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Comparative Analysis of Financial Ratios of Selected Semiconductor Equipment Firms During 2020-2023

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Abstract: As a matter of fact, the semiconductor equipment industry has been developing rapidly. On this basis, this research provides a comparative analysis of the financial ratios of four selected semiconductor equipment firms, i.e., Axcelis Technologies (ACLS), ACM Research (ACMR), Onto Innovation (ONTO), and Veeco Instruments (VECO), over the period from 2020 to 2023. With this in mind, the study aims to evaluate the financial health, operational efficiency, as well as market performance of these firms in order to identify the optimal investment target for value investing. According to the analysis, a specific investing target is selected. Overall, this research is useful in comparing assets and liabilities, gross revenue, stocks, bonds, return on investment, and other specifications of each of these companies that bring out their strong and weak areas. Based on the analysis, ACLS emerges as the most promising candidate due to its robust financial performance and stable market valuation.

Keywords: Financial ratios, axcelis technologies, current ratio, profit margin, P/E ratio.

1. Introduction

In numerous economies across the globe, the role of the stock market cannot be neglected. As an indispensable part of the financial system, the stock market facilitates and finances the listed company's business activities, accelerates economic growth by mobilizing savings into investments, and provides various possibilities for interest on the capital provided by investors [1, 2]. The stock market rewards investors who seek excessive returns, but they must account for higher risks [3]. This leads to the application of investment strategies that consistently generate profitable returns, often exploiting market anomalies in efficient markets [4].

The Efficient Market Hypothesis (EMH), which was developed by Eugene Fama in 1960, holds the stance that all the available information in the market is efficiently reflected in the prices of the assets [5]. EMH is divided into three forms: weak, semi-strong, and strong. Despite its theoretical appeal, the EMH faces criticism, particularly from behavioral finance, which highlights the influence of cognitive biases and emotional responses on investor behavior, leading to market inefficiencies [6]. Lasse Heje Pedersen's concept of "Efficiently Inefficient Markets" refines this view [7], suggesting that market prices deviate from their fundamental values due to demand pressures and institutional frictions. These inefficiencies are balanced by competition among money managers, creating a market that is inefficient enough to allow for profitable opportunities, yet efficient enough to limit excessive capital inflow.

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Investment strategies vary depending on the level of market efficiency. This research focuses on the technical use of value investing, an approach popularized by Warren Buffett, which involves identifying undervalued stocks based on their intrinsic value through the interpretation of financial statements, which disclose a firm's financial information and provide a comprehensive financial picture a company's financial health, detailing assets, liabilities, revenue, and expenses. These statements are essential for calculating financial ratios and fundamental metrics. By interpreting these financial metrics, investors can make informed decisions that align with the principles of EMH to identify and exploit market inefficiencies effectively. This strategy is particularly relevant and useful in semi-strong markets, where investors seek to exploit mispricing that is not apparent to the broader market. Specifically, value investors buy stocks below their intrinsic value and seek to profit from market corrections when the true value of these stocks is recognized. This strategy emphasizes long-term investment horizons, financial discipline, and thorough analysis of company fundamentals.

The semiconductor equipment industry, essential for semiconductor fabrication, has evolved from basic components to advanced technologies like photolithography and ion implantation [8]. Contemporarily, rapid progress and competition define the sector, with leaders such as Applied Materials and ASML driving innovation through AI and GPUs. AI boosts predictive maintenance and process optimization, while GPUs enhance high-performance computing [9]. Valued at USD 60 billion in 2020, the market is expected to reach USD 100 billion by 2025, driven by consumer electronics, automotive sectors, and IoT growth [10]. The sector's strong demand, financial performance, and supportive policies make it an attractive investment opportunity, leading to the selection of four smaller-cap companies for comparative analysis due to their growth potential [11-25]. Axcelis Technologies, Inc. engaged in design, manufacture and sale of ion implantation and processing equipment for the semiconductor chip manufacturing. High energy, high current and medium current implanters and aftermarket lifecycles products which comprise of used tools, spare parts, improvement of existing equipment, maintenance services and customer education is also provided by the company. Axcelis' target customers are specifically semiconductor chip makers who use its equipment. The firm was established in 1978 and has its base of operations in Beverly in the state of Massachusetts [26].

ACM Research, Inc SWOT Analysis ACM Research, Inc. has got the business of designing, manufacturing, and selling single-wafer wet cleaning equipment for improving the manufacturing process and yield of integrated chips. Their technologies are space-alternated phase shift, timed energetic bubble oscillation, Tahoe, and electrochemical plating. ACM markets its products under the Ultra C brand through direct sales and third-party representatives. Established in 1998, ACM Research is headquartered in Fremont, California [26]. Onto Innovation Inc. produces and distributes macro-defect inspection, metrology solutions and hence lithography systems intending to tools for process control analytical software, for makers of semiconductor and advanced packaging devices. It also provides process and yield management solutions and standalone systems in the areas that include inspection, lithography, probe card and test, and thin film measurements. Onto innovation is also dealing with spare parts and software licensing solutions. Founded as Rudolph Technologies in 1940, the company is headquartered in Wilmington, Massachusetts [26]. This company is engaged in the business of designing, manufacturing, selling, and servicing of semiconductor and thin film process equipment. It's product portfolio consist of laser annealing ion beam deposition and etch, metal-organic chemical vapor deposition, single wafer wet processing and surface preparation, molecular beam epitaxy, atomic layer deposition systems. Veeco's equipment is used in the production of microelectronic components and is marketed to various manufacturers, research centers, and universities. Founded in 1945, Veeco Instruments is headquartered in Plainview, New York [26].

