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Accounting ratios usage in investment decisions

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Abstract

The thesis aims to acquire knowledge of different kinds of ratios and their usage from investors' perspectives. This is an important topic because ratios help investors make informed decisions. When investors make informed decisions based on financial analysis, they contribute to financial markets' overall stability and efficiency.

The key finding is that ratios should be analyzed carefully in the right peer group, and in decision-making, ratios should be used collectively to comprehensively understand the factors influencing a company's financial performance and position. Also, factors other than just ratios should be considered when making investment decisions.

The conclusion states that financial ratios are excellent tools for investors, but they have inherent limitations that must be acknowledged for their optimal use as an analytical tool.

Keywords Accounting ratios, financial ratios, investment, performance, financial statement analysis

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Tiivistelmä

Tutkielman tavoitteena on selvittää erilaisten tunnuslukujen merkitystä ja niiden käyttöä sijoittajien näkökulmasta. Tämä on tärkeä aihe, sillä tunnusluvut auttavat sijoittajia tekemään perusteltuja päätöksiä. Kun sijoittajat tekevät päätöksiä taloudellisten analyysien perusteella, he edistävät rahoitusmarkkinoiden vakautta ja tehokkuutta.

Keskeinen havainto on, että tunnuslukuja tulisi analysoida huolellisesti oikeassa verrokkiryhmässä, ja päätöksenteossa tunnuslukuja tulisi käyttää yhdessä, jotta yrityksen taloudelliseen suorituskykyyn ja asemaan vaikuttavat tekijät ymmärrettäisiin kokonaisvaltaisesti. Lisäksi sijoituspäätöksiä tehtäessä tulisi huomioida myös muita tekijöitä kuin pelkästään tunnuslukuja.

Johtopäätöksenä todetaan, että taloudelliset tunnusluvut ovat erinomaisia työkaluja sijoittajille, mutta niihin liittyy rajoituksia, jotka on tunnustettava, jotta niitä voidaan käyttää optimaalisesti analyysivälineinä.

Avainsanat Tunnusluvut, sijoituspäätökset, suorituskyky, tilinpäätösanalyysi

Table of contents

1 Introduction

This thesis will study accounting ratios and their usage from investors' perspectives. Accounting ratios are also called financial ratios in the literature. The research is a literature review. The aim is to acquire knowledge of different kinds of ratios and their usage from investors' perspectives. The literature review uses different references from Google Scholar, using keywords such as accounting ratios, financial ratios, investing ratios, financial statements, and financial statement analysis. The thesis is formed carefully using multiple sources to provide a comprehensive overview of the topic.

The primary research question is how investors can use accounting ratios to make informed decisions when assessing a firm's financial performance. Other questions are: What are ratios? How are ratios used? How are ratios calculated? What are the main advantages and limitations of ratios? And what kind of different usage ratios there are. The thesis will answer these questions from point of view of the investor.

This topic is crucial because ratios help in decision-making. It is important that investors make informed decisions based on existing data. Accounting ratios use quantitive data from an entity's financial accounts (Goel, 2015; Robinson, van Greuning, Henry, & Broihahn, 2009). By evaluating different companies' financial health and performance, investors can identify which investments will likely offer the best returns, leading to more efficient use of their capital. And therefore accurate use of financial ratios ensures that capital will be allocated to the investment opportunities that are most promising.

The key is to choose the correct financial ratios to help decision-making. (Goel, 2015). It is important to understand how ratios can be used, what information can be derived from them, and what limitations they have. This thesis will provide an overview of the most helpful ratios and their usage when assessing a company's performance.

The thesis is composed to provide a clear and well-structured response to the research questions. It begins with an explanation of the ratios and their usage. Then, there is a section that discusses ratio categorization. When ratios are categorized, the most important ratios are explained in detail one by one. Following that is a literature review discussing the advantages and limitations of the ratios and ratios usage in different circumstances. Lastly, the conclusion section will summarize the findings and implications for investors.

