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VALUATION METRICS USED BY RETAIL INVESTORS IN STOCK ANALYSIS: THE STUDY OF INVESTONIAN USERS

Bachelor Thesis

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I have written this Research paper/Bachelor Thesis independently. Any ideas or data taken from other authors or other sources have been fully referenced.

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Introduction

Investing is a vital practice in building wealth, saving for retirement, and achieving financial independence. Advancements in technology and access to various financial instruments has made investing more accessible than ever (van Rooij et al., 2011). Moreover, investing into stocks, shares of a publicly traded company, has been a popular choice for investors as it has historically provided favourable returns for those with a long-term investment horizon. Between 1926 and 2024, U.S. stocks (S&P 500 index) have delivered an average annual return of 10.1%, and international stocks have provided 7.8% annualized returns (CRSP, 2024). The increase in the value of stocks has outpaced inflation and provided real growth in wealth for investors. The historical performance of the stock market has been noticed by individual investors, who recognize the opportunity to increase their wealth through stock investments.

The participation of individual investors, also referred to as retail investors, in the stock market should not be underestimated as recent events have showed how retail trading activity can influence market outcomes. In January 2021, increased retail trader activity through social media coordination led to sudden surges in the stock price of various companies listed on the United States stock market (Allen et al., 2021). These companies with an increased retail trading volume were deemed “meme stocks”, which represent shares of a company that rapidly rise in share price due to increased online community activity (Yousaf et al., 2023). The outcome of the 2021 meme stock rally set a new precedent in the investing community about the potential influence that retail investors have on the financial markets.

Previous research on the financial decision-making of retail investors has been limited. A recent study by Galaasen and Raja (2024) highlights that information about retail investor’s stock market participation is largely unknown. Whilst there is available literature on the market behaviours of individual investors, a number of these studies were conducted before the rapid rise in retail trading activity and do not account for the recent evolution in the retail investing commnuity. Additionally, while studies have been conducted to examine the commonly used valuation metrics by investing professionals, none have specifically analysed the valuation metric preferences of individual investors. The aim of this thesis is to explore the valuation metric preferences of retail investors’ in the example of the Investonian platform users. This includes identifying which specific valuation metrics are used, what factors influence their selection, and how useful investors perceive them to be. By evaluating the popularity and usage patterns of these metrics, the authors intend to provide insight into

retail investors' decision-making processes and preferences. This makes it a valuable study for understanding the tools and approaches retail investors rely on, shedding light on their behaviour and offering guidance for platforms and services aiming to better meet their needs. Beyond its academic contribution, this thesis holds practical value for financial education initiatives, fintech developers, policy makers, and investment service providers seeking to support and engage a growing population of individual retail investors. By offering an empirical view of retail investor behaviour, the study contributes to a more informed and inclusive financial ecosystem. The tasks for the theoretical and empirical section are set as follows:

- to discuss the purposes and approaches to stock analysis;
- to compare the advantages and limitations of valuation metrics;
- to explore the characteristics of commonly utilized valuation metrics;
- to review previous studies on the preferences of valuation metrics;
- to provide an overview of the Investonian platform;
- to introduce the data and methodology applied in the research;
- to present and discuss the results and analyse the stock analysis practices of retail investors.

The current thesis is structured into two parts: theoretical and empirical. The first chapter of the thesis will focus on defining the role, purposes and approaches of stock analysis. This part will also cover the merits and limitations of valuation metrics, as well as the key characteristics of the commonly used metrics. Additionally, the authors will provide an overview of previous studies on investors' preferences of valuation metrics in stock analysis.

The second chapter of the thesis will firstly provide an overview of the Investonian stock analysis platform. Moving onward the authors will describe the data collection process as well as the justification of the chosen methodology. Lastly, the empirical research will be conducted with a survey among the Investonian platform users, along with an analysis and discussion of the findings. It should be noted that whilst the study results provide insight into the valuation metric preferences of retail investors, the findings may be sample dependent. The limitation of this data should be considered when discussing the final conclusions drawn from the survey results.

Keywords: valuation metrics, retail investors, stock analysis, valuation ratios

1. The role of valuation metrics in stock analysis

1.1. Purposes and approaches to stock analysis

In the world of financial investing, a range of strategies are employed, which are broadly categorized into active and passive approaches. Passive investing entails acquiring a broadly diversified set of assets, often tracking a market index, with the objective of long-term portfolio growth, while requiring minimal active involvement in investment decisions or ongoing trading activity (Khan, 2016). This view stems from two cornerstone concepts in finance: 1) the modern portfolio theory (MPT) developed by Howard Markowitz in 1952, which describes the trade-off between risk and return, and 2) the efficient market hypothesis (EMH) proposed by Eugene Fama in the 1960s, which assumes that markets are fully efficient by reflecting all available information in asset prices (Rowley, 2024). Based on these concepts, there would be no need for active investing as it would be very difficult to consistently outperform market indexes. That said, a significant number of mutual funds, investment funds, banks, and brokers among other professional and non-professional investors still adopt the active investing strategy, aiming to select individual stocks in pursuit of earning superior returns.

