

## “CATERPILLAR INTRIGUING PROFITABILITY AND SOLVENCY” -AN ANALYSIS

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### **ABSTRACT:**

Caterpillar being a transnational corporation is the renowned leader having unmatched know-how and venture in diverse fields. Delivering better-quality results and budding preeminent team of people adds to the term a global leader. Caterpillar's vertical integration enables efficient and robust validation across components, systems and machines ensuing in products with higher overall quality. Aiming at the criteria to attract motivate retain and reward the firm thrives well. Sharing facts and skills with customers and by developing elevated levels of expertise enable them to be acquainted with significance of their equipment inculcating them to optimize product selection and feat, improves the overall eminence and reach of affairs with clientele .This study inculcates the gig of the MNC through various growth identifiers and checks for in any relationship between profitability and solvency. These two groups of ratio focuses on business's knack to generate retribution as compared to its expenses and other pertinent costs incurred during a precise epoch of time.

**KEY WORDS:** Profit after Tax, Earnings before Interest and Tax, Leverage, Liquidity, Solvency, Revenue, Profitability

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**CATERPILLAR**→Contrived for Controlling Activities and transfer/modify energy to perform and assist and To Enhance efficient performance Rounding the tame Pertaining to Intricate machining and Long Lasting Active Rotation.

## **INTRODUCTION:**

**Caterpillar Inc.** also known as "CAT", devises, concocts, markets and puts on the market the machinery and engines, financial products, insurance to customers by way of an international dealer complex. Caterpillar is the world's largest maker of construction and mining equipment, diesel and natural gas engines and industrial gas turbines. Caterpillar machinery is decipherable by its trademark "Caterpillar Yellow" livery and the "CAT" logo.

The analysis of financial statements is a process of evaluating the relationship between component parts of financial statements to obtain a better understanding of a firm's position and performance. Funds are the financial resources available to an organisation. Liquidity is the ability of a firm to meet their obligations in time. Profit margin gives the profit earned per rupee of total revenue and thus focuses on an organisation's ability to control expenses. The financial statements provide a summarized view of the financial position and operations are performed. In this study, researchers made an attempt to measure the funds position, profitability and solvency of Caterpillar.

## **OBJECTIVES OF THE STUDY:**

- To scrutinize growth of the MNC in a particular interval
- To weigh up the Fund position of the company
- To evaluate the profitability ratios of the company
- To analysis how CAT maintains trade-off between profitability and solvency

### **HYPOTHESIS:**

**H<sub>0</sub>**: There is coherence prevailing between mean profitability and mean solvency ratios

**H<sub>0</sub>**: There is no annotatable relation between mean solvency and mean profitability ratios

**H<sub>1</sub>**: There is coherence prevailing between standard deviation of profitability and solvency ratios

**H<sub>1</sub>**: There is no annotatable relation between standard deviation of profitability and solvency ratios

### **METHODOLOGY:**

The following methodology has been followed for the collection and analysis of data,

➤ **Period of study**

Annual reports of CAT consequent to the years 2005-2010 were taken into contemplation. The accounting year followed in this company is from 1<sup>st</sup> January to 31<sup>st</sup> December

➤ **Sources of information**

- The study is mainly based on secondary data
- Some details were collected from newspapers, magazines, books and websites

➤ **Data analysis**

The following tools have been applied to analyse the data

- Mean and standard deviation
- Ratio analysis
- Analysis of variance
- MATLAB 2007b



### LIMITATIONS OF THE STUDY:

- The study is based on the published data. Consequently this carries all the precincts inherent in it.
- Financial information related to Caterpillar Inc., has been rounded off to the nearest million dollars that has led to trifling variations in the ratios.
- This study is cramped to a period of five years (from 2005 to 2010) and it does not contrast with any other firm.

### ANTECEDENTS OF CATERPILLAR:

The steam tractors of the 1890s and early 1900s were awfully heavy, sometimes weighing 1,000 pounds (450 kg) per horsepower, and often sank into the rich, soft earth of the San Joaquin Valley Delta farmland surrounding Stockton, California. Benjamin Holt attempted to fix the predicament by escalating the size and width of the wheels up to 7.5 feet (2.3 m) lofty and 6 feet (1.8 m) ample, producing a tractor 46 feet (14 m) extensive. But this also made the tractors increasingly intricate, prized and knotty to uphold. Another solution considered was to lay a impermanent plank road ahead of the steam tractor, but this was lingeringly steep, and interfered with earthmoving. Holt thought of wrapping the planks around the wheels. He replaced the wheels on a 40 horsepower (30 kW) Holt steamer, No. 77, with a set of wooden tracks bolted to chains. On November 24, 1904, he successfully tested the rationalized machine ploughing the soggy delta land of Roberts Island. Troupe photographer Charles Clements was reported to have observed that the tractor crawled like a caterpillar, and Holt seized on the metaphor. "Caterpillar it is. That's the name for it!"

**1883:** Brothers Charles Henry Holt and Benjamin Holt inaugurated the Stockton Wheel Company in Stockton, California.

**1885:** Daniel Best aroused with his first combine.

**1886:** Stockton Wheel led to its first combine, the Link Belt Combined Harvester.

**1892:** Stockton Wheel was renamed as Holt Manufacturing Company.

**1904:** Holt evolved with the first commercially persevered caterpillar-style tractor, or crawler, which was soon sold under the Caterpillar brand.