2 Background

2.1 Explain of ratios

Accounting ratios, also known as financial ratios, are crucial tools for investors, creditors and internal management to assess various aspects of a company's financial situation and make informed decisions. Ratios serve multiple purposes like evaluating the business, measuring managerial success and determining a company's capacity to meet its debt obligations. (Barnes, 1987)

Accounting ratios are used as tools for evaluating a company's performance and financial health (Satryo, Rokhmania, & Diptyana, 2017; Seppänen, 2011). Ratios are calculations between different items in financial statements (1), expressing relationships between various financial accounts (Seppänen, 2011; Robinson et al., 2009).

$$\text{Accounting ratio} = \frac{\text{Item in financial statement}}{\text{Item in financial statement}} \quad (1)$$

Accounting ratio analysis, as a part of financial statement analysis, is an essential tool for investors gaining information about companies' performance and financial situation. Ratios are tools used to analyse financial statement information. (Goel, 2015) The financial statements consist of three sections: the income statement, balance sheet, and cash flow statement. The income statement measures the reporting entity's financial performance during the reporting period or fiscal year. The fiscal period can be any time frame, for example, day, week, month, quarter, or year. The balance sheet measures the reporting entity's financial position at a specific time. The statement of cash flows measures the net cash inflows and outflows from the reporting entity's operations during the fiscal period. (Seppänen, 2011)

Financial ratios help to understand financial statements (Goel, 2015). Ratios combine information from various parts of the financial statements. They help standardise financial statement information by removing the impact of company size. The divisor used in ratios is typically a financial statement item that reflects company size, such as revenue, total balance sheet, or equity. This makes the financial statement information comparable across companies or periods. (Seppänen, 2011)

Ratios also generate new information that cannot be directly obtained from financial statements. Ratios enhance the informativeness of financial statement information compared to individual items by integrating data from the balance sheet, income statement, and cash flow statement. (Seppänen, 2011) With ratios, investors can evaluate companys performance by looking at ratios instead of reading the whole financial statement (Goel, 2015).

There are no specific formulas for calculating ratios or providing a standard list of ratios. Relationship formulas and even names often vary from analyst to analyst, so different ratios are practically unlimited. Because of that, it is crucial to make sure how the ratio is calculated. The ratio does not give any straight answer; it gives what has happened, not why. (Robinson et al., 2009)

2.2 Usage of ratios

There are different kinds of usages to ratios. Ratios help, for example, stock buy decisions, evaluation of firm, and pro-forma statements for actions. (Rist & Pizzica, 2015) Accounting ratios are useful tools for different interested parties. Internal and external parties use financial statement information to measure company performance (Satryo et al., 2017).

It is important first to analyze the company before moving on to analysis using ratios. Analyzing the company's business model provides the basis for the

interpretation of the ratios. Ratios should be analyzed collectively to comprehensively understand the factors influencing a company's financial performance and position. Assessing a company's financial success based on a single ratio is challenging and can easily lead to incorrect conclusions. It is crucial to choose the right ratios. (Seppänen, 2011)

The correct or average value of the ratio is relative. In general, there is no specific target value to ratios. The use and interpretation of the ratios always rely on comparison. Typical reference points or benchmarks are the company's values from previous reporting periods and the values of companies in the same industry or direct competitors. Target values are commonly used internally within companies to assess whether the company has achieved its goals. They also reflect the management's ability to meet set targets, indicating management skills and credibility. The company might tell in financial statements if the target is reached. (Seppänen, 2011; Robinson et al., 2009)

Ratios can be analyzed using time series analysis, which compares a company's recent performance with its previous performance. This analysis helps obtain information about the current situation, trends, and volatility, which indicates the level of riskiness. (Seppänen, 2011)

Assessing a company's accounting ratios against industry averages or its direct competitors provides valuable information of the company's financial situation. (Seppänen, 2011) However, accurate interpretation of these ratios requires knowledge of both the company and its industry. It is important to compare ratios with the right peer group to obtain relevant and accurate information. (Goel, 2015)