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2. Methodology

This research paper aims to measure the financial performance of selected semiconductor equipment firms, i.e., Axcelis Technologies (ACLS), ACM Research (ACMR), Onto Innovation (ONTO), and Veeco Instruments (VECO), for the period 2020 to 2023 using comparative financial ratios through a quantitative analysis approach. As a research procedure, the researcher obtained the audited financial statements and market data for the specified period from three financial databases: Nasdaq, SEC EDGAR filings, and Gurufocus. All the necessary financial information to compute the financial ratios was extracted from these statements and data. The collected data was then aggregated and analyzed to develop similar financial ratios for the use during analysis stage.

Financial ratios in this study are grouped into five categories: liquidity, solvency, profitability, efficiency, and market value ratios. This research aims to satisfy the following objectives:

- To determine the liquidity, solvency, profitability, efficiency, and market value ratios of the selected companies.
- To analyze these financial ratios to assess the companies' financial health and performance.
- To perform a comparative analysis of these ratios to identify the strengths and weaknesses of each company.
- To evaluate the relative importance of each ratio and select the optimal investment target for value investing.

Liquidity ratios measure a company's ability to meet its short-term obligations using its most liquid assets. These ratios are crucial for assessing the firm's short-term financial stability and operational liquidity [14]. One needs to measure the ability of the company to pay short-term obligations with its current assets. This ratio is chosen because it provides a quick snapshot of the firm's liquidity position:

$$\text{Current Ratio} = \frac{\textit{Current Asset}}{\textit{Current Liabilities}} \tag{1}$$

Acid-test (Quick) Ratio provides a maneuver for checking the company's ability to address frequent and existing short-term debts without recourse for inventory sales:

$$\text{Quick Ratio} = \frac{\textit{Current Assets} - \textit{Inventory}}{\textit{Current Liabilities}} \tag{2}$$

Solvency ratios measure a firm's capacity for paying off long-term liabilities and continuing with operations for the long term. These ratios are very useful, especially in analyzing the financial leverage and management of debt by the firm [15]. Gearing Ratio (Debt-to-Equity) indicates the proportion of a company's capital that is financed through debt, helping to assess financial risk:

$$\text{Gearing Ratio} = \frac{\textit{Total Debt}}{\textit{Equity}} \tag{3}$$

Interest coverage ratio measures the company's ability to pay interest on its outstanding debt, reflecting its capacity to handle borrowing costs:

$$\text{Interest Coverage Ratio} = \frac{\textit{EBIT}}{\textit{Interest Expense}} \tag{4}$$

The measures that focus on the relationship between sales and profits, between profits and assets or equity, give insights into a firm's operating efficiency and its financial performance [12]. Gross profit margin indicates the percentage of revenue that exceeds the cost of goods sold, highlighting the efficiency of production processes:

$$\text{Gross Profit Margin} = \frac{\textit{Gross Profit}}{\textit{Revenue}} \times \mathbf{100}\% \tag{5}$$

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Net profit margin measures the percentage of revenue that remains as profit after all expenses, showing overall profitability:

$$\text{Net Profit Margin} = \frac{\boldsymbol{Net\ Profit}}{\boldsymbol{Revenue}} \times \mathbf{100}\% \tag{6}$$

Gross Profit Over Assets (GP/A) shows how efficiently a company generates profit from its assets, also indicating the efficiency of asset utilization:

$$\text{Gross Profit Over Assets} = \frac{\boldsymbol{Gross\ Profit}}{\boldsymbol{Total\ Assets}} \tag{7}$$

Return on Equity (ROE) indicates the return generated on shareholders' equity, reflecting financial performance from the shareholders' perspective:

$$\text{Return on Equity} = \frac{\boldsymbol{Net\ Income}}{\boldsymbol{Shareholder's\ Equity}} \times \mathbf{100}\% \tag{8}$$

Return on Capital Employed (ROCE) measures the profitability and efficiency of capital utilization, showing how well a company uses its capital to generate profits:

$$\text{Return on Capital Employed} = \frac{\boldsymbol{EBIT}}{\boldsymbol{Capital\ Employed}} \times \mathbf{100}\% \tag{9}$$

Earnings Per Share (EPS) reflects the portion of a company's profit allocated to each outstanding share, indicating profitability on a per-share basis:

$$\text{Earnings Per Share} = \frac{\boldsymbol{Net\ income}}{\boldsymbol{Outstanding\ Shares}} \tag{10}$$

Efficiency ratios evaluate how well a company utilizes its assets and manages its operations to generate revenue [16]. Asset Turnover Ratio assesses how efficiently a company uses its assets to generate sales, indicating asset efficiency:

$$\text{Asset Turnover Ratio} = \frac{\boldsymbol{Revenue}}{\boldsymbol{Total\ Assets}} \tag{11}$$

Inventory Turnover Ratio: Indicates how many times a company's inventory is sold and replaced over a period, reflecting inventory management efficiency:

$$\text{Inventory Turnover Ratio} = \frac{\boldsymbol{Cost\ of\ Goods\ Sold}}{\boldsymbol{Average\ Inventory}} \tag{12}$$

Market value ratios demonstrate how the stock market values a company, reflecting investor perceptions and market performance [12]. Price-to-Earnings (P/E) Ratio compares the market price of a stock to its earnings per share, indicating investor expectations of future earnings:

$$\text{P/E Ratio} = \frac{\boldsymbol{Market\ Price\ per\ Share}}{\boldsymbol{EPS}} \tag{13}$$

Price-to-Book (P/B) Ratio compares the market value of a stock to its book value, highlighting the value investors place on a company’s net assets:

$$\text{P/B Ratio} = \frac{\boldsymbol{Market\ Price\ per\ Share}}{\boldsymbol{Book\ Value\ per\ Share}} \tag{14}$$

