Deere & Company (DE)

BUY: € 434.80 (+14.22%)

Equity Research Division — 13th October 2023

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Market Cap	110,571
Basic Shares O/S	289.6
52-Wk High	450.00
52-Wk Low	345.55
Fiscal Year End	31 Oct. 2023

($million)	FY19A	FY20A	FY21A	FY22A
Gross profit	10,244	9,887	13,024	14,878
EBITDA	7,556	7,248	10,645	12,084
EBIT	3,332	3,154	6,711	7,828
Net Income	3,253	2,751	5,963	7,131

Key Executives	
John C.May	Chief Executive Officer
Joshua A.Jepsen	Chief Financial Officer

Basic Information	
Last Closing Price	$ 380.66
Target Price	$ 434.80
+/- Potential	+14.22%
Bloomberg Ticker	DE:US
GICS Sector	Industrials
GICS Sub-Industry	Construction & Farm Machinery

5Y Cumulative Returns

Company Description

Deere & Company, also known under the brand John Deere (headquartered in Moline, Illinois, USA), is a globally recognized powerhouse in the agricultural, construction, and forestry machinery sectors. The company is the market leader in the agricultural and forestry machinery sectors, with relevant shares in the construction equipment market. The strong position it has gained throughout more than 180 years is due to a sterling brand reputation and the high quality of its products.

Deere's target clients are both small and massive farming companies and constructors, and it reaches these targets by providing cutting-edge equipment and solutions. Deere has a product portfolio that includes diverse machinery such as tractors, combines, excavators, lawnmowers, forestry machinery, and a wide range of implements and services. The company also provides financial solutions to its clients (such as agricultural and construction financing), with the brand John Deere Financial.

Summary

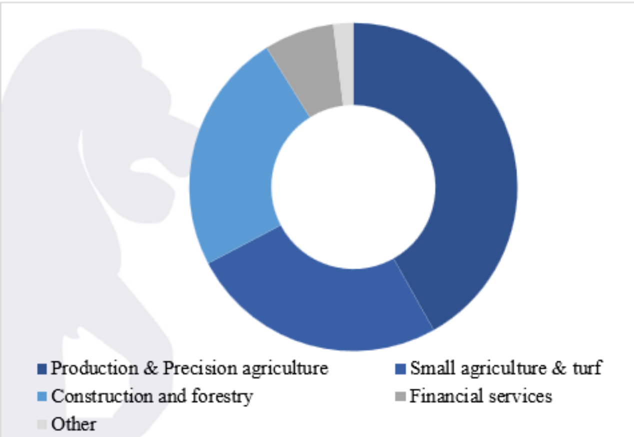
Deere & Company has a strong competitive position in the businesses in which it operates. Moreover, it is a company with a consistent historical revenue growth (11,8% Revenue CAGR over the last 5 years). From a valuation standpoint, we performed both absolute and relative valuation. For the absolute one, we used FCFF through 2033 plus TV, discounted at a WACC of 9.28%. The final price per share of the company resulting from the analysis is $434.80, up 14.22% from the previous close price. A different result is obtained through the relative valuation: using trading multiples, we obtained a final price per share of $357.17. We believe that the relative overvaluation can be justified by the company's relative risk and growth opportunity. Therefore, with a long-term perspective, our recommendation is a BUY.

Company Overview

The company generates net sales from the sale of equipment to John Deere dealers and distributors. It manufactures and distributes a full line of agricultural equipment; a variety of commercial and consumer equipment; and a broad range of equipment for construction, roadbuilding, and forestry. These operations (collectively known as the "equipment operations") are managed through the production and precision agriculture, small agriculture and turf, and construction and forestry operating segments. The company's financial services segment provides credit services, which finance sales and leases of equipment by John Deere dealers. In addition, the financial services segment provides wholesale financing to dealers of the foregoing equipment, finances retail revolving charge accounts, and offers extended equipment warranties.

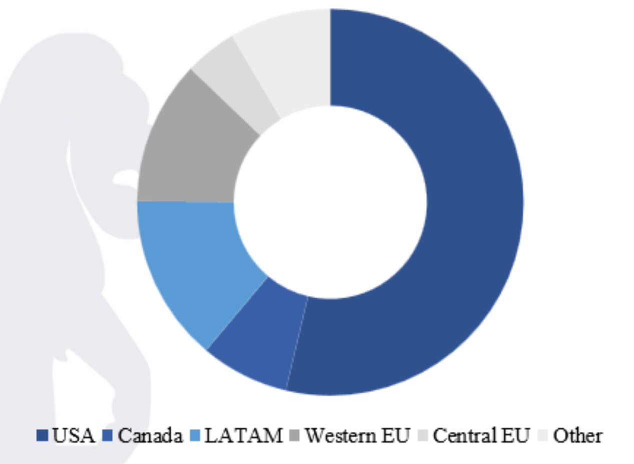
The company's Smart Industrial operating model is focused on making significant investments, strengthening its capabilities in digital, automation, autonomy, and alternative propulsion technologies. These technologies are intended to increase worksite efficiency, improve yields, lower input costs, and ease labor constraints.

Figure 1. Revenue Breakdown by Product



Source: Minerva Investment Society

Figure 2. Revenue Breakdown by Geographic reach



Source: Minerva Investment Society

Revenues

Deere generates revenues from four main sources:

- **Production and precision agriculture:** It involves the manufacturing of tractors, combines, and other machinery crucial for modern farming. Additionally, it encompasses the development and implementation of precision agriculture technologies such as GPS-guided systems, sensors, and data analytics to optimize farm operations.

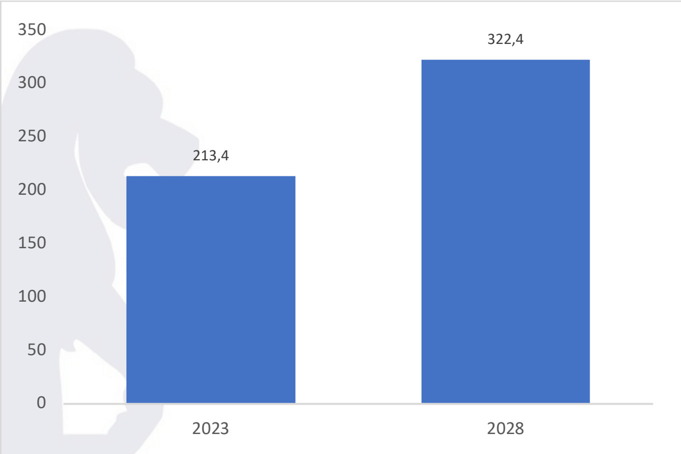
- **Small agriculture & turf:** It includes the production of smaller tractors suitable for small farms or specialized applications. Turf-related products involve lawn and garden equipment, catering to residential and commercial landscaping needs.