2.3 Ratios categorisation

Given the limitless amount of financial ratios, it is practical to organize ratios into broad categories. Ratios can be categorized in several different ways. There is no standard comprehensive list of ratios or categories whose names also differ. The use of ratios varies depending on who is doing the analysis and why. And because ratios are just numbers divided by other numbers, there is a possibility of creating limitless more ratios. (Robinson et al., 2009)

Depending on the source, there are different ways to classify ratios. Daryanto W. M. and Ariani P. M. (2021) said that there are six types of financial ratios: Liquidity ratios, profitability ratios, efficiency ratios, solvency ratios, coverage ratios, and market value ratios. Robinson et al. (2009) used categories where were only activity, liquidity, solvency, and profitability. And Goel (2015) uses the same categorization but adds market ratios. Satryo et al. (2017) articles also used this same categorization.

Based on investor opinion, this thesis will use five categories to discuss the most important ratios for investors: profitability, liquidity, solvency, efficiency, and market ratios. Valuation ratios, also known as market ratios, are often used in investment decision-making. However, investors should use other ratios to assess firms to get more information.

3 Overview of Ratios

3.1 Profitability ratios

Profitability ratios, also known as activity ratios, are used to measure a company's overall performance and potential return on investment. These ratios show how effectively the company uses its resources to generate profitable sales. Additionally, profitability ratios are useful in assessing the effectiveness and competence of an entity's management. (Goel, 2015, 4; Robinson et al., 2009).

Profitability ratios evaluate a company's capability of generating profits from its revenue, assets, and equity. They can be categorized into two main types: margins and returns. Margin ratios provide information on how sales are converted into profits, while return ratios measure how effectively a company can generate returns for its shareholders. (Goel, 2015; Robinson et al., 2009) Profitability ratios are often the main focus for the company owners so these are important ratios for particularly investors when they asses companies. The higher the ratio is, the better. (Satryo et al., 2017)

3.1.1. Margin ratios

The gross profit margin (2) indicated how well a company utilizes its resources during the production process to generate a profit. Gross profit is the revenue a company earns from its customers, minus the cost of goods sold. (Rist & Pizzica, 2015)

$$\textbf{Gross profit margin} = \frac{\text{Gross profit}}{\text{Revenue}} \quad (2)$$

Operating profit margin (3) follows the same idea, but there is a lower line from the income statement, operating profit, to be divided. Operating profit, which is also called earning before interest and taxes (EBIT), tells how much a company can generate profit from its core business, deducting only operating expenses. (Jayathilaka, 2020)

$$\textbf{Operating profit margin} = \frac{\text{Operating income}}{Revenue} \quad (3)$$

The last ratio in this series is net profit margin (4) which indicates the proportion of a company's revenue that remains after covering all expenses. Net sales is the last line in the income statement. (Jayathilaka, 2020)

$$\textbf{Net profit margin} = \frac{\text{Net income}}{Revenue} \quad (4)$$

The analysis of changes is important because change can indicate different kinds of things. Investors need to find the reason by combining existing information from the different sources. Only numbers do not tell the whole picture. Understanding the company, industry, and global context is important. For example, Rist and Pizzica suggested 2015 that a decrease can signify a price war or a strategy of increasing market share. Other possible reasons could be increased costs, strategic decisions, inefficient operations, or new regulations. (Jayathilaka, 2020)

3.1.2. Return ratios

The Return on Equity (5), ROE, calculates the net income of the fiscal year divided by the equity at the end of the fiscal year. ROE indicates from the shareholders' perspective how much return the company has generated on the capital invested by the owners in the company. (Seppänen, 2011; Satryo et al., 2017)

$$\textbf{Return on equity (ROE)} = \frac{\text{Net income}}{\text{Shareholders}'\text{equity}} \quad (5)$$

The company's ability to generate income from its assets is reflected in the return on assets (6) (Satryo et al., 2017).

$$\textbf{Return on assets (ROA)} = \frac{\text{Net income}}{Total\ assets} \quad (6)$$

For both ROE and ROA, the higher the number is, the better the company is generating profit (Satryo et al., 2017).