Enterprise Value to EBITDA (EV/EBITDA) Ratio: Assesses the value of a company relative to its earnings before interest, taxes, depreciation, and amortization, providing a more comprehensive measure of valuation:

$$\text{EV/EBITDA Ratio} = \frac{\boldsymbol{Enterprise\ Value}}{\boldsymbol{EBITDA}} \tag{15}$$

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Price/Earnings to Growth (PEG) Ratio: Adjusts the P/E ratio by the growth rate of earnings, offering a more nuanced view of valuation by considering growth prospects:

$$\text{PEG Ratio} = \frac{\boldsymbol{P/E\ Ratio}}{\boldsymbol{Earnings\ Growth\ Rate}} \tag{16}$$

The use of financial ratios in evaluating and comparing the performance of firms is a cornerstone of financial analysis. Financial ratios are critical tools for assessing a company's financial health, operational efficiency, and market performance. Empirical research has consistently validated the predictive value of financial ratios in assessing company performance and guiding investment strategies. Beaver demonstrated that financial ratios could predict the financial performance of firms, a conclusion reinforced by numerous subsequent studies [11]. Malhorta and McLeod emphasized the necessity of incorporating subjective measures to enhance the accuracy of financial performance predictions, highlighting the complexity and multidimensionality of financial analysis [17]. Kim underscored the importance of correcting data errors in financial databases to ensure the reliability of financial ratio analysis [18]. Foster reviewed various methods for evaluating financial performance, stressing the importance of considering the distribution of financial ratios to avoid misleading conclusions [13]. This underscores the importance of rigorous data validation and methodological precision in financial ratio analysis. Additionally, Lasher noted that the choice of financial ratios is influenced by the nature of the organization and industry-specific characteristics, underscoring the need for contextualized analysis [16]. Brigham and Ehrhardt argued that financial ratios are designed to facilitate the evaluation of financial statements, serving as essential tools for strategic planning, control, and performance evaluation [12]. These financial metrics serve as a comprehensive screening mechanism for analyzing a company's financial condition, supporting informed decision-making in investment and management.

3. Results and Discussion

3.1. Financial Ratios Analysis

Table 1 shows Axcelis Technologies' financial ratios from 2020 to 2023. Liquidity ratios have slightly declined but remain healthy (A healthy current ratio typically falls between 1.5 and 3.0 [19]), solvency ratios improved, with the Gearing Ratio decreasing from 0.10 to 0.05 and the Interest Coverage Ratio rising from 11.72 to 53.10. Profitability ratios saw gains, with Net Profit Margin increasing from 10.53% to 21.78% and ROE from 10.38% to 28.47%. Efficiency ratios, such as Asset and Inventory Turnover, improved. Market value ratios showed mixed trends, with the P/E Ratio normalizing to 17.22 and the PEG Ratio improving to 0.30 by 2023.

Table 1: Financial Ratio of Axcelis Technologie

Axcelis Technologies				
Ratio	2023	2022	2021	2020
Current Ratio	3.79	3.54	4.12	5.58
Acid-test Ratio	2.71	2.56	2.83	3.67
Solvency				
Gearing Ratio	0.05	0.07	0.09	0.10
Interest Coverage Ratio	53.10	37.74	25.91	11.72
Gross Profit Margin	43.45%	43.67%	43.24%	41.85%
Net Profit Margin	21.78%	19.90%	14.89%	10.53%
GP/A Ratio	38.32%	39.64%	38.03%	31.79%

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Table 1: (continued).

EPS	7.53	5.59	2.97	1.49
ROE	28.47%	27.44%	18.30%	10.38%
ROCE	31.20%	29.49%	21.36%	11.53%
Asset Turnover	0.88	0.91	0.88	0.76
Inventory Turnover	2.33	2.37	2.11	1.83
P/E Ratio	17.22	14.21	25.12	19.59
P/B Ratio	4.90	3.90	4.60	2.03
EV/EBITDA Ratio	12.72	9.98	16.39	11.6
PEG Ratio	0.3	0.44	1.26	1.08

Table 2 presents all the ratios outlined in the methodology section for ONTO, except for solvency ratios and PEG ratio in 2020 (The company has no short-term or long-term debt, so does interest payment. Data for the PEG ratio in 2020 is unavailable). Liquidity ratios have improved, with the Current Ratio rising by 2.6 and the Acid-test Ratio increasing from 4.50 to 6.47, reflecting better short-term financial stability. However, this may indicate poor investment and inventory management (Refer to ONTO's balance sheet from SEC filings). Profitability ratios, however, declined, with the Gross Profit Margin falling to 51.51% and the Net Profit Margin dropping to 14.85%. Efficiency ratios worsened, with Asset Turnover decreasing from 0.56 to 0.43 and Inventory Turnover dropping from 1.64 to 1.21. Market value ratios experienced significant fluctuations, with the P/E Ratio rising to 61.95, the P/B Ratio increasing to 4.32, and the EV/EBITDA Ratio climbing to 37.25.

Table 2: Financial Ratio of Onto Innovat

Onto Innovation				
Ratio	2023	2022	2021	2020
Current Ratio	8.69	7.07	6.14	6.09
Acid-test Ratio	6.47	5.05	4.56	4.50
Solvency				
Gearing Ratio	--	--	--	--
Interest Coverage Ratio	--	--	--	--
Gross Profit Margin	51.51%	53.64%	54.39%	50.04%
Net Profit Margin	14.85%	22.22%	18.04%	5.58%
GP/A Ratio	22.01%	30.04%	26.01%	18.97%
EPS	2.47	4.59	2.89	0.64
ROE	6.98%	13.99%	9.98%	2.45%
ROCE	6.98%	13.99%	9.98%	2.45%
Asset Turnover	0.43	0.56	0.48	0.38
Inventory Turnover	1.21	1.64	1.66	1.51
P/E Ratio	61.95	14.84	35.33	74.73
P/B Ratio	4.32	2.08	3.53	1.83
EV/EBITDA Ratio	37.25	9.25	20.24	20.85
PEG Ratio	0.89	0.55	10.72	--
EV/EBITDA Ratio	208.86	10.99	18.54	18.64

