbia and HCA financial statements, and not HCA’s performance on its own in 1993.

\(^{20}\) Note that the second term of Equation (6) has a negative sign.

\(^{21}\) Note that as debt issuance occurred in February, Compustat reports the debt as the year 1993’s debt. This is why we do not see a considerable change in the HCA’s long-term debt from 1993 to 1994.
4.1.1 HCA During the U.S. 1994 to 2000 Merger Wave

In 1994, HCA and COL announced their stock swap mega merger after which Scott became the CEO of COL/HCA. The new HCA’s CEO strategy involved significant healthcare facility acquisition and consolidation activities. The three largest mergers and acquisitions from 1994 to 1997 are: the 1994 merger with Medical Care of America which was financed by issuance of 21.1 million shares of HCA common stock, the 1995 merger with Healthtrust which was financed by issuance of 80.412 million HCA voting common stock, and the Value Health merger in 1997 by which Value Health stockholders received $20.50 in cash for each Value Health common stock. The HCA/Value Health original merger deal was a stock swap merger (each value Health’s 54.7 million shares outstanding would receive 0.58 shares of HCA’s common stock), but when HCA’s share price decline as the result of 1997 fraud investigation, HCA restructure the terms of the deal and bought Value Health for cash. Consistent with Andrade et al. (2001), most of HCA’s mergers in this period were stock swap mergers (even the Value Health merger was a stock swap merger before restructuring the deal). Although most of 1994 to 1996 M&As had been financed by issuing equity or using cash, HCA’s debt outstanding increased substantially as a result of assuming the acquired firms debt. This fact did not change HCA’s leverage ratio considerably, as this period M&As resulted in both increase in debt and increase in shareholder’s equity.

Figure 4 shows despite Columbia/HCA numerous mergers and acquisitions for the years 1994-1996, both market and book leverage ratios have been moderately stable. Interestingly, Figure 4 shows HCA capital structure did not fluctuate significantly and book leverage ratio was bounded between 0.43 and 0.50, and market leverage ratio was about 0.2 for the years 1994 up to the 1997 expansion period when Scott was the CEO. This moderately stable trend in the leverage ratios during HCA’s intensive expansion and acquisitions period could be due to the fact that the 1994 and 1995 mergers were financed by issuing common stock and not debt.

We recall Figure 1 and Equation (5) to see which terms of the Equation (5) caused variations in HCA’s market leverage ratio in comparison with the following year. For the period 1995-1996 the second term with a positive sign ($\Delta N$) and the third term ($\Delta P$) with a negative sign affected the

22From HCA’s 1994 annual report.
market leverage ratio the most. The negative sign of the third term shows the outsiders’ valuation effect. The Healthtrust merger in 1995 caused a share price increase which was offset in 1996. For the period 1996-1997, the first term with a positive sign ($\Delta D$) and the third term with a negative sign ($\Delta P$) had the most influence on Equation (5). The increase in the long-term debt was due to assuming the acquired firms’ debt, and the decrease in the share price was due to the 1997 fraud investigation, which overall caused an increase in the market leverage ratio.

Figure 2, along with Equation (6), shows that for the period 1995-1996 the book leverage ratio was affected by the second term (increase in $\Delta ceq$) which was due to this period’s mergers. For the period 1996-1997, the first term of Equation (6) with positive sign and the second term with a negative sign increased the book leverage ratio. For the year 1997, the large amount of first term (increase in $\Delta D$) along with a small decrease in the second term, increased the book leverage ratio.

All in all, HCA’s M&As financing behavior shows the HCA’s managers’ tendency to keep its capital structure in a target leverage zone and financing its M&As mainly with equity issuance. In one case in 1997, HCA financed its merger with Value Health with cash as a result of HCA’s share price decrease after the investigation. Due to the HCA fraud investigation, HCA’s stock was undervalued and HCA used cash to finance the deal.

### 4.1.2 HCA after 1997 Fraud Investigation

HCA’s M&A during 1994 to 1998 is consistent with 1994 to 2000 mega merger wave in the U.S. Our evidence shows that HCA would keep growing through M&A if it would not be stopped by the fraud investigation. Following the 1997 fraud investigation, HCA’s share price declined, and therefore using the stock swap mergers was not an option for the company anymore. Also following the fraud investigation, HCA’s Moody’s senior unsecured debt rating dropped from A2 (middle investment grade, prime-1) in 1997 to Ba2 (speculative grade, non-prime) in 1998, which increased HCA’s cost of debt substantially. Therefore, HCA stopped issuing new debt and also paid off some of its callable bonds.

In 1997, Scott was forced to resign, and COL/HCA modified its strategy and tried to refocus on its core competencies. Hite and Owers (1983) show that the share price increases due to spin-offs
and Nanda and Narayanan (1999) find that when a firm is undervalued, selling it as business units may make the market give a more accurate valuation. On the other hand, when overvalued firms face an under-performing division, they use external financing to raise capital.

Subsequent to fundamental changes in HCA’s strategies, HCA started to divest some of its hospitals and business units.\(^\text{23}\)

Figure 4 shows HCA’s book leverage ratio in 1998 was their lowest book leverage ratio since 1990. After experiencing a trough in 1998, HCA’s book leverage ratio showed an increasing trend. The main reason behind the sharp decrease in the book and market leverage ratios in 1998 is a 39% decrease in the total debt.

For the year 1998, Figure 3 shows a small increase in the book leverage ratio, and a close to zero variation in the market leverage ratio since the year 1999. Recalling Equation (5) terms and referring to Figure 1, we can see that the close to zero variation in the market leverage ratio is there because of the small decreases in the first term ($\Delta D$) and second term ($\Delta N$) of Equation (5), and a small increase in the third term which is due to variations in the share price. Therefore, the market leverage ratio remained largely unchanged. In addition, the 1998 book leverage ratio variations shown in Figure 3 were caused by a small decrease in the first term ($\Delta D$) and a larger decrease in the second term ($\Delta ceq$) of Equation (6). Note that as the second term of Equation (6) is negative, it essentially causes an increase in $\Delta (L_t)_{book}$.

Figure 6 plots HCA long-term debt issuance and reduction. It shows that despite the nontrivial debt reduction in 1998, HCA debt issuance is very small. Debt payoff without issuing new debt is a result of the 1998 divestitures, which were used as a source of financing to reduce the corporation’s total debt.

The year 1998 is a turning point for the book leverage ratio. Figure 4 shows that for the years 1998 up to 2001, which we call the HCA shrinking period, the book leverage ratio was increasing.