- **Construction & forestry:** It encompasses the production of construction equipment such as excavators, loaders, and graders. In forestry, the division produces equipment like harvesters and forwarders used in logging operations.

- **Financial Services:** The financial services division of the company offers credit services to support the sales and leases of John Deere equipment through its dealers. This segment also extends wholesale financing to dealers, finances retail revolving charge accounts, and provides extended warranties for the equipment.

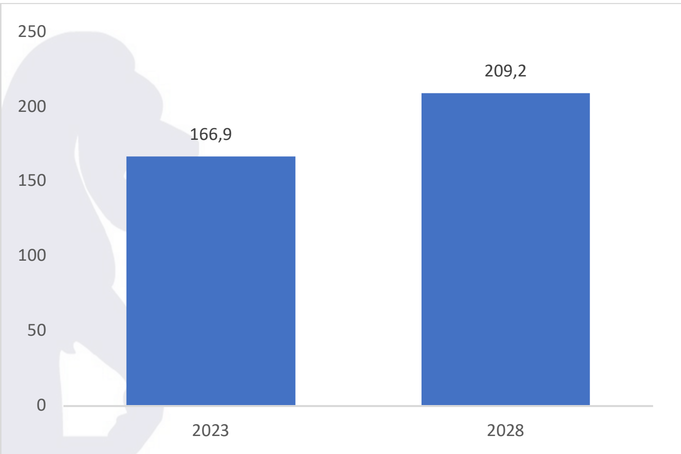
Deere's main market is represented by the United States, making up more than half of the company's revenues; the Latin America market follows, representing ca. 13% of sales, followed by Western Europe, representing ca. 12% of sales.

Figure 3. Agricultural Machinery Market Size in USD Billion



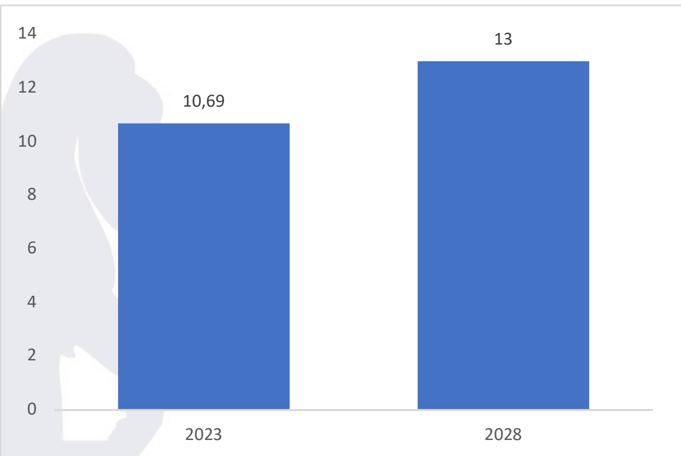
Source: GlobeNewswire & Minerva estimates

Figure 4. Construction Equipment Market Size in USD Billion



Source: Marketline & Minerva estimates

Figure 5. Forestry Machinery Market Size in USD Billion



Source: Mordor Intelligence

Industry Outlook

As mentioned above, the company mainly operates in the agricultural, construction, and forestry machinery sectors. A description of the aforementioned industries is presented below.

Agricultural Industry

The Agricultural Machinery Market size is estimated at USD 213.4 billion in 2023, and is expected to reach USD 322.4 billion by 2028, growing at a CAGR of 8.6% during the forecast period (Figure 3).

Agriculture machinery is used to make farming operations easy and achieve high yields. It reduces manpower in the farms and cuts down labor costs. It includes tractors, plows, harvesting machines, cultivators, and seedling machines.

As regards market geography, Asia Pacific is considered the largest and fastest-growing market, followed by Europe and North America.

The industry is facing transformation, marked by the adoption of technologies such as integration of AI, automation, robotics and transition to more sustainable machines. For this reason, the biggest companies are investing in electric, smart equipment and precision farming solutions to improve their products and gain competitive advantage. Moreover, governments around the world are increasingly promoting sustainable agriculture practices due to ESG policies. Equipment producers can explore new ways to help farmers adopt standards, while also creating value for stakeholders by protecting the environment and improving food quality.

The agricultural machinery industry has also downsides that need to be mentioned: a major one has been shown by the COVID-19 pandemic, which revealed strong vulnerabilities within global supply chains, pushing companies to reassess their strategies. Moreover, geopolitical tensions (such as wars) and trade battles have effective potential to impact the supply chains and global revenues of leading companies.

The agricultural machinery market is consolidated, with key players accounting for the majority of the market share. The top players in the market are Deere and Co., CNH Industrial, AGCO Corporation, Kubota, Mahindra and Mahindra Limited, Iseki & Co. Ltd, JC Bamford Excavators Limited, and Lindsay Corporation.

Construction Industry

The construction equipment market size is valued at USD 166.9 billion in 2023 and is expected to reach USD 209.2 billion by 2028, at a CAGR of 3.9% (Figure 4).

Construction equipment refers to heavy machinery that performs specific construction or demolition functions. This equipment is transportable, semi-permanent, or permanent and is primarily used for earthmoving, lifting containers or materials, drilling holes in the earth or rock, and concrete and paving applications. It is also used in other applications such as infrastructure, residential, commercial, and industrial buildings. Asia remains the key market for construction equipment, though the demand is also substantial in North America and Europe.

The industry is characterized by some relevant trends. The first one is the significant growth of investments in emerging economies (like various African countries) in mechanized construction projects. Another relevant trend is the remarkable growth in the rental market for construction equipment (expected to grow at a CAGR of 6.12% from 2023 to 2030), as companies opt more and more for cost-effective rental solutions over capital-intensive purchases, particularly in the urban construction market. The sector can also benefit from recent institutional policies: post-pandemic government investments in infrastructure projects have increased demand for construction equipment, especially in urban areas.

