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THE FREE CASH PROFILE: INSIGHT INTO THE CASH FLOW IMPLICATIONS OF GROWTH
AN ANALYSIS USING 2016 DATA

EXECUTIVE SUMMARY

The U.S. economy continued its recovery in 2016, and companies enjoyed the benefits of revenue growth. In terms of cash flow generation, as revenues grow, there are certain industries and companies that will benefit more than others. It is a common misbelief that growth requires a use of cash. The reality is that there are many companies that actually generate increasing amounts of free cash flow as revenues grow. These companies have what we refer to here as a positive free cash profile.

The purpose of this study is to analyze the free cash profile of 20 non-financial industries, looking at all firms within those industries that have assets in excess of $100 million. Our goal is to identify those industries that can be expected to generate cash as revenues continue to grow, as well as those industries that will consume cash with growth. We also highlight specific industries to investigate factors underlying their free cash profile.

Overall, the median free cash profile for our sample is 4.97%, a notable increase from 2015's median at 3.56%. There are 12 industries with a positive free cash profile, and 8 industries with a negative free cash profile. Industries with positive free cash profiles enjoy higher operating cushions and are more adept at managing operating working capital and limiting capital spending than industries with negative profiles. It is important to note that although industries have median positive (negative) free cash profiles, a number of companies within those industries may have negative (positive) free cash profiles.

Data for this research were provided by Compustat's Capital IQ database June 2017

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Georgia Tech Financial Analysis Lab

The Georgia Tech Financial Analysis Lab conducts research on issues of financial reporting and analysis. Unbiased information is vital to effective investment decision-making. Accordingly, the Lab thinks that independent research organizations, such as this Lab, have an important role to play in providing information to market participants.

Because the Lab is housed within a university, all of its research reports have an educational quality, as they are designed to impart knowledge and understanding to those who read them. Its focus is on issues that it believes will be of interest to a large segment of stock market participants. Depending on the issue, it may focus its attention on individual companies, groups of companies, or on large segments of the market at large.

A recurring theme in the work is the identification of reporting practices that give investors a misleading signal, whether positive or negative, of corporate earning power. The Labs defines earning power as the ability to generate a sustainable stream of earnings that is backed by cash flow. Accordingly, its research may look into reporting practices that affect either earnings or cash flow, or both. At times, its research may look at stock prices generally, though from a fundamental and not technical point of view.

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The Free Cash Profile: Insight into the Cash Flow Implications of Growth
An Analysis Using 2016 Data

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The Free Cash Profile: Insight into the Cash Flow Implications of Growth An Analysis Using 2016 Data

Introduction

In this study, we examine the cash-generating ability of 2,595 non-financial companies with assets greater than $100 million, through the lens of the free cash profile. We calculate the median free cash profile for each industry and compare free cash profiles across industries, contrasting those that could be expected to generate incremental cash flow from revenue growth with those that could be expected to consume cash with growth.

Definition

The free cash profile measures the capacity of a firm to generate free cash flow as it grows revenue. The metric is forward looking and reports the amount of incremental free cash flow that can be expected for any measured amount of growth in revenue. For example, an effective forecast of next year's free cash flow may be viewed as this year's sustainable net income plus the incremental cash flow effects of the free cash profile applied to expected revenue growth.

Many financial analysts look for companies that are adept at growing revenue and earnings. Indeed, earnings growth is at the heart of many stock valuation models. However, earnings growth does not necessarily translate into cash flow growth. The free cash profile is a measure of whether a firm can be expected to provide or consume free cash flow as it grows.

Growth is often considered to be a cash drain. That is, while growth is desired, it is often viewed as something that needs to be financed. In this view, as growth increases, so does a company's need for capital. However, growth doesn't have to be a cash drain. In fact, a firm with a positive free cash profile will generate increasing amounts of free cash flow as it grows. The more the company grows, the more cash the company generates.

The free cash profile is reported as a percentage of revenue. A firm with a positive profile will produce increasing amounts of cash flow as it grows. A firm with a negative profile will generate less cash and may require other sources of cash to support growth. For a profitable and growing company, a positive profile is more appealing than a negative one; however, a negative profile that increases towards a positive profile indicates progress in generating increasing amounts of free cash flow.

