

Stock Valuation Report on Caterpillar Inc. (NYSE: CAT)



FIN129: Student-Managed Investment Fund (SMIF)

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Date: 08 May 2015

Table of Contents

Executive Summary	1
I. Recommendation: Buy/Sell @? Or Hold.....	1
II. Investment Positives (at least 3).....	1
III. Investment Risks (at least 3)	1
Main Stock Report	2
IV. Overview of Company.....	2
V. Historical Performances.....	3
1. Historical Income Statements and Balance Sheets	3
2. Common-Size Income Statements and Balance Sheets	4
3. Historical NOPLAT, Invested Capital, ROIC, and Free Cash Flow	9
VI. Computation of Intrinsic Values	13
1. Valuation Models – Which DCF Model and Relative Valuation Model.....	13
2. Assumptions.....	15
3. Estimation of WACC.....	18
4. Free Cash Flow for 10 Years	21
5. Computation of Continuing Values – Discuss Various Approaches	22
6. Enterprise Values	24
7. Intrinsic Values	24
8. Comparison of Intrinsic Values and Market Value per Share.....	24
VII. Conclusion	25
VIII. References.....	27
IX. Appendices.....	29

Executive Summary

I. Recommendation: Buy/Sell @? Or Hold

We recommend selling Caterpillar at its current market price of \$91.53.

II. Investment Positives (at least 3)¹

Caterpillar's Strong Strategic Position

Caterpillar controls roughly 19% of the global construction market and is almost twice as big as its nearest competitor, Komatsu. It also has a strong brand and an extensive dealer network. All these are unique assets that are hard to replicate and hence yield major competitive advantages.

Caterpillar's Operating Performance

Caterpillar enjoys strong operating efficiency and is an expert in cost management. Also, CAT's high quality products allow for at least some extent of pricing power. Therefore, we think that in light of our industry outlook, CAT is well positioned for a recovery.

Caterpillar's Strong Dividend Yield

CAT's rapid share price decline and its stable dividend payments, which we expect to further increase, make it an interesting rebound candidate, especially on a total return basis.

III. Investment Risks (at least 3)¹

Structural Shifts in Industry Demand

Recent weakness in the mining industry could remain, not only due to lower commodity prices but also due to coal's declining cost competitiveness and stricter emission restrictions. Also, weakening construction activity could prove to be more structural than transitory.

Negative Overall Economic Developments

While CAT expects the world economy to show low single-digit gains in 2015, the likelihood of depressed commodity prices could further hurt its top-line. This negative effect could be magnified by the strengthening U.S. dollar versus major foreign currencies.

Restructuring Activities

Caterpillar expects additional restructuring costs to further improve its long-term cost structure.

¹ Author's Note: This section is mainly based on S&P Capital IQ (2015), Value Line (2015), and Morningstar (2015a).

Main Stock Report

IV. Overview of Company

“With 2014 sales and revenues of \$55.184 billion, Caterpillar is the world’s leading manufacturer of construction and mining equipment, diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives” (Caterpillar, 2015, p. 1). More specifically, CAT operates through the following product segments:

- The Resource Industries segment, which is primarily responsible for supporting customers using machinery in mine and quarry applications.
- The Construction Industries segment, which is primarily responsible for supporting customers using machinery in infrastructure and building construction applications.
- The Energy & Transportation segment (formerly Power Systems), which primarily serves the electric power, industrial, petroleum, marine application and rail-related end markets.

Besides these three product segments, CAT also runs a Financial Products segment, which primarily provides equipment financing to CAT dealers and customers. For 2013, these segments can be broken down by revenues and operating profits as follows: Construction Industries (33% of revenues and 17% of operating profit), Resource Industries (24%; 20%), Power Systems (36%; 43%), Other (2%; 8%), and Financial Products (5%; 12%). Overall, 61% of revenues were realized outside of North America in 2013 (S&P Capital IQ, 2015).

From a strategic point of view, Caterpillar controls about 19% of the global construction market and is considered to be the largest or second-largest manufacturer of nearly every product it makes. Additionally, it is almost twice as big as its nearest competitor Komatsu and its high-quality products not only provide its customers with a competitive total cost of ownership, but also allow for pricing power. Furthermore, in 2013 Interbrand ranked Caterpillar as the most valuable heavy equipment manufacturing brand in the world and CAT’s 3,500 dealers across 131 countries can also be regarded as a unique asset, which is hard to replicate. Regarding its scale, CAT combines organic and inorganic growth initiatives. For example, acquisitions are used to expand its product line, whereas new geographies are usually entered organically. Finally, in an

attempt to reduce production risk and create a less cyclical business, Caterpillar has created a more outsourced business model over the past decade. In short, all the above factors can be considered major competitive advantages, which result in a wide economic moat with regard to industry competition (Morningstar, 2015a).

Taking a brief look at CAT's industries, primary end markets for Caterpillar are mining, construction and energy. According to the Global Industry Classification Standard (GICS), Caterpillar operates in the Construction Machinery & Heavy Trucks Sub Industry of the Industrials Sector. Hence, S&P Capital IQ (2015) identifies global economic growth, construction activity, commodity prices, government spending and customers' access to capital as key drivers of demand. For example, the recent weakness in the mining industry, which is a major concern for Caterpillar's resource business, is mostly due to lower commodity prices in oil and gas, coal, iron ore and copper. Also, weakening construction activity, especially in emerging markets like China, poses a major risk for CAT, as it directly affects its construction business and indirectly also affects its resource business through less demand for commodities (S&P Capital IQ, 2015; Morningstar, 2015a).

Regarding major competitors, the world's five largest public construction companies based on revenue are Caterpillar, Komatsu, Hitachi, Volvo and Sany, with Caterpillar being almost twice as big as Komatsu. Other competitors include Zoomlion (China), Liebherr Group (Germany), Doosan Infracore (South Korea) and Terex (United States) (Fiore, 2013).²

V. Historical Performances

1. Historical Income Statements and Balance Sheets

In this section, annual income statements and balance sheets for Caterpillar will be analyzed for the last five years from 2010 to 2014. It should be noted that input data was derived from

² Author's note: A competitor analysis always depends on how an analyst defines a company's peer group. S&P Capital IQ (2015), for example, defines CAT's peer group as Joy Global, Komatsu, Manitowoc and Terex.

Morningstar (2015a), which sometimes groups or renames individual line items, and not from official annual report documents. After a detailed discussion of income statements and balance sheets in the form of common-size analysis, we will focus on NOPLAT (net operating profit less adjusted taxes), ROIC (return on invested capital), IC (invested capital), and FCF (free cash flow) by reorganizing the financial statements. Income statements and balance sheets are presented in the Appendix in Tables 1 and 3, respectively.

2. Common-Size Income Statements and Balance Sheets

a. Purpose of Common-Size Financial Statements

Common-size analysis, along with financial-ratio analysis, are two tools that investors frequently use to gauge the financial performance and condition of a company. Both tools are very important to understand where the company comes from, because the derived relationships are then used for pro-forma analysis, i.e., forecasting financial statements to understand how the company's performance is likely to evolve.³ In general, common-size financial statements are a restatement of financial information in a standardized form. By eliminating the effects of size, common-size financial statements allow for comparison of items over time (time-series analysis) and across firms (cross-sectional analysis). While total assets are also often used as a base value for balance sheets, we will use total revenues for both financial statements in this analysis (Kaplan, 2013a).

The next section will only examine the common-size income statements for Caterpillar in more detail. However, this should not imply that common-size balance sheets or cash flow statements are of less importance, as they can also be used to analyze a company's performance and strategies. For example, increasing goodwill along with increasing debt levels could be an indication of anorganic revenue growth, where an acquisition was financed with debt.

³ Author's note: Both financial-ratio analysis and pro-forma analysis are not part of this paper.

b. Discussion of Key Items

Margin ratios can be used to quickly analyze a firm's profitability and are easily observable from common-size income statements. Since they are usually stated as a percentage of revenue, the growth rate of this base value will be examined first. Overall, sales growth is probably the single most important number of this report, because as later sections will show, a stock's valuation essentially builds on the forecasted sales growth rate. Hence, a detailed analysis of sales growth and its drivers as well as a thorough understanding of the company, its competitors and the industry it operates in are critical.⁴ It should also be noted that this section is closely interconnected to Section VI. 2., which discusses assumptions for key income statement items going forward.

Sales Growth

When analyzing growth of a firm's top-line, an understanding of the underlying drivers like unit sales, pricing, currency and acquisitions or divestitures is critical. For example, revenue growth for a firm with lots of international activities may be impacted by changes in foreign exchange rates. Moreover, organic revenue growth could be heavily distorted by acquisitions, which is considered anorganic growth. Other more detailed drivers of revenue growth are changes in the so called sales mix and changes in net pricing. A "mix-shift" is observed when revenue changes can be attributed to a changing proportion of high-margin products versus low-margin products. Also, companies are said to have pricing power if they are able to raise prices without an increase in input cost (Fiore, 2013).

As can be seen from the bottom of Table 1, Caterpillar's sales growth was highly volatile over the past four years, with +41.2% and +9.5% in 2011 and 2012, respectively, before actually turning negative with -15.5% and -0.9% in 2013 and 2014, respectively. These numbers compare to a compound annual growth rate (CAGR) of 5.27% over the past nine years. At first glance, this reveals the highly cyclical nature of Caterpillar's business, since economic uncertainties have limited demand since 2012. A negative mix, created by continued weakness in Caterpillar's

⁴ Author's note: Industry and competitor analyses are beyond the scope of this paper, since they require extensive study of other companies and an industry's underlying driving forces.

higher-margined resource industries business, could be a further reason for the recent development. Also, the resource industries segment was greatly expanded through the acquisition of mining equipment manufacturer Bucyrus International in 2011, which explains the significant increase in revenues in this year (S&P Capital IQ, 2015). The evaluation of sales growth could be further expanded by looking into business and geographic segments in more detail. For example, construction equipment industry sales rose sharply in 2010 and 2011, due to strong demand in emerging markets, whereas economic uncertainties, especially in China, moderated the pace again in 2012 and 2013. However, while such a detailed analysis can yield great insights into sales growth, it is clearly beyond the scope of this paper.

Gross Profit Margin

Gross profit margin is the ratio of gross profit to revenue or sales. In general, gross profit margin is the most stable profitability metric, because of the high variable cost component in COGS. Besides sales growth this ratio is very important, as it yields insights into a firm's strategy in terms of both pricing power and manufacturing efficiency (Fiore, 2013). For example, a higher gross margin may result from technologically superior products, which allow a firm to charge higher prices for its products. This is often the case when products can be differentiated from others in terms of branding, quality or patent protection and is also evidenced by above-average research expenses (Kaplan, 2013a). On the other hand, it could also be an indication of reduced production costs through economies of scale, since gross and operating margins tend to increase with increasing production and sales volumes. However, an evaluation of the presence of economies of scale in an industry requires a more detailed peer group analysis (Kaplan, 2014). As a side note, these two strategies are referred to as differentiation strategy and cost leadership strategy, respectively (Hitt, Ireland, and Hoskisson, 2014).