\(^{23}\)HCA disposed of more than 33 surgery centres, 44 hospitals and all its home care related centres by selling them off or through spinoffs. Some of the HCA’s divestitures between 1998 and 2000 are LifePoint and Triad spin offs, Selling Value Behavioral Health, and Value Rx which were the Value Health business units (HCA’s 2000 annual report).
while the market leverage ratio was decreasing. This is the only period from 1990 to 2013 where the market and the book leverage ratios have different upward/downward slopes. As the total long-term debt, which is the book and market leverage ratios’ common component, was fairly stable we need to look at the market and the book leverage ratios’ decomposition terms in Figures 1 and 2. The figures show that for the years 1998 up to 2001, the increase in the book leverage ratio was due to the second term of Equation (6)’s negative sign (decrease in \( ceq \)), whereas, at the same period the market leverage ratio was decreasing due to the increase in the third term of Equation (5), i.e. increase in the share price.

Section 3.3 explains that equity value of a firm is price per share times the number of shares outstanding for the market leverage ratio and is the common/ordinary equity (\( ceq \)) for the book leverage ratio. During the shrinking period, HCA common/ordinary equity was decreasing due to a huge decrease in capital surplus and common/ordinary stock. As a result, the book leverage ratio was increased because of the decrease in its denominator. On the other hand, HCA’s price per share times the number of shares outstanding was increased despite the decreases in the number of shares outstanding due to a considerable increase in the share price from $24.75 in 1998 to $40.01 in 2000. The increase in the share price due to spin-offs is consistent with Hite and Owers (1983). In addition, the share price increase was caused by the market reaction to HCA’s several buybacks and HCA’s settlement with the USA Department of Justice on its 1997 fraud investigation. Therefore, the market leverage ratio decreased because of increases in its denominator.

As a result of this period of divestitures, the amount of HCA’s cash increased as HCA sold some of its business units in cash. The excess cash could be used to decrease the amount of corporate debt, but because debt disciplines managers as interest payments to debtholders are a firm obligation, firms prefer to use the excess cash to repurchase shares than pay off debt. My conjecture is that, if a firm is not in the target leverage zone and is a highly levered firm it may use the excess cash to pay off some of its debt and reduce its leverage ratio. On the other hand, if the firm is in its target leverage zone it can use the excess cash to buy back its stock. Since HCA was in its target leverage zone and was not highly over-levered, it spent the excess cash to buy back some of its stocks which we discuss in the next section.
For the years 2001 to 2005, both market and book leverage ratios show upward sloping trends. Despite the same book leverage trends (both increasing) in the late 90s and the early to mid-2000s, these trends are fundamentally different. The late 90s’ upward trend was due to a decrease in the denominator (HCA common/ordinary equity), and the early to mid-2000s increasing trend was caused by an increase in the HCA’s total long-term debt. In the late 90s, HCA was performing several divestitures and was shrinking in size, whereas in the early to mid-2000s HCA was a stable firm whose fraud investigation was settled, and which was financing several buybacks by issuing debt and firm free cash flows.

4.2 Buyback Programs

In this section, we discuss how share buybacks changed COL/HCA’s capital structure, and the reasons behind HCA’s buyback decisions.

insert Table 3

Buyback is a payout policy and refers to repurchase of a firm’s shares outstanding in order to reduce the number of a firm’s stock in the market. Table 3 reports some of the buyback literature and indicates why firms choose buyback as a payout policy. Skinner (2008) indicates that the number of firms using share buyback instead of dividend payments as their payout policy is increasing. A firm may choose a share buyback strategy for several reasons. Pettit (2001) suggests that firms benefit from buyback in two ways: 1) signaling, and 2) in the case of financing the buyback by debt, buyback is like exchanging equity for debt and there will be a tax benefit of debt. Dann and Mikkelson (1984), DeAngelo, DeAngelo and Rice (1984) and Asquith and Mullins (1986) show that a stock repurchase announcement can cause a stock price increase; therefore, a firm’s management team may follow the stock repurchase strategy to increase the firm’s current share value available in the market. In addition, Bagwell (1991) finds that firms can decrease the threat of hostile takeovers by choosing share buyback as their payout policy. Firms can also eliminate the threat of shareholders who have the desire for the controlling stake by share buyback. Firms may also use the buyback program to increase earnings per share (Hribar, Jenkins and Johnson, 2006, Almeida, Fos and Kronlund, 2013). Furthermore, Kahle (2002) finds that firms follow a buyback strategy
when employees have a large amount of currently exercisable options. In addition to these motives, Dittmar (2000) shows that changing the capital structure could be one of the reasons for a share buyback. Tsetsekos, Kaufman Jr and Gitman (2011) report the findings of a mail questionnaire and show that the managers of a firm are motivated to use share buyback to change the firm’s capital structure as well as to signal information to the market.

How does a share buyback change the capital structure? Recalling Equations (5) and (6), the leverage decomposition in Section 3.3 shows that a firm’s capital structure changes due to the capital structure components variations as

\[
\Delta(L_t)_{\text{Market}} = \frac{\Delta D}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)} - \frac{\Delta N}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)} - \frac{\Delta P}{(D_{t+1} + P_{t+1}N_{t+1})(D_t + P_tN_t)},
\]

\[(5)\]

\[
\Delta(L_t)_{\text{Book}} = \frac{\Delta D}{(D_{t+1} + C_{eq_{t+1}})(D_t + C_{eq_t})} - \frac{\Delta C_{eq}}{(D_{t+1} + C_{eq_{t+1}})(D_t + C_{eq_t})}.
\]

\[(6)\]

We need to seek the dynamics of capital structure due to variations in 1) long-term debt, 2) the number of shares outstanding, 3) share price, and 4) common/ordinary equity. Firms have several options to finance their share buybacks including issuing debt and using their free cash flows. When firms repurchase shares with their excess cash, they give up the option of using the excess cash to payoff the existing debt or payout dividends. In the former case, they forgo the option of decreasing their leverage ratio. Altogether, when a firm repurchases its stock, the capital structure dynamics are due to variations in its number of shares outstanding, share price, long-term debt, and common/ordinary equity.

One of the reasons that a firm considers a share buyback could be its undervalued stock (Stephens and Weisbach, 1998). The announcement of share buyback will be considered to be a good sign by the market and consequently increases a firm’s share price. This normally happens 2 to 3 days before the buyback. Therefore, if we look at daily changes in the capital structure and
consider buyback day as \((t)\) and the day before the buyback as \((t-1)\), the share price variation is trivial as the share price has already increased on the announcement day. As a result, the changes in capital structure from day \(t-1\) to day \(t\) occur due to the reduction in the number of shares outstanding at day \(t\) which leads to a decrease in shareholders’ equity and an increase in capital structure from day \(t-1\) to \(t\).

An improving measure of reported financial statements can also be a good motivation for a share buyback (Allen and Michaely, 2003, Brav et al., 2005). Generally, a share buyback increases return on assets (ROA), return on equity (ROE), and earnings per share (EPS) in financial statements. After a share buyback, ROA (a ratio of net income over total assets) increases as the firm’s excess cash, which is a part of a firm’s total assets, has been used for the share buyback leading to a smaller denominator in ROA; ROE (a ratio of net income over total shareholders’ equity) increases due to a decrease in total shareholders’ equity following a buyback; EPS (a ratio of earnings over the number of shares outstanding) also increases because the same earnings will be divided among the fewer number of shares outstanding.

