

Which Free Cash Flow Is Value Relevant? The Case of the Healthcare Industry

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The definition of free cash flow (FCF) varies widely in accounting theory and practice. The objective of this study is to empirically identify which definition is the most value relevant for the healthcare industry. Using a sample of 14,866 observations from 1988 to 2010, the author shows that the FCF defined as cash flow from operations less capital expenditures is the one most associated with stock prices. The author recommends that the FASB require healthcare companies to disclose that FCF, or at least require companies voluntarily disclosing FCF to use that definition. This should help retail investors make better decisions.

INTRODUCTION

While the finance literature may have a somewhat uniform definition of free cash flow (FCF), as the literature review below indicates, the accounting literature has a wide variety of definitions of FCF. The objective of this paper is to empirically identify which accounting definition of FCF has the highest information content, or the most value relevant, for the healthcare sector of the economy. This study aims to provide two contributions to the literature. First, identification of a specific definition of FCF that is most relevant to accounting information users in terms of predicting stock price changes as this would help investors make better decisions. Since the major objective of financial reporting is to provide information that is useful for decision-making, the first contribution of this study would enhance the objective of accounting. Second, the results of this study may have major implications for financial accounting standard setters. While the Financial Accounting Standards Board (FASB) requires companies, in Statement of Financial Accounting Standard (SFAS) No. 95, to report Cash Flow from Operations (CFO) on the Statement of Cash Flows (SCF), it has so far discouraged companies from reporting CFO per share. The FASB is concerned that requiring, or even encouraging, companies to report CFO per share may be construed by some that it is moving away from accrual-basis accounting toward cash-basis accounting. Thus, it requires companies to report Earnings per Share (EPS), which is based on accrual accounting, on the face of the Income Statement (I/S) but discourages companies from reporting CFO per share on the face of the SCF or anywhere else in the annual report. The results of this study might encourage the FASB to require companies to report a specific definition of FCF (but not FCF per share) in the body of the SCF or in the supplementary disclosures at the bottom of the SCF, together with cash paid for income taxes and cash paid for interest expense. This requirement would prohibit companies from voluntarily disclosing FCF of whatever definition they prefer. Adhikari and Duru 2006 report that companies that voluntarily disclose FCF information use a wide variety of definitions of FCF (apparently, each company is using the definition that shows the highest amount of FCF) and these

companies, on average, are less profitable and more leveraged than other firms in their own industries. Having all companies, in a given industry, reporting FCF that is calculated in the same way would enhance comparability of accounting information across firms. Because companies in a specific industry may spend more cash for capital expenditure or other investing activities than companies in a different industry, the author focuses the investigation in this study on one industry, healthcare. Also, the healthcare industry is selected for the study because some argue that the cash flow of healthcare companies will be significantly affected by the implementation of the Patient Protection and Affordable Care Act (PPACA), commonly called Obamacare (or the federal health care law.) The results of this study before the implementation of PPACA may be used as a benchmark against which the results of future studies may be compared. Furthermore, comparability in one specific industry is one of the enhancing qualitative characteristics of useful financial information as stated in FASB's SFAC No. 8. The remaining sections of the paper cover the literature review, the proposed model, sample, statistical results, conclusions, and limitations of the study, respectively. The final section provides some suggestions for further research.

LITERATURE REVIEW

In the finance literature, there is no wide variation of FCF definitions. Jensen 1986 is regarded as the seminal paper that laid out the basic definition of FCF. Jensen 1986 hypothesizes that FCF increases agency costs because the managers of companies with high FCF spend it on acquiring negative net present value (NPV) projects for the purpose of satisfying their ego (being managers of large-size companies) and possibly for increasing their own compensation. He proves his hypothesis by showing that, after acquisition, the return on investment of acquirers is lower than before the acquisition. In light of that, he defines FCF as "cash flow in excess of that required to fund all projects that have positive net present value when discounted at the relevant cost of capital." He argues that managers should not acquire negative NPV projects and should instead distribute the FCF as dividends to the stockholders. If managers want to acquire new companies they should do so using borrowed capital rather than the FCF. In this way, creditors would discipline managers (because they have the power to force the company into bankruptcy) and pressure them not to invest in negative NPV projects. The majority of papers in the finance literature tend to agree with Jensen's hypothesis. See, for example, (Mann and Sicherman 1991), (Opler and Sheridan 1993), (Dhumale 1998), (Carroll and Griffith 2001), and (Freund et al. 2003). The problem with Jensen's definition of FCF is that it is not publicly available and, thus, unobservable. Companies do not disclose the actual set of positive NPV projects that they have at any point in time or even for a given year. Thus, Lang et al. (1991) used a measure of Tobin's q (the ratio of market to book value of equity) to proxy for this. The assumption is that if average q is less than 1, the marginal investment opportunity is negative. Lang et al. (1991, 317) note that the FCF hypothesis implies that the acquirer's return should be negatively related to FCF in low q firms, and unrelated to FCF in high q firms. They find that high q bidders have significantly higher mean returns than low q bidders, and higher median returns. As predicted by the FCF hypothesis, their low q , high FCF firms are the worst performers of any of their sample sub-sets. One notable exception to Jensen's FCF hypothesis is Gregory (2005) who used a dataset of UK take-overs and proxies for FCF similar to those used by Lang et al. (1991). Gregory reported that, contrary to Jensen's FCF hypothesis, there is evidence that acquirers with high FCF perform better than acquirers with low FCF.