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Table 3 presents all the ratios outlined in the methodology section for VECO, except for the interest coverage ratio in 2023, the P/E ratio in 2020 and 2023, and the PEG ratio (Interest Coverage ratio and P/E ratio are negative and invalid due to negative earnings. The PEG ratio throughout the year is unavailable). Liquidity ratios show a general decline, partially due to the allocation of current assets to R&D (Refer to VECO's balance sheet from SEC filings. There was a decrease in short-term investment and an increase in R&D expenses) but within healthy levels. Solvency ratios improved, with the Gearing Ratio dropping from 0.79 to 0.41 and a significant rise in the Interest Coverage Ratio. Profitability ratios showed volatility: while the Gross Profit Margin remained around 42%, the Net Profit Margin turned negative in 2023 at -4.56%. Both EPS and ROE also turned negative, highlighting profitability challenges. Efficiency ratios decreased for more than two years, indicating less efficiency in managing assets and inventory. Market value ratios for 2023 revealed concerns, with the EV/EBITDA Ratio rising to 208.86 and the P/E Ratio being non-calculable due to negative earnings.

Table 3: Financial Ratio of Veeco Instruments

Veeco Instruments				
Ratio	2023	2022	2021	2020
Current Ratio	3.24	2.59	2.90	4.00
Acid-test Ratio	2.15	1.79	2.00	3.01
Solvency				
Gearing Ratio	0.41	0.48	0.52	0.79
Interest Coverage Ratio	--	5.43	1.91	0.66
Gross Profit Margin	42.77%	40.73%	41.54%	42.78%
Net Profit Margin	-4.56%	25.84%	4.46%	-1.85%
GP/A Ratio	23.19%	23.32%	26.95%	21.64%
EPS	-0.54	3.23	0.51	-0.17
ROE	-4.52%	28.89%	5.95%	-2.05%
ROCE	-1.75%	7.33%	8.10%	2.23%
Asset Turnover	0.54	0.57	0.65	0.51
Inventory Turnover	1.72	2.03	2.15	3.56
P/E Ratio	--	5.59	55.38	--
P/B Ratio	2.60	1.62	3.30	2.11

Table 4: Financial Ratio of ACM Researc

ACM Research				
Ratio	2023	2022	2021	2020
Current Ratio	2.35	2.43	4.63	2.53
Acid-test Ratio	1.26	1.44	3.57	1.67
Solvency				
Gearing Ratio	0.14	0.12	0.06	0.32
Interest Coverage Ratio	44.35	41.70	57.28	20.65
Gross Profit Margin	49.53%	47.22%	44.22%	44.44%
Net Profit Margin	13.87%	10.10%	14.54%	11.99%
GP/A Ratio	18.53%	14.86%	10.92%	20.39%
EPS	1.27	0.66	0.64	0.33
ROE	10.08%	5.82%	5.58%	13.30%

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Table 4: (continued).

ROCE	10.08%	5.82%	5.58%	13.30%
Asset Turnover	0.37	0.31	0.25	0.46
Inventory Turnover	0.60	0.67	0.94	1.96
P/E Ratio	15.43	11.72	44.18	80.89
P/B Ratio	1.55	0.68	2.47	10.76
EV/EBITDA Ratio	9.19	4.55	27.09	72.02
PEG Ratio	0.2	--	--	8.78

Table 4 details ACMR's financial ratios, excluding the PEG ratio for 2021 and 2022. Liquidity ratios show a slight decrease in the Current and Acid-test Ratios from 2021 to 2023, indicating tighter liquidity. The Gearing Ratio slightly increased but remains low at 0.14, reflecting conservative financial leverage. The Interest Coverage Ratio, though decreased, is strong at 44.35. Profitability ratios show improvement in the Gross Margin but variability in the Net Margin. ROE and ROCE recovered in 2023 but are below 2020 peaks. Declines in Asset and Inventory Turnover suggest reduced sales efficiency. The P/E Ratio fell to 15.43 by 2023, and the EV/EBITDA Ratio also significantly dropped, indicating a market reassessment of the company's value. The adjusted market value. The adjusted market value may be linked to the USA's decision to curb activities in the Chinese semiconductor sector. Given ACMR's extensive business operations and ownership in China, the USA's policies against China's semiconductor sector, including stringent export controls and investment restrictions, significantly impact ACM Research's market valuation by limiting access to essential technology and disrupting the supply chain [20][21], lowering the overall market confidence.

3.2. Comparative Analysis of Financial Ratios

ACLS has exhibited a little decline, suggested a modest weakening but still maintained a robust liquidity position. ONTO's Current Ratio has experienced a substantial increase, reaching a peak of approximately 8.0 in 2023. This indicates excellent management of liquidity, but it also suggests potential inefficiencies in the distribution of assets. VECO demonstrates a small decline in a consistent manner, with stable ratios hovering around 4.0, suggesting a persistent albeit slightly diminishing level of liquidity. The ratios of ACMR saw fluctuations, with a decline in 2021 but then stabilized by 2023, indicating a rebounding and robust liquidity situation. The Acid-test Ratio shows that ACLS maintains a consistent value of approximately 4.0, ONTO reaches its highest point at around 6.0, VECO remains constant at around 4.0, and ACMR reflects the changes in its Current Ratio. ONTO surpasses industry benchmarks with a Current Ratio of 2.0 and an Acid-test Ratio of 1.5 [22], demonstrating superior management of liquid assets and significant improvement in liquidity measures. ACLS and VECO demonstrate consistent robustness, while ACMR, despite initial fluctuations, maintains a stable and healthy liquidity position. Some results are shown in Fig. 1 and Fig. 2.