Panel A of Table 4 reports Columbia /HCA buybacks during 1990-2013. Columns (1) to (5) represent the date of buyback, the number of shares outstanding, price per share, market shareholders’ equity and the number of the repurchased shares, respectively. The number of repurchased shares is calculated by the difference between the number of shares outstanding from day \(t-1\) to day \(t\). The negative signs in Column (5) show decreases in the shares outstanding from the previous day. Interestingly, all HCA’s buybacks occurred at the end of the monthly period from 28th to 31st, showing report purpose as one of the share buyback motivations.

We start with the largest buyback that changed HCA’s capital structure. We study the dates of buyback where capital structure increases or decreases more than 2%.

Panel A of Table 4 shows that the largest buyback in Columbia/HCA history from 1990 to 2013 took place on Oct 31, 2011 when HCA repurchased 80.771 million of its outstanding shares owned
by the Bank of America at the closing price of NYSE on September 14, 2011. HCA financed the buyback by cash in hand and some borrowings. The announcement of this share buyback raised the HCA share price from $18.61 per share to $20.84 per share. Both the increase in the share price and the decrease in the shares outstanding, as well as the increase in HCA’s borrowings led to HCA’s capital structure change. The reason for this buyback was the Bank of America’s decision to focus on its core business.

This event affected both market and book leverage ratios. The market ratio was affected by an increase in the long-term debt (Equation (5)’s first term), the decrease in the number of shares outstanding (Equation (5)’s second term) and the increase in share price (Equation (5)’s third term) due to outsiders’ valuation after the news release, and not by HCA’s intention to signal information to the market. The book ratio was affected by the increase in HCA’s borrowings (Equation (6)’s first term) in order to finance the share buyback, as well as the decrease in the common shareholders’ equity (Equation (6)’s second term) due to the decrease in the number of shares outstanding.

Despite the share price increase after the buyback, President Obama’s plan to make Medicare more efficient dropped the HCA share price on Sep 19, 2011. All in all, the negative effects of news regarding HCA’s spending on lobbying and the Robbins Geller’s class action suit on HCA’s market price could have reduced the HCA share price significantly, but the buyback moderated the effects of the bad news. In addition, following the $1.45 billion payment to Colorado Health Foundation,

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24 StreetInsider (September 15, 2011) reported a HCA announcement of 80,771,143 share repurchase owned by the Bank of America at the closing price of NYSE on September 14, 2011.

25 This share buyback was completed 6 days later on September 21, 2011 but Compustat dataset reports 80,771,143 decline in the number of shares outstanding on Oct 31, 2011. The motivation for not reporting the buyback in September could be due to HCA’s forthcoming quarterly report. HCA’s third quarter report was released in November and included the financial statements up to the end of September. Not reporting the buyback in September, shows that HCA did not want to include the buyback in its third quarter report, and deferred it to the 2011 annual report.

26 Bank of America, the lead underwriter in HCA’s 2006 IPO, was holding 15.6% stake after acquiring Merrill Lynch one of the private equity firms involved in HCA’s 2006 LBO (Ma, 15 Sep 2011).

27 MarketWatch (September 20, 2011) reported:

HCA Holdings Inc. (HCA, US), which tried to win back investors with a buyback plan last week, lost ground on Monday, dropping nearly 7% to $19.81 at the close.
HCA’s earnings per share in the forthcoming quarterly report could have been dropped. The buyback helped HCA to maintain its earnings per share in the next financial report as the buyback reduced the number of shares outstanding. Hribar et al. (2006) and Almeida et al. (2013) find that firms’ management teams tend to repurchase shares in order to increase EPS.

The second largest buyback occurred on May 28, 1999 with buyback of 74.159 million shares, which was financed by cash in hand and debt issuance. This buyback was a result of the 1997 fraud investigation after which Scott was forced to resign and Columbia/HCA modified its growth strategy and tried to refocus on its core competencies. This buyback caused an 8% increase in the market leverage ratio. The increase in the market leverage ratio was due to an increase in debt as well as a decrease in the number of shares outstanding in Equation (5).

During April and May 1999, HCA was experiencing an unsteady situation as a result of the fraud trial process and a new lawsuit, which decreased HCA’s share price to $23.31, the lowest for the last month. HCA perceived its stock to be undervalued and repurchased $74.159 million of its shares on May 28, 1999. Therefore, along with refocusing on core competencies after Scott’s resignation, HCA’s intention to repurchase stock was to signal information to the market. The day after the buyback on May 29, the share price started to increase.

28Several events occurred in October 2011. HCA purchased full ownership of HCA-HealthOne in Denver that increased its share price by 92 cents, to close at $22.05 on October 14, leading to a close buy imbalance of 91,300 shares on October 18. Later in October, Bewley (October 28, 2011) reported that HCA is one of the 200 companies that tried to lobby Congress by spending thousands of dollars.

Business Wire (October 29, 2011) reported:

Robbins Geller Rudman & Dowd LLP files class action suit against HCA Holdings, Inc.

On Oct 31, 2011 on the same day as HCA’s largest buyback, the Colorado Health Foundation announced that they received $1.45 billion from HCA in order to complete the purchase of HCA-HealthOne.

29By recalling the discussion on using the spent cash on the buyback to repay some of the corporation debt, another HCA management team option was to decrease the market leverage instead of increasing it. The HCA’s management team chose the buyback over debt repayment; as a result, the market leverage ratio was increased.

30Reuters News (21 April, 1999a) reported a 63% increase in HCA’s net profits regardless of lower revenues in the first quarter; the news caused a 12% increase in HCA’s share price on the same day. Ten days later, Zengerle (May 2, 1999b) reported the commencement of COL/HCA’s ex-executives’ fraud trial, as the outcome of June 1997 fraud investigation which caused May 3, 1999 share price escalation. Such bad news should have decreased the share price, yet the stock price was increased from $24.68 on April 30, to $27.75 on May 3. The reason for the share price surge was the possible settlement with the government. Another explanation could be the repurchase of 3.272 million shares on April 30, 1999 which gave a positive sign to the market. We could also suppose that the potential settlement with government was the main reason for the April 30, 1999 share buyback. Because of the asymmetric information regarding the settlement with the government, HCA’s management team repurchased 3.272 million shares. The stock price kept appreciating to 28.63 on May 5, 1999, then followed a decreasing trend after the testifying of Steve Dudley, the government’s first witness. Zengerle (May 5, 1999a) reported:
The third largest buyback (39.645 million shares) of HCA occurred on January 31, 2005 and caused a 6% increase in HCA’s market leverage ratio. This buyback and the buyback of January 2006 were the only HCA’s share buybacks in January. HCA’s strategy on no buybacks in January could be due to the January effect and the fact that prices of most publicly traded stocks increase during the month of January (Haug and Hirschey, 2006). The buyback was financed by cash and not debt issuance. Therefore, the 6% increase in the market leverage ratio was due to a decrease in the number of shares outstanding along with a very small increase (about 1.1%) in the share price in Equation (5).