There are a few embedded components of a company's free cash profile. The core cash profile measures the capacity of a firm to generate core operating cash flow as it grows. Core operating cash flow is cash flow provided by operations, but excludes non-core sources of cash flow, financing costs and taxes. A firm's core cash profile reflects a combination of its operating cushion (operating profit before non-cash depreciation and amortization) and operating working capital requirements, expressed as a percentage of revenue. It is measured as the operating cushion percent (operating cushion to revenue) less operating working capital percent (operating working capital to revenue). For the purposes of this report, note that this equation will not hold when dealing with industry medians as it would for any one company. The metric reports the amount of core operating cash flow that can be expected for any measured amount of growth in revenue under the assumption that a firm's current mix of operating cushion and operating working capital remains unchanged.

The free cash profile measures the capacity of a firm to generate free cash flow as it grows. This metric incorporates taxes and capital expenditures into the calculations, two expenditures that are typically expected to grow with revenue. The free cash profile is measured as the core cash profile minus taxes paid percent (income taxes paid to revenue %) and minus capital expenditures percent (capital expenditures to revenue %). The metric measures the amount of free cash flow that can be expected for any measured amount of growth in revenue under the assumption that a firm's current mix of operating cushion, operating working capital, capital expenditures and taxes paid, all as percentages of revenue, remain unchanged.

The free cash profile provides a snapshot of a company's or an industry's cash-generating ability as of a point in time. Thus, the implications held by the profile for a company's ability to generate free cash flow as it grows may be improved upon by addressing the component factors that drive the Profile: operating cushion (gross margin or SG&A control), working capital, capital expenditures and income taxes paid. It is important to note, though, that changes to a Profile provide improvements to free cash flow that are not sustainable. A firm cannot be expected to continually generate incremental amounts of free cash flow through improvements in operating cushion or reductions in working capital. There are natural limits to how far such improvements can go.

The free cash profile differs from free cash margin (free cash flow divided by revenue). The free cash profile assumes that a company's margins, operating working capital, capital expenditures and income taxes to revenue will not change as revenues grow. Thus, working capital, capital expenditures and income taxes are expected to grow proportionately with revenue. The free cash profile metric measures the expected contribution of revenue growth to free cash flow. In contrast, free cash margin incorporates actual changes in margins, working capital, taxes and capital

expenditures to revenue during a reporting period. Accordingly, future changes in free cash flow may not follow revenue growth proportionately.

The Free Cash Profile across Companies and Industries

Because it measures a firm's ability to generate free cash flow as it grows, the free cash profile and changes therein provide a valuable look into a firm's financial health. A positive and improving profile indicates that a firm is not only generating cash as it grows, but that the firm's prospects are improving. A negative and declining profile indicates that a firm is consuming cash as it grows, but also that the firm's prospects are declining.

In this study we examine the core cash profile and free cash profile, together with their component drivers, for all non-financial companies with assets of $100 million or greater, utilizing reported twelve month trailing results as of December 31, 2016 or each firm's year-end closest to that date. We then compare these results across industries and examine some of the positive and negative free cash profile industries. It should be noted that an industry may have a positive median free cash profile, but there may be many examples of companies within those industries that have negative profiles. There are also many examples of industries having negative median free cash profiles but firms within the industries having significantly positive profiles.

Data and Methodology

The data is provided by S&P Capital IQ's Compustat database. As noted, each data amount is for a rolling twelve-month period ending December 31, 2016. The twenty analyzed industries are as follows:

GICS	Industry Group
1010	Energy
1510	Materials
2010	Capital Goods
2020	Commercial & Professional Services
2030	Transportation
2510	Automobiles & Components
2520	Consumer Durables & Apparel
2530	Consumer Services
2540	Media
2550	Retailing
3010	Food & Staples Retailing
3020	Food, Beverage, & Tobacco
3030	Household & Personal Products
3510	Health Care Equipment & Services
3520	Pharmaceuticals, Biotech, & Life Sciences
4510	Software & Services
4520	Technology Hardware & Equipment
4530	Semiconductors & Equipment
5010	Telecommunication Services
5510	Utilities