3.2 Liquidity ratios

A company's ability to fulfill its short-term obligations, due within a year, using its liquid assets is assessed by liquidity ratios (Seppänen, 2011; Robinson et al., 2009). Liquidity ratios shows the company's capacity to convert assets into cash on short notice. Liquidity ratios assess if a business is positioned to sustain its operations, as entities struggling to meet their short-term obligations are exposed to higher insolvency risk. (Goel, 2015)

Determining liquidity from the financial statements is not completely simple because the end date of the financial year represents only one day of the financial year and the company's cash reserves and short-term liabilities are not necessarily typical at that time. However, an overview of liquidity can still be obtained from the financial statements. (Leppiniemi, Kykkänen, 2023)

Current ratio (8), quick ratio, and cash ratio are three commonly used liquidity ratios. The Current Ratio measures how well a company's total short-term liquid current assets cover its total short-term liabilities as known as current liabilities. (Seppänen, 2011)

$$\textbf{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}} \quad (8)$$

Current assets comprise inventory, accounts receivable, cash, and securities, while current liabilities consist of accounts payable, short-term notes, the current portion of long-term debt, and accrued expenses. If current ratio is below one it means that company is not able to cover current liabilities with current assets. It can indicate that the company might struggle to meet its short-term obligation. (Rist & Pizzica, 2015)

Quick ratio (9) is also referred to as acid-test ratio or liquid ratio. It is divend between current assets excluding inventory and current liabilities. (Rist & Pizzica, 2015)

$$\textbf{Quick ratio} = \frac{\text{Current assets} - \text{inventory}}{\text{Current liabilities}} = \frac{\text{Cash and cash equivalents} + \text{account receivables}}{\text{Current liabilities}} \quad (9)$$

The ratio does not include inventory because it typically loses significant value compared to its balance sheet value when a company is forced to liquidate it to pay off short-term debts (Seppänen, 2011).

The last ratio cash ratio (10) measures how well a company's most liquid assets, cash and cash equivalents, cover all its short-term liabilities. So it excludes inventory and account receivables. (Rist & Pizzica, 2015)

$$\textbf{Cash ratio} = \frac{\text{Cash and cash equivalent}}{\text{Current liabilities}} \quad (10)$$

For all ratios, the higher the number, the better the coverage of current liabilities is. Liquid assets can be seen as an emergency reserve, which a company might need to rely on under extreme conditions when the cash flow from regular operations is temporarily insufficient to meet obligations. Therefore, they provide security for creditors, but also offer operational and

financial flexibility to the company, as its decision-making is not overly tied to financiers. (Seppänen, 2011)

3.3 Solvency ratios

Solvency ratios are also called financial leverage or long-term debt ratios (Robinson et al., 2009). They evaluate a company's capacity to meet its long-term financial obligations, providing insight into its long-term stability. (Goel, 2015; Robinson et al., 2009). Solvency ratios measure the extent to which the company uses long-term debt and the financial risk of the firm. If the solvency ratio is high it indicates that the company's cash flows are stable enough to cover regular interest and principal payments on its debt. Solvency ratios play a critical role as they are included as debt covenants in contract agreements. It is a way to ensure the company can remain operational and fulfill its financial obligations even in challenging economic conditions. (Goel, 2015)

The debt-to-equity ratio (11) is a key financial metric that quantifies how much a company is financed by debt holders instead of its owners. It provides an important insights of a company's financial confition. A high debt-to-equity ratio indicates significant debt financing, while a low ratio suggests minimal debt reliance. Companies with lower debt-to-equity ratios are generally viewed as less risky compared to those with higher ratios. (Rist & Pizzica, 2015)

$$\textbf{Debt-to-equity} = \frac{\text{Total liabilities}}{\text{Total equity}} \tag{11}$$

The debt-to-assets ratio (12), also known as the debt ratio or debt-to-capital ratio, indicates the percentage of a company's total debt compared to its assets. This metric provides insight into the company's leverage and highlights the potential risks related to its level of debt. (Rist & Pizzica, 2015)

$$\textbf{Debt ratio} = \frac{\text{Total debt}}{\text{Total assets}} \quad (12)$$