Unlike the finance literature, the accounting literature has so many definitions of FCF. FCF is defined differently from academic article to academic article, textbook to textbook, professional article to professional article, from company to company (and some companies change their definition of FCF from time to time), and from all these to the popular press. For example, Mandalay Resort (formerly known as Circus Circus) was one of the first companies to report FCF information in its 1988 annual report. Over the years, it has changed its FCF definition. In 1988 it defined it as Operating Income (OI), but in 2000, it added back pre-opening expenses, abandonment loss, depreciation and amortization (D&A), interest, dividend, and other income, as well as proceeds from disposal of equipment and other assets. Prior to

1999, Coca-Cola defined FCF as CFO less Cash Flow for Investing activities (CFI). In 1999, it changed the definition to CFO less “business investment.” An analysis of its 1999’s SCF indicates that by “business investment” Coca-Cola meant “acquisitions and investments.” That change in definition increased its FCF in 1999 by almost \$2 billion. Mills et al. (2002) report the following different definitions of FCF by popular magazines and investment advisory service organizations:

Money Magazine: $OI - \text{Capital Expenditures (CE)} - \text{Changes in Working Capital (W/C)}$.

Forbes Magazine: $\text{Net Income (NI)} + \text{D\&A} + \text{or} - \text{W/C adjustments} - \text{maintenance CE}$.

Harry Domasb’s Winning Investing: $\text{CFO} - \text{Cash paid for Property, Plant \& Equipment (PPE)} - \text{Dividends}$.

The Motley Fool: $\text{NI} + \text{D\&A} - \text{changes in W/C} + \text{or} - \text{cash outlay for taxes}$.

Value Line: $\text{NI} + \text{Depreciation} - \text{Dividends} - \text{CE} - \text{required debt repayments} - \text{any other scheduled cash outlays}$.

InvestorLinks: $\text{NI} + \text{D\&} - \text{CE} - \text{Dividends}$.

Advisors Inner Circle Fund: $\text{NI} + \text{D\&} - \text{CE}$.

Subramanyam & Wild (2009, p. 417) define FCF as CFO less Capital Expenditures required to Maintain Productive Capacity (CEMPC) less total Dividends. In the same edition they mention another definition: $\text{FCF} = \text{NOPAT (Net Operating Profits after Tax)} - \text{Increase in NOA (Net Operating Assets)}$. Kieso et al. (2012, p. 234) defines FCF as $\text{CFO} - \text{CE} - \text{Total Dividends}$.

The author searched for “free cash flow definition” on Google search engine. This produced about 1.35 million entries for this title, the first of which is “Definitions of Free Cash Flow on the Web.” Table 1 presents the 15 definitions under this title, together with the web address associated with each definition. It is interesting to note that every one of the 15 definitions is different from the others. Adhikari and Duru (2006) report that of 548 firms of their sample that voluntarily reported FCF information, 283 (or 51.6%) defined FCF as $\text{CFO} - \text{CE}$, 117 (or 21.4%) defined FCF as $\text{CFO} - \text{CE} - \text{Dividends}$, and 64 (or 11.7%) defined FCF as $\text{CFO} - \text{CFI}$. The remaining 84 firms (or 15.3%) defined FCF in four different other ways.