Summary of Results for all Non-financial Companies

Table A. Free Cash Profiles by Industry

GICS	Industry Name	Operating Cushion %	Operating WC %	Core Cash Profile	Capex %	Taxes Paid %	Free Cash Profile
4510	Software & Services	12.61%	-14.68%	27.29%	3.08%	1.62%	22.60%
2530	Consumer Services	18.12%	-11.62%	29.74%	6.13%	2.09%	21.52%
5010	Telecommunication Services	30.25%	-6.12%	36.37%	13.61%	1.54%	21.23%
2540	Media	21.70%	-0.77%	22.47%	2.84%	3.21%	16.42%
3030	Household & Personal Products	17.66%	4.06%	13.60%	3.21%	3.14%	7.25%
2030	Transportation	18.52%	0.66%	17.85%	9.74%	1.71%	6.40%
3020	Food, Beverage & Tobacco	17.39%	6.15%	11.24%	4.22%	2.43%	4.59%
2020	Commercial & Professional Services	13.40%	5.12%	8.28%	2.26%	2.12%	3.90%
1010	Energy	18.82%	0.38%	18.44%	15.47%	0.00%	2.97%
3510	Health Care Equipment & Services	13.39%	6.42%	6.97%	3.65%	1.24%	2.08%
4530	Semiconductors & Semiconductor Equipment	18.61%	12.61%	6.00%	3.00%	1.17%	1.83%
4520	Technology Hardware & Equipment	11.60%	7.96%	3.64%	2.50%	0.87%	0.27%
3010	Food & Staples Retailing	5.44%	2.56%	2.89%	2.18%	0.92%	-0.21%
5510	Utilities	31.62%	4.53%	27.09%	23.48%	4.05%	-0.44%
2550	Retailing	8.59%	5.63%	2.96%	2.73%	1.53%	-1.29%
2510	Automobiles & Components	10.98%	7.79%	3.19%	4.96%	1.45%	-3.23%
1510	Materials	16.54%	13.86%	2.69%	5.51%	1.74%	-4.57%
2010	Capital Goods	12.51%	12.84%	-0.32%	2.71%	1.74%	-4.77%
2520	Consumer Durables & Apparel	11.45%	18.16%	-6.71%	2.09%	2.19%	-10.99%
3520	Pharmaceuticals, Biotechnology & Life Sciences	-23.99%	-17.09%	-6.91%	5.57%	0.00%	-12.48%
	All Non-financials	14.16%	3.97%	10.19%	3.89%	1.33%	4.97%

Table A presents, by industry, four determinants of the free cash profile: operating cushion percent (operating profit before depreciation), operating working capital percent, capital expenditures percent and taxes paid percent. For an individual firm, operating cushion percent less operating working capital percent yields the core cash profile, or the contribution to core operating cash flow that can be expected from a measured increase in revenue. Subtracting capital expenditures percent and taxes paid percent results in the free cash profile.

Notice that the drivers or determinants of the free cash profile across industries can vary greatly. Some industries such as Telecommunication Services, Utilities, and Media have very high median operating cushions that drive up the free cash profile. Others, such as Pharmaceuticals, Software, and Consumer Services have negative median operating working capital, which also increases the free cash profile. Companies with a negative operating working capital percent are effectively financing not only their operating current asset needs with operating liabilities but some portion

of their fixed assets as well. Some industries, such as Energy and Utilities, have high median core cash profiles, but significant capital expenditure needs drain that cash flow and hurt the profile. Most industries have cash income tax needs of between 0% and 3.5% of revenue, with a few minor exceptions.

Across all 2,595 companies in the 20 industries, the median operating cushion percent is 14.16% while the median operating working capital percent is 3.97%. Compared to twelve months ago at December 2015, median operating cushion has increased from 13.72%, while median operating working capital has declined from 4.66%. Overall, the median core cash profile is 10.19% for 2016, an increase year-over-year from 9.06%. With a 10.19% core cash profile, a one-dollar increase in revenue would result in a positive contribution to core operating cash flow of 10.19 cents. The noted increase in the core cash profile can be primarily attributed to the observed decrease in operating working capital. An increase in operating cushion and decrease in operating working capital suggests that companies have continued to focus on working capital management in order to maximize benefits from higher operating cushions.

Capital expenditures and taxes paid both decreased slightly year-over-year. Median capital expenditures for the twelve months ending December 2016 were 3.89% of revenue, while income taxes were 1.33% of revenue. Compared to twelve months prior, median capital expenditures have decreased from 4.01%, and taxes have decreased from 1.50%. Overall, the median free cash profile for our sample of non-financial firms is 4.97%, a year-over-year improvement from 3.55%. A free cash profile of 4.97% indicates a positive contribution to free cash flow of 4.97 cents for every one dollar in revenue growth generated.