The interest coverage ratio (13), also called times interest earned (TIE), evaluates a company's capacity to fulfil its interest payment obligations on outstanding debt. It tells how much operating income can decrease before the company can no longer cover its annual interest expenses. A lower ratio suggests a greater risk of the company being unable to service its debt. If the interest coverage ratio falls below 1, it signifies that the company is not generating sufficient earnings to cover its interest payments. (Rist & Pizzica, 2015)

$$\textbf{Interest coverage ratio} = \frac{\text{EBIT}}{\text{Interest expense}} \quad (13)$$

3.4 Efficiency ratios

Efficiency ratios are also known as asset turnover or activity. As the name implies, these ratios evaluates a company's ability to effectively use and manages its resources. (Goel, 2015; Rist & Pizzica, 2015) Efficiency ratios are important because companies usually suffer from having too little or too large inventory (Rist & Pizzica, 2015). Inventory turnover ratio and account receivables turnover are commonly used efficiency ratios. (Goel, 2015).

The inventory turnover ratio (14) assess a company's efficiency in handling its inventory by measuring how often a company sells and replaces its inventory within a specific period. (Goel, 2015)

$$\textbf{Inventory turnover ratio (ITR)} = \frac{\text{Sales}}{\text{Average inventory}} \quad (14)$$

It can be calculated also:

$$\textbf{(ITR)} = \frac{\text{COGS}}{\text{Average inventory}} \quad (15)$$

A higher ratio implies the company's ability to sell its inventory. The lower number indicates an inventory that is too large and, therefore, a waste of resources for storage. (Goel, 2015)

The accounts receivable turnover ratio (16) assess a company's efficiency in collectinf sales revenue. It shows how many times the company collects its average receivable. (Rist & Pizzica, 2015)

$$\textbf{Accounts receivable turnover} = \frac{\text{Sales}}{\text{Average accounts receivables}} \quad (16)$$

A high number indicates the capability to collect receivables quickly, which is generally favourable as it reflects strong liquidity and efficient credit management. (Rist & Pizzica, 2015)

3.5 Market ratios

A company's aim is to enhance shareholder values. (Goel, 2015). Market value ratios are useful tools to help investors assess the current value of a company's stock in the marketplace. These ratios are valuable indicators for evaluating whether a company's stock is undervalued or overpriced by comparing key financial metrics to its market price. Both company executives and investors rely on these ratios to assess a stock's valuation. A higher market

value ratio often reflects market optimism regarding the company's growth prospects and is perceived as a lower-risk investment. (Rist & Pizzica, 2015)

One of the most commonly used ratio Price-to-earning ratio P/E (17) compares a company's stock price to its per-share earnings. P/E helps to determine whether a stock is priced appropriately relative to its earnings. In essence, purchasing shares in a company is akin to investing in its potential future profits. (Rist & Pizzica, 2015)

$$\textbf{P/E ratio} = \frac{\text{Price per share}}{\text{Earnings per share}} \tag{17}$$

The P/E ratio allows investors to compare how a stock's price stands against its earnings making it easier to evaluate across different companies or industrie (Rist & Pizzica, 2015).

As the name implies, earnings per share (18) EPS, indicates the return on a shareholder receives on each share. The share of a company's net profit is allocated to each outstanding common stock. (Satryo et al., 2017)

$$\textbf{Earnings per share} = \frac{\text{Net profit}}{\textit{Numbers of shares outstanding}} \tag{18}$$

In general, the higher the number, the better for the investor (Satryo et al., 2017).

Price to book P/B (19), which is also knowns as merket to book ratio, is is an effective tool for quickly determining whether a company is under or overvalued by comparing the market value of the firm to its book value. Ratio offers insight into the premium investors are willing to pay above the company's net asset value. (Rist & Pizzica, 2015)

$$\textbf{P/B ratio} = \frac{\text{Price per share}}{\text{Book value}} \tag{19}$$

A low market-to-book ratio typically indicates the company is undervalued, suggesting it might be a promising investment opportunity (Rist & Pizzica, 2015).