Active investing involves a meticulous stock selection process, utilizing both qualitative and quantitative analysis methods (MacGrath, 2016). However, the core of this strategy is the belief that markets occasionally mis-price assets, and through the process of stock valuation, investors can capitalize on the difference between price and value (Khan, 2016). In the context of active investing, it is important to distinguish asset price from asset value, a concept illustrated by a quote from the legendary investor Warren Buffet: "*Price is what you pay. Value is what you get*" (Hagstrom, 2006). Opposed to the passive investing strategy, active investors hold the belief that markets are in fact not fully efficient, allowing a company's stock to be over- or undervalued relative to its intrinsic value. Therefore, in the context of active investing, the market price of a stock is not always an appropriate indicator of value (Kantšukov, 2023).

According to Damodaran (2006) the intrinsic value of a company is determined by the cash flows that the company is expected to generate over its lifetime. The rationale being that one should pay a higher price for an asset that produces higher cash flows as opposed to a more speculative asset with lower cash flows. Damodaran (2006) also notes that whilst estimating the intrinsic value of a company by estimating cash flows should be the focus, most assets are valued on a relative basis by comparing similar assets to one another. In stock analysis, relative valuation involves compiling a list of comparable companies (often based

on industry or company size) and determining their value through the application of valuation ratios (Sharma & Prashar, 2013).

Valuation is an important tool for investors and company managers, as it can serve a wide range of strategic and operational purposes. Based on various authors, the purposes of valuation can be summarized in the following table (Hitchner, 2011; Thomas & Gup, 2010; Trugman, 2012).

Table 1

Purposes of valuation

Purpose	Description
Transactions	Buying or selling businesses, mergers, acquisitions, reorganizations, or bankruptcies
Taxation	Evaluate estates, gifts, income, and property taxes
Disputes	Resolve shareholder disputes, marital dissolutions, or ownership litigation
Financial reporting	Allocate a purchase price, test goodwill impairment, or report audit values
Compensation and incentives	Set executive pay, employee stock ownership plans, or stock option plans
Strategic decisions	Assess business plans, major investments, or fairness opinions
Litigation and claims	Support damages litigation, insurance claims, or eminent domain cases
Charitable contributions	Value assets for donations to charities.

Source: Compiled by the authors

Whilst the application of valuation is limitless, we can view the purpose of valuation in three primary categories: corporate finance, the acquisition process, and investment management. In corporate finance, the primary goal of a company is to maximize their firm value (Brigham & Houston, 2009). In this instance, valuation serves as a crucial tool for guiding strategic decision-making and assessment of financial performance, such as the formulation of dividend distribution policies and the selection of new projects. In pursuit of value maximation for shareholders, the company can use the valuation process to monitor key drivers of performance, and ultimately make more informed financial decisions. (Zerbato, 2024)

Valuation also plays an important role in acquisition analysis, as the buyer has to decide the fair value for the target firm before making an offer (Damodaran, 2012). The acquisition process accentuates the need for valuation, as both parties need to understand the intrinsic value of the target company, in order to ensure a successful transaction. Matthews (2012) studied the valuation methods of cash acquisitions for U.S. firms and found that while all of the studied acquisitions involved some methodology of valuation, 96% of the firms used the market-based approach in their valuation.

Lastly, the role of valuation in investment management applies mostly to active investors, however, the nature of valuation also varies for different types of investors. This concept is most applicable to fundamental investors who use valuation tools to compile a portfolio of undervalued companies, anticipating that the market will eventually recognize the disparity between price and value, leading to superior returns. To a lesser extent, valuation is also applied by other types of investors, including franchise buyers, chartists, information traders, market timers, and efficient marketers (Damodaran, 2012). In essence, valuation in investment management is crucial for all investors, regardless of their investment philosophy. For the purpose of this thesis, the focus will be on valuation in investment management.

Advancements in technology and improvements in financial services have significantly improved accessibility to investing, emphasizing the important role of valuation (van Rooij et al., 2011). Furthermore, the rising number of investors is accompanied by the growing ambition of investors to conduct their own research on stocks, as evidenced in the following figure.