The above review of the literature, especially the accounting literature, indicates that FCF is defined in so many different ways. The objective of this study is to determine which one of these definitions is most correlated with (and, thus, is hypothesized to be the best predictor of) stock price changes. The following section describes the proposed model to be used to answer the research question of this study.

PROPOSED MODEL

The author argues that FCF should be defined not only as the cash flow that is *cost free* (i.e., that is generated internally from operating activities) but also “the cash flow that management is *free* to do whatever it wants with it as long as management actions may not lead to the firm getting out of business”. Actions that may lead to the firm getting out of business include (a) not maintaining existing operating capacity (i.e. not replacing worn out PPE) and (b) not paying the annual installment of mandatorily redeemable preferred stock or the annual dividend on preferred stock. Not maintaining the existing operating capacity will lead to the gradual liquidation of the firm until it eventually gets out of business. Not paying the annual installment of mandatorily redeemable preferred stock or the annual dividend on preferred stock will not lead to gradual liquidation of the firm but will amount to financial suicide. Creditors and investors may deal with the company only if they are paid exuberantly high returns (which would be prohibitively high cost for the firm) or may stop dealing with the firm altogether if they determine that their downside risk is becoming too great compared to their upside reward. It may also be argued that not paying the debt that becomes currently due may lead to the firm getting out of business because it will lead creditors to force the firm into bankruptcy. However, most firms have lines of credit or refinancing programs so the debt that becomes currently due is paid out from new borrowing that occurs in the current period. Thus, there is no need to pay the debt that becomes currently due this period out of internally generated cash flow from operating activities in the current period. The annual

installment due and preferred stock dividend on mandatorily redeemable preferred stock are not available in the Compustat database. They can only be obtained from a review of the notes to the financial statements. Considering the large size of the study sample (14,866 observations) that would be cost and time prohibitive. In addition, many companies do not have mandatorily redeemable preferred stock and many of those that do usually do not disclose the information in the footnotes based on the GAAP loophole that management believes the information is not material. To substitute for that information, the author decided to subtract preferred stock dividends (PSD) from CFO in the determination of FCF. While regular preferred stock are not exactly similar to mandatory redeemable preferred stock (since dividend declaration and payment on regular preferred stock is discretionary), the nonpayment of PSD may give the same signal to creditors and investors as the nonpayment of mandatorily redeemable preferred stock dividends. Furthermore, the subtraction of total PSD from CFO in the determination of FCF may compensate to some degree for the non-subtraction of debt that becomes currently due this period.

In light of the above discussion, the author hypothesizes that FCF should be defined as follows:

$$FCF = CFO - CEMPC - PSD$$

Where:

FCF = Free Cash Flow

CFO = Cash Flow from Operating activities

CEMPC = Capital Expenditure required to Maintain Productive Capacity

PSD = Preferred Stock Dividends

The author decided to use the current year Depreciation & Amortization expense (D & A) as a proxy for CEMPC. A better proxy for that would be D & A computed based on the current cost of PPE. However, the disclosure of current cost of PPE, which was required under SFAS 34, is no longer mandatory, and few companies, if any, provide that disclosure.

Since the objective of this empirical study is to determine which FCF is a better predictor of stock prices, the study model will include other definitions of FCF besides the definition hypothesized here. Since there are so many definitions of FCF as illustrated in the literature review, the author decided to include in the model only those definitions that are most common. The following nine definitions will be included in the model:

$$FCF1 = CFO - CEMPC$$

$$FCF2 = CFO - CE$$

$$FCF3 = CFO - CFI$$

$$FCF4 = CFO - CEMPC - PSD$$

$$FCF5 = CFO - CE - PSD$$

$$FCF6 = CFO - CFI - PSD$$

$$FCF7 = CFO - CEMPC - TD$$

$$FCF8 = CFO - CE - TD$$

$$FCF9 = CFO - CFI - TD$$

Where: TD = Total Dividends paid on common and preferred stock.

It should be noted that FCF4 is the author's hypothesized definition, and FCF8 is Standard & Poors' definition and is reported directly in its COMPUSTAT database.