**1908:** Holt manufacturing came up with its first gas-powered crawlers; Daniel Best sells his company to Holt.

**1909:** Holt sets firm at eastern manufacturing operation by purchasing a plant in Peoria, Illinois.

**1910:** Best's son, C.L. Best, formed his inane tractor manufacturing company, C.L. Best Gas Tractor Company.

**1925:** Holt manufacturing and C.L. Best Gas Tractor merged to form Caterpillar Tractor Company.

**1931:** Caterpillar's Diesel Sixty tractor helps turn up the diesel the staple engine for heavy-duty vehicles.

**1932:** Company recorded its first full-year loss, \$1.6 million.

**1950:** Caterpillar Tractor Company Ltd. was made appellate in Great Britain as the first overseas subsidiary.

**1963:** Caterpillar and Mitsubishi Heavy Industries, Ltd. form a joint venture to produce Caterpillar-designed vehicles in Japan.

**1982:** Company down trod first loss since the Great Depression.

**1985:** An enigmatic factory-extension program was launched that eventually rated \$1.8 billion and completed in 1993.

**1986:** Company was renamed Caterpillar Inc.

**1990:** Caterpillar reorganized along product lines and geographic areas.

**1991:** A prolonged labour dispute began with a strike at two Caterpillar plants.

**1994:** Record-long, 17-month strike began.

**1998:** LucasVarity PLC's Perkins Engines unit was acquired for \$1.3 billion and prolonged labour dispute abashed with the signing of a new six-year contract.

**2001:** Caterpillar abates from the agricultural tractor business.

**2003:** Caterpillar became the first engine manufacturer to offer a complete line of 2004 model year clean diesel engines fully compliant and certified by the U.S. Environmental Protection Agency (EPA).

**2005:** Demonstrated a pledge to sustainable development, Caterpillar responded to natural calamities around the world.

**2006:** Caterpillar Inc. subsidiary Caterpillar Logistics Services, Inc. (Cat Logistics) pinned a new parts distribution centre in the Lingang Industrial Area in Shanghai.

**2007:** Cat machines catered to construct the 1,100-kilometer Yamal-Ukhata pipeline that was a part of a planned 2,500-kilometer gas transportation system built in one of the world's most extreme climates.

**2008-2010:** More than 700 Cat machines aided the construction of 47-mile-long Arabian Canal through Dubai's Arabian Desert.

**2008-2011:** Over 400 new Caterpillar machines buttressed the construction of 2,400-kilometer rail line through the Nafud Desert in Saudi Arabia.

### **CAT PRODUCTS:**

The MNC extends its link to wide range of artefact industrialization with modern mechanised facilities and other built-up constraints that include:

- USED EQUIPMENTS
- ENGINES, RENTAL
- ELECTRONICS
- TECHNOLOGY, GIFTS, OEM AND ATTACHMENT

### **VISION AND MISSION:**

**Vision** is a world in which all people's basic requirements - such as shelter, clean water, sanitation and reliable power - are fulfilled in a way that sustains the environment.



**Mission** is to enable economic growth through infrastructure and energy development, and to provide solutions that protect people and preserve the planet.

**Strategy** is to provide work environments, products, services and solutions that make efficient use of the world's natural resources and reduce unnecessary impacts on people, the environment and the economy

### **CAT DEFINITION:**

- A large tracked vehicle that is propelled by two incessant metal belts, recurrently used for moving terrain in edifice and ranch work
- A vehicle, such as a tractor, tank, bulldozer, etc obsessed by such tracks
- An endless track, driven by sprockets or wheels, used to impel a profound vehicle and facilitate it to fractious soft or potholed ground

### **HUB ON ENLIGHTMENT:**

- Promote and protect individual safety and well-being
- Provide employment, education and training
- Minimize the use of energy, materials, water and land
- Maximize recycling
- Minimize emissions
- Optimize the use of renewable resources.

### **SUCCESS FACTORS:**

**Culture:** Creating a culture of sustainable maturity in all big business units and in all daily work.

**Operations:** Being consistent with sustainability principles and contribute to enterprise-sustainable development goals.

**Business Opportunities:** Recognize and pursue business growth opportunities created by sustainable development.

### **COMPETITORS:**

- Komatsu Ltd.
- CNH Global N.V.
- Deere & Company
- Terex Corporation
- Cummins, Inc
- Ingersoll-Rand Company Limited
- AB Volvo
- Hitachi Construction Machinery Co., Ltd.
- J C Bamford Excavators Ltd.

### **2020 GOALS:**

- Design all new construction to meet Leadership in Energy and Environmental Design (LEED) or comparable green building criteria
- Eliminate waste by reducing waste generation and reusing or recycling all that remains
- Hold water consumption flat
- Use alternative / renewable sources to meet 20% of our energy needs
- Reduce absolute greenhouse gas emissions from existing facilities by 25%
- Increase energy efficiency by 25%
- Reduce recordable workplace injury rates to 0.6% and lost-time case rate due to injury to 0.15%
- Increase customer materials efficiency by 20%
- Increase customer energy efficiency by 20%
- Reduce customer greenhouse gas emissions by 20%
- Provide leadership in the safety of people in, on and around our products



### **ANALYSIS AND INTERPRETATION:**

In this analysis and interpretation of the study the growth, funds position and profitability verses solvency has been analysed. The first criteria of the study are to get through the trends in growth identifiers. Researchers have identified some of the predominant growth indicators of Caterpillar as follows,

- Sales
- Assets
- Net Income
- Revenue
- Earnings Before Interest and Tax (EBIT)
- Gross Operating Profit
- Profit After Tax (PAT)
- Research and Development
- Capital Expenditure

### **GROWTH INDICATORS:**

The intensification indicators that are specified to epitomize the entitlement escalation are taken into deliberation from 2005-2010 respectively. The values incorporated are in million dollars. The growth indicator helps to spot the parameter that sets the company in a pilot pertaining to a particular interval.