4 Literature review of the usage of the financial ratios

4.1 Limitations of ratios

While ratios are powerful tools for analyzing a company's financial condition, they do have their limitations. There are many different limitations as well as ratios, so the most common restrictions that cause the most harm are discussed here. (Robinson et al., 2009)

It is possible that the numbers in financial statements are calculated using different accounting methods. This means that investors need to understand how the numbers were calculated and whether there are differences in the way inventory value, depreciation, or leases were treated. (Robinson et al., 2009)

Many companies have divisions operating in different industries, which makes comparison difficult. It is better to look at industry-specific ratios by business area, but if the company operates in several industries, the comparison becomes difficult. Especially if the company does not report figures for different divisions separately. (Robinson et al., 2009)

If an analysis is made using financial statements, it is not current information, and it can lead to wrong decisions. For example, the return on assets is based on the balance sheet number, which is only one day's information. The situation might have changed.

As an investor, it is crucial to be aware of a company's business as well as its competitors. Failing to understand their business practices can lead to incorrect interpretations based solely on the numbers. (Seppänen, 2011) For example, when comparing companies in the clothing industry, the business

models of companies producing clothes can differ. Although all companies sell clothes, their business practices can differ. For instance, some companies sell clothes directly to customers while others sell to retailers. Some have their own stores, and some sell only online. Those reflect to numbers and therefore it is crusial to understand the company and it’s peers.

Ratios evaluate firms solely based on numbers and do not take into account other facts, such as future possibilities. So, different information must be combined in decision-making, which must be made according to the investment strategy (Puttonen, Puttonen, 2021).

4.2 Advantages of using ratios in investment decisions

As we have learned, there are plenty of different ratios. The key is for investors to understand those as tools. Investors' goal is to make a profit in the future by investing now. Investing is an activity where money is allocated to assets to generate profit or take advantage of increasing value. With ratio analysis investors can evaluate which companies are most likely to offer it. (Gitman et al., 2015)

Investing is an activity where targets and plans differ (Gitman et al., 2015). Therefore, there is no clear right answer to how different ratios should be valued in analysis. Investors need to make their own strategies and use different ratios to reach their goals.

It is important first to analyze the company before moving on to analysis using ratios. Analyzing the company's business model provides the basis for the interpretation of the ratios. (Seppänen, 2011)

Ratios should be analyzed collectively to comprehensively understand the factors influencing a company's financial performance and position. Assessing a company's financial success based on a single ratio is challenging

and can easily lead to incorrect conclusions. It is crucial to choose the right ratios. (Seppänen, 2011)

Investors rely on financial statements for investment activities in the capital market. Other useful information, such as industry, economic, market, and management situation, is provided in financial statements, which helps investors make informed decisions. (Satryo et al., 2017)

Satryo et al. (2017) find that Financial ratios can measure a company's financial condition and predict the return of shares on the capital market. Research has been done on accounting ratios related to stock prices. The study finds that Earnings Per Share (EPS) and Price to Book Value (PBV) significantly influence share prices, indicating their critical role in investment decisions.

4.3 Usages of the ratios in different circumstances

Financial ratios have different usages and investors are not the only usergroup for them. Ratios are used as tool for example predicting financial distress and stock retuns and evaluating startups.

4.3.1 Ratios in predicting bankruptcy

Research has shown that ratios can effectively predict bankruptcy. As discussed earlier, these ratios offer valuable insights into a company's financial health, allowing for the identification and elimination of underperforming businesses. The Altman Z-Score (17) is one of the most well-known models that combine financial ratios to predict bankruptcy. It uses five financial ratios to produce a score indicating the likelihood of bankruptcy. (Altman, Iwanicz-Drozdowska, Laitinen, & Suvas, 2014)

$$Z = 1.2\,X1 + 1.4\cdot X2 + 3.3\,X3 + 0.6X4 + 1.0X5 \quad (17)$$

X1 = Working capital/Total assets
X2 = Retained Earnings/Total assets
X3 = Earnings before interest and taxes/Total assets
X4 = Market value of equity/Book value of total liabilities
X5 = Sales/Total assets
Z = Z-score, Overall Index

If a company has an Altman Z-score below 1.8 it is considered at high risk of bankruptcy and companies with scores exceeding 3 are generally not at risk of failing. (Altman, et al., 2014; Rist & Pizzica, 2015)

4.3.2 Ratios in predicting stock returns

Financial ratios are also used in various valuation models. Frankel and Lee provided (1998) empirical evidence that accounting valuations have significant predictive power for future stock returns. They utilized the I/B/E/S consensus forecast and a residual income model to make an estimate of firms' fundamental value (V). I/B/E/S consensus forecast provides detailed information on analysts' earnings predictions as market expectations. Residual income model a valuation method used to estimate a company's intrinsic value.