Since the change in the stock price per share ($\Delta SPPS$) may be affected by changes in sales per share (ΔSPS), earnings per share (ΔEPS), dividend per share (ΔDPS), and book value per share ($\Delta BVPS$), the proposed model includes all these variables so they can be controlled for to show the effect of change in FCF per share ($\Delta FCFPS$) on $\Delta SPPS$. Also, to control for the size of the firm, the natural logarithm of total sales ($\ln TS$) and natural logarithm of total assets ($\ln TA$) will be included in the model as well. The author also controls for year-end fixed effects. Thus, the proposed model is as follows:

$$\Delta SPPS = B_0 + B_1 \Delta SPS + B_2 \Delta EPS + B_3 \Delta DPS + B_4 \Delta BVPS + B_5 \Delta FCFPS_{1-9} + B_6 \ln TS + B_7 \ln TA + \epsilon \quad (1)$$

The definitions of the model variables are provided in Appendix A.

$\Delta\text{FCFPS} = \text{FCFPS}_t - \text{FCFPS}_{t-1}$ where $\text{FCFPS}_t = \text{FCF}_t / \text{weighted average number of common shares outstanding during year } t$. This weighted average number of common shares will be computed by dividing NI by EPS for year t . The same rule applies for FCFPS2 through FCFPS9.

THE STUDY SAMPLE

The study sample includes all healthcare companies listed in COMPUSTAT for the 23-year period 1988 to 2010. After eliminating all firm year observations that have missing variables, the final sample is composed of 14,866 observations. The study period starts from 1988 because SFAS 95, which requires companies to disclose CFO, was issued in 1987. Because the model uses the changes from year to year, 1988 observations will represent the changes from 1987 to 1988 data. The study period ends in 2010 because this is the last year with available data on COMPUSTAT at the time of collection. The year 2008 was a very abnormal year as total market indexes took a big dive because of the world's financial crisis that started during that year. In that year, the Dow Jones Industrial average lost 31 percent of its value (but at one point, in November of that year, it was down 39 percent). The NASDAQ index lost 39 percent (but in November 2008 it was down 46 percent). Similarly, the S&P 500 Cash Index lost 36 percent (but in November 2008 it was down 43 percent). Because of that abnormality, the author thought that the change in stock prices during 1988 was affected by psychological factors much more so than by financial factors. As a result, the author ran the model using a sample of observations ending in 2007. The results were not significantly different from the results based on the study sample ending in 2010.

STATISTICAL RESULTS

TABLE 2 presents Pearson correlation coefficients for all the study and control variables. As the table indicates, with the exception that FCF3, FCF6 and FCF9 have negative associations, all FCF definitions have positive associations with changes in stock price (Δspps) at the 5% significance level. Among the control variables, Δspps is negatively associated with changes in sales per share (Δsps), and changes in book value per share (Δbvps), and these associations are statistically significant at the 5% level. Furthermore, Δsps is statistically significantly associated with all definitions of FCF (except FCF3, FCF6 and FCF9 where the association is negative). Also, Δeps and Δbvps are statistically significantly associated with all definitions of FCF (without exception). On the other hand, Δdps is statistically significantly negatively associated with all definitions of FCF (without exception). The lnsale and lnat are not statistically significant with any of the FCF definition suggesting that these variables would be appropriate controls. The correlations presented in Table 2 already present some interesting results which the author validates in a multivariate framework shown in TABLE 3 as discussed below.

TABLE 3 presents regression coefficients for nine models by including one FCF definition at a time in the model. Along with the control variables specified in Model (1), the author also includes year fixed effects. These fixed effects control for heterogeneity at the year level that may not be captured by the set of controls used. As TABLE 3 shows that, with the exception that FCF3, FCF6, and FCF9 have no significant associations with changes in stock price (Δspps), all other FCF definitions have positive associations with Δspps at the 1% significance level after controlling for other determinants of changes in stock price. Among the control variables, Δsps and Δbvps are negatively associated and Δeps is positively associated with Δspps and these associations are statistically significant at the 1% level across all specifications of FCF. Also the control variable, Δdps is negatively associated with Δspps but only at the .10 level of significance and only for FCF1-FCF4 and FCF6.

Overall, TABLE 3 confirms the results of the univariate correlations in Table 2. It is interesting to note that the three definitions of FCF that have significant negative associations with changes in stock prices have one thing in common: they all include CFI as a deduction from CFO. That is the case whether CFI alone is deducted (FCF3), CFI and PSD are deducted (FCF6), or CFI and TD are deducted (FCF9). Apparently, PSD and TD have very negligible effect, if any, on stock price changes of healthcare

