

Caterpillar Inc. Financial Analysis and Forecasting

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This project is a DCF valuation model for Caterpillar (CAT) with five-year forecasts and a Monte Carlo simulation. Best on our results, we offer a hold recommendation.

About Caterpillar Inc.

Caterpillar Inc. is the world's leading manufacturer of construction and mining equipment, off-highway diesel and natural gas engines, industrial gas turbines and diesel-electric locomotives. Caterpillar Inc. is a multi-national corporation that operates in every continent through three primary segments: Construction Industries, Resource Industries, and Energy and Transportation¹. Caterpillar Inc. also provides financial services through their Financial Products segment. Caterpillar Inc.'s main competitor is John Deere, the second largest global heavy-equipment manufacturer. Another competitor, Komatsu, a Japan based company, is the second largest global manufacturer of mining and construction equipment. Another honorable mention is Volvo Construction Equipment, which specializes in agricultural haulers and wheel loaders globally². While Caterpillar Inc.'s year-over-year growth rate has fluctuated over the years, its revenue growth from 2007 to 2022 is 32.18%³, indicating a positive historical growth rate. Caterpillar Inc. has acquired 38 companies, including 3 in the last 5 years with the largest purchase being Bucyrus International (\$7.6B). Caterpillar Inc. has acquired in 13 countries, with its most targeted sectors being machinery and electrical equipment⁴.

Company Leadership⁵

- Chief Executive Officer & Chairman: Jim Umpleby
- Chief Financial Officer: Andrew R. J. Bonfield
- Chief Accounting Officer: William E. Schuapp

¹ <https://www.caterpillar.com/en/company.html>

² <https://bstrategyhub.com/caterpillar-competitors-alternatives/>

³ <https://www.zippia.com/caterpillar-careers-2138/revenue/>

⁴ <https://mergr.com/caterpillar-acquisitions>

⁵ <https://www.caterpillar.com/en/company/governance/officers.html>

DCF Model

The DCF model uses historical financial data from 2018-2022 to project the future financial performance of Caterpillar Inc. for the years 2023-2027. The key assumptions in the model, based on historical averages, include a Sales Growth Rate of 9.56%, Cost of Goods as a percentage of Sales at 68.92%, and Current Assets as a percentage of Sales at 79.37%.

Additionally, the model assumes Current Liabilities as a percentage of Sales at 54.85%, an SGA Growth Rate of 9.79%, and an Other Operating Costs Growth of 1.06%. Furthermore, the model incorporates a yearly growth in Gross PPE at -3.50% and forecasts that the depreciation rate will increase from 42.78% in 2022 to 50.92% in 2027. The dividend payout ratio is expected to remain constant at 42.78%, while the interest rate on debt is projected to be 14.91%. The model assumes that the marginal tax rate facing the firm will be 25%, and the interest earned on cash and equivalents is assumed to be the current 1-year treasury rate.

Based on these assumptions, the DCF model projects increasing sales revenue from \$65,110.48 million in 2023 to \$93,825.18 million in 2027. Operating profit is also projected to increase from \$9,340.18 million in 2023 to \$15,004.36 million in 2027. Caterpillar's profit is expected to grow from \$7,012.71 million in 2023 to \$11,265.44 million in 2027.

The model's projected Balance Sheet shows an increase in total Current Assets from \$51,678.89 million in 2023 to \$74,470.05 million in 2027. The net cash from Operating Activities is expected to recover from a negative \$29,284.48 million in 2023 to a positive \$9,272.03 million in 2027.

Overall, the DCF valuation model suggests a positive outlook for Caterpillar Inc. in the coming years, with increasing Revenue, Profits, and overall financial strength. Please note that this valuation is based on the assumptions provided and actual results may vary.

Monte Carlo Results

The primary goal of this Monte Carlo simulation was to provide a probabilistic assessment of various financial metrics based on the uncertainties and assumptions associated with our model. The simulation involved the following key assumptions: Sales Growth rate (Mean: 9.56%, Standard Deviation: 24.45%), COGS as a Percentage of Sales (Mean: 68.92%, Standard Deviation: 1.00%), Overhead Growth rate (Mean: 16.42%, Standard Deviation: 4.05%), and yearly growth in Gross PPE (Mean: -3.50%, Standard Deviation: 1.52%). We generated 200 random samples using these assumptions and calculated their respective financial metrics.

The results of the Monte Carlo simulation are as follows: The average value of the financial metric was \$783.08, with a standard deviation of \$636.66. The range of the values fell between \$(958.79) and \$2,510.80, with 95% of the values falling within three standard deviations of the mean. The distribution of values across bins can be summarized as follows: 28 observations fell between \$267.89 and \$513.23, 81 observations fell between \$513.23 and \$758.57, 120 observations fell between \$758.57 and \$1,003.91, 145 observations fell between \$1,003.91 and \$1,249.24, 161 observations fell between \$1,249.24 and \$1,494.58, 168 observations fell between \$1,494.58 and \$1,739.92, 171 observations fell between \$1,739.92 and \$1,985.26, 178 observations fell between \$1,985.26 and \$2,230.59, 181 observations fell between \$2,230.59 and \$2,475.93, and 183 observations fell between \$2,475.93 and \$2,721.27.

Please be aware that these values are from a selected simulation and that the values from this observation will be different for each simulation. Nonetheless, these results provide valuable

insights into the potential outcomes and their associated probabilities based on the given assumptions. This information will help us in making informed decisions and better managing the risks involved in our project.

Buy/Sell/Hold Recommendation

After conducting a thorough analysis of Caterpillar Inc. using the Monte Carlo simulation results, we would like to provide our buy/sell/hold recommendation. The simulation considered the following assumptions: Sales Growth Rate with a mean of 9.56% and a standard deviation of 24.45%, COGS as a percentage of sales with a mean of 68.92% and a standard deviation of 1.00%, Overhead Growth Rate with a mean of 16.42% and a standard deviation of 4.05%, and Yearly Growth in Gross PPE with a mean of -3.50% and a standard deviation of 1.52%.

Based on the simulation, the average predicted value for Caterpillar Inc. is \$776.00, with a standard deviation of \$578.27. The three standard deviation range, which covers 99.7% of the possible outcomes, is between \$(958.79) and \$2,510.80. With this wide range of possible outcomes, we recommend a 'hold' position for Caterpillar Inc. at this time. It is important to consider that the simulation's results show significant volatility in the stock price, indicating a level of uncertainty in the company's performance. Investors should closely monitor Caterpillar Inc.'s financial statements and industry trends to reassess their position as new information becomes available.