The construction equipment market is characterized by numerous international and regional players, resulting in a highly competitive market environment. Apart from the top players, small-scale or domestic players account for a significant share of the market.

Some of the major companies are Caterpillar Inc., Kobelco Construction Machinery Co., Ltd, CNH Industrial NV, Deere & Company, Komatsu Ltd, JCB India Limited, Volvo Group, Doosan Infracore, and XCMG.

Forestry Industry

The Forestry Machinery Market size is expected to grow from USD 10.69 billion in 2023 to USD 13 billion by 2028, at a CAGR of 4% during the forecast period (Figure 5).

Forestry equipment refers to tools used for managing and converting forests.

Europe is the largest market and is expected to remain the leading as well as the fastest-growing. The European Union has about 182 million hectares of forest, covering 43% of its geographical area, making it one of Europe's most valuable renewable resources.

Factors such as rising mechanization rates in the logging sectors of developing nations and the increasing use of cut-to-length logging techniques, which are more machine intensive, in industrialized countries are contributing to the growth of the market.

The Forestry Machinery Market is fragmented, with major companies such as Deere & Company, Komatsu, Barko Hydraulics L.L.C. Caterpillar, Inc, and Tigercat International Inc.

Porter's 5 Forces

Buyer Power: moderate. Customers in the agricultural and construction sectors typically make substantial investments in equipment, due to the nature of the sector in which they operate. While buyers have some power to negotiate on price and terms due to the presence of various competitors, John Deere's strong brand reputation within the market and the superior features of its machinery in relation to their price can mitigate buyer power. Additionally, the extremely high market share in the Tractors and Agricultural Machinery Manufacturing industry helps Deere in its position with the majority of its customers. However, economic downturns or industry-specific challenges can increase price sensitivity among buyers for some of its products, especially the most sophisticated and expensive and the ones not essential to the agricultural or construction business. Also, fierce competition, especially in the construction equipment market (in which Deere is the 4th major player in the world), helps leverage the bargaining power of buyers.

Supplier Power: moderate. John Deere purchases raw materials and some manufactured components and replacement parts for its equipment, engines and other products from leading suppliers both domestically and internationally (such as General Motors Company, Caterpillar Inc., 3M Company, United States Steel Corp. and many others), strongly diversifying its suppliers' network. We need to say that Deere has strong and long-lasting relationships with many of its suppliers, but some of them are also competitors in other industries (such as Caterpillar Inc. in the construction equipment industry). Additionally, commodity price fluctuations driven by major macroeconomic events can affect costs, and shortages of key components from suppliers (which are mostly in the USA) can pose challenges also for a market leader like Deere.

Substitutes: low. John Deere's products are highly specialized for agricultural and construction purposes, making direct substitutes unlikely in the near term. There are limited alternatives that can match the precision and capabilities of Deere's equipment. Another key point of Deere's advantage is its offer of customization options and integrated solutions that cater to specific customer needs: highly tailored solutions make it challenging for potential substitutes to match the level of functionality and compatibility provided. While alternative technologies will emerge over time, the strong reputation of John Deere's brand and its remarkable investments in R&D will keep the risk of its products being substituted low.

Threat of New Entrants: low. The industries in which the company operates are characterized by several barriers to entry, such as high capital requirements, technological complexity, brand reputation and customer loyalty. The capital-intensive nature of the business acts as a significant barrier to new entrants: establishing a global manufacturing and distribution network, developing advanced technology, and building a highly trusted brand like John Deere takes considerable time, financial resources and a wide network of suppliers. In order to maintain and strengthen its competitive advantage, Deere & Co. has also spent a significant part of its revenues in 2022 on R&D (more than $3.6 billion), an investment almost impossible to match for new entrants.

Rivalry among Existing Competitors: high. As mentioned above, the industries in which the company operates are characterized by fierce competition. In particular, the construction equipment market (which includes heavy machinery such as excavators, loaders, bulldozers, and cranes), is characterized by huge competition, and major players invest heavily in research and development to introduce new features and technologies in their equipment, such as advancements in automation, precision and environmental sustainability. In addition, there are major competitors with a global presence (such as Caterpillar, the market leader in the construction equipment industry, and Komatsu, the cost leader) capable of serving different markets and industries with specific pricing strategies, intensifying competition in all regions in which John Deere operates.

SWOT Analysis

Strengths:

Diverse portfolio

John Deere offers different types of products to its customers. Initially, the company gained popularity for its agricultural equipment and machinery, such as tractors, harvesters, mowers, cutters, etc. However, later the brand diversified its products by manufacturing heavy construction machinery, which included bulldozers, cranes, diggers, etc. Besides that, the brand also started manufacturing machines used by the government and military. Such diversification helps the brand to generate revenue by selling various products to diverse clients.

Demand for the Company's equipment

Agricultural fundamentals are expected to remain solid into 2023, and retail demand will comprise most of 2023 sales. The company expects dealer stock inventory replenishment to occur in 2024. The North American retail customer fleet age remains above average, and dealer inventories are historically low due to the manufacturing and supply chain constraints over the past few years. The company expects to sell more large agricultural equipment in 2023 than 2022 in North America, Europe, and South America. Demand for small agricultural equipment remains stable, while turf and utility equipment product sales are expected to be lower due to the overall U.S. economic conditions. Construction equipment markets are forecasted to be steady.

Weaknesses:

Limited presence in growing markets

Businesses look forward to expanding internationally to increase their sales and revenue. John Deere has a significant presence in the US and Europe. However, it does not operate in emerging markets that are expected to perform well in the future. For example, middle eastern countries, such as Saudi Arabia, UAE, Qatar, in the construction machinery market. Such a limited international presence acts as a weakness of Deere.

Dependence on external factors

Deere's dependence on external factors like weather conditions, government policies, and trade tariffs underscores the company's vulnerability to macroeconomic and geopolitical factors beyond its control. While it can take measures to mitigate these risks through diversification, innovative product offerings, and proactive engagement with policymakers, these external factors remain significant challenges that can impact the company's financial performance and market dynamics.