Study found that the estimated firm values were highly correlated with current stock prices. Furthermore, the value-to-price (V/P) ratio derived from these models was an effective predictor of long-term cross-sectional returns. (Frankel & Lee, 1998)

4.3.2 Ratios in evaluating startups

Examining the financial health of startups is important for economy as it ensures that funding is directed to the most promising firm and therefore sustain their operations and drive growth. However, evaluating starups can be challenging because profitability ratios like return on investment, cash-flow margin and profit margin can be highly non-stationary during the early years in startups. This is due to factors like the internal rate of return (IRR), growth rate, expense rate, and revenue lag structure. This volatility may distort signals about a startup's financial performance. (Laitinen, 2017)

Laitinen's 2017 study emphasizes that early-stage profitability ratios often undergo unstable adjustments, making them poor indicators of actual profitability. For instance, ROI might initially overestimate or underestimate the actual return due to the high volatility in expenses and revenue lags. Using a mathematical growth model to analyze time series data from startups can provide a more accurate assessment of the business's financial health. Laitinen developed a mathematical model that evaluates the time series behavior of these ratios, accounting for steady growth in expenses and proportional revenue flows, thereby providing a more accurate reflection of a startup's financial trajectory.

However, given the nonstationary nature of startups, reliance on profitability ratios alone may be insufficient, necessitating a broader, more nuanced approach to evaluating the potential success of early-stage companies (Laitinen, 2017).

5 Conclusions

Ratios play an important role in decision-making, helping investors make informed choices. When a company's performance is assessed through ratios, it guides the decision-making process, providing confidence in the investment process. (Goel, 2015)

Investors use ratios to compare a company's performance with its past performance and that of its peers or industry standards. This comparison is crucial in deciding whether a company is performing well enough for investment. Without such comparisons, investors may overlook better opportunities or invest in companies that are not performing as well as others in their sector. (Seppänen, 2011)

Accurate use of financial ratios ensures that capital is allocated to the most promising investment opportunities. By evaluating different companies' financial health and performance, investors can identify which investments will likely offer the best returns, leading to more efficient use of their capital. (Goel, 2015)

When investors make informed decisions based on financial analysis, they contribute to financial markets' overall stability and efficiency. Informed investing behaviour can also prevent bubbles and reduce the likelihood of market crashes, which have huge economic impacts. (Nadar, 2019)

A recurring theme in my research is the actual use of financial ratios. Many investors, particularly individual investors, do not rely heavily on ratios when analyzing firms. Individual investors, in particular, often base their decisions on their perception of the company and its future prospects, trusting the company's narrative rather than considering financial ratios.

Another insight from my research is that even if a company appears to be a good investment on paper, its actual value depends on the investor's goals. Not all investors aim solely for maximum profit. For example, sustainable investing is becoming more and more popular. Many investing strategies, like negative and positive screening, could exclude companies with better ratios, but investors want to rely on those strategies. (Puttonen, Puttonen, 2021) However, this thesis explores only how ratios are used in investment decisions. It is also important to recognize that not all investors use them, and many other factors influence their choices.

Ratios themselves do not give enough information, and they can sometimes mislead. Users should be aware of the limitations of ratios to ensure that they do not rely on them to misguide their decision-making processes. Also, even though the company might look like a good investment, previous data does not forecast future performance. While extremely useful, financial ratios have inherent limitations that must be acknowledged for their optimal use as an analytical tool. Understanding ratios is crucial for making decisions. (Nadar, 2019)

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