There are twelve industries (60%) that have positive median free cash profiles. The three industries with highest median free cash profiles are Software & Services, Consumer Services, and Telecommunication Services. Companies in these industries and others at the top of the list tend to have a negative operating working capital percent, boosting free cash profile.

Eight of the industries (40%) studied have a median negative free cash profile. With a negative median free cash profile, growth for firms in these industries tends to consume cash that would need to be financed with incremental debt or equity financing. The three industries with the lowest median free cash profile are Capital Goods, Consumer Durables & Apparel and Pharmaceuticals, Biotechnology & Life Sciences.

Table A ranks the industries from highest to lowest free cash profile. At the top of the list, with a median free cash profile of 22.60%, firms in the Software & Services industry enjoy an average of 22.60 cents of incremental free cash flow for every dollar of revenue growth. Pharmaceuticals,

Biotechnology & Life Sciences lags all industries at -12.48%, requiring an investment of 12.48 cents for every dollar growth in revenue.

The following section looks at two example industries: one with a positive free cash profile but a cautious outlook and one with a positive free cash profile with attractive growth signals. This analysis will provide insight into how to interpret a company's free cash profile and the drivers behind it.

Individual Industry Results

Industry #1010 – Energy

GICS	Industry Name	Operating Cushion %	Working Capital %	Core Cash Profile	Capex%	Taxes Paid %	Free Cash Profile
1010	Energy	18.82%	0.38%	18.44%	15.47%	0.00%	2.97%

Free cash profile: 2.97%

With a 18.44% core cash profile and a 2.97% free cash profile, Energy provides a good example of an industry that has recently faced challenges and seems to have refocused on stable growth. Despite having the second highest capital expenditures of any industry, the Energy industry enjoys a strong operating cushion of 18.82% and working capital of 0.38%, providing cash to fund capital expenditures and future growth. When compared to 2015, operating cushion increased by 2.53%, operating working capital decreased by 2.13%, capital expenditures decreased by 12.65%, and taxes were stable. Expanding margins, improving working capital, and a normalization of capital expenditures signal improved growth prospects. Year-over-year trends suggest a cautiously optimistic outlook for the Energy industry.

Industry #4510 – Software & Services

GICS	Industry Name	Operating Cushion %	Working Capital %	Core Cash Profile	CapEx %	Taxes Paid %	Free Cash Profile
4510	Software & Services	12.61%	-14.68%	27.29%	3.08%	1.62%	22.60%

Free cash profile: 22.60%

The Software & Services industry had the highest median free cash profile for 2016. The Software & Serices industry's median core cash profile was also robust at 27.29%. Compared to the twelve-month period ending December 2015, operating cushion decreased slightly from 12.70% to 12.61%, operating working capital moved from -16.58% to -14.68%, capital expenditures decreased from 3.25% to 3.08%, and taxes paid decreased from 1.66% to 1.62%. Overall, a stable operating cushion, along with favorable operating working capital and relatively low taxes, allow the Software & Services industry to maintain a strong free cash profile. Management may focus on tightening its working capital to preserve free the free cash profile position.

Conclusions

In this study we examined the free cash profile of 2,595 firms with assets in excess of $100 million, taken from 20 non-financial industries. Exactly 60% of the industries studied have a positive median free cash profile versus 40% with a negative profile. The median free cash profile of all of the firms studied is 4.97%.

We have seen a compression and reduction in free cash profile ranges across industries. The range of the highest and lowest industries contracted for the second year in a row in 2016, while the median free cash profile across companies from all non-financial industries increased by 141 bps.

Positive cash flow is the ultimate driver of firm value. The free cash profile, a measure of a firm's ability to generate free cash flow as it grows, helps distinguish between companies that will generate cash as they grow revenues from companies that will require cash for revenue growth.

A closer look at the components of the free cash profile for some selected industries shows the key factors influencing free cash generation. In particular, industries with positive free cash profiles tend to enjoy significantly higher operating cushions and are generally more adept at managing operating working capital. Firms with negative profiles have low operating cushions, high working

capital requirements, and/or high capital expenditures consume cash as they grow, and they likely require external financing to achieve growth.