**TABLE 1.1**  
**GROWTH IN SALES**

(Value in million dollars)

| YEAR | SALES | DIFFERENCES IN SALES FROM 2005 TO 2010 |        |        |        | FIG of MERIT | %GROWTH      |
|------|-------|--|--------|--------|--------|--------------|--------------|
| 2005 | 34006 |  |        |        |        |              |              |
| 2006 | 38869 | 4863                                   |        |        |        |              | <b>0.143</b> |
| 2007 | 41962 | 3093                                   | -1770  |        |        |              | <b>0.079</b> |
| 2008 | 48004 | 6042                                   | 2949   | 4719   |        |              | <b>0.143</b> |
| 2009 | 29540 | -18464                                 | -24506 | -27455 | -32174 |              | <b>0.384</b> |
| 2010 | 39867 | 10327                                  | 2891   | 27397  | 54852  | 87026        | <b>0.349</b> |

Resource: Caterpillar Annual Report

**TABLE 1.2**  
**GROWTH IN TOTAL ASSET**

(Value in million dollars)

| YEAR | TOTAL ASSETS | DIFFERENCES IN TOTAL ASSET FROM 2005 TO 2010 |        |        |        | FIG of MERIT | %GROWTH       |
|------|--------------|--|--------|--------|--------|--------------|---------------|
| 2005 | 47553        |  |        |        |        |              |               |
| 2006 | 51449        | 3896   |        |        |        |              | <b>0.081</b>  |
| 2007 | 56132        | 4683   | 787    |        |        |              | <b>0.091</b>  |
| 2008 | 67782        | 11650  | 6967   | 6180   |        |              | <b>0.207</b>  |
| 2009 | 60038        | -7744  | -19394 | -26361 | -32541 |              | <b>-0.114</b> |
| 2010 | 64020        | 3982   | 11726  | 31120  | 57481  | 90022        | <b>0.060</b>  |

Resource: Caterpillar Annual Report

TABLE 1.3

GROWTH IN TOTAL NET INCOME

(Value in million dollars)

| YEAR | TOTAL NET INCOME | DIFFERENCES IN TOTAL NET INCOME FROM 2005 TO 2010 |       |       |       | FIG of MERIT | %GROWTH       |
|------|------------------|---|-------|-------|-------|--------------|---------------|
| 2005 | 2854             |   |       |       |       |              |               |
| 2006 | 3537             | 683   |       |       |       |              | <b>0.239</b>  |
| 2007 | 3541             | -6  | -689  |       |       |              | <b>-0.002</b> |
| 2008 | 3557             | 16  | 22    | 711   |       |              | <b>0.004</b>  |
| 2009 | 895              | -2662   | -2678 | -2700 | -3411 |              | <b>-0.740</b> |
| 2010 | 2700             | 1805  | 4467  | 7145  | 9845  | 13256        | <b>2.010</b>  |

Resource: Caterpillar Annual Report

TABLE 1.4

GROWTH IN OPERATING REVENUE

(Value in million dollars)

| YEAR | OPERATING REVENUES | DIFFERENCES IN OPERATING REVENUE FROM 2005 TO 2010 |        |        |        | FIG of MERIT | %GROWTH       |
|------|--------------------|--|--------|--------|--------|--------------|---------------|
| 2005 | 36339              |  |        |        |        |              |               |
| 2006 | 41517              | 5178   |        |        |        |              | <b>0.142</b>  |
| 2007 | 44958              | 3441   | -1737  |        |        |              | <b>0.082</b>  |
| 2008 | 51324              | 6336   | 2895   | 4632   |        |              | <b>0.140</b>  |
| 2009 | 32396              | -18928   | -25264 | -28159 | -32791 |              | <b>-0.360</b> |
| 2010 | 42588              | 10192  | 29120  | 54384  | 82543  | 115334       | <b>0.314</b>  |

Resource: Caterpillar Annual Report



TABLE 1.5

GROWTH IN EBIT

(Value in million dollars)

| YEAR | EBIT | DIFFERENCES IN EBIT FROM 2005 TO 2010 |       |       |       | FIG of MERIT | %GROWTH       |
|------|------|---------------------------------------|-------|-------|-------|--------------|---------------|
| 2005 | 5002 |                                       |       |       |       |              |               |
| 2006 | 6239 | 1237                                  |       |       |       |              | <b>0.247</b>  |
| 2007 | 6446 | 207                                   | -1030 |       |       |              | <b>0.033</b>  |
| 2008 | 5937 | -509                                  | -716  | 314   |       |              | <b>-0.078</b> |
| 2009 | 1991 | -3946                                 | -3437 | -2721 | -3035 |              | <b>-0.664</b> |
| 2010 | 4983 | 2992                                  | 6938  | 10375 | 13096 | 16131        | <b>1.502</b>  |

Resource: Caterpillar Annual Report

TABLE 1.6

GROWTH IN GROSS OPERATING PROFIT

(Value in million dollars)

| YEAR | GROSS OPERATING PROFIT | DIFFERENCES IN GROSS OPERATING PROFIT FROM 2005 TO 2010 |       |       |       | FIG of MERIT | %GROWTH       |
|------|------------------------|---|-------|-------|-------|--------------|---------------|
| 2005 | 10303                  |   |       |       |       |              |               |
| 2006 | 13570                  | 3267  |       |       |       |              | <b>0.317</b>  |
| 2007 | 14129                  | 559   | -2708 |       |       |              | <b>0.041</b>  |
| 2008 | 14889                  | 760   | 201   | 2909  |       |              | <b>0.054</b>  |
| 2009 | 10845                  | -4044   | -4804 | -5005 | -8414 |              | <b>-0.270</b> |
| 2010 | 14517                  | 3672  | 7716  | 12520 | 17525 | 25939        | <b>0.338</b>  |