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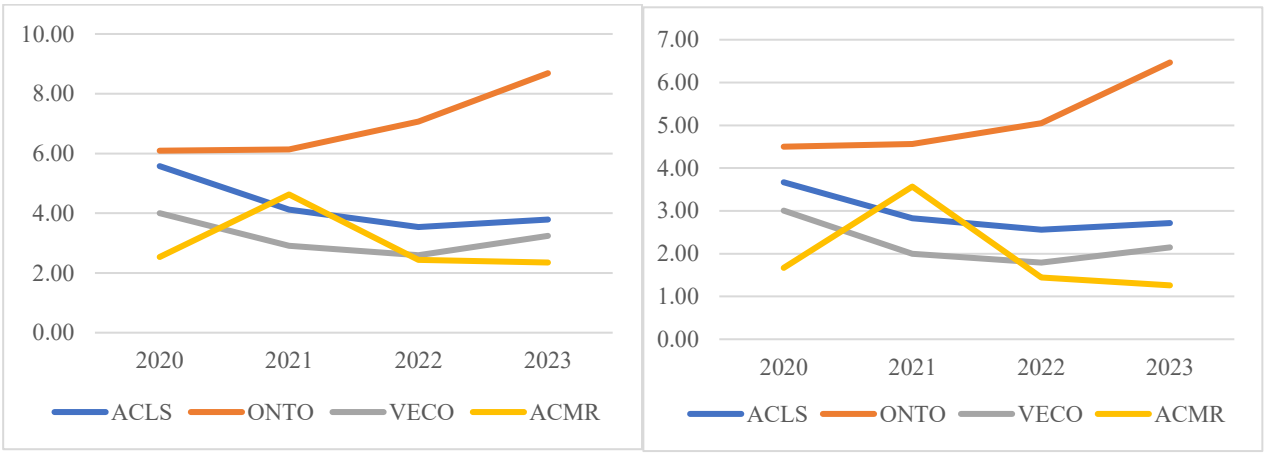

Figure 1: Current ratio and Acid test ratio for four companies.

As seen from Fig. 2, from 2020 to 2023, ACLS consistently maintained a near-zero Gearing Ratio, indicating minimal debt dependence and low financial risk. ONTO also showed no reliance on debt, with its balance sheet reflecting no long-term debt. VECO's Gearing Ratio decreased from around 0.8 in 2020 to 0.3 in 2023, suggesting reduced financial leverage and debt. ACMR experienced fluctuations but stabilized at zero by 2023, indicating decreased financial leverage and stability. ACLS's Interest Coverage Ratio showed a consistent upward trend, surpassing 50 by 2023, indicating a strong capacity to meet interest payments, supported by an expanding asset portfolio and consistent earnings. ONTO had no outstanding debt or interest expenditures. VECO's low and stable Interest Coverage Ratio indicated a relatively moderate capacity to meet interest obligations, consistent with its declining Gearing Ratio. ACMR demonstrated a robust but fluctuating capacity to meet interest obligations, supported by significant asset growth and decreased debt. Compared to industry benchmarks, ACLS and ONTO exhibited superior financial stability with minimal debt reliance, shown by a Gearing Ratio below 0.5 and an Interest Coverage Ratio above 3. VECO improved its solvency by reducing debt levels, and despite initial fluctuations, ACMR stabilized with strong solvency measures, highlighting the superior financial risk management of ACLS and ONTO.

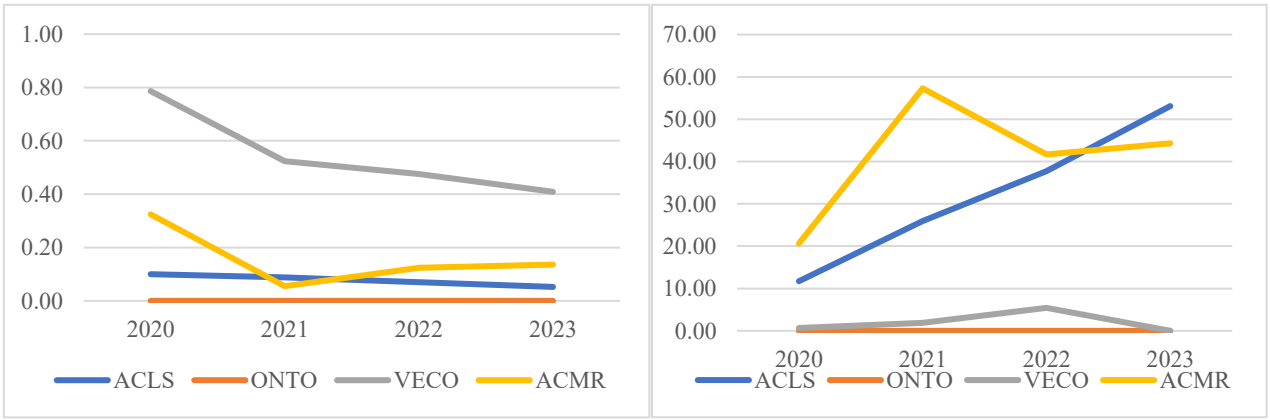

Figure 2: Gearing Ratio and Interest Coverage Ratio for four companies.