Other factors to consider when analyzing gross profit margins are changes in input costs and overall manufacturing productivity. For example, many manufacturing companies are able to pass increases in raw material prices through to their customers with a lag of one or two quarters, which often explains the short term fluctuations in gross margins. However, unanticipated price increases, especially for commodities like steel and other metals used in production, can still significantly impact profitability, if not hedged properly. Another likely explanation for short

term fluctuations in gross profit margins is the over-/ under absorption of manufacturing overhead costs if production volumes differ from management's expectations. On the contrary, manufacturing productivity improvements through supply chain optimizations (e.g. lean management, six sigma) or cost-reduction programs tend to be more long term and only gradually affect gross margins (Fiore, 2013).

As Table 1 shows, CAT's gross margin slightly decreased from 28.7% to 27.9% over the past five years, while also showing the mentioned transitory fluctuations in input costs. Additionally, while one would generally expect gross margins to expand with sales growth, the metrics actually moved in different directions in 2011 and 2014. One reason for the overall increase in COGS and the associated decrease in gross profits could be the negative fixed cost leverage due to lower sales (S&P Capital IQ, 2015). The "mix-shift" away from CAT's higher-margined resource industries business may be another reason. As with revenues, a more detailed analysis could help to further explain Caterpillar's recent gross margin development. Topics to consider include but are not limited to price realization, manufacturing costs or the effect of currencies on both input costs and revenues (Caterpillar, 2015).

Operating Profit Margin

Operating profit margin, which is also called EBIT margin (earnings before interest and taxes), is a more comprehensive measure of profitability, since it measures how much a company earns from its operations before considering the effects of financing and taxes. As mentioned earlier, with increasing revenues companies strive for margin expansion, mainly by leveraging the fixed cost components of SG&A, but also COGS. Additionally, operating margins yield insight into a firm's operating leverage, which is especially important for companies in cyclical industries. Firms with a high proportion of fixed costs are considered to have high operating leverage and tend to see more rapid EBIT margin expansion during up cycles, but also more rapid contraction in down cycles of the economy. Hence, it could also be beneficial for analysts to track normalized gross and operating margins for the company in question, its peers, or the industry as a whole (Fiore, 2013).

As shown in Table 1, Caterpillar's EBIT margin increased slightly from 9.3% to 9.7% over the

past five years, while the gross margin actually decreased from 28.7% to 27.9%. This clearly shows managements' efforts to manage costs more efficiently, especially with regard to the currently negative operating leverage caused by lower revenues (S&P Capital IQ, 2015). Also, a more differentiated evaluation of OPEX shows that while SG&A slightly increased, R&D and other operating expenses actually decreased over the past five years. Also, OPEX are most likely negatively affected by restructuring costs, due to CAT's efforts in improving efficiency and optimizing its cost structure (Caterpillar, 2015).

Net Profit Margin

Net profit margin measures what a company earns after considering all expenses but before dividends, i.e., the percentage of each dollar of revenues that remains for shareholders. Like the other margins, this ratio should be evaluated in a time-series and cross-sectional analysis (Kaplan, 2013a). As can be seen from Table 1, non-operating items for Caterpillar are interest income/expense, profit/loss from long-term equity investments, provision for income taxes, and other expenses. One of the more important non-operating items here is net interest expense, which is interest expense minus interest income from investments. A firm's interest expense mainly depends on the amount of debt on its balance sheet but also on its capital structure. Since interest payments are a fixed expense, a higher proportion of debt in a firm's capital structure results in additional risk, called financial risk, as opposed to the aforementioned operating risk (Kaplan, 2013b). Furthermore, an analyst should pay close attention to net income from continuing operations, because "below-the-line" items like discontinued operations or other extraordinary items will not affect a firm's future results.

As shown in Table 1, Caterpillar's net margin slightly increased from 6.3% in 2010 to 6.7% in 2014, which compares to an average annual net margin of 6.97% over the past nine years (S&P Capital IQ, 2015). Overall, the ratio followed the same pattern as the EBIT margin, whereas most fluctuations in non-operating items were caused by provisions for income taxes. In conclusion, it is impressive that Caterpillar managed to increase its net margin on weak revenues combined with decreasing gross margins.

3. Historical NOPLAT, Invested Capital, ROIC, and Free Cash Flow

a. Discussion of NOPLAT

Koller, Goedhart and Wessels (2010, p. 40) define NOPLAT as follows: “Net operating profit less adjusted taxes (NOPLAT) represents the profits generated from the company’s core operations after subtracting the income taxes related to the core operations”, which implies that any profits/ losses from non-operating activities and financing expenses are excluded. Hence, NOPLAT can be considered a profit available to all investors, as opposed to net income, which is only available to shareholders. Also, since interest is considered a financing item, NOPAT is independent of a firm’s capital structure (Koller, Goedhart and Wessels, 2014).

The calculation of NOPLAT, which is the first step to later calculate ROIC and FCF, requires reorganizing a company’s income statements. Since this valuation project adopts the Excel spreadsheet approach suggested by Chen and Jassim (2014), which in turn is based on Koller, Goedhart and Wessels’ (2010) business valuation framework and Weston’s (2002) clinical study of the Exxon-Mobil merger, formulas and explanation will be derived from these sources subsequently. It should be noted, however, that various definitions for measures like NOPLAT, ROIC, IC and FCF appear in academic literature. For example, Kaplan (2014b) uses a similar definition of reconciling NOPLAT from net income, whereas it defines NOPLAT derived from operating income as EBIT multiplied by $(1 - \text{tax rate})$, instead of using EBITA.

As shown at the top of Table 5, NOPLAT can be calculated from operating earnings and reconciled from net income using the following formulas (Chen and Jassim, 2014)⁵:

$$\text{NOPLAT} = \text{EBITA} - \text{operating cash taxes}$$

$$\begin{aligned} \text{Operating cash taxes} = & \text{income tax provision} + \text{tax shield on interest expense} - \text{tax on interest} \\ & \text{income} \pm \text{changes in deferred taxes} \end{aligned}$$

⁵ Author’s note: In the attached Excel spreadsheet, the formulas have been adjusted to also account for non-operating items other than after-tax interest and losses/ gains from discontinued operations.

$$\text{NOPLAT} = \text{Net income} + \text{increase (–decrease) in net deferred taxes} + \text{after-tax interest expense} \\ + \text{loss (–gain) from discontinued operations} - \text{after-tax interest received}$$

The adjustment for operating cash taxes in the upper NOPLAT equation is necessary, because reported taxes are calculated after interest and other non-operating items. Additionally, reported taxes have to be adjusted for net deferred taxes to receive actual cash taxes. To calculate EBITA, amortization expense would have to be separated from depreciation and amortization on the statement of cash flows, to be then added back to EBIT. However, this adjustment was neglected here to simplify the analysis. Since the lower NOPLAT equation starts with net income, it has to be adjusted for interest and any other non-operating items to remain consistent with the above definition.

Looking at the numbers, CAT was able to generate positive NOPLAT during the last five years, with the years 2013 and 2014 heavily impacted by a temporary drop in deferred tax assets. In practice, such anomalies would require more scrutiny by the analyst with an extensive study of annual report documents or even an enquiry to the company's investor relations department. While this is beyond the scope of this paper, it clearly shows us the importance of taxes for stock valuation purposes.

b. Discussion of Invested Capital and ROIC

Koller, Goedhart and Wessels (2010, p. 40) define invested capital as follows: “Invested capital represents the cumulative amount the business has invested in its core operations—primarily property, plant, and equipment and working capital”, which requires reclassifying assets and liabilities as either operating or non-operating. Hence, while the calculation of NOPLAT required reorganizing a company's income statements, the calculation of invested capital requires reorganizing the balance sheets. In doing so, it is critical to define invested capital consistent with the above definition of NOPLAT. Therefore, when excluding non-operating assets from invested capital, the associated non-operating income also has to be excluded from NOPLAT.

As can be seen from Table 6, invested capital can be calculated as follows (Chen and Jassim, 2014)⁶:

$$\text{Invested capital} = \text{operating current assets} - \text{operating current liabilities} + \text{net property, plant and equipment} + \text{intangible assets} + \text{other non-current assets}$$

For Caterpillar, only equity and other investments and short term debt were classified as non-operating and excluded from invested capital calculations. From an investing perspective, adding back non-operating assets, i.e., equity and other investments, results in Caterpillar's total funds invested. From a financing perspective, this figure should be equal to the sum of interest-bearing debt and its equivalents plus equity and its equivalents, including net deferred taxes.

Looking at the numbers, Caterpillar's invested capital increased steadily from \$46.6bn in 2010 to \$68.4bn in 2012, with a substantial increase in goodwill and intangibles in 2011. From this peak it slightly decreased to \$64.9bn in 2014, which was mainly owed to a reduction in operating working capital in 2013 and lower intangible assets in 2014.

After calculating NOPLAT and invested capital, ROIC can finally be derived as follows (Chen and Jassim, 2014):

$$ROIC_t = \frac{NOPLAT_t}{Invested\ Capital_{t-1}}$$

Koller, Goedhart and Wessels (2010, p. 40) define ROIC as follows: "Return on invested capital (ROIC) is the return the company earns on each dollar invested in the business". Furthermore it is considered the most important driver of value besides revenue growth. In fact, analysts can measure the value created by management by simply comparing a company's ROIC with its WACC, whereas value is created when ROIC exceeds WACC, et vice versa (Chen and Jassim, 2014). Additionally, ROIC is preferred to ROE (return on equity), because it provides a return to

⁶ Author's note: In the attached Excel spreadsheet the formula has been adjusted to also account for goodwill.

both debt and equity holders and hence allows for comparisons across firms with different capital structures. Finally, firms with higher ROIC relative to competitors or the industry as a whole are said to enjoy some competitive advantage (Kaplan, 2014a).

As shown in Table 7, Caterpillar's ROIC decreased significantly from 10.8% in 2011 to 4.4% in 2014, due to a decreasing NOPLAT and increasing invested capital over the time period.

c. Discussion of FCF

The last metric to be discussed in this section is free cash flow, which Koller, Goedhart and Wessels (2010) define as “the cash flow generated by the core operations of the business after deducting investments in new capital”. As with the calculation of NOPLAT and invested capital, it excludes cash flows related to financing and non-operating items. Hence, it can be considered an after-tax cash flow to debt and equity holder.

Table 8 shows the calculation methodology adopted from Chen and Jassim (2014)⁷:

- (1) NOPLAT (Net Operating Profits Less Adjusted Taxes)
- (2) Depreciation
- (3) Gross Cash Flow = (1) + (2)
- (4) Investment in Operating Working Capital
- (5) Capital Expenditures
- (6) Investment in Intangible Assets
- (7) Increase (decrease) in Other Operating Assets
- (8) Decrease (Increase) in Accumulated Comprehensive Income
- (9) Gross Investment = (4) + (5) + (6) + (7) + (8)
- (11) Free Cash Flow = (3) – (10)

Looking at the numbers, CAT was able to generate positive gross cash flow over the last four

⁷ Author's note: In the attached Excel spreadsheet the formula has been adjusted to also account for goodwill.

years. However, free cash flow was negative in 2011 and 2012, with -\$9.5bn and -\$3.5bn, respectively, which was mainly caused by a significant increase in intangibles and goodwill, as well as a significant increase in operating working capital.