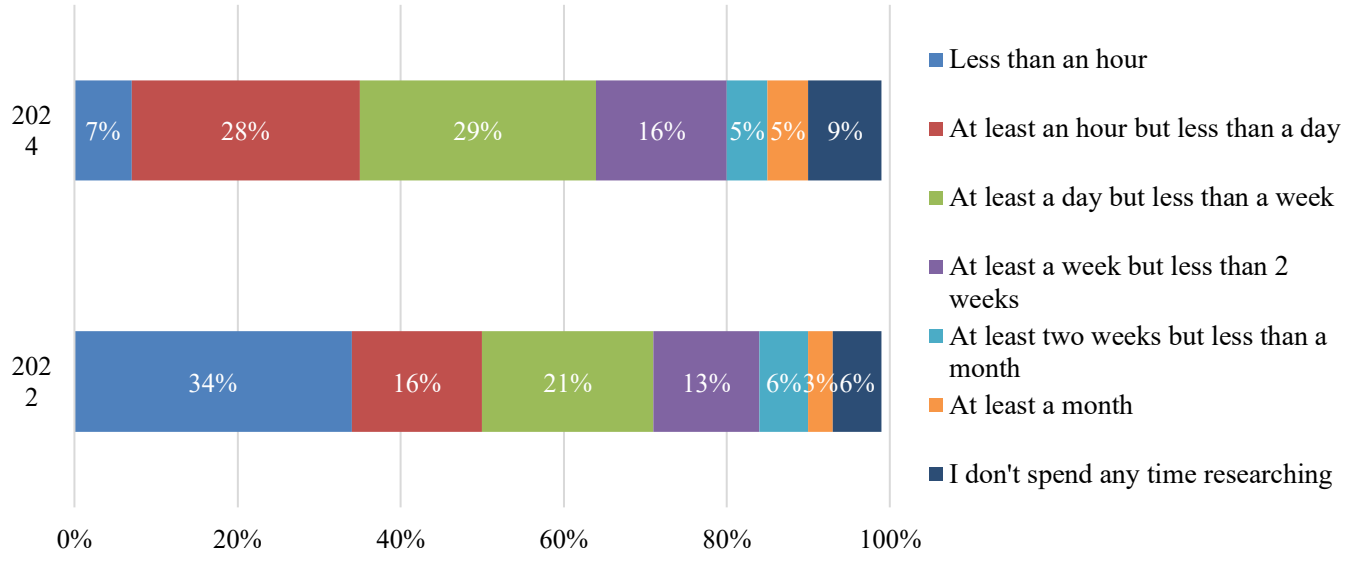

Figure 1. Time spent on researching an investment before buying or selling

Source: Compiled by authors based on Nasdaq (2024)

Investors are increasingly more motivated to spend time on investment research, which ultimately leads to more informed investment decisions. However, the expansion of financial products and access to various investable assets introduces the challenge of managing an overwhelming number of potential investment opportunities (Bardoscia et al., 2019). With limited time and resources, conducting thorough stock analysis for every company's stock would hardly be possible. Therefore, practicing effective stock analysis is crucial, particularly by employing valuation metrics, which streamline and accelerate the valuation process.

Whilst valuation is an integral part of investment management, it does have certain limitations. Investors must accept that uncertainty is a part of the valuation process, as the fundamental issue stems from the fact that valuation merely results in an estimate of value (Damodaran, 2006). Since intrinsic valuation frameworks require estimates for future cash flows and discount rates, the differences in valuation results are inherently biased towards a certain outcome (Broekema et al., 2022). There is an argument to be made that imprecise valuation may happen because of a lack of due diligence or relevant data. However, Damodaran (2012) argues that as the model becomes more quantitative, the effectiveness of valuation decreases due to the increased number of inputs required, which are naturally biased.

Although deriving an exact value for a business may not always be feasible, the process of valuation remains important. The main idea being that an estimate of value is still better than no estimate at all, as it can be compared to various economic forecasts, such as GDP growth, inflation, or unemployment rates (Kantšukov, 2023). In investment management, valuation plays a crucial role for investors to take advantage of market inefficiencies and profit on mispriced assets.

The role of valuation in stock analysis cannot be refuted, which leads to the application of these methods through various approaches. These approaches form the foundation of all valuation practices, providing the guiding principles that shape methods, models, and techniques. They reflect fundamental philosophies, such as the principle of future benefits, which states that an asset's value is determined by its expected returns. Understanding these approaches is critical, as they form the theoretical and practical frameworks used to evaluate any asset. The following table provides an overview of valuation approaches covered in this thesis, which sets the stage for further examination into each approach.