Resource: Caterpillar Annual Report

**TABLE 1.7**  
**GROWTH IN PAT**

(Value in million dollars)

| YEAR | PAT  | DIFFERENCES IN PAT FROM 2005 TO 2010 |       |       |       | FIG of MERIT | %GROWTH       |
|------|------|--------------------------------------|-------|-------|-------|--------------|---------------|
| 2005 | 2854 |                                      |       |       |       |              |               |
| 2006 | 3537 | 683                                  |       |       |       |              | <b>0.240</b>  |
| 2007 | 3541 | 4                                    | -679  |       |       |              | <b>0.001</b>  |
| 2008 | 3547 | 6                                    | 2     | 681   |       |              | <b>0.002</b>  |
| 2009 | 895  | -2652                                | -2658 | -2660 | -3341 |              | <b>-0.070</b> |
| 2010 | 2700 | 1805                                 | 4457  | 7115  | 9775  | 13116        | <b>2.010</b>  |

Resource: Caterpillar Annual Report

**TABLE 1.8**  
**GROWTH IN RESEARCH & DEVELOPMENT**

(Value in million dollars)

| YEAR | RESEARCH & DEVELOPMENT | DIFFERENCES IN RESEARCH & DEVELOPMENT FROM 2005 TO 2010 |      |      |      | FIG of MERIT | %GROWTH       |
|------|------------------------|---|------|------|------|--------------|---------------|
| 2005 | 1084                   |   |      |      |      |              |               |
| 2006 | 1347                   | 263   |      |      |      |              | <b>0.243</b>  |
| 2007 | 1404                   | 57  | -206 |      |      |              | <b>0.042</b>  |
| 2008 | 1128                   | -276  | -333 | -127 |      |              | <b>-0.197</b> |
| 2009 | 1421                   | 293   | 579  | 912  | 1039 |              | <b>0.260</b>  |
| 2010 | 1905                   | 484   | 191  | 388  | -524 | -1563        | <b>0.341</b>  |

Resource: Caterpillar Annual Report

**TABLE 1.9**  
**GROWTH IN CAPITAL EXPENDITURE**

(Value in million dollars)

| YEAR | CAPITAL EXPENDITURE | DIFFERENCES IN CAPITAL EXPENDITURE FROM 2005 TO 2010 |       |       |       | FIG of MERIT | %GROWTH      |
|------|---------------------|--|-------|-------|-------|--------------|--------------|
| 2005 | 1201                |  |       |       |       |              |              |
| 2006 | 1593                | 392  |       |       |       |              | <b>0.33</b>  |
| 2007 | 1700                | 107  | -285  |       |       |              | <b>0.07</b>  |
| 2008 | 2445                | 745  | 638   | 923   |       |              | <b>0.44</b>  |
| 2009 | 1348                | -1097  | -1842 | -2480 | -3403 |              | <b>-0.45</b> |
| 2010 | 1575                | 227  | 1324  | 3166  | 5646  | 9049         | <b>0.17</b>  |