companies. This is also borne out by the fact that when CEMPC or total CE are deducted from CFO (FCF1 and FCF2 respectively) there are significant associations with stock price changes. This is the case whether PSD is also deducted (FCF4 and FCF5) or TD is also deducted (FCF7 and FCF8). Of the six FCF definitions that have significant associations with stock price changes, the three that have CE as a deduction from CFO (FCF2, FCF5 and FCF8) have the most significant associations. Of those latter three, FCF5 (CFO – CE – PSD) has a little bit less significant association than FCF2 and FCF8 (which have the same exact association) with stock price changes. Thus, the author will choose FCF2 as the preferred FCF definition since it has only two variables as TD payment did not make any difference in the association level. The fact that FCF2 (CFO – CE) and FCF8 (CFO – CE – TD) have the same exact association with Δsps , indicates that TD (total dividends) have negligible effect, if any, on stock prices changes. This result is in agreement with Modigliani and Miller' theorem of irrelevance of dividend discussed many years ago in a series of papers (1958, 1961, and 1963).

CONCLUSIONS

In light of the statistical results above, the author conclude that FCF2 (CFO – CE) is the most value-relevant definition of free cash flow for healthcare companies. While other definitions of free cash flow, including the one hypothesized by the author (FCF4), are also significantly associated with stock price changes, FCF2 was the one that had the most significant association when the author controlled for year fixed effects and for national log of total assets and of total sales. The reason the hypothesized definition was not the most significantly associated with changes in stock prices could be due to the possibility that the un-inflation-adjusted depreciation and amortization expense does not really approximate capital expenditures required to maintain productive capacity. Another reason could be that the stock market participants do not make an effort to determine capital expenditures required to maintain productive capacity (and they just use the conveniently available “total capital expenditures”) when they are making their investment decisions. In any event, the author recommends that the standards setters, particularly the FASB, should require healthcare companies to disclose FCF2 definition (CFO – CE) in the body of the Statement of Cash Flows or at its bottom together with the cash outflow for income taxes and interest expense. Short of that, the FASB should at least require healthcare companies that voluntarily disclose FCF to use only the FCF definition identified by this study. Furthermore, if a company departs from this definition, the independent auditor should consider this departure as a violation of GAAP.

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The study is subject to some limitations. The most important limitation is the possibility that the study model did not include other variables that may have influenced stock price changes and is correlated with the definitions of FCF used in this study. The combined effect of those other variables is represented by the error term \sum in the model. Adding year fixed effects help mitigate some concerns but not all regarding unobservable explanatory variables. Another limitation is that there may be other formulas for FCF which may be more value-relevant than the ones included in this study. While the author tried to develop as comprehensive a list as possible, other definitions of free cash flow may possibly exist.

One suggestion for further research is to replicate the study using other variables that could possibly have more effect on stock prices than the variables included in the study model. Another suggestion would be to investigate whether a trading strategy could be developed buying (shorting) stock of firms which have the greatest positive (negative) change in one or more measures of FCF over the prior year.

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APPENDIX A

VARIABLE DEFINITIONS

$\Delta spps$	Change in stock price between the end of the next fiscal year and the current year.
$\Delta fcfps1$	Change in the difference between cash flow from operations (CFO) and depreciation and amortization expense (DP) over the current fiscal year.
$\Delta fcfps2$	Change in the difference between cash flow from operations (CFO) and capital expenditures (CE) over the current fiscal year.
$\Delta fcfps3$	Change in the difference between cash flow from operations (CFO) and cash flow from investing activities (CFI) over the current fiscal year.
$\Delta fcfps4$	Change in cash flow from operations (CFO) minus depreciation and amortization expense (DP) minus preferred stock dividends (PSD) over the current fiscal year.
$\Delta fcfps5$	Change in cash flow from operations (CFO) minus capital expenditures (CE) minus preferred stock dividends (PSD) over the current fiscal year.
$\Delta fcfps6$	Change in cash flow from operations (CFO) minus cash flow from investing activities (CFI) minus preferred stock dividends (PSD) over the current fiscal year.
$\Delta fcfps7$	Change in cash flow from operations (CFO) minus depreciation and amortization expense (DP) minus total dividends (TD) over the current fiscal year.
$\Delta fcfps8$	Change in cash flow from operations (CFO) minus capital expenditures (CE) minus total dividends (TD) over the current fiscal year.
$\Delta fcfps9$	Change in cash flow from operations (CFO) minus cash flow from investing activities (CFI) minus total dividends (TD) over the current fiscal year.
Δsps	Change in total sales per share over the current fiscal year.
Δeps	Change in earnings per share over the current fiscal year.
Δdps	Change in dividends per share over the current fiscal year.
$\Delta bvps$	Change in book value per share over the current fiscal year.
$Lnsale$	Natural logarithm of total sales over the current fiscal year.
$Lnat$	Natural logarithm of total assets at the current fiscal year end.