To study the capital structure changes, we dig into the events that made this change. First, Gazette (Jan 2, 2005) reported stock option expenses would be deducted from earnings starting in June 2005. Therefore, HCA announced acceleration in its employee options vesting. Kahle (2002) examines the relationship between shares buyback and stock options exercise. She finds that firms follow a buyback strategy when employees have a large amount of currently exercisable options. From a firm’s point of view, vesting increases the number of shares outstanding and results in dilution which means decreases in the earnings per share. To cope with the EPS reduction due to vesting, a firm needs to lessen its shares outstanding in the market. Therefore, HCA’s management repurchased 39.645 million shares which reduced the dilution and increased the earnings per share financial measure. Second, Reuters Significant Developments (January 12, 2005) reported an approximate 6.1% increase in HCA’s fourth quarter earnings in comparison with the previous year’s fourth quarter. After this announcement, HCA’s share price rose 10.1% to close at $43.7 per share on January 12. As a result, the market leverage ratio was decreased about 6% due to the increase in HCA’s share price in Equation (5).

All in all, we propose the main reason for the Jan 31, 2005 stock repurchase was the employee option vesting that made HCA’s management repurchase HCA’s stock in order to stop the decrease in earnings per share.

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Executives from hospital giant Columbia/HCA Healthcare Corp. misstated interest expenses to suck excess funds from government insurance programmes, a key government witness alleged during their trial on Wednesday.

Another lawsuit against HCA on May 26, 1999 caused a 4% decrease in HCA’s share price. On May 26, Reuters News (May 26, 1999) reported that the USA Justice Department joined another lawsuit against HCA, in which HCA’s physicians were accused of having investment opportunities and acting like free riders.
The fourth biggest HCA share buyback (35.167 million shares) was reported on January 31, 2006 and caused a 5.8% increase in the market leverage ratio. APRS (November 16, 2005) reported that HCA was authorized to repurchase $2.5 billion of its stock in a Dutch auction tender offer.\footnote{In a Dutch auction share repurchase, a firm specifies a desired price range and invites its stockholders to tender their shares. By the responses from the shareholders, the firm decides on the purchase price which is the lowest price, allowing the firm to purchase the number of shares stated in the offer. Then the firm pays the purchase price to the shareholders who tendered below or at the chosen purchase price.} The auction of about 28.740 million shares (about $1.5 billion) took place on November, 14 and the firm was still authorized to repurchase $1 billion stock. The buyback of 35.167 million shares reported in January was the result of this $2.5 billion stock repurchase. As a result of this buyback, the market leverage ratio was increased due to a decrease in the number of shares outstanding in Equation (5).

Another motive for January 2006 share buyback was granting about $3.3 million restricted stock and 66,750 stock options to the HCA’s chairman and the CEO.\footnote{Reported by Dow Jones Corporate Filings Alert (January 31, 2006).} Granting restricted stock and stock options to the CEO of a firm reduces the diluted earnings per share by increasing the denominator of earnings per share measure. A firm reports its diluted earnings per share as a measure of its profit. Therefore, lower diluted earnings per share could affect the share price negatively. By the buyback of 35.167 million shares, diluted EPS was prevented from decreasing. Using the stock buyback to increase earnings per share is consistent with Hribar et al. (2006) and Almeida et al. (2013).

In this section we study the four largest HCA buybacks from 1990 to 2013. The evidence shows several objectives behind these buybacks. HCA’s intention behind the 1998 to 2000 buybacks is different to the September 2011 buyback.

For the years 1998 to 2000, HCA planned to send a signal to the market and tried to increase its share price by repurchasing millions of shares after the 1997 fraud investigation. HCA’s attempts to increase the share price by share buyback is consistent with the findings of Dann and Mikkelson (1984), DeAngelo et al. (1984) and Asquith and Mullins (1986), which indicate market positive reaction to share repurchase announcements. HCA financed this period of buybacks mostly with the excess cash generated by several divestitures and also a small amount of borrowings. Overall,
the decrease in the market leverage ratio in Equation (5) was due to the increase in the Equation (5) third term (price per share) with a positive sign. Figure 4 shows that for the years 1998 up to 2001, the book leverage ratio was increasing while the market leverage ratio was decreasing. We think the different trend in market and book leverage ratio is due to the buyback of about 135 million shares for the years 1998 to 2001. HCA used the book leverage ratio to stop the market leverage ratio from decreasing below the lower target leverage range of 0.2. After the 1997 fraud investigation, HCA faced a large decrease in its share price. At the same time HCA modified its strategy and started to divest some of its business units, and kept its long-term debt level fairly constant. HCA knew after changing its strategy, the share price would increase. The increase in the share price would have decreased the market leverage below the target lower bound of 0.2. The buyback of 135 million shares during this period decreased during the second term of Equation (6) ($\Delta c_{eq}$) as a result of the decline in the capital surplus and therefore increased the book leverage ratio. On the other hand, the buyback decreased the second term of Equation (5) (the number of shares outstanding) which somehow offset the increase in the share price due to divestitures and as a result, the market leverage ratio did not go below 0.2. My concluding remark is that HCA’s management team used the book leverage ratio as a tool to stop the market leverage ratio from decreasing below the lower leverage limit of 0.2.

On the other hand, the 2011 buyback was not HCA’s decision to repurchase its stock, it was Bank of America’s decision to focus on its core business. HCA financed this buyback by cash on hand and some borrowings. Therefore, the book leverage ratio increase in Equation (6) was due to the increase in HCA’s long-term debt, and the variation in the market leverage ratio in Equation (5) was due to the decrease in the second term, i.e. the number of shares outstanding.

Moreover, in both the 2005 and 2006 buybacks, HCA was facing dilution due to vesting its employees’ options and granting restricted stock and stock options to its CEO, respectively. Therefore, consistent with Hribar et al. (2006) and Almeida et al. (2013), HCA’s management team decided to repurchase some shares to cope with dilution as well as the earnings per share deceleration. These buybacks were financed by cash in hand and some borrowings and decreased the market
leverage ratio due to a decrease in the second term ($\Delta N$) and an increase in the third term ($\Delta P$) of Equation (5).

4.3 Changes in Ownership

In this section we discuss the two events that change the ownership of a firm, LBOs and public offerings.

LBO is the acquisition of a firm by a group of investors where the acquisition costs are covered by a remarkable amount of money borrowed from a bank or bond issuance by the acquired firm. The LBO activities were popular during the 1980s, but declined after the USA early 1990s recession and the bond market crash. Renneboog, Simons and Wright (2007) report that a range of $1$ billion to $60$ billion LBOs were completed from 1979 through 1988, and the total value of LBOs in the 1980s was slightly less than $1.3$ trillion (Shleifer and Vishny, 1991). The second wave of LBOs started in the mid-2000s, and stopped in 2008 following the debt market turbulence and the 2008 financial crisis.