Table 2

Overview of stock analysis approaches

Approach	Rationale	Time perspective	Key strength	Key weakness
Asset-based*	Value is determined by its replacement or liquidation value	Static snapshot of current value	Grounded in tangible asset values	Ignores future earnings and intangible assets
Income-based*	Value is determined by the company's future cash flows or earnings	Forward-looking assumptions	Considers growth and cash flow generation potential	Highly sensitive to assumptions and forecasting errors
Market-based*	Similar assets must trade at the same price level	Retrospective benchmarking	Reflects current market consensus and relative pricing	Requires accurate comparables and standardization
Technical	Prices move in recognisable patterns	Real-time market behaviour	Identifies short-term opportunities	Ignores intrinsic value and fundamentals

Note: Fields marked with an asterisk (*) represent valuation approaches

Source: Compiled by authors

Asset-based valuation focuses on the value of a company's assets, either on a book-value basis or a liquidation basis. This approach is particularly relevant for firms in asset-heavy industries, companies with tangible, "on-the-books" assets and a low proportion of intangible assets, such as property, plant, and equipment-heavy businesses (CFA Institute, 2024). However, it is crucial to recognize that the balance sheet values may differ significantly from the market (fair) values of the same assets, which adds complexity to this approach and brings us to the methods.

Whilst the asset-based approach to valuation consists of different methods, the authors of this thesis will focus on two main methods - adjusted book value method and the liquidation value method. Adjusted book value method calculates the net asset value (NAV) by subtracting the assigned fair market value of liabilities from the adjusted fair market value of assets, not relying solely on the values reported on the balance sheet- reflecting their true economic worth. Liquidation value method estimates the amount that could be realized if all the company's assets were sold (either in an orderly fashion or rapidly) and liabilities paid off.

The advantages of asset-based approaches include simplicity, reliability, and conservatism. First, it focuses on current, tangible assets, avoiding the complexity of projecting future financial performance. Second, it allows for a more straightforward assessment of physical assets, which are often easier to evaluate accurately than intangible components. Third, it provides a conservative valuation, establishing a baseline value that can be particularly useful in scenarios requiring a cautious approach.

The main limitations of asset-based approaches arises from the exclusion of intangible assets such as intellectual property, brand equity, moat, goodwill, and growth potential (especially critical for valuing companies in knowledge-based or service-based industries). Another limitation is that it excludes the cash flow generation potential of a company. For instance, tech companies or service-oriented businesses may be undervalued using this method due to their reliance on intangible assets, hence investors should seek to use other valuation approaches. (CFA Institute, 2024; Kantšukov, 2023)

Market-based valuation approach compares the target company to similar businesses based on financial metrics derived from market data. These value are then standardized through multiples such as price-to-earnings (P/E), price-to-book (P/B), or enterprise value-to-EBITDA ratios. This approach, also referred to as relative valuation or the method of comparables, assumes that the market efficiently prices comparable companies, providing a benchmark for valuation. It is grounded in the law of one price, which asserts that identical or similar assets should trade at comparable prices in a frictionless market, as arbitrage eliminates price differences. (Damodaran, 2006; Segal, 2025)

However, relative valuation requires careful selection of comparable assets and standardization of metrics to ensure meaningful comparisons, particularly for companies of differing sizes or growth rates, cash flows, and risk. The market-based approach involves using a price (value) multiple, to estimate if a company is fairly valued, undervalued, or overvalued, by comparing it to a benchmark value of the multiple. Companies can be measured against their own historical performance, as well as the average or median multiples of their peers, industries, and the market as a whole. Aswath Damodaran (2002) highlights that nearly 90% of equity research valuations and half of acquisition valuations rely on relative valuation methods, often employing a combination of multiples and comparable company analysis. This suggests that market-based approach is the most widely used approach.

The **income-based** approach to valuation is grounded in the principle that a company's value is intrinsically tied to its ability to generate future economic benefits for its

shareholders. At its core, this method emphasizes the forward-looking nature of valuation, capturing the present value of expected future cash flows or earnings, adjusted for the associated risks. This approach assumes that a company operates as a going concern, continuing its operations without planning to liquidate or dispose of critical value-generating assets (Kantšukov, 2023).