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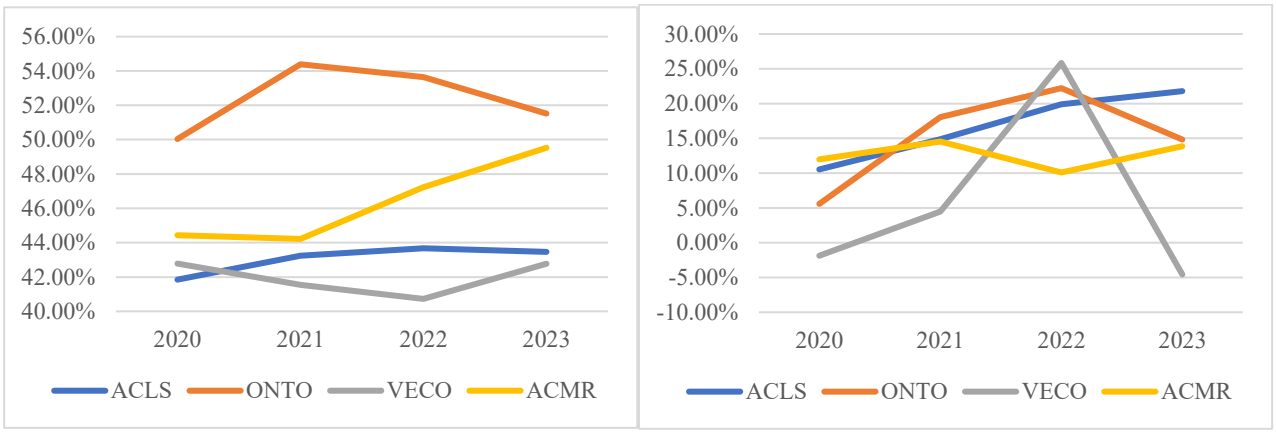

Figure 3: Gross Profit Margin and Net Profit Margin for 4 companies.

As illustrated in Fig. 3, ACLS consistently demonstrates strong profitability, maintaining a stable Gross Margin of around 45% and gradually increasing its Net Margin to 20% by 2023, reflecting efficient cost control. ONTO, despite robust core operations and a high Gross Margin of over 50%, has seen its Net Margin decline from 25% in 2021 to 15% in 2023, indicating cost or revenue challenges. VECO shows consistent core profitability with a Gross Margin above 40% but struggles with Net Profit Margin instability, declining to -5% in 2023, highlighting issues in expense control or revenue maintenance. ACME has significantly improved both its Gross and Net Margins, with the Gross Margin steady at 50% and the Net Margin reaching 20% by 2023, indicating strong profitability despite past fluctuations. ONTO exhibits exceptional core profitability with a Margin above 40% and a robust Net Margin beyond 10%, outperforming industry norms but struggling with overall profitability. ACLS shows strength in both margins, indicating a healthy financial condition. VECO's underlying profitability is weakened by volatile overall profitability, while ACMR's significant improvements signal a strong financial recovery and effective management after a decline in 2021.

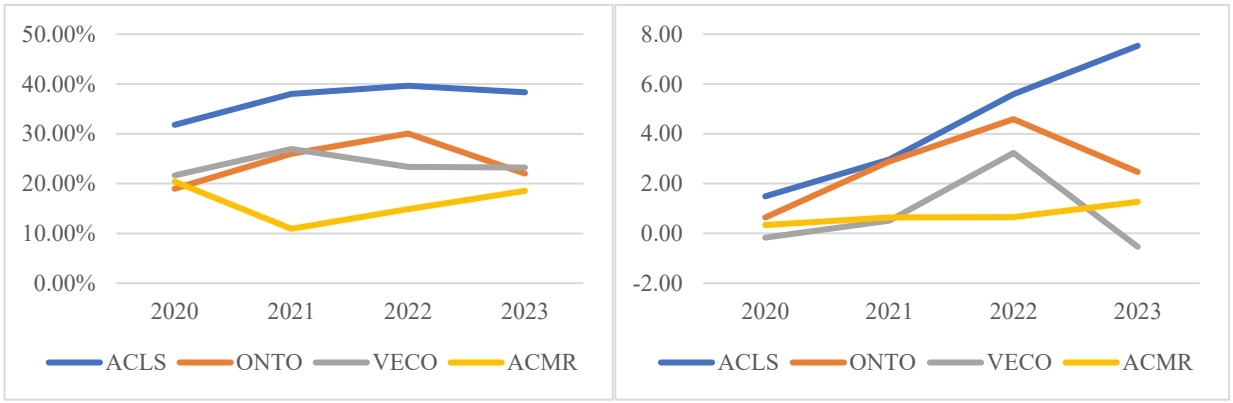

Figure 4: GP/A Ratio and EPS for 4 companies.

For the GP/A Ratio (depicted in Fig. 4), ACLS consistently remains the highest at around 40%, reflecting superior efficiency in using assets to generate profit, supported by stable increases in total assets and effective management of inventory and receivables on its balance sheet. ONTO's GP/A Ratio peaks at 30% in 2021 but falls to 20% by 2023, indicating strong initial asset utilization followed by decreased efficiency, possibly due to rising costs or less effective asset use. VECO maintains a stable GP/A Ratio of around 30%, showing consistent asset utilization aligned with balanced inventory and cash management. Overall, ACLS excels, ONTO shows potential but

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declining efficiency, VECO maintains stable efficiency, and ACMR reveals weaknesses in asset management.