Table 5 lists some of the existing literature on LBOs and public offerings. Kaplan (1989) and Bargeron, Schlingemann, Stulz and Zutter (2008) note that LBOs transactions tend to be completed by a large premium over the existing share price. LBOs in general are financed with a large amount of debt including loans and debt issuance (mostly junk bonds) by the acquired firm. In most of the LBOs the leverage ratio increases drastically. As reported by Bayar, Baker and Kiymaz (2011), during the first wave of LBOs in the 1980s, the firms’ leverage ratios approached 90%, which is higher than firms’ leverage ratios during the second LBO wave in the mid-2000s. In addition to the debt financing, the remaining portion of acquisition costs is financed by the acquiring parties, which could be private equity firms or wealthy individual investors.

In July 2006 during the second LBO wave, the Frist family (one of the co-founders of HCA in 1968) and a group of private equity firms including Merrill Lynch Private Equity and Bain Capital
and Kohlberg Kravis Roberts proposed to acquire HCA in a $21 billion LBO. The $21 billion value of the deal did not include HCA’s $10.6 billion debt.³³

The deal was on and off for some time as the offered price by lending banks and the buyers was not satisfactory for HCA. HCA market capitalization was $17.6 billion accompanied by a $11.7 billion debt, making its leverage ratio 38.6% which was not desirable enough for the banks and the buyers to offer a higher price.³⁴ Finally, HCA’s shareholders approved the largest buyout in USA history on November 16, 2006 (French, 17 November 2006).

To finance the proposed buyout, the prospective buyers invested about $5.5 billion in cash, and issued about $16 billion new debt (mostly callable junk bonds) in addition to HCA’s existing $11.7 billion debt.³⁵ The on-again-off-again $33 billion deal (including HCA’s existing debt) was completed on November 17, 2006. Each HCA shareholder received $51 in cash for each share they held. The total value of the deal was equal to $21.3 billion paid to shareholders in cash plus the $11.7 billion HCA debt (French, 17 November 2006). Considering the $11.7 billion HCA debt, each HCA shareholder received $80.53 for each share they held, with $29.56 premium over the last traded share price of $50.97 one day before the buyout.

DeAngelo and DeAngelo (1987) indicate tax saving, better performance and competitive positioning as LBOs’ merits. On the other hand, they state problems in raising capital and attracting experienced managers as LBOs’ demerits. Guo, Hotchkiss and Song (2011) find that in LBOs, the realized returns to capital are affected by tax benefit of debt, industry valuation multiples and changes in operating performance. In addition, Fox and Marcus (1992) find that LBOs increase managers’ commitment to profitability. In general, when firms go private after LBOs they face lower regulations. Private firms could gain benefit from the fact that their management teams have more time and energy to spend on long-term earnings and are not obligated to provide the quarterly

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³³ According to APRS (20 July 2006), at that time HCA Inc. owned 94 surgery centres and 182 hospitals and its 2005 net income was $1.4 billion.

³⁴ Newspapers reported a 10% difference in the value of the deal between HCA and the buyers.

³⁵ HCA Quarterly report (May 15, 2007, page 21) reported:

Due to the Recapitalization, we are highly leveraged and have significant debt service requirements. Our debt totaled $27.903 billion at March 31, 2007, which represents a $16.591 billion increase from the total debt of $11.312 billion at March 31, 2006. Interest expense increased from $186 million in the first quarter of 2006 to $557 million in the first quarter of 2007. We expect our interest expense to increase from $955 million for the year ended December 31, 2006 to approximately $2.3 billion in 2007.
earnings’ expectations by external analysts. Thus, the private firm senior management team will be able to focus more on the firm’s strategic positioning in the market, growth opportunities, and cost-cutting strategies.

What were the reasons behind HCA’s 2006 LBO? Generally, an appropriate LBO candidate (the target firm) should have enough potential to maximize the value of acquirers’ investment. HCA was a suitable LBO candidate from the HCA acquirers’ point of view. First, increase in health care spending due to the USA population aging made the health care industry a lucrative investment target. Second, HCA’s strong position in the market made it an appropriate buyout candidate. In addition, the publicly traded HCA was supposed to pay taxes and dividends, while the HCA non-profit competitors had the strength against HCA (a for-profit organization) that they did not have to worry about paying taxes and dividends (Berman, Naik and Winslow, July 25, 2006). Therefore, in order to be competitive in the market, HCA needed to reduce some of its expenses. The 2006 LBO helped HCA to cut some of its expenses and the number of full-time equivalents in comparison with other local hospitals (McCue and Thompson, 2012).

HCA had about $11.7 billion debt when it confirmed pursuing the buyout on July 24, 2006. The announcement of pursuing the buyout triggered a huge decline in the value of HCA’s long-term bonds.

Figure 7 plots HCA’s 6.5% coupon bond prices due Feb 15, 2016, from June 2006 to November 2007. The value of this bond dropped to $78.12 on July 26, 2006 after the LBO announcement, as a result of the increase in HCA’s default risk after the LBO. Debt rating was also cut accordingly.

Figure 8 plots the HCA historical share price from January to November 2006. The price of each HCA share increased to $49.48, indicating a 3% premium to the closing price of $47.84 on July 21, 2006.

The 2006 LBO increased the HCA capital structure drastically due to the existing and new debt issue in order to finance the buyout. The day before the buyout on November 16, HCA’s market
leverage was about 0.36 and its book leverage was about 0.6. After the buyout the book leverage increased to 1.67 which indicates a 178% increase in the book leverage ratio (Equation (6)). The reason for the 178% increase in the book leverage ratio and the greater than one book leverage (1.67) is explained in Section 3.4.

One of the ways a firm can acquire its required funds is to publicly sell its equity. The term IPO refers to a type of offering in which a private firm sells its stock to the public for the first time. The raised capital via the public offerings (the proceeds) may be used for debt repayments, investment opportunities, acquisitions, product developments and distribution to pre-IPO shareholders (Leone, Rock and Willenborg, 2007). In addition to raising capital, founding individuals or private equity firms may use IPO as an exit strategy.

Panel B of Table 4 shows Columbia/HCA public offerings from 1990 to 2013. The largest offering was the IPO of 515.205 million shares on March 10, 2011. HCA had been privately held from the 2006 LBO to the time it went public again in 2011.

Accompanied by HCA’s largest IPO in 2011, Figure 6 shows that the largest debt reduction in the history of HCA occurred in 2011. As stated in HCA’s prospectus dated March 9, 2011, HCA intended to use the net proceeds from the 2011 IPO to repay some of its indebtedness including the senior secured revolving credit facility and the asset-based revolving credit facility. As HCA did not hold any debt with 2011 maturity, the 2011 debt reduction refers to calling HCA’s callable bonds before their maturity date.