Lastly, it should be noted that the above calculation method is slightly different from the method used in the valuation model, which will be introduced in later sections. The reason for this lies in the different Excel spreadsheets adopted for this paper. While the above method is based on Koller, Goedhart and Wessels (2010), the one used in the valuation model is based on Weston (2002).

VI. Computation of Intrinsic Values

1. Valuation Models – Which DCF Model and Relative Valuation Model

Among the many ways to value a company, the so called enterprise discounted cash flow (EDCF) model and the price-to-earning (P/E) multiple, as an example of relative valuation models, will be used to calculate Caterpillar's intrinsic value in the following sections.

Enterprise Discounted Cash Flow Model

In theory, any discounted cash flow (DCF) model projects future cash flows, which are then discounted at an appropriate risk-adjusted cost of capital. As defined by Koller, Goedhart and Wessels (2010, p. 104), “The enterprise DCF model discounts free cash flow, meaning the cash flow available to all investors—equity holders, debt holders, and any other non-equity investors—at the weighted average cost of capital, meaning the blended cost for all investor capital.” After deriving the value of operations, adding back non-operating assets results in a company's enterprise value. The intrinsic value per share is then calculated by subtracting debt and other non-equity claims and dividing the resulting equity value by the number of shares outstanding (Koller, Goedhart and Wessels, 2010).

Specifically, the value of operations can be calculated as follows (Chen and Jassim, 2014):

$$VO = \sum_{t=1}^{10} \frac{FCF_t}{(1 + WACC)^t} + \frac{CV_{10}}{(1 + WACC)^{10}}$$

with VO = value of operations and CV_{10} = continuing value in year 10.

As can be seen from the two fractions in the above formula, the EDCF model is essentially a two-stage model, with an explicit forecast period and a perpetual period, which accounts for all cash flows received after the explicit forecast period. The various approaches to calculate Caterpillar's continuing value will be discussed in more detail in Section VI. 5.

Price-to-Earnings (P/E) Multiple

The second approach to calculate Caterpillar's intrinsic value is also the simpler of the two, which is one reason why price multiples are among the most widely used tools for equity valuation. In theory, relative or comparative valuation models use ratios to assess the valuation of one firm against another or the industry as a whole, based on fundamental measure such as sales, earnings, book value or cash flow. The underlying economic argument for this method is the law of one price, i.e., the notion that the value of one dollar in earnings, for example, should be the same for similar stocks or within an industry (Kaplan, 2014a).

Basically, the P/E ratio can be used in two ways. On one hand, an analyst could compare the P/E ratios of two firms in the same industry to evaluate whether the market is valuing one firm "more aggressively". However, as the name of the model implies this is only a relative valuation based on current market values of other stocks, which does not result in an intrinsic value estimate. On the other hand, an analyst could estimate a stock's intrinsic value by multiplying forecasted earnings per share (EPS) by an estimated forward P/E multiple (Bodie, Kane and Marcus, 2014). Since we aim to derive Caterpillar's intrinsic value, the latter method will be used in this report.

2. Assumptions

This section discusses the operating assumptions necessary for the calculation of Caterpillar's free cash flow going forward. In particular, it will take a closer look at the sales growth rate, EBIT/ sales and NOPLAT/ sales along with the marginal tax rate, CAPEX/ sales, depreciation/ sales, operating working capital/ sales and other assets/ sales. Of all these assumptions, sales growth and EBIT/ sales require most attention, since they form the basis for NOPLAT, which is the starting point of our free cash flow calculation. For this reason, they will be discussed more detailed than the others below.

It should also be noted, that in practice, such forecasts are based on detailed analyses of a company, its competitors, and the industry as a whole. However, since such analyses are beyond the scope of this paper, the following assumptions are mainly based on information derived from S&P Capital IQ (2015), Value Line (2015) and Morningstar (2015a) as well as historical trends.

a. Sales Growth Rates (Panel B in Table 9)

In theory, there are three major approaches to forecast future revenues: a bottom-up approach, which builds on company-specific data like historical revenue growth, a top-down approach, which derives revenue projections from assumptions about the overall economy like nominal GDP growth, and a hybrid approach, which incorporates both elements. Of all three, the hybrid approach is most often found in practice. For example, an analyst could estimate industry sales depending on overall GDP growth and then forecast a firm's revenue based on its market share. For more detailed projections, an analyst could further differentiate between the firm's business and geographic segments (Kaplan, 2014a).

As discussed in Sections IV. and V., CAT's sales are highly volatile and affected by many underlying drivers of demand. To account for the current weak outlook of Caterpillar's industries and in light of limited visibility, due to recent economic uncertainties, we forecast a decrease in sales of -5% for 2015. Also, we expect 2016 to be a transition year, where sales remain flat. Thereafter, however, we expect sales growth to gradually move back to its long-term CAGR of

roughly +5%, on the back of an expected upturn in the global economy (S&P Capital IQ, 2015).

b. Operating Relationships (Panel A in Table 9)

EBIT/ Sales, the Marginal Tax Rate and NOPLAT/ Sales

NOPLAT/ Sales is tied to EBIT/ Sales via Caterpillar's marginal tax rate, which we forecast to remain constant at 28% going forward (Value Line, 2015). Hence, only the ratio of EBIT/ Sales will be examined in more detail hereafter.

As can be seen from Table 1, EBIT depends on cost of goods (COGS) sold and operating expenses (OPEX), i.e., sales, general and administrative (SG&A), research and development (R&D) and other operating expenses. Hence, forecasting future EBIT requires assumptions about all these items going forward.

In general, SG&A is more stable than COGS due to the higher fixed cost component. Also, R&D expenditures are usually relatively stable as a percentage of revenue. However, they may be uncorrelated to revenues at other times, since they are eventually driven by managements' decisions. Depending on the desired accuracy of analysis, an analyst could simply use historical trends of these items, which likely indicate changing business or market conditions, or use a more elaborate approach by also analyzing input costs and business segments, for example. An examination of competitors' cost structures could further aid the analysis. However, such analyses should also account for differences in business models (Kaplan, 2014a).

As discussed in Sections IV. and V., CAT has a strong track record of managing costs efficiently, which is evidenced by relatively stable profitability margins on highly variable sales.

Additionally, profitability margins were unfavorably affected by negative fixed cost leverage over the past two years. However, based on improving industry conditions and an upturn in the global economy, we expect this trend to reverse going forward. Nevertheless, we remain cautious and forecast the EBIT margin to remain flat at 9.5% in the medium term to factor in the possibility of overall cost increases. In the long term we even decrease our estimate by 0.2%-

points to factor in structural changes in Caterpillar's industries, especially the ongoing weakness in the mining industry and the expected headwinds for the global construction industry, due to less demand from emerging markets like China (Morningstar, 2015a).

Depreciation/ Sales, Working Capital / Sales and Other Assets/ Sales

Unlike with sales growth rates and EBIT margins above, our forecasts of depreciation/ sales, working capital / sales and other assets/ sales are mainly derived based on historical trends, since we lack the insights needed for more precise estimates. All three ratios increased on lower revenues since 2012, which were mainly caused by economic uncertainties and industry specific issues and should therefore be transitory. Hence, we looked at historical five year averages as a basis for our forecasts and adjusted the ratios accordingly: We expect depreciation/ sales to remain flat at 5.73% in the medium term, decreasing to 5.5% afterwards. Working capital/ sales is expected to stay at 37%, gradually moving towards its average of about 35% in the long term. Finally, since other assets/ sales increased significantly over the last two years, we forecasted a decrease by roughly 2%-points for 2015, followed by a gradually decreasing pattern going forward.

CAPEX/ Sales

The last operating ratio needed to finally forecast free cash flow is CAPEX/ sales. For CAPEX we forecast a different growth pattern than for the above operating ratios, since historical values were actually higher than the 2014 ratio of 5.73%. This is not a surprise, since it is only rational for a company to decrease investments in growth during weak business conditions. As we expect Caterpillar's business environment to further deteriorate before it gradually improves in the medium term, we also decreased our 2015 forecast of CAPEX/ sales to 4.50%. Thereafter, we gradually increase our expectations to 5.5% in 2022, which is in line with our expectation of an improving business environment for Caterpillar. However, we decrease our long term estimate again afterwards to account for a maturing industry, which is generally associated with lower growth and CAPEX.

3. Estimation of WACC

a. Discussion of Cost of Debt Estimation

There are several ways of estimating cost of debt. From an accounting perspective, cost of debt could simply be estimated by dividing this year's interest expense by the previous year's interest-bearing debts. However, if a company has bonds outstanding, the two preferable methods are as follows (Chen and Jassim, 2014): If the bonds are either non-investment grade or not actively traded, i.e., there is no observable price or yield information, cost of debt can be approximated by adding the default spread of the respective rating-/ maturity category to the yield of a government bond. If the bonds are both publicly traded and investment grade, one can simply take the weighted average yield to maturity (YTM) as a proxy for cost of debt.

Since Caterpillar is rated A and A2 by Standard & Poor's and Moody's, respectively, and also has actively traded bonds outstanding, the weighted average method can be applied to estimate cost of debt. Therefore, we first gathered all necessary data, like maturity, amount outstanding, coupon type, and yield to maturity from Morningstar (2015b). This data set was then adjusted for floating-rate bonds and bonds without a stated amount, which were both excluded from the calculation. Also, the YTM on bonds without observable price or yield information was approximated by the YTM of other CAT bonds with similar maturity. As Table 11 shows, cost of debt was then calculated by weighting the individual YTMs with the relative amounts outstanding to result in a value of 2.86%. To justify this estimate, we further compared this approximation to a market average YTM. Since the average YTMs on A rated U.S. corporate bonds for five and ten years are currently at 2.22% and 3.18%, respectively, we can be confident in our estimate (Bonds Online, 2015).

While the above calculated cost of debt is before taxes, the input needed to calculate the weighted average cost of capital (WACC) is after-tax cost of debt. As Panel C in Table 9 shows, with a marginal tax rate of 28%, the after-tax cost of debt becomes 2.06%.

b. Discussion of Cost of Equity Estimation

While there are various models available to estimate cost of equity, the capital asset pricing model (CAPM) was used to simplify the analysis:

$$k_e = r_f + \beta \times [E(r_m) - r_f]$$

with r_f = risk-free rate, β = systematic risk of the stock, and $E(r_m) - r_f$ = expected market risk premium.

As the above formula shows, we need three estimates to derive the cost of equity for Caterpillar:

Risk-Free Rate

The risk-free rate is usually approximated by a long-term government bond yield (Bodie, Kane and Marcus, 2014). Since the 10-year treasury yield is widely seen as the benchmark rate for the U.S. market, it will be used as a starting point for our cost of equity estimate. As of 31 December 2014, the 10-year constant maturity treasury yield was 2.17% p.a. (Federal Reserve, 2015).