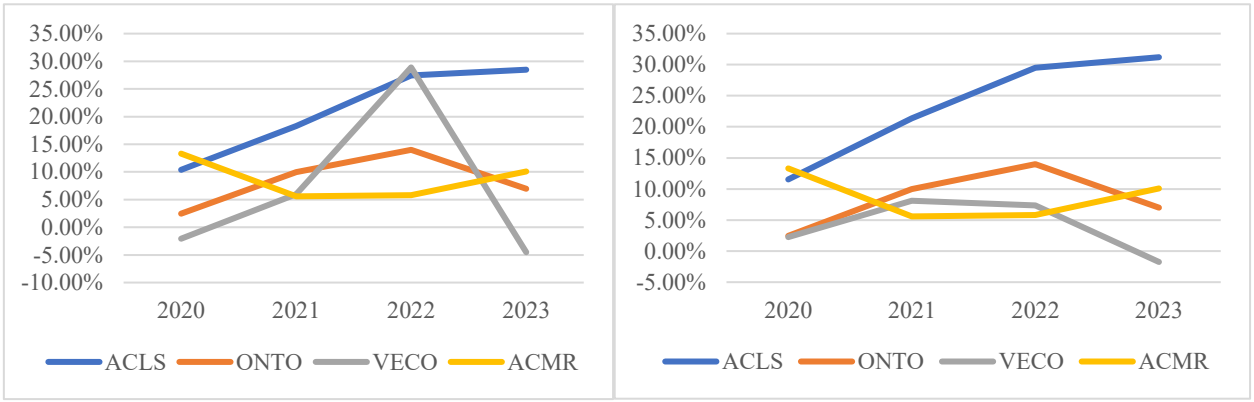

Figure 5: ROE and ROCE for 4 companies.

The EPS, ROE, and ROCE charts reveal significant trends as presented in Fig. 5. ACLS shows a consistent increase in all three indicators, indicating strong profitability and effective equity and capital utilization. ONTO, initially strong in EPS, ROE, and ROCE, has faced reductions due to cost pressures and reduced asset efficiency. VECO demonstrates volatility, with EPS and ROE peaking in 2022 before dropping to negative values in 2023, reflecting challenges in sustaining profitability. ACMR exhibits moderate improvements, maintaining its ROCE at around 15%, suggesting potential expansion despite inconsistent profitability. ACLS outperforms industry benchmarks with high EPS, ROE above 15%, and ROCE above 15%, indicating robust financial health. ONTO shows fundamental profitability stability but needs to address recent downturns. VECO presents risks due to significant fluctuations in profitability and efficiency [22]. ACMR shows moderate enhancements with expansion potential. ACLS stands out for robust financial stability and impressive returns, while ONTO demonstrates recent inefficiencies.

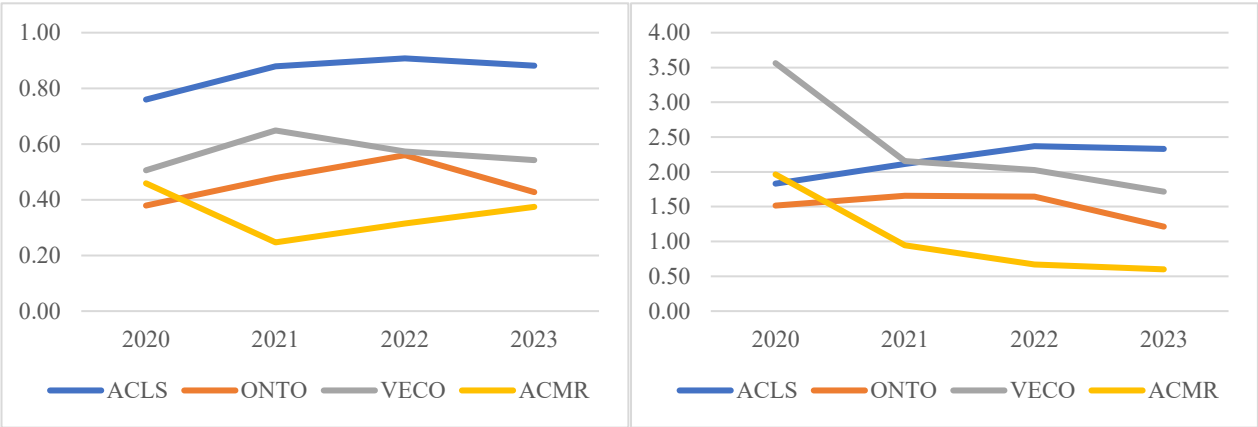

Figure 6: Asset Turnover and Inventory Turnover for 4 companies.

For efficiency ratios as shown in Fig. 6, ACLS consistently demonstrates high efficiency in asset usage and inventory management, with a stable Asset Turnover Ratio of around 0.8 and an Inventory Turnover Ratio of about 2.0, supported by steady asset growth. ONTO, however, shows a decreasing trend, with its Asset Turnover Ratio at approximately 0.6 and its Inventory Turnover Ratio dropping from 1.5 to below 1.0 by 2023, indicating inventory inefficiencies and excessive stock. VECO initially had an effective Inventory Turnover Ratio of 3.5 in 2020, but this fell to 1.5 by 2023, along

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with a modest decrease in Asset Turnover, suggesting challenges in managing increasing inventory and converting it into sales. ACMR shows the lowest and most volatile ratios, with an Asset Turnover of about 0.4 and an Inventory Turnover declining to less than 0.5 by 2023, indicating significant inefficiencies in asset utilization and inventory management. Overall, ACLS excels operationally, while ONTO, VECO, and ACMR face varying levels of efficiency challenges.