TABLE 1
DEFINITIONS OF FREE CASH FLOW ON THE WEB

1. In corporate finance, free cash flow (FCF) is cash flow available for distribution among all the securities holders of an organization. They include equity holders, debt holders, preferred stock holders, convertible security holders, and so on. en.wikipedia.org/wiki/Free_cash_flow.
2. Net income plus depreciation and amortization, less changes in working capital, less capital expenditure. en.wiktionary.org/wiki/free_cash_flow.
3. Adjusted operating cash flow less interest and tax paid, prior to distributions to shareholders. This is the cash flow available for payments of dividends and share buybacks as well as repayments of capital on loans. www.reed-lsevier.com/investorcentre/glossary/Pages/Home.aspx.
4. Cash flow from operating activities, investments, financial items and tax and the effect of restructuring measures on cash flow. www.investor.rezidor.com/phoenix.zhtml.
5. equals EBITDA minus net interest expense, capital expenditures, change in working capital, taxes paid, and other cash items (net other expenses less proceeds from the disposal of obsolete and/or substantially depleted operating fixed assets that are no longer in operation). www.cemex.com/ic/ic_glossary.asp.
6. This item on the cash flow statement represents the sum of cash flows generated by operating and investing activities. investors.benettongroup.com/phoenix.zhtml.
7. How much money a company could pay shareholders out of profits without expanding, but without running down its existing operations either. moneyterms.co.uk/d/.
8. Represents a common measure of internally generated cash and is defined as cash from operations less fixed asset purchases. portal.acs.org/portal/PublicWebSite/about/aboutacs/financial/WPCP_012234.
9. Cash available after financing operations and investments, available to pay down debt. www.graduates.bnpparibas.com/glossary.html.
10. A stock analyst's term with a definition that varies somewhat depending on the particular analyst. It usually approximates operating cash flow minus necessary capital expenditures. www.jackadamo.com/glossary.htm.
11. The amount of money that a business has at its disposal at any given time after paying out operating costs, interest payments on bank loans and bonds, salaries, research and development and other fixed costs. www.premierfoods.co.uk/investors/shareholder-services/Glossary.cfm.
12. Net Operating Profit after Tax minus Year-to-Year change in Net Capital. www.intrinsicvalue.com/glossary.htm.
13. The increase in cash from one period to the next. www.knowledgedynamics.com/demos/BreakevenFlash/GlossaryMain.htm.
14. Cash flow after operating expenses; a good indicator of profit levels. healthcarefinancials.wordpress.com/2008/01/24/equity-based-securities-terms-and-definitions-for-physicians/.
15. The surplus cash generated from operating activities recognized in the profit and loss account. This expresses a company's internal financing power, which can be used for investments, the repayment of debt, dividend payments and to meet funding requirements. www.deutsche-euroshop.de/berichte/gb2004/glossar_e.php.

TABLE 2
PEARSON CORRELATION COEFFICIENTS-HEALTHCARE FIRMS

	Δ spss	Δ fcfps1	Δ fcfps2	Δ fcfps3	Δ fcfps4	Δ fcfps5	Δ fcfps6	Δ fcfps7	Δ fcfps8	Δ fcfps9	Δ spss	Δ eps	Δ dps	Δ bvps	lnat
Δ spss	1.00														
Δ fcfps1	0.02	1.00													
Δ fcfps2	0.03	0.96	1.00												
Δ fcfps3	-0.02	0.69	0.59	1.00											
Δ fcfps4	0.02	0.98	0.96	0.67	1.00										
Δ fcfps5	0.03	0.93	0.98	0.57	0.97	1.00									
Δ fcfps6	-0.02	0.70	0.61	1.00	0.69	0.61	1.00								
Δ fcfps7	0.02	0.86	0.81	0.69	0.86	0.81	0.71	1.00							
Δ fcfps8	0.03	0.82	0.83	0.63	0.84	0.83	0.65	0.98	1.00						
Δ fcfps9	-0.02	0.68	0.59	0.98	0.67	0.58	0.98	0.78	0.73	1.00					
Δ spss	-0.04	0.10	0.12	-0.13	0.09	0.11	-0.12	0.07	0.08	-0.11	1.00				
Δ eps	0.02	0.49	0.47	0.25	0.48	0.44	0.26	0.53	0.51	0.30	-0.02	1.00			
Δ dps	-0.01	-0.30	-0.27	-0.39	-0.33	-0.30	-0.41	-0.75	-0.76	-0.57	-0.01	-0.35	1.00		
Δ bvps	-0.09	0.35	0.20	0.11	0.32	0.18	0.11	0.37	0.28	0.15	0.12	0.53	-0.24	1.00	
lnat	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.03	-0.01	0.00	-0.01	1.00
lnat	-0.03	0.01	0.01	0.00	0.01	0.01	0.00	0.01	0.01	0.00	0.03	-0.01	0.00	-0.01	0.85