Opportunities:

Technology implementation

The company's approach to technology involves hardware and software, guidance, connectivity and digital solutions, automation and machine intelligence, autonomy, and electrification. This technology is incorporated into products within each of its operating segments. Customers continue to adopt technology integrated in the John Deere portfolio of "smart" machines, systems, and solutions. The company expects this trend to persist for the foreseeable future.

Renewable energy

As the world increasingly focuses on reducing greenhouse gas emissions and transitioning to more sustainable energy sources, there's a significant opportunity for John Deere to explore renewable energy solutions for its machinery. John Deere can align with global sustainability goals, meet customer demand for greener equipment, and contribute to a more environmentally responsible future in both agriculture and construction industries.

Threats

Supply chain disruptions

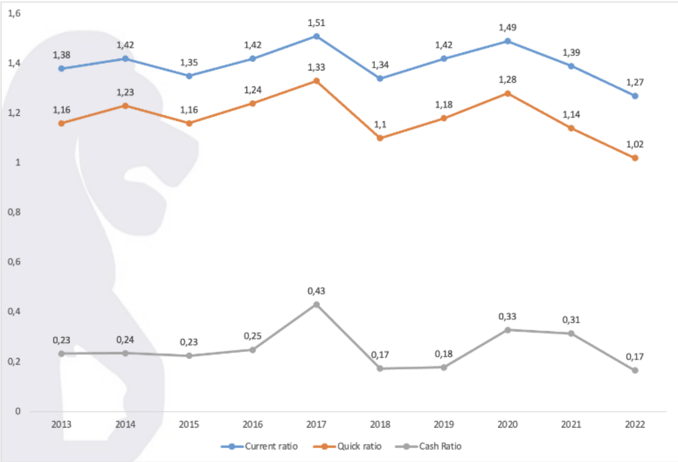
Supply chain disruptions impacted many aspects of the business, including parts availability, production costs, and the number of partially completed machines in inventory. In 2022, Past due deliveries from suppliers were at elevated levels. Late part deliveries incurred expedited freight charges and led to the rework of partially built machines, contributing to production inefficiencies and higher overhead costs.

Inflation

Inflation was a pervasive feature throughout 2022, increasing the cost of material, freight, energy, salaries, and wages. Higher costs due to general business inflation were offset by price realization, which mitigated the impact of inflation on the company's operating results. The company expects inflation to continue in 2023, resulting in higher costs. If customers are unwilling to accept increases in the cost of John Deere products, or the company is otherwise unable to offset increases in production costs, inflation could have an adverse effect on the company's operations and financial condition.

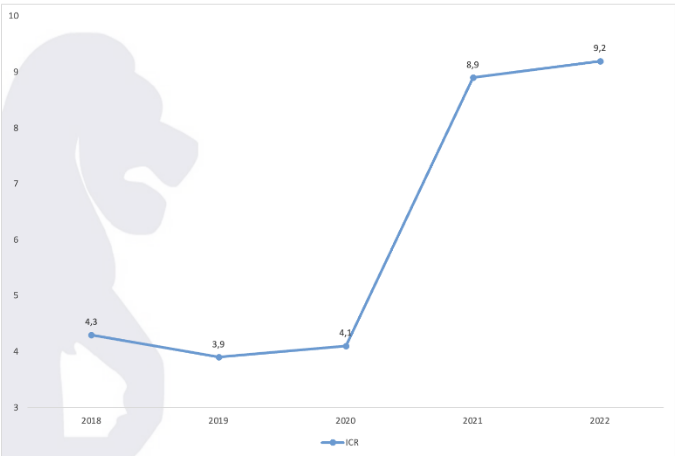
Financial Analysis

Figure 6. Liquidity Ratios



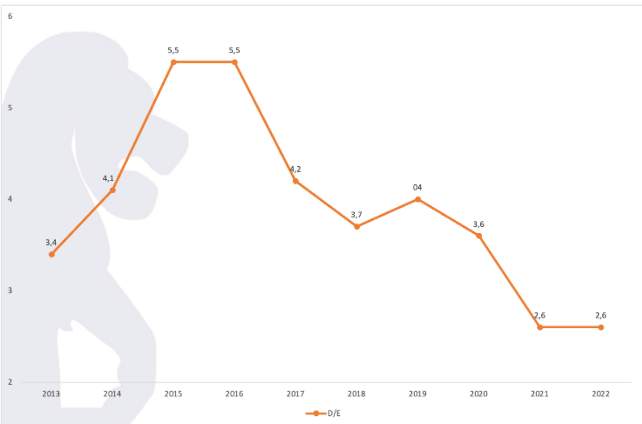
Source: Minerva Investment Society

Figure 7. Interest Coverage Ratio



Source: Minerva Investment Society

Figure 8: D/E Ratio



Source: Minerva Investment Society

Liquidity

Deere's liquidity has historically been quite stable. The company's current and quick ratios are consistently above one in the period considered for our analysis. We should note that financing receivables due in the next 12 months represent more than half of the company's current assets. These receivables mainly consist of retail notes originated in connection with financing sales of John Deere equipment to retail customers and wholesale financing to dealers of John Deere equipment. Given the current macroeconomic trends in the US, where a considerable part of this notes is located (According to the last annual report, 85% of the company's financing receivables were located in the U.S. and Canada), there is a risk of increased delinquency rates in this kind of receivables in the future. However, given that there is no disproportionate concentration of credit risk with any single customer or dealer and the company retains as collateral security in the equipment associated with the notes, we think that this should not represent a threat to the company's liquidity position.

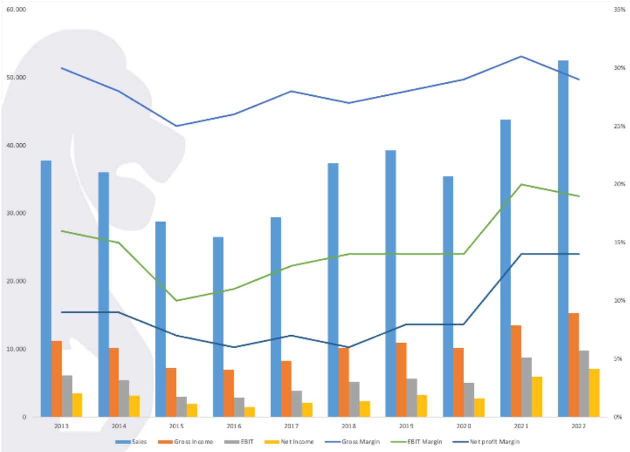
An important point to note is that in 2017-2018 the company acquired Wirtgen Group, mainly using cash, and that is why the cash ratio spikes before the acquisition and falls immediately afterwards.