However, since we use the cost of equity to discount future cash flows, we also have to take into consideration future changes in the risk-free rate. As can be read from almost every financial newspaper lately, it is not a matter of if but only a matter of when the Federal Open Market Committee (FOMC) will increase the federal funds rate. Hence, for this analysis we forecast at least two interest rate hikes of roughly 0.25% for the years to come, which results in a risk-free rate estimate of 2.75%. To put this into context, over the last decade, the highest and lowest values for the above benchmark were 5.11% and 1.53%, respectively (Federal Reserve, 2015). This historical low was marked in 2012, with rates gradually increasing since then, which further justifies our assumption of increasing interest rates going forward.

Market Risk Premium

The equity market risk premium can be derived from either historical data or forward-looking estimates. Based on historical averages and forward-looking estimates, Koller, Goedhart and Wessels (2010) recommend a market risk premium of 4.5% to 5.5%. Additionally, Damodaran

(2015)⁸ currently suggests an equity risk premium of 5.8%. A further approach, which will be adopted for this analysis, is to derive forward-looking estimates from an annual survey of practitioners and professors about their view on the market risk premium, which results in a median estimate of 5.0% for the U.S. market in 2014 (Fernandez, Linares and Fernandez Acin, 2014). Hence, we will use a market risk premium of 5.0% for the calculation of cost of capital.

Systematic Risk (Beta)

The last input value needed to calculate CAT's cost of capital is Caterpillar's beta.⁹ Again, there are various approaches to derive beta, for example, by retrieving it from financial data providers like Yahoo, Morningstar, or S&P Capital IQ. However, for this analysis we calculate our own beta by first running the market model with five years of returns and then smoothing the resulting raw beta to receive an adjusted beta of 1.43.

After estimating all input parameters for the CAPM, we can finally calculate Caterpillar's cost of equity to be 10.61%, as can be seen from Panel C in Table 9.

c. Market-Value Weights of Debt and Equity

After estimating after-tax cost of debt and cost of equity, the next step is to determine Caterpillar's capital structure on a market value, not a book value basis. To understand why market values are used instead of book values, Koller, Goedhart and Wessels (2010, p. 266) provide an intuitive explanation by stating that "rather than reinvest in the company, management could return capital to investors, who could reinvest elsewhere. To return capital without changing the capital structure, management can repay debt and repurchase shares, but must do so at their market value."

As Table 7 shows, the market value of equity can simply be calculated by multiplying Caterpillar's stock price with the actual number of shares outstanding. The market value of

⁸ Author's note: Professor Aswath Damodaran teaches corporate finance and valuation at the Stern School of Business at New York University and his website is widely followed by the investing community.

⁹ Author's note: A detailed analysis of Caterpillar's beta was already performed in another paper, which this analysis builds on. Hence, at this point we only refer to the results obtained in this beta study.

interest-bearing debt is approximated by its book value to simplify the analysis, based on the assumption that CAT's debt is currently selling near par value (Bodie, Kane and Marcus, 2014). Book value of interest-bearing debt was already derived in Section V. 3. Adding both market value of equity and market value of debt results in Caterpillar's enterprise value, which can then be used to express both debt and equity as percentage values of 48.1% and 51.9%, respectively.

d. Computation of WACC

As explained earlier, free cash flows are available to all investors. Hence, the WACC should be used as an appropriate discount rate. The WACC formula applied in Panel C of Table 9 is as follows (Koller, Goedhart and Wessels, 2010):

$$WACC = \frac{D}{D + E} \times k_d \times (1 - T) + \frac{E}{D + E} \times k_e$$

where D = market value of interest-bearing debt, E = market value of equity, (D + E) = EV = enterprise value and T = marginal tax rate.

Plugging all the numbers estimated in this section into the above equation results in a WACC of 6.08% for Caterpillar.

4. Free Cash Flow for 10 Years

Based on all the assumption made in the previous sections, we can finally derive the free cash flow forecasts for the next ten years, as shown in Panel B of Table 9. While free cash flow as a percentage of sales was 7.9% in 2014, based on our operating assumptions the ratio fluctuates between 3.65% and 6.51% from 2017 onwards. At first glance, the forecasted free cash flows for 2015 and 2016 seem somewhat out of line. However, this can be explained by our negative and flat forecasts for sales growth, which to be consistent with our free cash flow model, cause changes in working capital and other assets to be significantly positive in 2015 and zero in 2016.

In practice, a comparison of forecasted free cash flows to historical free cash flows could also yield valuable insights. However, as mentioned before, we used slightly different calculation methods for historical free cash flows and forecasted free cash flows. Hence, such a comparison would be distorted and not meaningful for our analysis. Also, when analyzing historical free cash flows it is important to consider extraordinary events. For example, CAT's 2011 free cash flow was extremely negative with -\$9.5bn, which was due to the acquisition of mining equipment manufacturer Bucyrus International.

Finally, after discounting all ten forecasted free cash flows at the WACC derived earlier, we can sum them up to receive the PV of cash flows for the explicit forecast period of \$27.95bn.

5. Computation of Continuing Values – Discuss Various Approaches

This section continues the discussion of the EDCF model by taking a closer look at the calculation of continuing values. As mentioned already, a company's continuing value should account for all cash flows received after the explicit forecast period.

In general, estimates of intrinsic value depend critically on continuing value, which unfortunately is highly sensitive to even small changes in input variables. For example, future growth rates are hard to forecast, especially with regard to long-term growth after the explicit forecast period (Bodie, Kane and Marcus, 2014).

To showcase the importance of continuing value in our EDCF model, two different approaches will be used. The more complicated approach is based on Koller, Goedhart and Wessels (2010):

$$CV_{10} = \frac{NOPLAT_{10} \times (1 + g) \times (1 - g/RONIC)}{WACC - g}$$

with g = the long-run growth in NOPLAT and $RONIC$ = the long-run forecast for return on new invested capital.

If a company is expected to exploit competitive advantages going forward, RONIC should be estimated closer to ROIC, whereas otherwise it should be closer to WACC (Chen and Jassim, 2014).

As Panel C in Table 9 shows, the PV of the continuing value amounts to \$77.3bn, based on 5% long-run growth in NOPLAT and 7% long-run forecast of RONIC. A precise forecast of RONIC is hardly possible with the valuation approach adopted for this paper, since forecasts of ROIC are not part of the Excel spreadsheet and hence we can only rely on historical ROIC. On top of this, ROIC in 2013 and 2014 was heavily impacted by a significant drop in EBIT as well as an anomaly in deferred tax assets, which distorts NOPLAT considerably. Due to these events, we don't see the 2014 ROIC as representative and instead take the four year average of 8.44% from 2011 to 2014 as a benchmark value. Since our estimated WACC was 6.08%, we can estimate RONIC somewhere in the range between 6.08% and 8.44%. To remain consistent with our operating assumptions, i.e., our expectation of structural shifts in CAT's industries along with limited visibility due to current economic uncertainties, we chose a more conservative RONIC of 7%.

The simpler approach is to use a relative valuation model, as described in Section VI. 1. However, instead of using a P/E multiple, the enterprise value (EV)/ EBITDA multiple will be used, since EBITDA is a flow to both debt and equity holders and is usually positive even if EPS is negative. Also, it is preferable to the P/E multiple when valuing firms with different degrees of financial leverage (Kaplan, 2014a). As shown in Table 9, the following formula will be used to calculate continuing value (Chen and Jassim, 2014):

$$CV_{10} = EBITDA_{10} \times \frac{EV}{EBITDA}$$

whereas EV/EBITDA is the normalized multiple.

Since Caterpillar's historical EV/ EBITDA multiple averaged roughly 12x over the last five years, we chose this value as our normalized EV/ EBITDA forecast. Together with our 2024 EBITDA estimate of \$11.1bn, which results from our operating assumptions, we obtain a PV of

continuing value of \$74.05bn, which is slightly below the \$77.3bn calculated with the other approach.

6. Enterprise Values

As explained in Section VI. 1., the value of operations is derived by simply summing up the PV from the explicit forecast period and the PV of continuing value. Enterprise value then results from adding back non-operating assets, i.e., Caterpillar's equity and other investments. After adjusting for non-operating assets, our EDCF model results in enterprise values of \$105.5bn using the formula approach for CV_{10} and \$102.3bn for using the EV/ EBITDA multiple approach for CV_{10} .

7. Intrinsic Values

In the final step of our EDCF model, debt and other non-equity claims have to be subtracted from enterprise value to receive equity value. Hence, by subtracting interest-bearing debt of \$51.5bn from the above calculated enterprise values, we receive Caterpillar's equity values of \$54.03bn and \$50.8bn, respectively. These values can then be divided by the actual number of shares outstanding to receive the intrinsic value of equity per share. Hence, dividing both equity values by 606.2mn shares outstanding at the end of 2014 results in intrinsic share price estimates of \$89.14 and \$83.76 for the formula approach and the EV/ EBITDA multiple approach for CV_{10} , respectively.

8. Comparison of Intrinsic Values and Market Value per Share

In general, if the intrinsic share price is higher than the current market price per share, the stock is considered undervalued, et vice versa. Hence, based on Caterpillar's share price of \$91.53 on 31

December 2014, we can conclude that the stock is overvalued in both cases. More precisely, a comparison of the intrinsic share price of \$89.14 from the formula approach to the market price of \$91.53 shows that CAT is overvalued by roughly 3%. Similarly, comparing the intrinsic share price of \$83.76 from the EV/ EBITDA multiple approach to the market price of \$91.53 reveals that CAT is overvalued by roughly 8%.

To further complement our EDCF model and to verify the above results, we can perform a simple relative valuation based on the P/ E multiple. As shown in Table 10, based on historical trends we first estimate quarterly dividends for the years 2015 and 2016, which we add up to receive annual values of \$2.60 and \$3, respectively. We then estimate a normalized long term P/E multiple by analyzing CAT's P/E multiples over the last ten years. Using the P/ E history provided by Morningstar (2015c), we conclude that a P/ E multiple of 15x would be a plausible estimate. Next, in order to calculate the price at the end of 2016, we need to forecast 2016 EPS. Averaging reported EPS over the past five years results in EPS of \$6.5, which seems reasonable in light of our assessment of Caterpillar's business environment going forward.

After deriving the input parameters, the normalized P/ E multiple of 15 can then be multiplied by 2016 EPS of \$6.50 to derive the estimated share price of \$97.50 at the end of 2016. Discounting this value along with the forecasted 2015 and 2016 dividends at cost of equity of 9.82% finally results in an intrinsic share price of \$85.70. Similar to the intrinsic values derived from the EDCF model, this simple relative valuation also suggests that Caterpillar is overvalued by roughly 6% at a market price of \$91.53.

VII. Conclusion

Since all three intrinsic value estimates for CAT are somewhat lower than its actual stock price, we could conclude that the stock is currently overvalued. However, it could also indicate that our assumptions for the valuation models are unrealistic. Theoretically all three methods should result in the same estimate of intrinsic value. However, in practice analysts must make forecasts and simplifying assumptions, which can cause intrinsic values estimates to differ.