Variables are defined in Appendix A. Numbers in bold indicate significance at the 5% level.

TABLE 3
ASSOCIATION BETWEEN VARIOUS MEASURES OF FREE-CASH-FLOW
AND CHANGES IN STOCK PRICES-HEALTHCARE FIRMS

Variables	Predicted Sign	Δ spps (1)	Δ spps (2)	Δ spps (3)	Δ spps (4)	Δ spps (5)	Δ spps (6)	Δ spps (7)	Δ spps (8)	Δ spps (9)
Δ fcfps1	+	0.236*** (2.66)								
Δ fcfps2	+		0.256*** (3.1)							
Δ fcfps3	+			0.033 (1.28)						
Δ fcfps4	+				0.212** (2.42)					
Δ fcfps5	+					0.234*** (2.87)				
Δ fcfps6	+						0.032 (1.23)			
Δ fcfps7	+							0.236*** (2.66)		
Δ fcfps8	+								0.256*** (3.1)	
Δ fcfps9	+									0.033 (1.28)
Δ sps		-0.125*** (-4.1)	-0.123*** (-4.02)	-0.131*** (-4.27)	-0.125*** (-4.1)	-0.123*** (-4.03)	-0.13*** (-4.26)	-0.125*** (-4.1)	-0.123*** (-4.02)	-0.131*** (-4.27)
Δ eps		0.215*** (4.25)	0.213*** (4.21)	0.24*** (4.82)	0.217*** (4.29)	0.214*** (4.24)	0.24*** (4.81)	0.215*** (4.25)	0.213*** (4.21)	0.24*** (4.82)
Δ dps		-0.341* (-1.79)	-0.342* (-1.8)	-0.326* (-1.71)	-0.313* (-1.65)	-0.311 (-1.64)	-0.322* (-1.69)	-0.104 (-0.5)	-0.086 (-0.42)	-0.292 (-1.52)
Δ bvps		-0.295*** (-8.83)	-0.295*** (-8.84)	-0.298*** (-8.65)	-0.294*** (-8.8)	-0.294*** (-8.81)	-0.297*** (-8.63)	-0.295*** (-8.83)	-0.295*** (-8.84)	-0.298*** (-8.65)
lnsale		0.264*** (4.39)	0.263*** (4.37)	0.277*** (4.63)	0.265*** (4.41)	0.264*** (4.39)	0.277*** (4.63)	0.264*** (4.39)	0.263*** (4.37)	0.277*** (4.63)
lnat		-0.263*** (-3.54)	-0.263*** (-3.53)	-0.272*** (-3.66)	-0.265*** (-3.56)	-0.264*** (-3.55)	-0.272*** (-3.66)	-0.263*** (-3.54)	-0.263*** (-3.53)	-0.272*** (-3.66)
Intercept		0.058 (0.11)	0.059 (0.12)	0.04 (0.08)	0.058 (0.11)	0.059 (0.12)	0.041 (0.08)	0.058 (0.11)	0.059 (0.12)	0.04 (0.08)
Year Fixed Effects		Yes								
Observations		14,866	14,866	14,866	14,866	14,866	14,866	14,866	14,866	14,866
Adjusted R ²		0.0652	0.0636	0.0648	0.0651	0.0652	0.0648	0.0652	0.0653	0.0648

This table provides the results of regressing the change in future stock prices of a firm (Δ spps) on various measures of changes in free cash flow (Δ fcfps1 - Δ fcfps9) and control variables. Coefficients are provided with t-statistics in parentheses below. Variables are defined in Appendix A. ***, **, and * represent two-tailed p-value significance levels of 0.01, 0.05, and 0.1 respectively.