Solvency

In order to assess Deere's ability to sustain its activity in the long term, we decided to look at its Interest Coverage Ratio and D/E ratio. We can see a decreasing trend in the D/E ratio over the last years of the considered period. One also must applaud the management's job at handling debt, noticing how they doubled their borrowings in 2020, taking advantage of the fact that interest rates were at their lowest level.

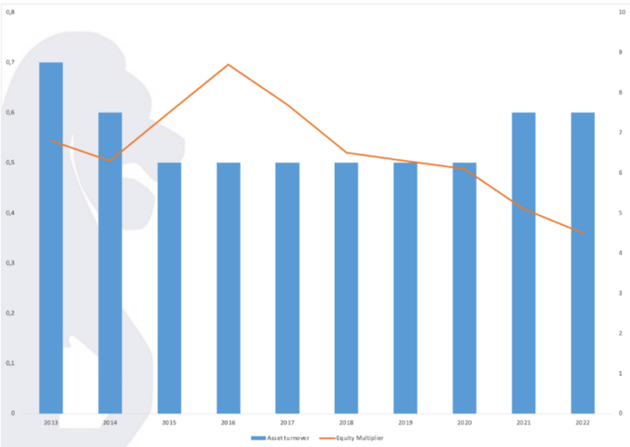
Looking at the IC ratio, we can see a substantial increase in 2021 and 2022. This is mainly due to a notable increase in operating profits. This additional profit also boosted net income, which flowed through the balance sheet as retained earnings, increasing stockholders' equity and therefore further decreasing the debt to equity ratio, despite the absolute increase in total debt. It should be mentioned that the company faces an interest rate risk. According to its latest annual report, rising interest rates have historically impacted the company's borrowings sooner than the benefit is realized from the financing receivable and equipment on operating lease portfolios. As a result, its financial services operations experienced spread compression in 2022. If interest rates continue to rise, further spread compression is expected, which would negatively affect the interest coverage ratio.

Figure 9. Profitability Ratios



Source: Minerva Investment Society

Figure 10. 5-Step Dupont



Source: Minerva Investment Society

Figure 11. Cash Conversion Cycle

	2018	2019	2020	2021	2022
DSO	58	63	63	47	52
DIO	73	84	86	76	79
DPO	36	38	37	33	37
CCC	95	109	112	90	94

Source: Minerva Investment Society

Profitability

As regards the analysis of the profitability margins, these oscillated during the considered period. Overall, revenue grew at a 3.7% CAGR in the last decade, but net profit outperformed the latter by almost 5% (8.2% CAGR). As one can infer from the graph below, the company saw its margins hold stable throughout a huge part of the decade, but the aftermath of the pandemic helped to push them to superior levels. Gross margin is now just below 30%, with net margin at roughly 14%, more than twice of what was achieved in 2018. The true question is whether the company will manage to keep its margins at such high levels.

A key factor is whether the firm will be able to continue to pass higher costs to its customers. Another thing to note is that the portion of revenues spent in R&D and SG&A have decreased during the last years of the period considered for the analysis. Since the firm operates in competitive markets, it should be asked whether it will be able to sustain its market share without increasing R&D and SG&A expenses on sales. In conclusion, it seems margins are quite resilient and even though there is a possibility of a small decline, it should result in no devastating effect for Deere.

5-Step DuPont Analysis

It may be useful to investigate which are the main variables that impact on shareholder profitability through the 5-step Dupont model. Asset turnover has settled at a relatively stable value after the initial fall in 2015. Overall, one can say that 0.5x is the average asset turnover for this company, with the recently achieved results being an exception due to strong performance. The equity multiplier sharply fell from pre-acquisition highs, but the change was offset by growth in net profit margins, as we have seen in the analysis above. So, ROE values are now back to pre-acquisition ones, but its composition is much different, with much higher net margins and reduced leverage.

Cash Conversion Cycle

The Cash Conversion Cycle (CCC) for Deere is calculated using three key metrics: Days Sales Outstanding (DSO), Days of Inventory Outstanding (DIO), and Day Payables Outstanding (DPO). The CCC formula is employed to assess a company's working capital management efficiency. A shorter cash conversion cycle indicates that the company is more adept at selling inventories, recovering cash from sales, and paying suppliers. Moreover, a shorter CCC has a positive influence on the company's cash flows due to the increased availability of cash.

DPO values oscillate around 37, while inventory days have usually been around 80. Throughout the cycle DSO first increased, reaching 63, and then fell to values around 50. The same can be said about the overall cash conversion cycle: after a significant increase before the pandemic, it moved towards values that are closer to its historical average. Despite a decreasing trend might be a good signal, this is a key metric that investors should track carefully in the coming years.

Figure 12. DCF Analysis

Assumptions		
Final period in forecast horizon		FY2033
Terminal growth rate		2,00%
Tax Rate		22,85%
WACC		9,28%
Calculations		
Final forecast FCFF	$	13.360,35
Terminal value	$	173.424,49
Present value of forecast cash flows	$	61.422,25
Present value of terminal value	$	71.423,98
Enterprise value	**$**	**132.846,23**
Less: Debt & Other capital claims	$	61.863,00
Add: Cash & Cash Equivalents	$	7.417,00
Add: Non-operating assets	$	48.303,00
Less: Fair value of options		786
Equity value	**$**	**125.916,81**
Weighted average basic shares		289,6
Value per share	**$**	**434,80**
Current value per share	$	380,66
Premium (discount to last close)		14,22%

Source: Minerva Investment Society

Valuation

Our analysis followed two main approaches:

- Intrinsic valuation regarding the DCF model (FCFF).
- Relative valuation using comparable company analysis.

Cost of Capital

Throughout the whole analysis, we used a constant cost of capital. We can therefore start looking at how we computed it through its different components.

Risk-free rate

The risk-free rate has been assumed to be equal to the 10-year Treasury bond yield (4.30%).