As already mentioned in the discussion of continuing values, intrinsic value estimates depend critically on continuing value, which in turn is highly sensitive to even small changes in input parameters like WACC or growth. On one hand, this explains the importance of performing sensitivity analyses to identify the parameters that need most consideration by the analyst. On the other hand, it shows that DCF valuation estimates will almost always be imprecise (Bodie, Kane and Marcus, 2014). Additionally, the simple fact that different models use different input parameters sometimes explains differences in intrinsic values. For example, the two methods used to calculate continuing value in our EDCF model rely on different inputs and in practice it is not always easy to maintain consistent assumptions across models.

To conclude, our analysis shows that while the models used in this paper are relatively easy to apply, the hard part is to establish proper inputs, because eventually any intrinsic value estimate is no better than the assumptions used to derive it. As Bodie, Kane and Marcus (2014, p. 621) state: “This should not be surprising. In even a moderately efficient market, finding profit opportunities will be more involved than analyzing Value Line data for a few hours. These models are extremely useful to analysts, however, because they provide ballpark estimates of intrinsic value. More than that, they force rigorous thought about underlying assumptions and highlight the variables with the greatest impact on value and the greatest payoff to further analysis”.

Finally, from an equity analyst’s perspective on 31 December 2014, we recommend selling Caterpillar at its current market price of \$91.53. We conclude that CAT is currently overvalued, since all three valuation models suggest a somewhat lower intrinsic share price. However, in light of the arguments just presented it should also be noted that this is only our “best guess”, based on the valuation models we used.

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IX. Appendices

Table 1: Caterpillar's Income Statements and Common-size Analysis from 2010 to 2014

Caterpillar Inc (CAT) Income Statements										
for the Years Ended December 31 (Dollars in Millions, except per share data)						Common-Size Analysis				
	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010
Revenue	55,184.00	55,656.00	65,875.00	60,138.00	42,588.00	100.00%	100.00%	100.00%	100.00%	100.00%
Cost of revenue	39,767.00	40,727.00	47,055.00	43,578.00	30,367.00	72.06%	73.18%	71.43%	72.46%	71.30%
Gross profit	15,417.00	14,929.00	18,820.00	16,560.00	12,221.00	27.94%	26.82%	28.57%	27.54%	28.70%
Sales, general and administrative	5,697.00	5,547.00	5,919.00	5,203.00	4,248.00	10.32%	9.97%	8.99%	8.65%	9.97%
Research and development	2,135.00	2,046.00	2,466.00	2,297.00	1,905.00	3.87%	3.68%	3.74%	3.82%	4.47%
Other operating expenses	2,257.00	1,708.00	1,862.00	1,907.00	2,105.00	4.09%	3.07%	2.83%	3.17%	4.94%
Total operating expenses	10,089.00	9,301.00	10,247.00	9,407.00	8,258.00	18.28%	16.71%	15.56%	15.64%	19.39%
Operating income = EBIT	5,328.00	5,628.00	8,573.00	7,153.00	3,963.00	9.65%	10.11%	13.01%	11.89%	9.31%
Interest income	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0.00%
Interest expense	484.00	465.00	467.00	396.00	343.00	0.88%	0.84%	0.71%	0.66%	0.81%
Net interest income	-484.00	-465.00	-467.00	-396.00	-343.00	-0.88%	-0.84%	-0.71%	-0.66%	-0.81%
Other income (expense)	239.00	-35.00	130.00	-32.00	130.00	0.43%	-0.06%	0.20%	-0.05%	0.31%
Income before taxes	5,083.00	5,128.00	8,236.00	6,725.00	3,750.00	9.21%	9.21%	12.50%	11.18%	8.81%
Provision for income taxes	1,380.00	1,319.00	2,528.00	1,720.00	968.00	2.50%	2.37%	3.84%	2.86%	2.27%
Other income	8.00	-6.00	14.00	-24.00	-24.00	0.01%	-0.01%	0.02%	-0.04%	-0.06%
Net income from continuing operations	3,711.00	3,803.00	5,722.00	4,981.00	2,758.00	6.72%	6.83%	8.69%	8.28%	6.48%
Other	-16.00	-14.00	-41.00	-53.00	-58.00	-0.03%	-0.03%	-0.06%	-0.09%	-0.14%
Net Income	3,695.00	3,789.00	5,681.00	4,928.00	2,700.00	6.70%	6.81%	8.62%	8.19%	6.34%
Net income available to common shareholders	3,695.00	3,789.00	5,681.00	4,928.00	2,700.00					
Earnings per share										
Basic	5.99	5.87	8.71	7.64	4.28					
Diluted	5.88	5.75	8.48	7.40	4.15					
Sales growth rate	-0.85%	-15.51%	9.54%	41.21%						
Marginal tax rate	28.00%	28.00%	28.00%	28.00%	28.00%					

Table 2: Caterpillar's Statements of Cash Flows and Common-size Analysis from 2010 to 2014

Caterpillar Inc (CAT) Statements of Cash Flows										
for the Years Ended December 31 (Dollars in Millions)						Common Size Analysis - Divided by Sales				
Fiscal Year	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010
Net income from continuing operations	3,711.00	3,803.00	5,722.00	4,981.00	2,758.00	6.72%	6.83%	8.69%	8.28%	6.48%
Depreciation & amortization	3,163.00	3,087.00	2,813.00	2,527.00	2,296.00	5.73%	5.55%	4.27%	4.20%	5.39%
Investment/asset impairment charges	0.00	0.00	580.00	0.00	0.00	0.00%	0.00%	0.88%	0.00%	0.00%
Inventory	101.00	2,658.00	-1,149.00	-2,927.00	-2,667.00	0.18%	4.78%	-1.74%	-4.87%	-6.26%
Accounts payable	222.00	134.00	-1,868.00	1,555.00	2,570.00	0.40%	0.24%	-2.84%	2.59%	6.03%
Accrued liabilities	891.00	-108.00	183.00	308.00	964.00	1.61%	-0.19%	0.28%	0.51%	2.26%
Other working capital	-584.00	135.00	-849.00	109.00	-1,381.00	-1.06%	0.24%	-1.29%	0.18%	-3.24%
Other non-cash items	553.00	482.00	-191.00	457.00	469.00	1.00%	0.87%	-0.29%	0.76%	1.10%
Net cash provided by operating activities	8,057.00	10,191.00	5,241.00	7,010.00	5,009.00	14.60%	18.31%	7.96%	11.66%	11.76%
Investments in property, plant, and equipment	-1,840.00	-1,924.00	-1,726.00	-1,409.00	-1,011.00	-3.33%	-3.46%	-2.62%	-2.343%	-2.37%
Property, plant, and equipment reductions	904.00	844.00	1,117.00	1,354.00	1,469.00	1.64%	1.52%	1.70%	2.25%	3.45%
Acquisitions, net	169.00	170.00	581.00	-7,808.00	-1,126.00	0.31%	0.31%	0.88%	-12.98%	-2.64%
Purchases of investments	-825.00	-402.00	-12,412.00	-336.00	-217.00	-1.49%	-0.72%	-18.84%	-0.56%	-0.51%
Sales/Maturities of investments	810.00	449.00	9,433.00	247.00	228.00	1.47%	0.81%	14.32%	0.41%	0.54%
Other investing activities	-2,845.00	-4,183.00	-3,183.00	-3,475.00	-938.00	-5.16%	-7.52%	-4.83%	-5.78%	-2.20%
Net cash used for investing activities	-3,627.00	-5,046.00	-6,190.00	-11,427.00	-1,595.00	-6.57%	-9.07%	-9.40%	-19.00%	-3.75%
Debt issued	10,649.00	9,328.00	16,015.00	15,460.00	8,324.00	19.30%	16.76%	24.31%	25.71%	19.55%
Debt repayment	-9,248.00	-10,870.00	-11,099.00	-10,593.00	-12,461.00	-16.76%	-19.53%	-16.85%	-17.61%	-29.26%
Common stock issued	239.00	128.00	52.00	123.00	296.00	0.43%	0.23%	0.08%	0.20%	0.70%
Common stock repurchased	-4,238.00	-2,000.00	0.00	0.00	0.00	-7.68%	-3.59%	0.00%	0.00%	0.00%
Dividend paid	-1,627.00	-1,124.00	-1,623.00	-1,162.00	-1,084.00	-2.95%	-2.02%	-2.46%	-1.93%	-2.55%
Other financing activities	1,229.00	27.00	204.00	138.00	312.00	2.23%	0.05%	0.31%	0.23%	0.73%
Net cash provided by (used for) financing activities	-2,996.00	-4,511.00	3,549.00	3,966.00	-4,613.00	-5.43%	-8.11%	5.39%	6.59%	-10.83%
Effect of exchange rate changes	-174.00	-43.00	-167.00	-84.00	-76.00	-0.32%	-0.08%	-0.25%	-0.14%	-0.18%
Net change in cash	1,260.00	591.00	2,433.00	-535.00	-1,275.00	2.28%	1.06%	3.69%	-0.89%	-2.99%
Cash at beginning of period	6,081.00	5,490.00	3,057.00	3,592.00	4,867.00	11.02%	9.86%	4.64%	5.97%	11.43%
Cash at end of period	7,341.00	6,081.00	5,490.00	3,057.00	3,592.00	13.30%	10.93%	8.33%	5.08%	8.43%