Resource: Caterpillar Annual Report

Table 1.1 → Dwindle in sales for the year 2009

Table 1.2 → Variation in total assets for the year 2009

Table 1.3 → Remarkable change in net income for the year 2007 and 2009

Table 1.4 → Decrease in revenue for the year 2009

Table 1.5 → Back slag in EBIT for the year 2008 and 2009

Table 1.6 → Retention in gross operating profit for the year 2009

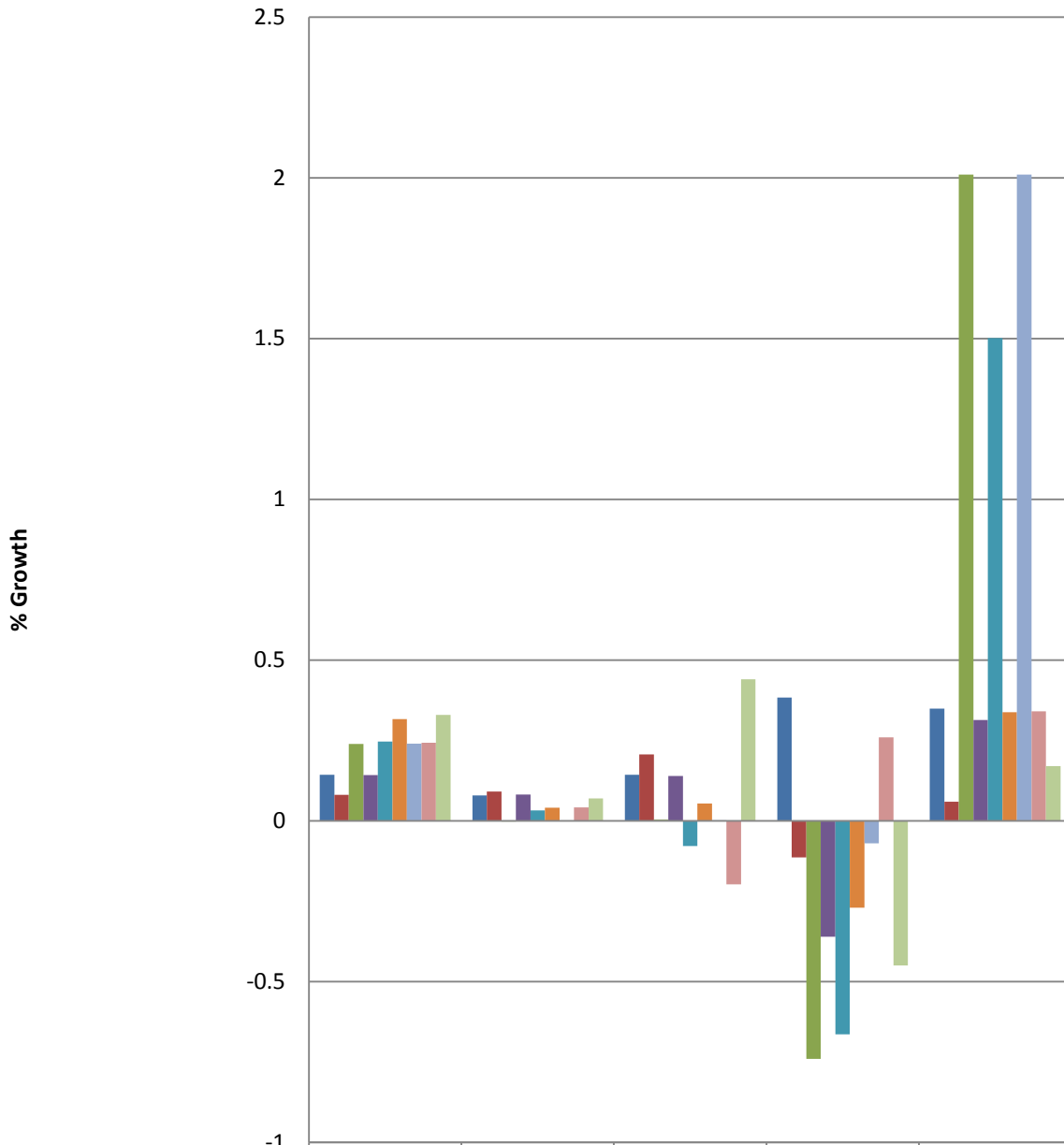
Table 1.7 → Decline in PAT for the year 2009

Table 1.8 → Down fall in research and development for the year 2008

Table 1.9 → Backdrop in capital expenditure for the year 2009



Chart 1



|                             | 2006  | 2007   | 2008   | 2009   | 2010  |
|-----------------------------|-------|--------|--------|--------|-------|
| ■ Sales(%)                  | 0.143 | 0.079  | 0.143  | 0.384  | 0.349 |
| ■ Total Asset(%)            | 0.081 | 0.091  | 0.207  | -0.114 | 0.06  |
| ■ Total Net Income(%)       | 0.239 | -0.002 | 0.004  | -0.74  | 2.01  |
| ■ Operating Revenue(%)      | 0.142 | 0.082  | 0.14   | -0.36  | 0.314 |
| ■ EBIT(%)                   | 0.247 | 0.033  | -0.078 | -0.664 | 1.502 |
| ■ Gross Operating Profit(%) | 0.317 | 0.041  | 0.054  | -0.27  | 0.338 |
| ■ PAT(%)                    | 0.24  | 0.001  | 0.002  | -0.07  | 2.01  |
| ■ R&D(%)                    | 0.243 | 0.042  | -0.197 | 0.26   | 0.341 |
| ■ Capital Expenditure(%)    | 0.33  | 0.07   | 0.44   | -0.45  | 0.17  |

The second objective of the study is to analyse the funds position and profitability of Caterpillar, which helps to measure the company's efficiency in operating the business successfully.

Ratio analysis is a widely-used tool for financial analysis. The term ratio refers to the statistical or quantitative relationship between two items/variables. Ratio analysis can be used to compare the jeopardy and return relationships of firms of diverse sizes. It is the methodical use of ratio to interpret the financial statements so that the strengths and weaknesses of a firm as well as its chronological performance and current financial condition can be made resolute.

Sheer statistics/data obtainable in the different financial statements do not divulge the factual picture of a financial position of a firm. Properly analyzed and interpreted financial statements can provide valuable insights into a firm's performance. To extract the information from financial statements, a number of tools are used to analyse such statements. The most popular tool is the ratio analysis.

**TABLE 2**  
**SOLVENCY RATIOS**

(in times)

| YEAR        | CURRENT RATIO | PAYOUT RATIO | TOTAL DEBT TO EQUITY | LONG TERM DEBT TO TOTAL CAPITAL |
|-------------|---------------|--------------|----------------------|---------------------------------|
| 2005        | 1.20          | 23.00        | 3.05                 | 0.65                            |
| 2006        | 1.20          | 21.00        | 3.98                 | 0.72                            |
| 2007        | 1.10          | 25.00        | 3.20                 | 0.67                            |
| 2008        | 1.20          | 28.00        | 5.84                 | 0.79                            |
| 2009        | 1.40          | 117.00       | 3.62                 | 0.71                            |
| 2010        | 1.40          | 41.00        | 2.63                 | 0.65                            |
| <b>MEAN</b> | 1.25          | 42.50        | 3.72                 | 0.69                            |
| <b>SD</b>   | 0.12          | 37.17        | 1.13                 | 0.05                            |

Resource: Caterpillar Annual Report

The term 'solvency' refers to the ability of a firm to meet its long-term obligations. The current ratio fell below the rule of thumb of 2:1 in all the years of study and hence it represents that the liquidity position of the firm was slightly disturbed. The payout ratio lie prosaic in 2009 and consequent improvement was seen in 2010. There was a hike in total debt to equity in 2008

comparing to the previous years indicating that the claims of creditors were greater than those of owners. It was also noted that there was subsequent change in long-term debt to total capital.