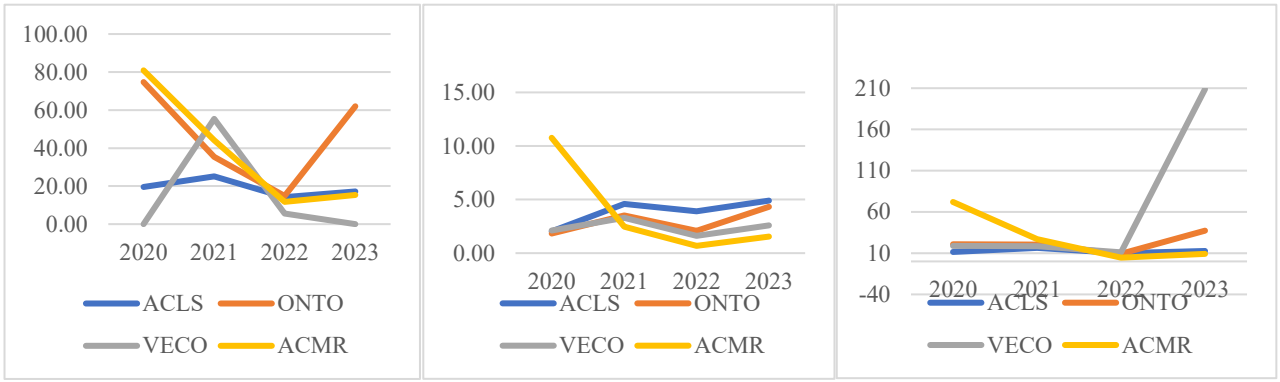

Figure 7: P/E Ratio, P/B Ration and EV/EBITDA Ratio for 4 companies.

Fig. 7 illustrates the metrics used to assess the value of the market. ACLS maintains a P/E Ratio of approximately 20, which indicates consistent earnings growth and market confidence, making it a reliable value company. The company's P/B Ratio of 3 and EV/EBITDA Ratio of approximately 10 reflect that it is fairly valued in relation to its book value and operational earnings. This indicates that investors are becoming more confident in its long-term prospects. ONTO, which was initially deemed expensive in 2020 with a P/E Ratio of approximately 80, has experienced a fall in its P/E Ratio to below 20 by 2023. This decline suggests a correction towards more acceptable prices as the company's earnings have stabilized. The decline in the company's P/B Ratio from 4 to 2 and EV/EBITDA Ratio from 15 to 10 provide additional evidence of this change, indicating a better alignment with the company's true worth and improved market sentiment. VECO demonstrates substantial fluctuations in its financial metrics. Its P/E Ratio reached a high of 60 in 2021, but decreased below that level in 2020 and is expected to do so again in 2023. Meanwhile, its P/B Ratio has remained relatively stable at 2. However, its EV/EBITDA Ratio has been highly unpredictable, reaching a peak above 200 before eventually settling at 10. The high level of volatility indicates a significant reevaluation of the market and possible concerns over profitability and operational stability. ACMR, having reached a peak P/E Ratio of 100 in 2020 and subsequently dropping to 10 by 2023, illustrates a situation where there were initially high expectations but were met with skepticism from the market. The significant decrease in the company's P/B Ratio from 10 to 3 and the sharp decline in its EV/EBITDA Ratio from 60 to below 10 demonstrate large corrections, which underscore the difficulties in upholding investor confidence and earnings stability. When comparing ACLS and ONTO to industry benchmarks, ACLS appears to be a well-valued stock with stable metrics. Its P/E Ratio falls within the typical range of 15 to 25, its P/B Ratio falls within the range of 1 to 3, and its EV/EBITDA Ratio falls within the range of 8 to 12[23]. On the other hand, ONTO shows improved valuation alignment and expectations, and it is supported by the highest PEG ratio of 0.89. The inconsistent performance of VECO highlights notable uncertainties and hazards, while the considerable corrections in ACMR indicate the necessity for stable earnings and restored investor confidence, revealing a flaw in its underlying fundamentals.

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4. Conclusion

When examining Axcelis Technologies (ACLS), Onto Innovation (ONTO), Veeco Instruments (VECO), and ACM Research (ACMR), the perspective of value investing uncovers clear investment opportunities and hazards. ACLS offers the best value investing opportunity due to its earnings growth and potential. The company has strong liquidity and solvency ratios, indicating a strong financial position to withstand market volatility. The consistent increase in profitability ratios, including net profit margin and ROE, and stable efficiency ratios like asset and inventory turnover indicate effective management and a solid operational framework. The ONTO case is more complicated. While its liquidity ratios have improved, indicating strong short-term financial stability, its P/E ratio has fluctuated from over 80 in 2020 to below 20 in 2023, indicating a volatile market valuation. This volatility may be due to inconsistent profitability and efficiency metrics. ONTO's declining net profit margins and asset turnover ratios suggest cost management or revenue generation inefficiencies. These operational issues may overshadow ONTO's high gross profit margin, suggesting that its market valuation may be overestimated unless these issues are addressed. Inefficient asset allocation is supported by the balance sheet's significant current assets but potential overreliance on them.

Financially unstable VECO is a high-risk option for value investors. Its volatile P/E and EV/EBITDA ratios, especially the 2023 spike to 208.86, indicate market reassessment and potential internal issues. Operational and financial issues are highlighted by declining liquidity and efficiency ratios and negative profitability metrics like net profit margin and ROE. Variable asset and liability management on VECO's balance sheet makes growth unstable. VECO is not a good value investment because its operational inefficiencies and market volatility outweigh its returns. Despite some progress, ACMR still faces many challenges. Its P/E ratio dropped from 100 in 2020 to below 10 in 2023, indicating a severe market correction and initial overvaluation. ACMR has improved its profitability metrics and stabilized its finances, but its fluctuating efficiency ratios and low asset turnover indicate operational inefficiencies. Positively, the balance sheet shows a conservative financial structure with low debt, but the company's ability to maintain and grow profitability is uncertain. Despite its potential, ACMR is not yet a good value investment due to this uncertainty and semiconductor regulatory changes.

To summarize what has been discussed so far, the concepts are clearly aligned with ACLS, making a compelling argument for investing in its value. ONTO demonstrates potential but necessitates enhancements in its operations. VECO's instability and financial volatility render it a risky choice. ACMR, despite making advances, nevertheless poses a speculative investment due to its inconsistent performance and susceptibility to external forces, but a low and attractive P/E ratio.

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