ERP

To compute the ERP, we followed a bottom-up approach. Differently from the computations carried out to get the measurement of beta, we used, instead of a business-segment division, a geographic division of revenues, as we concluded that this would be a better proxy of risk premium. We divided Deere & Company's revenues in five main geographic sources: the United States, Canada, Latin America, Western Europe, Central Europe, and the rest of the world. By computing the weighted average of the single ERPs (Damodaran) with the proportional share of revenues, the ERP resulted to be equal to 6.85%.

$$ERP = \sum_{i=1}^{n} \frac{Rev_i}{Total\ Rev} \cdot ERP_i$$

Beta

To compute the beta of Deere Company, we used the bottom-up approach as well. In particular, we first divided Deere & Company's business into four main segments: Production and Precision Agriculture (42% of revenues), Small Agriculture and Turf (25% of revenues), Construction and Forestry (24% of revenues), and Financial Services (7% of revenues). Then, we took the unlevered beta for each segment (Damodaran), applied the Blume adjustment, and computed a weighted average by the estimated value of business. The estimated value of business was in turn computed by multiplying sales per segment by the EV/sales factor for each segment (Damodaran). The unlevered beta, as a result, is equal to 0.8759.

$$Estimated\ value\ of\ business = EVB = Revenues \cdot \frac{EV}{Sales}$$

$$\begin{aligned}\beta_{U(Company)} = &\left(\beta_{U(Prec.agr)} \cdot \frac{2}{3} + \frac{1}{3}\right) \cdot \frac{EVB_{Prec.agr}}{EVB_{Company}} \\ &+ \left(\beta_{U(Turf)} \cdot \frac{2}{3} + \frac{1}{3}\right) \cdot \frac{EVB_{Turf}}{EVB_{Company}} \\ &+ \left(\beta_{U(Constr.)} \cdot \frac{2}{3} + \frac{1}{3}\right) \cdot \frac{EVB_{Constr.}}{EVB_{Company}} \\ &+ \left(\beta_{U(Fin.Serv)} \cdot \frac{2}{3} + \frac{1}{3}\right) \cdot \frac{EVB_{Fin.Serv.}}{EVB_{Company}}\end{aligned}$$

To compute the levered beta, we used the Hamada formula and a tax rate of 22.85%, and the levered beta is therefore equal to 1.1549.

Cost of Equity

The cost of equity, therefore, is equal to:

$$Cost\ of\ equity = k_e = r_f + \beta_L \cdot ERP = 12.21\%$$

Cost of Debt

To compute the cost of debt, we added the risk-free rate and the spread of Deere & Company's debt:

$$Pre - tax\ cost\ of\ debt = rf\ rate + debt\ spread$$

To compute Deere & Company's debt spread, we assumed that due to a high level of interest coverage (which would put its synthetic rating at AA/Aa2), the correct spread was 0.85%. Therefore, with the pre-tax cost of debt equaling 5.15%, using a tax rate of 22.85%, we estimated that the cost of debt would be equal to 3.97%.

$$Cost\ of\ debt = k_d = Pre - tax\ cost\ of\ debt \cdot (1 - t)$$

WACC

We estimated the WACC using the following formula:

$$WACC = \frac{E}{D+E} * Cost\ of\ Equity + \frac{D}{D+E} * Cost\ of\ Debt$$

Weights are computed using the market value of equity and the book value of debt as a proxy of its market value.

Terminal Value

The Terminal Value was computed by applying Gordon's growth model, assuming a long-term growth rate equal to the risk-free rate (2%):

$$Terminal\ value = \frac{Terminal\ CF}{WACC - r_f}$$

DCF and sensitivity analysis

We calculated the estimated value per share by summing the present value of FCFF over the 10 years and the present value of the terminal value:

$$Enterprise\ value = PV(Terminal\ value) + PV(FCFF)$$

We then added cash, adjusted for financing receivables (as sales considered only operating activities of Deere Company, thus excluding revenues from financing operations), subtracted the book value of debt and the fair value of options, and divided the resulting Equity Value by the base number of shares outstanding.

The target price we derived is therefore equal to $434.80, with an upside of ca. +14.22% compared to the last closing price of $380.66 (13/10).

Figure 13. Sensitivity Analysis

	Sensitivity analysis					
	TGR					
WACC	0,50%	1,00%	1,50%	2,00%	2,50%	3,00%
8,50%	$ 412,49	$ 427,44	$ 444,54	$ 464,26	$ 487,26	$ 514,46
9,00%	$ 399,29	$ 412,49	$ 427,44	$ 444,54	$ 464,26	$ 487,26
9,28%	$ 392,64	$ 405,00	$ 418,94	$ 434,80	$ 452,99	$ 474,09
10,00%	$ 377,07	$ 387,57	$ 399,29	$ 412,49	$ 427,44	$ 444,54
10,50%	$ 367,63	$ 377,07	$ 387,57	$ 399,29	$ 412,49	$ 427,44
11,00%	$ 359,08	$ 367,63	$ 377,07	$ 387,57	$ 399,29	$ 412,49

Source: Minerva Investment Society

According to our sensitivity analysis, which we carried out by estimating the value per share by varying the terminal growth rate (range 0,5-3%) and the WACC (range 8.5-11%), the target price is almost symmetrically influenced by variations in TGR and WACC, with 50 bps variations in both variables approximately resulting in a 5-7% variation in share price.

Multiples Analysis

In order to obtain a more comprehensive result, we carried out a different valuation approach performing a multiple analysis and further compare the results with the forecasts obtained through the DCF analysis. For the purpose of the market multiples analysis, we considered a scope of multiples, including those emerging from the trading numbers and the ones calculated from the most recent transactions in the industry.

Figure 14. Multiple Analysis

Company	Ticker	Current Share price (USD)	Revenue (mln USD)	Market Cap (mln USD)	EV (mln USD)	LTM EV/Sales	LTM EV/EBITDA	LTM EV/EBIT
Deere & Co	**DE.N**	382,23	61.368	110.705	160.255	2,61	9,78	11,12
Caterpillar Inc	**CAT.N**	259,22	64.771	133.670	159.283	2,46	10,98	12,93
Toro Co	**TTC.N**	84,46	4.727	8.839	9.705	2,05	13,22	15,63
Volvo AB	**VOLVb.ST**	20,81	49.362	42.432	57.006	1,15	6,60	8,61
Komatsu Ltd	**6301.T**	25,49	26.840	24.138	31.253	1,16	6,08	7,73
Kubota Corp	**6326.T**	13.80	21.381	16.296	29.749	1,39	10,65	14,22

Source: Factset Data as of 19/10

Trading Multiples

To define a pool of suitable comparable companies for the target we looked at the core peer group of companies in terms of size - by looking at market capitalization – industry, financial characteristics and business model, allowing us to identify a set of 5 peers, being the closest representatives of Deere & Co. (the list can be seen in the table).