Why 2011? Cowan (19 February 2011) reported that HCA’s public offering was the third public offering in 2011 (in the first two months of the year) which raised more than one billion dollars. HCA’s 2011 IPO followed public offerings of Kinder Morgan Inc. and Nielsen Holdings N.V. Stock prices, both of which were priced above their range. Private firms issue considerably more equity and decrease their leverage ratio more in a hot IPO market than a cold IPO market. Alti (2006) examines the impact of market timing on capital structure by studying the number of firms’ issued shares when they issue shares in either a hot or a cold market. He shows that firms tend to issue more equity in a hot issue market than they would do if the market was not hot. Demos (23

\[\text{36 After buyout market leverage is not available as HCA was privately held until 2011.}\]
February, 2011) reported the struggle of private equity IPOs in 2010, as some of them were priced below their range and others were delayed as the potential investors had their doubts regarding the debt repayments by the heavily indebted private equity firms. On the other hand, the evidence shows that the 2011 IPO market could be considered to be a hot IPO market, after the good performance of USA equity markets, since the middle of 2010.

Figure 4 shows a decrease in HCA’s market leverage ratio in 2011 from 2010. This decrease is due to a decrease in the first term ($\Delta D$) and an increase in the second term ($\Delta ceq$) of Equation (6). The comparison of market leverage ratios in 2010 and 2011 is not possible as market data are not available for the years 2006-2011. However, it is worth mentioning that the downward slope of the market leverage ratio in Figure 4 indicates the HCA management team’s attempt to close the gap between HCA’s market leverage ratio and its target leverage zone of 0.2 and 0.4.

Section 3.4 points out either the firms’ decisions affect their capital structure (changes in both market and book debt ratios) or the outsiders’ valuation affects the capital structure (changes in market debt ratio). HCA’s decision to go public and use the proceeds to repay some of its debt decreased its book and market debt ratios. Our conjecture is that consistent with the Baker and Wurgler (2002) market timing theory and the Alti (2006) hot vs. cold IPO market findings, HCA chose the perfect timing to go public, as the 2011 IPO market can be considered to be a hot IPO market.

5 Discussion, Robustness and Summary

5.1 Robustness to Industry Leverage

To check if changes in the HCA capital structure are coming from changes in the “Hospitals” industry, we test how the capital structure changes of the firms in the “Hospitals” industry compare with the variations in the median industry leverage. Keefe and Yaghoubi (2016) show that there is a statistically significant and positive relationship between the median industry leverage and the debt ratio. In this study, we want to see how many of the deviations in debt ratios are in line with the changes in industry leverage trends versus the firms’ effect.
First, we obtain annual data from the Compustat-CRSP merged database for the years 1990 to 2013 and keep the USA firms within the "Hospitals" industry that is SIC codes 8060 to 8069. Then, we define two variables, 1) IndustryMDR which is the median industry leverage using the $L_{t, Market}$ ratio and 4-digit SIC code, and 2) IndustryBDR which is the median industry leverage using $L_{t, Book}$ ratio and 4-digit SIC code. To find out how the variations in industry leverage affect the variations in debt ratios, we estimate:

$$\Delta L_{i,t} = \beta_1 \Delta IndustryLEV_{i,t} + \epsilon_{i,t}$$  \hspace{1cm} (7)

where, $\Delta$ is the first difference operator, $L_{i,t}$ represents either market or book debt ratio of firm $i$, $IndustryLEV_{i,t}$ is either market or book industry leverage and $\epsilon_{i,t}$ represents the part of the variation in $\Delta L_{i,t}$ which has not been explained by the $\Delta IndustryLEV_{i,t}$.

Using the OLS model in Stata, we then predict $\Delta L_{i,t}$ and the residual $\epsilon_{i,t}$. Considering $\Delta IndustryLEV_{i,t}$ as an x-axis variable, we plot the predicted $\Delta L_{i,t}$ and $\epsilon_{i,t}$ where the x-axis shows the 20-quantile of $\Delta IndustryLEV_{i,t}$.

As can be seen in Figures 9 and 10, the residuals, which are the firms specific characteristics, are quite large in both figures. We can also see that the residuals match the $\Delta L_{t, Market}$ or $\Delta L_{t, Book}$ better than the predicted $\Delta L_{t, Market}$ or $\Delta L_{t, Book}$ values. Therefore, we conclude that most of the variations in either market or book debt ratios are the result of the firm's effects rather than the industry effects.

5.2 Discussion and Summary

The empirical studies on dynamics of capital structure explore whether firms’ capital structures vary over time and what factors affect these capital structure variations. This paper is a case study of HCA and its capital structure dynamics for the years 1990 to 2013. The motivation of this case study comes from the fact that in an empirical study with thousands of firms in the sample, we are
not able to understand how management teams of firms make their capital structure decisions and how they decide what to do, and how they do it. This case study helps us to understand how firms make capital structure decisions and how the behavior of the accounting-based data is different to the market-based data, and how the HCA management team’s decisions affect the capital structure and the data.

In this study, we investigate HCA’s capital structure changes due to 1) mergers and acquisitions, and divestitures that change a firm’s total assets, 2) buybacks, and 3) LBOs and public offerings that change a firm’s ownership. HCA is an interesting case to study as it had several M&As, divestitures, buybacks, LBOs and public offerings from 1990 to 2013.

Our evidence suggests that in most of the cases except the 2006 LBO which has increased the book leverage ratio dramatically, HCA’s management team tried to keep the leverage ratio in a target leverage zone by using both debt and equity financing.

HCA’s market leverage ratio had been bounded between 0.2 and 0.4 for the years 1992 to 2006 before the LBO. The 2006 LBO increased HCA’s debt drastically and made it a private firm. This paper suggests HCA aimed to keep its market leverage ratio in the target leverage zone. The decreasing trend of the HCA market leverage ratio after the 2011 IPO shows that the market leverage ratio tends to get back to the target leverage zone. The idea of staying in a target leverage zone is consistent with the dynamic trade-off theory and the existence of a target leverage ratio like Leary and Roberts (2005). More interestingly, the evidence suggests that in some cases when the outsiders’ valuation pulled the market leverage ratio out of the target leverage zone, HCA used the book leverage ratio as a tool to keep the market leverage ratio inside the target leverage zone. For instance, from 1998 to 2000 the HCA management team decreased the common equity ($ceq$) to stop the market leverage ratio from decreasing below the target lower bound of 0.2.

The HCA case suggests that the reasons behind the equity financing in one situation are different to another situation. Financing events by voluntary debt or equity issuance is different from using available cash from operating activities or selling assets. Both cases cause variations in leverage ratios, but the latter is less expensive than the former. For example repurchasing shares using the
available generated cash from selling a business unit is less expensive than repurchasing shares by issuing debt in order to finance the buyback.