Table 3: Caterpillar's Balance Sheets and Common-size Analysis from 2010 to 2014

Caterpillar Inc (CAT) Balance Sheets										
for the Years Ended December 31 (Dollars in Millions)						Common-Size Analysis - Divided by Sales				
	2014	2013	2012	2011	2010	2014	2013	2012	2011	2010
Cash and cash equivalents	7,341.00	6,081.00	5,490.00	3,057.00	3,592.00	13.30%	10.93%	8.33%	5.08%	8.43%
Receivables	16,764.00	17,176.00	18,952.00	17,953.00	16,792.00	30.38%	30.86%	28.77%	29.85%	39.43%
Inventories	12,205.00	12,625.00	15,547.00	14,544.00	9,587.00	22.12%	22.68%	23.60%	24.18%	22.51%
Deferred income taxes	1,739.00	1,553.00	1,547.00	1,580.00	931.00	3.15%	2.79%	2.35%	2.63%	2.19%
Prepaid expenses	818.00	900.00	988.00	994.00	908.00	1.48%	1.62%	1.50%	1.65%	2.13%
Total Current Assets	38,867.00	38,335.00	42,524.00	38,128.00	31,810.00	70.43%	68.88%	64.55%	63.40%	74.69%
Gross property, plant and equipment	31,572.00	31,316.00	29,932.00	27,326.00	24,906.00	57.21%	56.27%	45.44%	45.44%	58.48%
Accumulated Depreciation	-14,995.00	-14,241.00	-13,471.00	-12,931.00	-12,367.00	-27.17%	-25.59%	-20.45%	-21.50%	-29.04%
Net property, plant and equipment	16,577.00	17,075.00	16,461.00	14,395.00	12,539.00	30.04%	30.68%	24.99%	23.94%	29.44%
Equity and other investments	257.00	272.00	272.00	133.00	164.00	0.47%	0.49%	0.41%	0.22%	0.39%
Goodwill	6,694.00	6,956.00	6,942.00	7,080.00	2,614.00	12.13%	12.50%	10.54%	11.77%	6.14%
Intangible assets	3,076.00	3,596.00	4,016.00	4,368.00	805.00	5.57%	6.46%	6.10%	7.26%	1.89%
Deferred income taxes	1,404.00	594.00	2,011.00	2,157.00	2,493.00	2.54%	1.07%	3.05%	3.59%	5.85%
Other long-term assets	17,806.00	18,068.00	17,130.00	15,185.00	13,595.00	32.27%	32.46%	26.00%	25.25%	31.92%
Total Non-Current Assets	45,814.00	46,561.00	46,832.00	43,318.00	32,210.00	83.02%	83.66%	71.09%	72.03%	75.63%
Total Assets	84,681.00	84,896.00	89,356.00	81,446.00	64,020.00	153.45%	152.54%	135.64%	135.43%	150.32%
Short-term debt	11,501.00	11,031.00	12,391.00	9,648.00	7,981.00	0.00%	0.00%	18.81%	0.00%	0.00%
Accounts payable	6,515.00	6,560.00	6,753.00	8,161.00	5,856.00	11.81%	11.79%	10.25%	13.57%	13.75%
Accrued liabilities	5,986.00	5,115.00	5,578.00	5,796.00	4,550.00	10.85%	9.19%	8.47%	9.64%	10.68%
Deferred revenues	1,697.00	2,360.00	2,978.00	2,691.00	1,831.00	3.08%	4.24%	4.52%	4.47%	4.30%
Deferred income taxes	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0.00%
Other current liabilities	2,178.00	2,231.00	2,055.00	2,265.00	1,802.00	3.95%	4.01%	3.12%	3.77%	4.23%
Total Current Liabilities	27,877.00	27,297.00	29,755.00	28,561.00	22,020.00	50.52%	49.05%	45.17%	47.49%	51.70%
Long-term debt	27,784.00	26,719.00	27,752.00	24,944.00	20,437.00	50.35%	48.01%	42.13%	41.48%	47.99%
Pensions and other benefits	8,963.00	6,973.00	11,085.00	10,956.00	7,584.00	16.24%	12.53%	16.83%	18.22%	17.81%
Deferred income taxes	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0.00%
Other long-term liabilities	3,231.00	3,029.00	3,182.00	4,056.00	3,115.00	5.85%	5.44%	4.83%	6.74%	7.31%
Total Non-Current Liabilities	39,978.00	36,721.00	42,019.00	39,956.00	31,136.00	72.44%	65.98%	63.79%	66.44%	73.11%
Total liabilities	67,855.00	64,018.00	71,774.00	68,517.00	53,156.00	122.96%	115.02%	108.95%	113.93%	124.81%
Common stock	5,016.00	4,709.00	4,481.00	4,273.00	3,888.00	9.09%	8.46%	6.80%	7.11%	9.13%
Paid-in capital	0.00	0.00	0.00	0.00	0.00	0.00%	0.00%	0.00%	0.00%	0.00%
Minority interest	80.00	67.00	50.00	46.00	40.00	0.14%	0.12%	0.08%	0.08%	0.09%
Treasury stock	-15,726.00	-11,854.00	-10,074.00	-10,281.00	-10,397.00	-28.50%	-21.30%	-15.29%	-17.10%	-24.41%
Retained earnings	33,887.00	31,854.00	29,558.00	25,219.00	21,384.00	61.41%	57.23%	44.87%	41.94%	50.21%
Accumulated other comprehensive income	-6,431.00	-3,898.00	-6,433.00	-6,328.00	-4,051.00	-11.65%	-7.00%	-9.77%	-10.52%	-9.51%
Total Shareholders' Equity	16,826.00	20,878.00	17,582.00	12,929.00	10,864.00	30.49%	37.51%	26.69%	21.50%	25.51%
Total Liabilities and Equity	84,681.00	84,896.00	89,356.00	81,446.00	64,020.00	153.45%	152.54%	135.64%	135.43%	150.32%
check	0.00	0.00	0.00	0.00	0.00					

Table 4: Inputs for the EDCF Model from 2010 to 2014

Inputs for Enterprise DCF Model					
	2014	2013	2012	2011	2010
Operating cash flow	8,057.00	10,191.00	5,241.00	7,010.00	5,009.00
Capital expenditure	-3,379.00	-4,446.00	-5,076.00	-3,924.00	-2,586.00
Free cash flow	4,678.00	5,745.00	165.00	3,086.00	2,423.00
Working capital	20,752.00	20,516.00	23,613.00	17,635.00	16,840.00
WC/Sales	37.61%	36.86%	35.85%	29.32%	39.54%
Change in WC	236.00	-3,097.00	5,978.00	795.00	
Change in WC/Sales	0.43%	-5.56%	9.07%	1.32%	
Capital Expenditure	2,665.00	3,701.00	4,879.00	4,383.00	
CAPEX/Sales	4.83%	6.65%	7.41%	7.29%	
Depreciation	3163	3087	2813	2527	2296
Depreciation/Sales	5.73%	5.55%	4.27%	4.20%	5.39%
Other assets	17,806.00	18068	17130	15185	13595
OA/Sales	32.27%	32.46%	26.00%	25.25%	31.92%
Change in OA	-262.00	938.00	1,945.00	1,590.00	
Change in OA/Sales	-0.47%	1.69%	2.95%	2.64%	
Dividends	2.60	1.72	1.96	1.80	1.72
EPS	5.99	5.87	8.71	7.64	4.28
Retention ratio (RR)	56.59%	70.70%	77.50%	76.44%	
Invested capital (IC)	64,905.00	66,211.00	68,162.00	58,663.00	46,393.00
NOPLAT = EBIT * (1 - tax rate) =	2883.40	5580.00	6129.64	5000.16	
ROIC = NOPLAT / IC =	4.35%	8.19%	10.45%	10.78%	
g = RR * ROIC =	2.46%	5.79%	8.10%	8.24%	

Table 5: Caterpillar's NOPLAT from 2010 to 2014

Historical NOPLAT					
	2014	2013	2012	2011	2010
EBIT	5,328.00	5,628.00	8,573.00	7,153.00	3,963.00
Add amortization					
Adjusted EBITA	5,328.00	5,628.00	8,573.00	7,153.00	3,963.00
Operating cash taxes	-2444.60	-48.00	-2443.36	-2152.84	-1027.64
NOPLAT	2883.40	5580.00	6129.64	5000.16	2935.36
Operating Taxes on EBITA					
Reported taxes	1,380.00	1,319.00	2,528.00	1,720.00	968.00
Tax shield on interest paid	135.52	130.20	130.76	110.88	96.04
Taxes on interest received	0.00	0.00	0.00	0.00	0.00
Taxes on other income (expense)	-66.92	9.80	-36.40	8.96	-36.40
Taxes on EBITA	1,448.60	1,459.00	2,622.36	1,839.84	1,027.64
Decrease/(increase) in deferred taxes	996.00	-1,411.00	-179.00	313.00	0.00
Operating cash taxes	2,444.60	48.00	2,443.36	2,152.84	1,027.64
Reconciliation to net income	2014	2013	2012	2011	2010
Net income	3,695.00	3,789.00	5,681.00	4,928.00	2,700.00
Increase/(decrease) in deferred taxes	-996.00	1,411.00	179.00	-313.00	0.00
Adjusted net income	2,699.00	5,200.00	5,860.00	4,615.00	2,700.00
After-tax interest paid	348.48	334.80	336.24	285.12	246.96
After-tax interest income	0.00	0.00	0.00	0.00	0.00
After-tax other income (expense)	172.08	-25.20	93.60	-23.04	93.60
Other income	8.00	-6.00	14.00	-24.00	-24.00
Other	-16.00	-14.00	-41.00	-53.00	-58.00
Total income available to all investors	2,883.40	5,580.00	6,129.64	5,000.16	2,935.36
NOPLAT	2,883.40	5,580.00	6,129.64	5,000.16	2,935.36
Check Row 7 = Row 27?	0.00	0.00	0.00	0.00	0.00

Table 6: Caterpillar's Invested Capital from 2010 to 2014

Historical Invested Capital					
	2014	2013	2012	2011	2010
Cash and cash equivalents	7,341.00	6,081.00	5,490.00	3,057.00	3,592.00
Receivables	16,764.00	17,176.00	18,952.00	17,953.00	16,792.00
Inventories	12,205.00	12,625.00	15,547.00	14,544.00	9,587.00
Prepaid expenses	818.00	900.00	988.00	994.00	908.00
Operating Current Assets	37,128.00	36782	40977	36548	30879
Accounts payable	6,515.00	6,560.00	6,753.00	8,161.00	5,856.00
Accrued liabilities	5,986.00	5,115.00	5,578.00	5,796.00	4,550.00
Deferred revenues	1,697.00	2,360.00	2,978.00	2,691.00	1,831.00
Other current liabilities	2,178.00	2,231.00	2,055.00	2,265.00	1,802.00
Operating Current Liabilities	16,376.00	16,266.00	17,364.00	18,913.00	14,039.00
Operating working capital	20,752.00	20,516.00	23,613.00	17,635.00	16,840.00
Net property, plant and equipment	16,577.00	17,075.00	16,461.00	14,395.00	12,539.00
Goodwill	6694.00	6956.00	6942.00	7080.00	2614.00
Intangible assets	3076.00	3596.00	4016.00	4368.00	805.00
Other long-term assets	17806.00	18068.00	17130.00	15185.00	13595.00
Operating invested capital	64,905.00	66,211.00	68,162.00	58,663.00	46,393.00
Short-term investments					
Equity and other investments	257.00	272.00	272.00	133.00	164.00
Non-operating assets	257.00	272.00	272.00	133.00	164.00
Total funds invested	65,162.00	66,483.00	68,434.00	58,796.00	46,557.00
	2014	2013	2012	2011	2010
Short-term debt	11,501.00	11,031.00	12,391.00	9,648.00	7,981.00
Long-term debt	27,784.00	26,719.00	27,752.00	24,944.00	20,437.00
Pensions and other benefits	8,963.00	6,973.00	11,085.00	10,956.00	7,584.00
Other long-term liabilities	3,231.00	3,029.00	3,182.00	4,056.00	3,115.00
Debt & debt equivalents (interest-bearing debts)	51,479.00	47,752.00	54,410.00	49,604.00	39,117.00
Deferred income taxes (net of deferred tax assets)	-3,143.00	-2,147.00	-3,558.00	-3,737.00	-3,424.00
Net common stock and paid-in-capital	5,016.00	4,709.00	4,481.00	4,273.00	3,888.00
Minority interest	80.00	67.00	50.00	46.00	40.00
Treasury stock	-15,726.00	-11,854.00	-10,074.00	-10,281.00	-10,397.00
Retained earnings	33,887.00	31,854.00	29,558.00	25,219.00	21,384.00
Accumulated other comprehensive income	-6,431.00	-3,898.00	-6,433.00	-6,328.00	-4,051.00
Equity & equity equivalents	13,683.00	18,731.00	14,024.00	9,192.00	7,440.00
Total funds invested	65,162.00	66,483.00	68,434.00	58,796.00	46,557.00
Check Row 52 = Row 67?					
	0.00	0.00	0.00	0.00	0.00