We used both asset-side and equity-side multiples to capture a broader scope of the valuation. The peer group under consideration is represented by well-established mature businesses, allowing for the use of asset side multiples such as EV/Revenue, EV/EBITDA and EV/EBIT. Carried out calculations resulted in EV/Sales (median) value of 1.39x, EV/EBITDA (median) value of 10.65x, and an EV/EBIT (median) value of 12.93x. Concerning the choice of equity-side multiples, we opted for the P/E TTM, with the result obtained for the peer group standing at P/E TTM (median) of 11.56x. Based on the calculated market multiples we proceeded with the calculation of Equity Value for the target under the four multiples, applying the Equity Bridge Value calculated under the DCF approach where needed. Based on the resulting values we calculated the simple average of the four valuations obtained, with a consequential Equity Value of ca. 103 billion US dollars and a price per stock of 357.17 US dollars, corresponding to a 6% downside vs current market share price of Deere & Co. This overvaluation on a relative basis could be justified by the company fundamentals, future growth opportunity and risk exposure.

Figure 15. Comparison of the valuation methods

		Upside/downside
DCF Valuation	434,80	14,22%
Relative valuation	357,17	-6,17%
Past transaction valuation	452,83	18,96%
Current stock price	**380,66**	**100%**

Source: Minerva Investment Society

Final Valuation Methodology

Considering that the DCF above performed followed a logic of "conservative values", and that we decided not to merge the DCF valuation, which is based on fundamentals of the target company, and the relative valuation, which implied logic is to find a price based on how similar assets trade, we derived a final value of $434.80, equal to the one obtained through the DCF valuation.

Figure 16. Past Transaction Valuation

EBITDA LTM	Avg. w/o outliers
EBITDA LTM	**14,1**
EBITDA Multiples	9,8x
Enterprise Value	**138,1**
Total Non-Operating Assets and Liabilities	(6,9)
Equity Value	**131,1**
Number of shares outstanding	**289600**
Value per share	**452,83**

Source: Minerva Investment Society

Past transactions valuation

Finally, as a method of confirmation to the multiples and DCF analysis, we performed a past transaction multiples analysis, using the software Mergermarket. The parameters considered were: transactions no older than 3 years ago, transaction on a global scale, both minority and majority deals, with companies operating in the sub-sector of "industrial machinery & agriculture". The results of the analysis are a median multiple and a mean multiple of 9.8x (EV/EBITDA); We should consider that these have been mostly deals of smaller scale than the dimension of Deere & Company.

By applying the mean multiple to Deere's LTM EBITDA, the Enterprise Value would be around 138 billion USD; Based on the calculated market multiples we proceeded with the calculation of Equity Value for the target, applying the Equity Bridge Value calculated under the DCF approach and, lastly, dividing for the shares outstanding, the final value per share would be 452.83 US dollars, slightly higher than the DCF valuation.

Investment Risks

Production & Precision Agriculture and Small Agriculture & Turf Operations

The company's agricultural equipment operations are subjected to a number of uncertainties, including customer profitability, consumer purchasing preferences, housing starts and supply, infrastructure investment, and consumable input costs. Additionally, these operations are subject to certain factors that affect farmers' confidence and financial condition.

John Deere's financials

The liquidity and ongoing profitability of Deere Capital Corporation and the company's other financial services subsidiaries depend on timely access to capital to meet future cash flow requirements and to fund operations, costs and purchases of the company's products. If general economic conditions deteriorate further or capital markets become more volatile, funding could be unavailable or insufficient. Additionally, customer confidence levels may result in declines in credit applications and increases in delinquencies and default rates, which could materially impact write-offs and provisions for credit losses.

Market Competition

Deere operates in highly competitive markets, facing competition from well-established players in the agricultural and construction equipment industries, including Caterpillar, AGCO Corporation, CNH Industrial, and Komatsu. The market competition between these players can lead to pricing pressure and John Deere may be forced to reduce prices; market competition can also have a huge impact on the R&D division since competitors are constantly innovating and introducing new technologies and features in their equipment. This makes investing in this division fundamental.

Commodity price volatility

Commodity price volatility poses risks to John Deere primarily by affecting customers' demand for its agricultural machinery. When commodity prices are low, farmers may delay equipment purchases due to reduced income, impacting the company's sales and profitability. Fluctuations can also impact the resale value of used equipment and create inventory management challenges. The company's international exposure adds complexity, as global commodity price trends influence its competitiveness in export markets. To mitigate these risks, it employs strategies like flexible financing options, diversified product offerings, and cost management.