**TABLE 3**  
**CAPITAL STRUCTURE RATIOS**

| YEAR        | LONG TERM DEBT PER SHARE (in dollars) | CURRENT LIABILITIES PER SHARE (in dollars) | CASH PER SHARE (in dollars) | LONG TERM DEBT TO EQUITY (in times) | LONG TERM DEBT AS % OF INVESTED CAPITAL | LONG TERM DEBT AS % OF TOTAL DEBT | TOTAL DEBT AS % OF TOTAL ASSET | WORKING CAPITAL AS % OF EQUITY | REVENUE PER SHARE (in dollars) | BOOK VALUE PER SHARE (in dollars) |
|-------------|---------------------------------------|--|-----------------------------|-------------------------------------|---|-----------------------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------------------|
| 2005        | 23.37                                 | 28.46                                      | 1.65                        | 1.86                                | 65.00                                   | 40.60                             | 82.10                          | 43.90                          | 54.17                          | 12.57                             |
| 2006        | 27.38                                 | 29.81                                      | 0.82                        | 2.58                                | 72.00                                   | 40.20                             | 86.50                          | 56.00                          | 64.29                          | 10.62                             |
| 2007        | 28.57                                 | 35.65                                      | 1.80                        | 2.01                                | 66.70                                   | 37.70                             | 84.20                          | 36.40                          | 72.05                          | 14.24                             |
| 2008        | 37.96                                 | 43.34                                      | 4.55                        | 3.75                                | 79.00                                   | 37.00                             | 91.00                          | 91.40                          | 85.32                          | 10.12                             |
| 2009        | 34.97                                 | 30.88                                      | 7.79                        | 2.50                                | 71.40                                   | 42.60                             | 85.40                          | 85.80                          | 51.86                          | 13.99                             |
| 2010        | 31.99                                 | 34.47                                      | 5.62                        | 1.89                                | 65.40                                   | 38.40                             | 83.10                          | 90.40                          | 66.67                          | 16.94                             |
| <b>MEAN</b> | 30.71                                 | 33.77                                      | 3.71                        | 2.43                                | 69.92                                   | 39.42                             | 85.38                          | 67.32                          | 65.73                          | 13.08                             |
| <b>SD</b>   | 5.33                                  | 5.44                                       | 2.73                        | 0.72                                | 5.37                                    | 2.10                              | 3.17                           | 24.85                          | 12.27                          | 2.54                              |

Resource: Caterpillar Annual Report

The term 'capital structure' refers to the relationship between various long-term forms of financing such as debentures, preference share capital and equity share capital including reserves and surplus. These ratios were manipulated to evaluate the financial position of the firm. The long-term debt per share diminished after 2008. There was a substantial increase in current liabilities per share for the year 2008. The cash per share in 2009 was also found in a state of cataclysm. The long-term debt to equity turned down after 2008. There was a sudden decrease in long-term debt as percentage of invested capital after 2008. Following the year 2006 the long-term debt as percentage of total debt tends to decline and there was a sudden hike in 2009 and later it toddled subsequently. The long-term debt as percentage of total asset attained its peak in 2008 and further fell down. There was a sudden boost of working capital as percentage of equity from 2007 to 2008. Revenue per share also was too low that it derived attention. The book value per share fluctuated from 2005 to 2010.



TABLE 4  
EFFICIENCY RATIOS

| YEAR        | LEVERAGE<br>(in times) | ASSET<br>TURNOVER<br>(in times) | CASH AS<br>% OF<br>REVENUE | RECIEVABLE<br>AS % OF<br>REVENUE | SELLING,<br>GENERAL &<br>ADMINIS.<br>EXP. AS %<br>OF<br>REVENUE | R&D AS %<br>OF REVENUE |
|-------------|------------------------|---------------------------------|----------------------------|----------------------------------|---|------------------------|
| 2005        | 5.60                   | 0.80                            | 3.00                       | 38.40                            | 8.80  | 3.00                   |
| 2006        | 7.40                   | 0.80                            | 1.30                       | 36.10                            | 11.30   | 3.20                   |
| 2007        | 6.30                   | 0.80                            | 2.50                       | 35.00                            | 10.80   | 3.10                   |
| 2008        | 11.10                  | 0.80                            | 5.30                       | 35.30                            | 8.60  | 3.40                   |
| 2009        | 6.90                   | 0.50                            | 15.00                      | 42.90                            | 11.30   | 4.40                   |
| 2010        | 5.90                   | 0.70                            | 8.40                       | 39.40                            | 10.00   | 4.50                   |
| <b>MEAN</b> | 7.20                   | 0.73                            | 5.92                       | 37.85                            | 10.13   | 3.60                   |
| <b>SD</b>   | 2.02                   | 0.12                            | 5.11                       | 3.03                             | 1.21  | 0.67                   |

Resource: Caterpillar Annual Report

Funds are invested in various assets in a business to make sales and earn profits. The efficiency with which assets are managed directly affects the volume of sales. The better the management of assets, the larger is the amount of sales and the profits. Efficiency ratios measure the effectiveness with which a firm manages its resources or assets. These ratios indicate the speed with which assets are converted or turned over into sales. There was an upheaval in leverage for the year 2008. There was a down trod in asset turnover in the corresponding year 2009. The cash as percentage of revenue also trembled in 2009. The receivable as percentage of revenue in the year 2009, oscillated and turned low. The selling, general and administrative expenses as percentage of revenue went down in the year 2008. The research and development as percentage of revenue increased gradually from 2005 to 2010.