In addition, the substantial amount of debt or equity issuance in the case of acquisitions, as well as the substantial amount of available cash in the case of divestitures, leads us to test the relationship between the investment volatility and the level of debt and cash holding outlined in the next chapter.
A Appendix A - History of HCA and Columbia before their 1994 mega merger

A.1 History of CHC before 1994

CHC was founded in 1987 by Richard Scott and Richard Rainwater. Scott started his journey to create a national healthcare provider network by teaming up with Rainwater who was a director on HCA’s board. For their first move, Columbia’s management team purchased two hospitals in Texas that were poorly managed and reformed the operations of these hospitals. Afterwards, they formed a limited partnership with a group of physician investors and named it El Paso Healthcare System, Ltd. (EPHS). The new partnership acquired the two Columbia owned hospitals and some other diagnostic centres owned by physicians in exchange for EPHS shares. Columbia’s growth continued by purchasing two medical centres and consolidating them with EPHS hospitals through transferring these two medical centres’ equipment and patients and selling their buildings. Columbia’s management team pursued its expansion by opening Sun Tower Behavioral Healthcare in 1988, which increased the Columbia average daily census. The EPHS growth plan was a success between 1988 and 1990. EPHS management team increased its total average daily census to 303 from 174 patients and EPHS revenue jumped to $135 million in 1990 from $113 million in 1989 (Pederson, 2001).

Scott and his team’s expansion plans were not limited to EPHS. Columbia continued its growth and entered other markets by purchasing nearly bankrupt hospitals in other states. They followed the same strategy as before, forming limited partnerships with physician investors. For their next steps, Columbia merged with Smith Laboratories and its subsidiary Sutter Corp in 1990 which led Columbia to go public, and then in a landmark joint venture Columbia’s management team built a $50 million hospital with Medical Care America of Dallas.\(^{37}\) Columbia’s management team chased their growth strategy by acquiring local hospitals from 1990 to 1992. By the end of 1992 the number of Columbia’s hospitals increased to 24 (Pederson, 2001).

\(^{37}\)Columbia had three more deals in 1990. It acquired HEI Corporation for $22 million in cash, Reef Hospital for $18 million in cash and notes and then, Southside Community Hospital for $5 million.
Scott shook up the general medical and surgical hospital industry twice between 1993 and 1994. The first big change in Columbia Corporation occurred in 1993, when Columbia merged with Galen Health Care and renamed itself Columbia Healthcare Corporation (COL) (Reuters News, 10 June 1993). This $3.2 billion stock swap merger increased Columbia’s network to 94 hospitals in 19 states, as well as Switzerland and England. Not long after its merger with Galen Health Care, in October 1993 Columbia shocked the industry again by announcing a $5.7 billion stock swap merger with HCA (The New York Times, 3 October 1993).

A.2 History of HCA before 1994

Founded in 1968 by a small group including Dr. Thomas Frist, Sr., his son Dr. Thomas Frist, Jr. and Jack Massey, HCA was one of America’s first hospital companies. Dr. Thomas Frist, Sr. called “the father of modern for-profit hospital system” by the New York Times (1998), emphasized the role of Dr. Thomas Frist, Jr. his son, on the establishment of HCA. Gilpin (January 8, 1998, part 1) reported:

In an oral history on file at the American Hospital Association, the elder Dr. Frist quoted his son as having said: “Banks are together, filling stations are together, grocery stores are together, why can’t we put hospitals together? Economy of scale means so much.”

HCA’s first initial public offering (IPO) was conducted in 1969 with 11 hospitals on the New York Stock Exchange. By the end of 1969, HCA increased the number of its hospitals to 26.

The 1970s and the early 1980s had been the golden years for HCA due to remarkable growth by acquiring hundreds of hospitals across the US. During this period the HCA’s management team acquired General Care Corporation, Hospital Affiliates International, General Health Services and Health Care Corporation, which increased the number of HCA hospitals (owned and managed) to 349. In 1987, Dr. Thomas Frist, Jr. took over as HCA’s chief executive officer after which HCA spun off Healthtrust, one of its subsidiaries with 104 hospitals. One year later, in 1988, HCA went private by a $5.1 billion management buyout followed by a successful IPO in 1992 (HCA History, 2015).
Frist, Jr., who designed HCA’s private LBO in 1988, considered the early 1990s’s serious reforms in the health industry as a growth opportunity and tried to team up with HCA’s biggest competitors. His first target was Galen Health Care, which was a result of the early 1993 Humana spin off. However, Frist would rather use HCA’s cash to repay HCA’s debt which was increased as a result of 1988 LBO. In the meantime, Scott the CEO of Columbia, proposed a merger to Galen, and Galen took it. Frist, who has been watching Columbia, found this to be a good opportunity to merge with Columbia and build the nation’s largest hospital.
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Figure 1: Horizontal axis shows the years 1994-2005. Vertical axis plots the first to the fourth terms of Equation (4), the HCA’s market leverage ratio decomposition.

Figure 2: Horizontal axis shows the years 1994-2005. Vertical axis plots the first and the second terms of Equation (6), the HCA’s book leverage ratio decomposition.
Figure 3: Horizontal axis shows the years 1990-2012. Vertical axis plots the changes in the HCA’s market leverage ratio of Equation (4), and the changes in the HCA’s book leverage ratio of Equation (6).

Figure 4: Horizontal axis shows the years 1990-2013. Vertical axis plots the annual market and book leverage ratios of HCA in each year. Annual market leverage ratios are missing from 1990 to 1992 and from 2007 through 2011, when HCA was privately held. The book leverage ratios are available for all years.
Figure 5: Horizontal axis shows the years 1990-2013. Vertical axis plots the HCA annual long-term debt and retained earnings from 1990 to 2013 in millions.

Figure 6: Horizontal axis shows the years 1990-2013. Vertical axis plots the HCA annual long-term debt issuance and reduction from 1990 to 2013 in millions.

Figure 8: Horizontal axis shows the year 2006. Vertical axis plots HCA historical share price from January to November 2006.
Figure 9: The horizontal axis shows the 20-Quantiles of $\Delta(IndustryMDR_t)$. The vertical axis plots the mean of $\Delta(L_t)_Market$, the predicted $\Delta(L_t)_Market$, and the predicted residuals using Equation (7).

Figure 10: The horizontal axis shows the 20-Quantiles of $\Delta(IndustryBDR_t)$. The vertical axis plots the mean of $\Delta(L_t)_Book$, the predicted $\Delta(L_t)_Book$, and the predicted residuals using Equation (7).
Table 1: Components of HCA’s Book and Market Leverage Ratios

This table shows the components of HCA’s book and market leverage ratios from 1990 to 2005 and from 2011 to 2013. There are three sets of accounting information in this table. The first set is HCA’s data from 1990 to 1992. The second set is CHC’s accounting information from 1990 to 1992. The third set includes the consolidated accounting information of HCA and Columbia in 1993 one year before their merger, and the accounting information of merged Columbia/HCA from 1994 to 2013. The common component in the market and the book leverage ratios is the long-term debt ($D$). The main components of the market leverage ratio are the number of shares outstanding ($N$) and the price per share ($P$). The main components of the book leverage ratio are the common shareholders’ equity or deficit ($ceq$) where, $ceq = cstk + caps + re - tstk$. $cstk$ is the common stock, $caps$ is the capital surplus, $re$ is the retained earnings and $tstk$ is the treasury stock (HCA’s $tstk$ is equal to zero for the years 1990 to 2013). The market leverage ratio components are the number of shares outstanding ($N$) and price per share ($P$). $(Lt)_Book$ and $(Lt)_Market$ are the long-term book and market leverage ratios, respectively. *Ticker* is the firm trading symbol in the market, and the components are in million dollars.