Table 7: Caterpillar's ROIC and EV/EBITDA multiple from 2010 to 2014

	2014	2013	2012	2011	2010
ROIC (including goodwill)	4.35%	8.19%	10.45%	10.78%	
Stock's closing price as of Dec 31, 20XX	91.53	90.81	89.61	90.6	93.66
Actual shares outstanding	606.2	637.8	655	647.5	638.8
Market capitalization of equity	55485.49	57918.62	58694.55	58663.50	59830.01
Interest-bearing debt	51479.00	47752.00	54410.00	49604.00	39117.00
Enterprise value = interest-bearing debt + market value of equity	106964.49	105670.62	113104.55	108267.50	98947.01
EBITDA multiple = EV/EBITDA	12.60	12.13	9.93	11.18	15.81

Table 8: Caterpillar's Free Cash Flows from 2010 to 2014

Historical Free Cash Flows					
	2014	2013	2012	2011	2010
NOPLAT	2883.40	5580.00	6129.64	5000.16	2935.36
Depreciation	3,163.00	3,087.00	2,813.00	2,527.00	2,296.00
Gross cash flow	6046.40	8667.00	8942.64	7527.16	5231.36
(Increase)/decrease in operating working capital	-236.00	3,097.00	-5,978.00	-795.00	
Capital expenditures	-2,665.00	-3,701.00	-4,879.00	-4,383.00	
(Increase)/decrease in other assets	262.00	-938.00	-1,945.00	-1,590.00	
(Increase)/decrease in intangibles and goodwill	782.00	406.00	490.00	-8029.00	
Increase (decrease) in accumulated comprehensive income	-2533.00	2535.00	-105.00	-2277.00	
Gross investment	-4390.00	1399.00	-12417.00	-17074.00	
Free cash flow from operations	1656.40	10066.00	-3474.36	-9546.84	
After-tax interest received	0.00	0.00	0.00	0.00	
Other income (expense)	172.08	-25.20	93.60	-23.04	
Other income	8.00	-6.00	14.00	-24.00	
(Increase) /decrease in short-term investments	0.00	0.00	0.00	0.00	
(Increase) /decrease in long-term investments	15.00	0.00	-139.00	31.00	
Discontinued operations ("-" for expense and "+" for income)					
Free cash flows to investors (includes non-operating)	1,851.48	10,034.80	-3,505.76	-9,562.88	
Financing flows	2014	2013	2012	2011	2010
After-tax interest expense	348.48	334.80	336.24	285.12	
Decrease/(increase) in debt	-3,727.00	6,658.00	-4,806.00	-10,487.00	
Flows to debt holders	-3,378.52	6,992.80	-4,469.76	-10,201.88	
Minority interests (gain) from income statement	16.00	14.00	41.00	53.00	
Decrease (Increase) in minority interest	-13.00	-17.00	-4.00	-6.00	
Dividends (or adjustments to retained earnings)	1,662.00	1,493.00	1,342.00	1,093.00	
Net shares repurchased (issued)	3,565.00	1,552.00	-415.00	-501.00	
Flows to equity holders	5,230.00	3,042.00	964.00	639.00	
Cash flows available to investors	1,851.48	10,034.80	-3,505.76	-9,562.88	
Check Row 97 = Row 110?	0.00	0.00	0.00	0.00	

Table 9: Spreadsheet Valuation of Caterpillar's Common Stock

Spreadsheet Valuation of Caterpillar Inc.													
		t=0	t=1	t=2	t=3	t=4	t=5	t=6	t=7	t=8	t=9	t=10	t=11
		2014	2015e	2016e	2017e	2018e	2019e	2020e	2021e	2022e	2023e	2024e	2025e
Panel A. Operating Assumptions													
EBIT/Sales		9.65%	9.50%	9.50%	9.50%	9.50%	9.50%	9.30%	9.30%	9.30%	9.30%	9.30%	9.30%
NOPLAT/Sales		6.95%	6.84%	6.84%	6.84%	6.84%	6.84%	6.70%	6.70%	6.70%	6.70%	6.70%	6.70%
Depreciaton/Sales		5.73%	5.73%	5.73%	5.73%	5.73%	5.73%	5.50%	5.50%	5.50%	5.50%	5.50%	5.50%
Working capital/Sales		37.61%	37.00%	37.00%	37.00%	37.00%	37.00%	36.00%	36.00%	36.00%	36.00%	35.00%	35.00%
Working capital		20752	19397	19397	19979	20778	21817	22289	23403	24574	25802	26340	27657
Capital expenditures/Sales		4.83%	4.50%	4.50%	5.00%	5.00%	5.00%	5.50%	5.50%	5.50%	5.00%	5.00%	5.00%
Other assets/Sales		32.27%	30.00%	30.00%	30.00%	30.00%	30.00%	28.00%	28.00%	28.00%	27.00%	27.00%	27.00%
Other assets		17806	15727	15727	16199	16847	17690	17336	18203	19113	19352	20319	21335
Free cash flow/Sales		7.90%	14.62%	8.07%	5.62%	4.99%	4.38%	6.51%	3.65%	3.65%	5.15%	5.20%	4.24%
Panel B. Inputs for Present Value Calculations													
1 Sales		55184	52,425	52,425	53,998	56,157	58,965	61,914	65,009	68,260	71,673	75,256	79,019
2 Sales growth rate		-0.8%	-5.00%	0.00%	3.00%	4.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
3 EBIT		5328	4,980	4,980	5,130	5,335	5,602	5,758	6,046	6,348	6,666	6,999	7,349
4 Marginal tax rate		28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%	28.00%
5 Income taxes		1492	1394	1394	1436	1494	1568	1612	1693	1777	1866	1960	2058
6 NOPLAT		3,836	3,586	3,586	3,693	3,841	4,033	4,146	4,353	4,571	4,799	5,039	5,291
7 + Depreciaiton		3163	3005	3005	3095	3219	3380	3405	3576	3754	3942	4139	4346
- Change in working capital		(236)	1355	0	(582)	(799)	(1039)	(472)	(1114)	(1170)	(1229)	(538)	(1317)
9 - Capital expenditures		(2665)	(2359)	(2359)	(2700)	(2808)	(2948)	(3405)	(3576)	(3754)	(3584)	(3763)	(3951)
10 + - Change in other assets		262	2079	0	-472	-648	-842	354	-867	-910	-239	-968	-1016
11 Free cash flow		4,360	7,665	4,232	3,035	2,805	2,583	4,028	2,372	2,490	3,690	3,910	3,353
12 WACC		6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%	6.08%
13 Discount factor			1.0608338	1.1253684	1.1938289	1.266454	1.343497	1.4252274	1.511929	1.603906	1.701478	1.8049851	
14 Present value			7225.42	3760.18	2542.08	2214.81	1922.91	2826.08	1568.71	1552.69	2168.69	2166.40	
Panel C. Valuation Calculations													
Risk-Free Rate		2.67%											
Beta Levered		1.43			1	PV of FCF, 2015-2024		27948		Enterprise value			105513
Equity Risk Premium		5.00%			2	PV of continuing value (CV10))		77308		Value of debt			51479
Cost of Equity		9.82%			3	Non-operating assets		257		Value of equity			54034
Cost of Debt (Before Tax)		2.86%			4	Enterprise value		105513		Shares outstanding			606
Cost of Debt (After Tax)		2.06%			5	RONIC		7.00%		Intrinsic share price			89.14
Capital Structure, % Equity		51.87%			$CV_{10} = \frac{NOPLAT_0(1+g)(1-g/RONIC_{10})}{WACC-g}$						Stock was undervalued		-3%
Base WACC		6.08%											
					1	PV of FCF, 2015-2024		27948		Enterprise value			102253
Capital structure		Total	Weight		2	PV of continuing value (CV10)		74048		Value of debt			51479
Interest-bearing debt		51,479.00	48.13%		3	Non-operating assets		257		Value of equity			50774
MV of equity		55485.49	51.87%		4	Enterprise value		102253		Shares outstanding			606
Debt+equity=EV		106,964.49	100.00%		$CV_{10} = EBITDA_{10} \times EBITDA_{Multiple}$						Intrinsic share price		83.76
										Stock was undervalued			-8%
2014 EV/EBITDA multiple		12.60											
2024 EV/EBITDA multiple		12.00								Stock price on Dec31, 2014 =			91.53

Table 10: Relative Valuation of Caterpillar's Common Stock

Relative valuation:		Dividend forecasts:					
2016 EPS Estimate	6.50		Q1	Q2	Q3	Q4	Full Year
Long-term average P/E	15.00	2013	0.00	0.52	0.60	0.60	1.72
Estimated 2016 price	97.50	2014	0.60	0.60	0.70	0.70	2.60
Dividends in 2015 (year 1)	2.60	2015	0.70	0.70	0.80	0.80	3.00
Dividends in 2016 (year 2)	3.00	2016	0.80	0.80	0.90	0.90	3.40
Intrinsic Share Price	85.70	2017					0.00
Stock was undervalued	-6%	2018					0.00