TABLE 5  
PROFIT MARGINS

| YEAR        | GROSS PROFIT MARGIN<br>(in times) | NET PROFIT MARGIN<br>(in times) | INTEREST COVERAGE<br>(in times) | INTEREST AS % OF CAPITAL |
|-------------|-----------------------------------|---------------------------------|---------------------------------|--------------------------|
| 2005        | 28.40                             | 7.90                            | 4.90                            | 4.30                     |
| 2006        | 32.70                             | 8.50                            | 4.80                            | 5.30                     |
| 2007        | 31.40                             | 7.90                            | 4.50                            | 5.30                     |
| 2008        | 29.00                             | 6.90                            | 4.20                            | 4.90                     |
| 2009        | 33.50                             | 2.80                            | 1.40                            | 4.70                     |
| 2010        | 34.10                             | 6.30                            | 3.90                            | 4.00                     |
| <b>MEAN</b> | 31.52                             | 6.72                            | 3.95                            | 4.75                     |
| <b>SD</b>   | 2.37                              | 2.08                            | 1.30                            | 0.53                     |

Resource: Caterpillar Annual Report

The primary objective of a business undertaking is to earn profits. Profit earning is well thought-out essential for the endurance of the business. In the words of Lord Keynes, "Profit is the engine that drives the business enterprise". The gross profit ratio indicates the coverage to which selling prices of goods per unit may demur without resulting in losses on operations of a firm. The gross profit margin emerged up after 2008 representing good fund position. The interest as percentage of capital hooted down right from 2007. Net profit ratio establishes a liaison between net profit after tax and sales, and indicates the competence of the management in manufacturing, selling, clerical and other activities of the firm. The net profit margin toggled down in 2009 showing very squat profitability and in subsequent years the firm made up the profitability back to normal. The interest coverage ratios faced down drop in 2009.

TABLE 6  
LIQUIDITY RATIOS

| YEAR        | RECIEVABLE<br>TURNOVER<br>(in times) | RECIEVABLE<br>PER DAY<br>SALES<br>(in dollars) | SALES PER<br>INVENTORY<br>(in dollars) | NO OF DAYS<br>COST OF<br>GOODS IN<br>INVENTORY | INVENTORY<br>TURNOVER<br>(in times) |
|-------------|--------------------------------------|--|--|--|-------------------------------------|
| 2005        | 2.60                                 | 138.38   | 6.96                                   | 68.00  | 5.30                                |
| 2006        | 2.90                                 | 129.82   | 6.54                                   | 75.00  | 4.80                                |
| 2007        | 2.90                                 | 126.13   | 6.24                                   | 79.00  | 4.50                                |
| 2008        | 3.00                                 | 127.15   | 5.84                                   | 79.00  | 4.60                                |
| 2009        | 2.00                                 | 154.60   | 5.09                                   | 126.00   | 2.80                                |
| 2010        | 2.80                                 | 141.94   | 4.44                                   | 102.00   | 3.50                                |
| <b>MEAN</b> | 2.70                                 | 136.34   | 5.85                                   | 88.17  | 4.25                                |
| <b>SD</b>   | 0.37                                 | 10.96  | 0.94                                   | 21.78  | 0.92                                |

Resource: Caterpillar Annual Report

A concern may sell goods on cash well as on credits. Credit is one of the imperative elements of sales promotion. The volume of sales can be increased by following a liberal credit policy. But the effect of this policy may result in tying up substantial funds of firm in the form of trade receivables. Trade receivables are expected to be converted into cash within short period and are included in current assets. Hence, the liquidity position of a concern to pay its short-term obligations in time depends upon the quality of its trade receivables. The receivable turnover attain its peak in 2008 indicating more efficient was the management of sales and less liquid debtors and it came down by two in 2009. For the year 2009, the receivable per day sales drained high. The sales per inventory also decreased subjecting to the year 2009. The number of cost of goods in inventory usurped the attention. Inventory turnover ratio measures the velocity of conversion of stock into sales. The inventory turnover faced an immediate decline in 2009 which shows inefficient management of inventory.



TABLE 7  
PROFITABILITY

| YEAR        | WORKING CAPITAL PER SHARE (in dollars) | CASH FLOW PER SHARE (in dollars) | RETURN ON STOCK EQUITY (in %) | RETURN ON CAPITAL INVESTED (in %) | RETURN ON ASSET (in %) | PRICE PER CASH FLOW RATIO | SALES PER EMPLOYEE (in dollars) |
|-------------|--|----------------------------------|-------------------------------|-----------------------------------|------------------------|---------------------------|---------------------------------|
| 2005        | 5.51                                   | 6.46                             | 33.80                         | 11.80                             | 6.10                   | 8.90                      | 426935                          |
| 2006        | 5.95                                   | 7.96                             | 51.60                         | 14.40                             | 7.00                   | 7.70                      | 438901                          |
| 2007        | 5.18                                   | 8.55                             | 39.90                         | 13.30                             | 6.30                   | 8.50                      | 443666                          |
| 2008        | 9.25                                   | 9.20                             | 58.40                         | 12.30                             | 5.20                   | 4.90                      | 454649                          |
| 2009        | 12.00                                  | 5.17                             | 10.20                         | 2.90                              | 1.50                   | 11.00                     | 345325                          |
| 2010        | 15.33                                  | 7.82                             | 24.90                         | 8.60                              | 4.20                   | 12.00                     | 407580                          |
| <b>MEAN</b> | 8.87                                   | 7.53                             | 36.47                         | 10.55                             | 5.05                   | 8.83                      | 419509.30                       |
| <b>SD</b>   | 4.13                                   | 1.47                             | 17.62                         | 4.23                              | 1.99                   | 2.51                      | 39736.99                        |

Resource: Caterpillar Annual Report

The parameters that are indulged in table 7 were found to be highly intransigent and dissolute. The working capital per share changed its tune high in 2009 and there was a subsequent fall of cash flow per share in 2009. There was a gear down of return on stock equity in 2009. The return on capital invested establishes the relationship between profits and the capital invested. It is the primary ratio and is most widely used to measure the overall profitability and efficiency of a business. The return on capital invested emerged retentive in 2009. The return on asset also thrashed down in 2009. The sales per employee thrived low in 2009.