<table>
<thead>
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<th>Year</th>
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<th>Common component ($D$)</th>
<th>$(Lt)_Book$</th>
<th>$(Lt)_Book$ components</th>
<th>$(Lt)_Market$</th>
<th>$(Lt)_Market$ components</th>
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Table 2: Empirical Literature - Changes in Assets

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hite and Owers (1983)</td>
<td>Share price increases due to spin-offs.</td>
</tr>
<tr>
<td>Nanda and Narayanan (1999)</td>
<td>When a firm is undervalued, selling it as business units may make the market do a more accurate valuation. On the other hand, when overvalued firms face an under-performing division, they use external financing to raise capital.</td>
</tr>
<tr>
<td>Morck et al. (1990)</td>
<td>A firm’s value may decrease as a result of an acquisition which has been derived by managerial objectives.</td>
</tr>
<tr>
<td>Schlingemann, Stulz and Walkling (2002)</td>
<td>Firms tend to divest underperformed, small and unrelated divisions.</td>
</tr>
<tr>
<td>Kummer and Steger (2008)</td>
<td>Firms’ tendency to grow, outsiders’ pressure on firms to grow, elimination of competition, and the history of other firms’ successful M&amp;As as reasons why firms tend to merge with other firms or to acquire other firms.</td>
</tr>
<tr>
<td>Harford et al. (2009)</td>
<td>Firms have target capital structure and when it comes to financing M&amp;As, over leveraged firms prefer equity financing to debt financing to stay close to their target capital structure.</td>
</tr>
<tr>
<td>DeAngelo et al. (2011)</td>
<td>Firms with high investment shock volatility keep their leverage low to preserve their debt capacity to meet future financing needs.</td>
</tr>
<tr>
<td>Uysal (2011)</td>
<td>Over-leveraged firms are less likely to initiate acquisitions; managers in such firms try to re-balance their capital structure if they are aware of a future acquisition opportunity.</td>
</tr>
</tbody>
</table>
Table 3: Empirical Literature - Buyback

<table>
<thead>
<tr>
<th>Study</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dann and Mikkelsen (1984), DeAngelo et al. (1984), and Asquith and Mullins (1986)</td>
<td>A stock repurchase announcement can cause a stock price increase.</td>
</tr>
<tr>
<td>Bagwell (1991)</td>
<td>Firms can decrease the threat of hostile take-overs by choosing share buyback as the payout policy.</td>
</tr>
<tr>
<td>Stephens and Weisbach (1998)</td>
<td>One of the reasons that a firm considers a share buyback could be its undervalued stock.</td>
</tr>
<tr>
<td>Dittmar (2000)</td>
<td>Changing the capital structure could be one of the reasons for a share buyback.</td>
</tr>
<tr>
<td>Pettit (2001)</td>
<td>Firms benefit from buyback in two ways: 1) signaling, and 2) in cases of financing the buyback by debt, buyback is like exchanging equity for debt and there will be a tax benefit of debt.</td>
</tr>
<tr>
<td>Kahle (2002)</td>
<td>Firms follow a buyback strategy when employees have a large amount of currently exercisable options.</td>
</tr>
<tr>
<td>Allen and Michaely (2003), and Brav et al. (2005)</td>
<td>An improving measure of reported financial statements can also be a good motivation for a share buyback.</td>
</tr>
<tr>
<td>Brav et al. (2005)</td>
<td>Managers use their firms’ excess cash to repurchase stocks.</td>
</tr>
<tr>
<td>Skinner (2008)</td>
<td>The number of firms using share buyback instead of dividend payment as their payout policy is increasing.</td>
</tr>
<tr>
<td>Hribar et al. (2006), and Almeida et al. (2013)</td>
<td>Firms use the buyback program to increase earnings per share.</td>
</tr>
<tr>
<td>Tsetsekos et al. (2011)</td>
<td>By reporting the findings of a mail questionnaire, they show that the managers of a firm are motivated to use share buyback to change a firm’s capital structure as well as to signal information to the market.</td>
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</tbody>
</table>
Table 4: Columbia/HCA buybacks and public offerings from 1990 to 2013
Panel A of this table reports Columbia/HCA buybacks from 1990 to 2013, and panel B reports Columbia/HCA public offerings from 1990 to 2013. Columns (1) to (4) represent the date of buyback/public offering, number of shares outstanding, price per share, shareholders’ equity. Column (5) in panel A reports the number of the buybacked shares, and panel B reports the number of the offered shares. The numbers in columns (2), (4) and (5) are written in thousands. The negative signs in Column (5) show the decrease in the shares outstanding from the previous day, and the positive signs show the increase in the shares outstanding from the previous day.

<table>
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<tr>
<th>Date</th>
<th>N</th>
<th>Prc</th>
<th>SHEquity</th>
<th>Diffshrout</th>
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Panel B

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<tr>
<td>DeAngelo and DeAngelo (1987)</td>
<td>Tax saving, better performance and competitive positioning are LBOs’ merits, and problems in raising capital and attracting experienced managers are LBOs’ demerits.</td>
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<tr>
<td>Fox and Marcus (1992)</td>
<td>LBOs increase managers’ commitment to profitability.</td>
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<tr>
<td>Opler and Titman (1993)</td>
<td>Firms unlikely to do LBOs when they have high expected costs of financial distress. Consistent with the Jensen (1986), free cash flow theory, firms with high cash flow and unfavorable investment opportunities and low R&amp;D expenditures tend to initiate LBOs more. 'Debt financing is crucial for realizing the gains from going private.'</td>
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<tr>
<td>Van de Gucht and Moore (1998)</td>
<td>Increase in share price when going public after LBOs.</td>
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<td>Chou, Goh, Gombola and Liu (2002)</td>
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<tr>
<td>Baker and Wurgler (2002)</td>
<td>The firms’ managers repurchase the stock when they perceive their stock is undervalued, and alternatively they tend to issue equity rather than debt when they believe their stock is overvalued.</td>
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<td>Leone et al. (2007)</td>
<td>The raised capital via the public offerings (the proceeds) may be used for debt repayments, investment opportunities, acquisitions, product developments and distribution to pre-IPO shareholders.</td>
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<td>Kaplan (1989), and Bargeron et al. (2008)</td>
<td>LBOs’ transactions tend to be completed by a large premium over the existing share price.</td>
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<td>Guo et al. (2011)</td>
<td>In LBOs, the realized returns to capital are affected by tax benefit of debt, industry valuation multiples and changes in operating performance.</td>
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