Table 11: Calculation of Caterpillar's Cost of Debt

Name	Maturity Date	Amount \$ (Mil) *	Price	Coupon %	Coupon Type (Fix/Float)	YTM %	Weighted YTM%
Caterpillar Finl Svcs Ltd Mtn 2.2%	06/01/2015	247.70		2.20	Fixed	0.29	0.0058
Caterpillar Finl Corp Pwrmtsbe 1.55%	06/15/2015	2.50	97.00	1.55	Fixed	0.29	0.0001
Caterpillar Inc Del 0.95%	06/26/2015	500.00	100.10	0.95	Fixed	0.29	0.0117
Caterpillar Finl Corp Pwrmtsbe 1.35%	09/15/2015	8.50	100.60	1.35	Fixed	0.65	0.0004
Caterpillar Finl Corp Pwrmtsbe 5.5%	09/15/2015	3.07		5.50	Fixed	0.65	0.0002
Caterpillar Finl Corp Pwrmtsbe 4.75%	09/15/2015	0.09	110.80	4.75	Fixed	2.03	0.0000
Caterpillar Finl Corp Pwrmtsbe 1.35%	10/15/2015	2.69	100.40	1.35	Fixed	0.74	0.0002
Caterpillar Finl Corp Pwrmtsbe 5.5%	12/15/2015	1.38		5.50	Fixed	0.74	0.0001
Caterpillar Finl Corp Pwrmtsbe 5.4%	12/15/2015	1.00		5.40	Fixed	0.74	0.0001
Caterpillar Finl Corp Pwrmtsbe 5.5%	02/15/2016	4.32		5.50	Fixed	1.51	0.0005
Caterpillar Finl Corp Pwrmtsbe 5.5%	03/15/2016	1.51		5.50	Fixed	1.51	0.0002
Caterpillar Finl Corp Pwrmtsbe 5.55%	04/15/2016	0.70		5.55	Fixed	1.51	0.0001
Caterpillar Finl Corp Pwrmtsbe 1.05%	04/15/2016	0.66	98.80	1.05	Fixed	1.51	0.0001
Caterpillar Finl Corp Pwrmtsbe 2%	06/15/2016	13.90	101.00	2.00	Fixed	1.14	0.0013
Caterpillar Finl Corp Pwrmtsbe 6%	06/15/2016	2.56		6.00	Fixed	1.14	0.0002
Caterpillar Inc Del 5.7%	08/15/2016	500.00	106.30	5.70	Fixed	0.74	0.0300
Caterpillar Finl Corp Pwrmtsbe 1.55%	09/15/2016	5.08	101.50	1.55	Fixed	0.64	0.0003
Caterpillar Inc Svcs Ltd Mtn 2.12%	11/25/2016	165.10		2.12	Fixed	0.64	0.0086
Caterpillar Finl Svcs Ltd Mtn 2.63%	06/01/2017	371.50		2.63	Fixed	0.93	0.0280
Caterpillar Inc Del 1.5%	06/26/2017	500.00	101.20	1.50	Fixed	0.93	0.0376
Caterpillar Finl Corp Pwrmtsbe 6%	04/15/2018	2.71		6.00	Fixed	1.62	0.0004
Caterpillar Finl Corp Pwrmtsbe 6%	05/15/2018	2.05		6.00	Fixed	1.62	0.0003
Caterpillar Inc Svcs Ltd Mtn 2.29%	06/01/2018	289.00	102.00	2.29	Fixed	1.62	0.0379
Caterpillar Finl Corp Pwrmtsbe 6%	06/15/2018	1.33		6.00	Fixed	1.62	0.0002
Caterpillar Finl Corp Pwrmtsbe 2.25%	09/15/2018	7.64	101.30	2.25	Fixed	1.86	0.0012
Caterpillar Finl Corp Pwrmtsbe 2.2%	10/15/2018	2.71	103.00	2.20	Fixed	1.33	0.0003
Caterpillar Inc Del 7.9%	12/15/2018	900.00	121.40	7.90	Fixed	1.76	0.1282
Caterpillar Finl Corp Pwrmtsbe 2.05%	04/15/2019	1.50	97.70	2.05	Fixed	2.63	0.0003
Caterpillar Finl Corp Pwrmtsbe 1.9%	05/15/2019	3.73	96.80	1.90	Fixed	2.69	0.0008
Caterpillar Finl Corp Pwrmtsbe 1.8%	05/15/2019	1.94	97.00	1.80	Fixed	2.51	0.0004
Caterpillar Finl Corp Pwrmtsbe 1.75%	06/15/2019	1.49	97.60	1.75	Fixed	2.34	0.0003
Caterpillar Finl Corp Pwrmtsbe 1.7%	04/15/2020	0.97	99.90	1.70	Fixed	1.71	0.0001
Caterpillar Finl Corp Pwrmtsbe 1.7%	05/15/2020	1.73	95.80	1.70	Fixed	2.54	0.0004
Caterpillar Finl Corp Pwrmtsbe 2.25%	07/15/2020	5.85	98.50	2.25	Fixed	2.54	0.0012
Caterpillar Finl Corp Pwrmtsbe 2.65%	08/15/2020	2.68	101.60	2.65	Fixed	2.32	0.0005
Caterpillar Finl Corp Pwrmtsbe 2.65%	10/15/2020	5.54	102.00	2.65	Fixed	2.28	0.0010
Caterpillar Finl Corp Pwrmtsbe 2.35%	10/15/2020	2.41	99.00	2.35	Fixed	2.54	0.0005
Caterpillar Finl Corp Pwrmtsbe 2.8%	11/15/2020	3.15	99.90	2.80	Fixed	2.83	0.0007
Caterpillar Finl Corp Pwrmtsbe 2.75%	12/15/2020	2.86	100.50	2.75	Fixed	2.66	0.0006
Caterpillar Inc Del 9.375%	03/15/2021	120.00	131.80	9.38	Fixed	3.36	0.0326
Caterpillar Finl Corp Pwrmtsbe 2.7%	03/15/2021	5.48	103.80	2.70	Fixed	2	0.0009
Caterpillar Finl Corp Pwrmtsbe 0.11%	03/15/2021	4.75	98.90	2.20	Fixed	2.4	0.0009
Caterpillar Finl Corp Pwrmtsbe 2.45%	05/15/2021	4.31	99.00	2.45	Fixed	2.62	0.0009
Caterpillar Finl Corp Pwrmtsbe 2%	05/15/2021	0.74	92.70	2.00	Fixed	3.12	0.0002
Caterpillar Inc Del 3.9%	05/27/2021	1,250.00	108.60	3.90	Fixed	2.37	0.2399
Caterpillar Finl Corp Pwrmtsbe 2.6%	06/15/2021	4.70	99.40	2.60	Fixed	2.7	0.0010
Caterpillar Finl Corp Pwrmtsbe 2.75%	09/15/2021	3.54	99.90	2.75	Fixed	2.76	0.0008
Caterpillar Finl Corp Pwrmtsbe 2.55%	09/15/2021	1.35		2.55	Fixed	2.76	0.0003
Caterpillar Finl Corp Pwrmtsbe 2.75%	04/15/2022	4.00	101.60	2.75	Fixed	2.49	0.0008
Caterpillar Finl Corp Pwrmtsbe 0.01%	04/15/2022	3.77	98.20	2.30	Fixed	2.58	0.0008
Caterpillar Inc Del 2.6%	06/26/2022	500.00	99.40	2.60	Fixed	2.69	0.1089
Caterpillar Finl Corp Pwrmtsbe 2.3%	08/15/2022	4.64	98.00	2.30	Fixed	2.6	0.0010
Caterpillar Finl Corp Pwrmtsbe 2.125%	11/15/2022	6.11	99.70	2.13	Fixed	2.17	0.0011
Caterpillar Finl Corp Pwrmtsbe 2.25%	12/15/2022	10.00	98.00	2.25	Fixed	2.54	0.0021
Caterpillar Finl Corp Pwrmtsbe 2.25%	12/15/2022	5.51	98.20	2.25	Fixed	2.51	0.0011
Caterpillar Inc Del 8%	02/15/2023	82.00	127.80	8.00	Fixed	3.83	0.0254
Caterpillar Finl Corp Pwrmtsbe 2.5%	03/15/2023	2.26	96.60	2.50	Fixed	2.96	0.0005
Caterpillar Finl Corp Pwrmtsbe 2.45%	04/15/2023	1.59	94.80	2.45	Fixed	3.16	0.0004
Caterpillar Finl Corp Pwrmtsbe 2.55%	05/15/2023	4.06	99.50	2.55	Fixed	2.62	0.0009
Caterpillar Finl Corp Pwrmtsbe 2.5%	05/15/2023	1.03	95.00	2.50	Fixed	3.18	0.0003
Caterpillar Finl Corp Pwrmtsbe 2.7%	06/15/2023	1.99	99.70	2.70	Fixed	2.74	0.0004
Caterpillar Finl Corp Pwrmtsbe 3.35%	08/15/2023	4.83	104.80	3.35	Fixed	2.7	0.0011
Caterpillar Finl Corp Pwrmtsbe 3.625%	09/15/2023	6.16	105.00	3.63	Fixed	2.95	0.0015
Caterpillar Finl Corp Pwrmtsbe 3.35%	11/15/2023	5.72	103.60	3.35	Fixed	2.87	0.0013
Caterpillar Finl Corp Pwrmtsbe 3.55%	12/15/2023	6.52	104.50	3.55	Fixed	2.96	0.0016
Caterpillar Finl Corp Pwrmtsbe 3.3%	03/15/2024	3.21	102.10	3.30	Fixed	3.03	0.0008
Caterpillar Inc Del 3.4%	05/15/2024	1,000.00	104.10	3.40	Fixed	2.88	0.2332
Caterpillar Finl Corp Pwrmtsbe 3.2%	07/15/2024	5.74	101.30	3.20	Fixed	3.04	0.0014
Caterpillar Finl Corp Pwrmtsbe 3.05%	08/15/2024	4.12	100.10	3.05	Fixed	3.04	0.0010
Caterpillar Finl Corp Pwrmtsbe 3.15%	10/15/2024	1.39	99.00	3.15	Fixed	3.27	0.0004
Caterpillar Finl Corp Pwrmtsbe 0.2335%	03/15/2025	1.37	99.60	2.70	Fixed	2.74	0.0003
Caterpillar Finl Corp Pwrmtsbe 3.45%	08/15/2025	1.91	103.60	3.45	Fixed	3.04	0.0005
Caterpillar Finl Corp Pwrmtsbe 3.5%	10/15/2025	6.52	104.10	3.50	Fixed	3.04	0.0016
Caterpillar Finl Corp Pwrmtsbe 3.6%	11/15/2025	2.51	105.40	3.60	Fixed	3	0.0006
Caterpillar Finl Corp Pwrmtsbe 3.65%	12/15/2025	1.89	106.60	3.65	Fixed	2.93	0.0004
Caterpillar Finl Corp Pwrmtsbe 3.45%	03/15/2026	3.32	102.90	3.45	Fixed	3.13	0.0008
Caterpillar Finl Corp Pwrmtsbe 3.15%	05/15/2026	1.35	102.60	3.15	Fixed	2.87	0.0003
Caterpillar Finl Corp Pwrmtsbe 3.2%	06/15/2026	1.82	100.30	3.20	Fixed	3.17	0.0005
Caterpillar Finl Corp Pwrmtsbe 3.1%	09/15/2026	1.25	101.50	3.10	Fixed	2.95	0.0003
Caterpillar Inc Del 6.625%	07/15/2028	193.20	134.30	6.63	Fixed	3.38	0.0529
Caterpillar Finl Corp Pwrmtsbe 6%	10/15/2028	1.00		6.00	Fixed	3.38	0.0003
Caterpillar Inc Del 7.3%	05/01/2031	242.20	137.10	7.30	Fixed	4.11	0.0806
Caterpillar Inc Del 5.3%	09/15/2035	307.30	120.30	5.30	Fixed	3.85	0.0958
Caterpillar Inc Del 6.05%	08/15/2036	460.10	125.70	6.05	Fixed	4.21	0.1568
Caterpillar Inc Del 8.25%	12/15/2038	65.20	162.40	8.25	Fixed	4.13	0.0218
Caterpillar Inc Del 5.2%	05/27/2041	758.70	113.00	5.20	Fixed	4.36	0.2678
Caterpillar Inc Del 6.95%	05/01/2042	159.90	142.30	6.95	Fixed	4.29	0.0555
Caterpillar Inc Del 3.803%	08/15/2042	1,717.40	100.70	3.80	Fixed	3.76	0.5228
Caterpillar Inc Mtns Be 3.803%	08/15/2042	543.10		3.80	Fixed	3.76	0.1653
Caterpillar Inc Del 144A 3.803%	08/15/2042	4.11		3.80	Fixed	3.76	0.0012
Caterpillar Inc Del 4.3%	05/15/2044	500.00	97.90	4.30	Fixed	4.43	0.1793
Caterpillar Inc Del 4.75%	05/15/2064	500.00	101.00	4.75	Fixed	4.7	0.1903
Caterpillar Inc Del 7.375%	03/01/2097	246.10	143.00	7.38	Fixed	5.13	0.1022
		12,351.24					2.8620%