The third objective of the study is to aver or succinct any relationship between profitability and solvency if it resembles any iconoclast that is lambastable.

### ANALYSIS OF VARIANCE (ANNOVA)

The analysis of variance confining to researchers is an enhanced statistical tool that attributes to the chance of specified causes in an analytical path.

- $x \rightarrow$  Mean values computed in PROFIT MARGIN
- $y \rightarrow$  Mean values computed in SOLVENCY RATIO
- $j \rightarrow$  SD computed in SOLVENCY RATIO
- $k \rightarrow$  SD computed in PROFIT MARGIN

**Hypothesis 1**

**H<sub>0</sub>**: There is coherence prevailing between mean profitability and mean solvency ratios

**H<sub>1</sub>**: There is no annotatable relation between mean solvency and mean profitability ratios

>> x= [31.52 6.72 3.95 4.75];

>> y= [1.25 42.50 3.72 0.69];

>> m=[x;y];

>> anova2 (m)

ans = 0.6583 0.9835

**TABLE 8.1**  
**MEAN PROFITABILIIY AND SOLVENCY RATIOS**  
**ANOVA**

| Source  | SS      | Df | MS      | F   | Prob>F |
|---------|---------|----|---------|-----|--------|
| Columns | 661.95  | 3  | 220.65  | 0.6 | 0.6582 |
| Rows    | 0.19    | 1  | 0.186   | 0   | 0.9835 |
| Error   | 1106.32 | 3  | 368.774 |     |        |
| Total   | 1768.46 | 7  |         |     |        |

**Result:**

Table 8.1 depicts the computational result arrived by using the simulation tool, MATLAB 2007b. From the last two columns of the table, it could be sited that F is less than prob>F. Hence there is no relationship between mean profitability and mean solvency of Caterpillar and so the hypothesis **H<sub>0</sub>** is rejected.

**Hypothesis 2**

**H<sub>1</sub>**: There is coherence prevailing between standard deviation of profitability and solvency ratios

**H<sub>1</sub>**: There is no annotatable relation between standard deviation of profitability and solvency ratios

```
>> k=[2.37 2.08 1.30 0.53];
```

```
>> j=[0.12 37.17 1.13 0.05];
```

```
>> p=[k;j];
```

```
>> anova2(p)
```

```
ans = 0.4766 0.4383
```

**TABLE 8.2**

**STANDARD DEVIATION OF PROFITABILIIY AND SOLVENCY RATIOS**

**ANOVA**

| Source  | SS     | Df | MS      | F    | Prob>F |
|---------|--------|----|---------|------|--------|
| Columns | 526.18 | 3  | 175.394 | 1.08 | 0.4766 |
| Rows    | 129.52 | 1  | 129.525 | 0.79 | 0.4383 |
| Error   | 488.79 | 3  | 162.93  |      |        |
| Total   | 1144.5 | 7  |         |      |        |

**Result:**

As observed from the table 8.2 computed by using MATLAB 2007b, F is sounding greater than Prob>F. So there exists coherence between standard deviation of profitability and solvency of Caterpillar. Hence the hypothesis **H<sub>10</sub>** is accepted.

**FINDINGS AND SUGGESTIONS:**

- On analysing the growth indicators, haphazard growth pertaining to the year 2009 has been pragmatically seen.



- The ratios (profitability and solvency) simultaneously being manipulated resulted in sporadic profit ratio for the year 2009.
- A liaison exists between profitability and solvency.
- Upgrading the subsequent stepladder in short-term liquidity position, current liability per share and profitability would make the CAT for constant progress.
- Extending further more collaboration and tie-ups across the globe shall enhance the firm's value enforced service with globalised technology leading to profound economic value added performance and share holders wealth maximisation.

### **CONCLUSION:**

To **Cater** the **pillar** of customers, clangouring their imagination to proper shape by burnishing and acting as a buttress, aims the company. The financial gig of CAT has been analysed intricately and the ascendancy that adheres to it has been identified like an aerie. The diverse indicators that has waved the part to caterpillar's engulfment in its leading career has been made apropos to its development. Figuring out the various commodities developed and the ample pathway in terms of proceeds and subsidize pose pertaining to assorted aspects make us erudite about the factors that concern the nippy development of the company. To maintain competitiveness in the capital markets and to have effectual and competent exploit of alternative funding sources, Cat pecuniary may from time to time endow with supplementary diffidence support to previously issued asset-backed securitizations. Being a conglomerate corporation it fulfils the liabilities prevalent to an employee and additively meets other hassle in the organisation.

### **SCOPE FOR FUTURE STUDY:**

- This analysis can be compared with competitive earth mover companies such as KOMATSU and AB Volvo.
- Cost benefit Analysis can be made potent in this regard for further working out to come out with new-fangled results.

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**WEBSITES:**

- [www.cat.com](http://www.cat.com)
- <http://in.advfn.com/>