Appendix

Figures in $ (millions)	1	2	3	4	5	6	7	8	9	10		
Years	**2023E**	**2024E**	**2025E**	**2026E**	**2027E**	**2028E**	**2029E**	**2030E**	**2031E**	**2032E**	**2033E**	**Terminal year**
Revenue	56.169	60.305	64.770	69.591	74.796	80.419	85.767	90.716	95.138	98.047	100.008	102.008
Revenue growth rate		7,36%	7,40%	7,44%	7,48%	7,52%	6,65%	5,77%	4,87%	3,06%	2,00%	2,00%
EBIT	11.795	12.531	12.848	13.147	13.423	13.672	14.908	15.839	16.421	16.725	17.060	17.401
EBIT margin	21,00%	20,78%	19,84%	18,89%	17,95%	17,00%	17,38%	17,46%	17,26%	17,06%	17,06%	17,06%
Tax rate	22,00%	22,17%	22,34%	22,51%	22,85%	22,85%	22,85%	22,85%	22,85%	22,85%	22,85%	22,85%
EBIT(1-t)	$ 9.200,48	$ 9.753,12	$ 9.977,51	$ 10.187,31	$ 10.355,97	$ 10.547,90	$ 11.501,65	$ 12.219,41	$ 12.668,40	$ 12.903,07	$ 13.161,13	$ 13.424,65
EBIT (1-t) growth rate		6,01%	2,30%	2,10%	1,66%	1,85%	9,04%	6,24%	3,67%	1,85%	2,00%	2,00%
Sales to capital ratio	1,97	2,01	2,05	2,09	2,13	2,18	2,23	2,29	2,34	2,40	2,46	2,46
Invested capital	$ 28.512,18	$ 30.011,69	$ 31.601,64	$ 33.287,78	$ 35.076,20	$ 36.973,38	$ 38.470,80	$ 39.697,92	$ 40.617,72	$ 40.838,56	$ 40.639,34	$ 41.444,82
Reinvestment rate		15,37%	15,94%	16,55%	17,27%	17,99%	13,02%	10,04%	7,26%	1,71%	-1,51%	6,00%
(-) Reinvestment		$ 1.499,51	$ 1.589,96	$ 1.686,14	$ 1.788,41	$ 1.897,18	$ 1.497,42	$ 1.227,12	$ 919,80	$ 220,84	$ -199,21	$ 805,48
FCFF	$ 9.200,48	$ 8.253,62	$ 8.387,56	$ 8.501,17	$ 8.567,55	$ 8.650,72	$ 10.004,23	$ 10.992,29	$ 11.748,60	$ 12.682,23	$ 13.360,35	$ 12.619,17
Cost of capital	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%	9,28%
Cumulated discount factor		0,915110	0,837427	0,766338	0,701283	0,641751	0,587273	0,537420	0,491798	0,450049	0,411845	
PV		$ 7.552,97	$ 7.023,96	$ 6.514,77	$ 6.008,28	$ 5.551,61	$ 5.875,22	$ 5.907,48	$ 5.777,94	$ 5.707,63	$ 5.502,39	

Terminal cash flow	$	12.619,17
Terminal cost of capital		9,28%
Terminal value	$	173.424,49
PV terminal value	$	71.423,98
PV CF over 10 years	$	61.422,25
Sum of PV	$	132.846,23
Value of debt	$	61.863,00
Cash & Marketable Securities	$	7.417,00
Financing Receivables	$	48.303,00
Value of options	$	786
Value of equity	$	125.916,81
Common shares (oct '23)		289,6
Estimated value per share	$	434,80
Price (13/10)	$	380,66
Upside/downside		14,22%

	Base year	Years 1-5	Years 6-10	After year 10	Assumptions
Agricultural Machinery Market	213.4 Billion $	Grow 8.6% a year	Gradually decreasing to 2.00%	Grow 2.00% a year	Using market forecasts provided in the Industry Outlook section for the first five years. Then assuming that growth declines toward a terminal growth rate of 2%, which is reached in year 10
Construction & Forestry Market	177.6 Billion $	Grow 3.95% a year	Gradually decreasing to 2.00%	Grow 2.00% a year	Using market forecasts provided in the Industry Outlook section for the first five years. Then assuming that growth declines toward a terminal growth rate of 2%, which is reached in year 10
Market Share Agricultural Machinery	19.00%		Stays at current levels		The company is able to keep its leading position
Market Share Construction & Forestry	8.28%		Decreases to 8.03%		The company slightly loses market shares due to the high competitiveness of the sector
Operating margin	21.72%	Gradually decreasing to 17.50%	Stable around 17,5%	Stable around 17%	Calculated considering the average margins in the Agricultural Machinery and Construction & Forestry segments and the change in their share of total revenues over the forecast period. We also assume increasing costs in R&D and SG&A over time to mantain the firm's competitive position
Reinvestment	NA		Sales-to-capital gradually increasing to 2.46	Sales-to-capital ratio of 2.46	Based on historical data. We assume the Sales-to-capital ratio to get closer to its long-term average value over time. In year 10 reinvestment is estimated considering the terminal growth rate and ROIC (reinvestment=g/ROIC)
Cost of capital	10.07%		Stays at current levels		Calculated considering Damodaran's ERP divided by geography, actual debt rating of Deere, Damodaran's Beta calculation by segment, adjusted with the Blume rule, 22,85% statutory tax rate

#	Target	Country	Bidder	Completed Date	EV (€ Mio)	Net Debt (€ Mio)	Equity Val. (€ Mio)	Deal Value (€ Mio)	Sales (€ Mio)	EBITDA (€ Mio)	EBIT (€ Mio)	EV / Sales	EV / EBITDA	EV / EBIT
1	Bauer AG	Germany	Doblinger Beteiligungs GmbH	giu-23	740	469	271	128	1.640	83	(19)	0,5x	8,9x	*n.a.*
2	Nordic Lights Oy	USA	Methode Electronics, Inc.	apr-23	154	22	132	154	80	11	6	1,9x	14,0x	25,9x
3	AgroFresh Solutions Inc	USA	Paine Schwartz Partners LLC	mar-23	494	214	280	393	164	58	14	2,9x	8,1x	33,2x
4	Heartland Agriculture LLC	Canada	Titan Machinery Inc.	ago-22	94	*n.a.*	94	94	188	13	89	0,4x	6,2x	0,9x
5	Cervus Equipment Corp	USA	Brandt Tractor Ltd.	ott-21	327	118	209	309	790	37	23	0,4x	8,6x	14,0x
6	Bell Equipment Limited	India	I A Bell & Co Pty Ltd	set-21	113	87	26	95	372	14	2	0,3x	8,0x	56,1x
7	Escorts Kubota Ltd	India	Kubota Corporation	ago-20	1.486	181	1.305	131	806	116	105	1,9x	13,1x	14,5x
	First quartile											*0,4x*	*8,1 x*	*14,1 x*
	Mediana											**0,5x**	**8,6 x**	**20,2 x**
	Media											**1,2x**	**9,6 x**	**24,1 x**
	Avg. w/o outliers											**1,0x**	**9,4 x**	**21,9 x**
	Third quartile											*1,9x*	*11,0 x*	*31,4 x*
	Minimo											*0,3x*	*6,2 x*	*0,9 x*
	Massimo											*2,9x*	*14,0 x*	*56,1 x*

Fonte: Elaborazioni Minerva su dati MergerMarket

Disclaimer