The methods used in the income-based approach are called present value or discounted cash flow (DCF) models, which enjoy widespread acceptance due to their robust theoretical foundation (CFA Institute, 2024). By discounting future cash flows at a rate that reflects their riskiness, the DCF method aligns with financial theory, which asserts that the value of an asset is determined by the economic benefits it generates in the future (Damodaran, 2006). This alignment allows investors to estimate intrinsic value, striving for an objective measure unaffected by market perceptions. While DCF offers great flexibility in modelling different scenarios, it requires meticulous forecasting of cash flows, growth rates, and discount rates, making it highly sensitive to input assumptions.

The primary strength of the income-based approaches lies in their ability to incorporate growth potential and future performance into valuation. Unlike static methods such as the asset-based approach, income-based models capture the dynamic and realistic nature of businesses, particularly those with significant intangible value or innovative capabilities. This makes the method particularly well suited for growth-oriented companies or those in industries driven by intellectual property and technological advancements (IT services and software products).

However, the approach is not without its limitations. It depends heavily on the accuracy of projected financial data and the appropriateness of the discount rate, both of which are inherently uncertain and subjective. While income-based approaches offers a comprehensive assessment of intrinsic value, its accuracy heavily depends on the reliability of input assumptions. Retail investors often struggle with this complexity, leading to errors, for instance, in risk premium estimation or terminal growth rates (Damodaran, 2006, 2012).

Technical stock analysis, while not specifically an approach to stock valuation, is a common practice of stock analysis among retail investors. Technical analysis evaluates securities by examining past price movements, trading volume, and other market data. Unlike fundamental analysis, which seeks to determine intrinsic value, technical analysis relies solely on patterns and trends in the market to predict future price movements (Seth, 2024). As noted by Drakopoulou (2016), traders use a technical approach utilizing tools such as charts, indicators, and oscillators to identify trading opportunities with a probability of success

greater than 50%, focusing on price targets rather than intrinsic value. The technical approach operates under three assumptions:

1. Market discounts everything: all relevant information is already reflected in a stock's price.
2. Prices move in trends: stock prices tend to follow established patterns over time.
3. History repeats itself: past price behaviours recur in a similar way due to market psychology and investor reactions.

One of the most widely used indicators in technical analysis is "moving averages", which smooth out short-term fluctuations in the price of an equity to identify trends and reversals. Simple moving averages (SMA) calculate the average of a stock's price over a set period, while exponential moving averages (EMA) give more weight to recent prices, offering a faster response to market changes (Fernando, 2024). For example, an investor who seeks to buy a stock may view the 50-day SMA and 200-day SMA and wait for the 50-day SMA to cross above the 200-day moving average, as it indicates that the stock's recent price momentum (short-term) is stronger than its longer-term average. This crossover is commonly referred to as a "Golden Cross" and is considered a positive signal. Momentum indicators are tools such as the Relative Strength Index (RSI) and Moving Average Convergence Divergence (MACD) that help measure the speed and direction of price movements. These indicators are used in identifying relatively overbought or oversold conditions and signalling potential reversals (Drakopoulou, 2016). Support and resistance levels are used to identify price levels at which stocks tend to reverse direction, acting as barriers (support) or ceilings (resistance) at which a significant volume of transactions are executed. These levels help traders identify potential entry and exit points. Parabolic SAR (Stop and Reverse) is an indicator, introduced by Wilder in 1978, that provides directional signals by placing dots above or below price action. It is recognised as particularly effective in trending markets, allowing traders to secure profits while following price momentum (Drakopoulou, 2016).

While technical analysis offers valuable insights for short-term traders, it has limitations. Firstly, the reliance on historical data can result in false signals, particularly in volatile or sideways markets. Furthermore, critics argue that technical analysis ignores underlying fundamentals, which can lead to misinterpretation of broader market conditions and result in pure speculation.

Having explored the various valuation approaches alongside their respective advantages and limitations, the discussion leads to the specific stock analysis tools these approaches rely on. The following subchapter will examine the commonly used valuation

metrics in investment management by exploring their theoretical background and practical implications in conducting stock analysis.

1.2. Valuation metrics for stock analysis

Whilst there are multiple approaches to stock valuation, the two prominent methods are the income-based (discounted cash flow) method and the market-based (valuation ratios) method (Damodaran, 2006). For the purpose of this thesis, the authors have chosen to focus specifically on the valuation metrics employed within these two principal approaches. This decision is based on their relevance to assessing the intrinsic value of actively operating companies. The asset-based approach is excluded due to its reliance on current asset values, which are more applicable in liquidation or restructuring contexts. Likewise, technical analysis is omitted, as it does not aim to determine intrinsic value but instead focuses on short-term market behaviour and price trends. The following figure provides an overview of valuation metrics in both the market-based and income-based approaches.

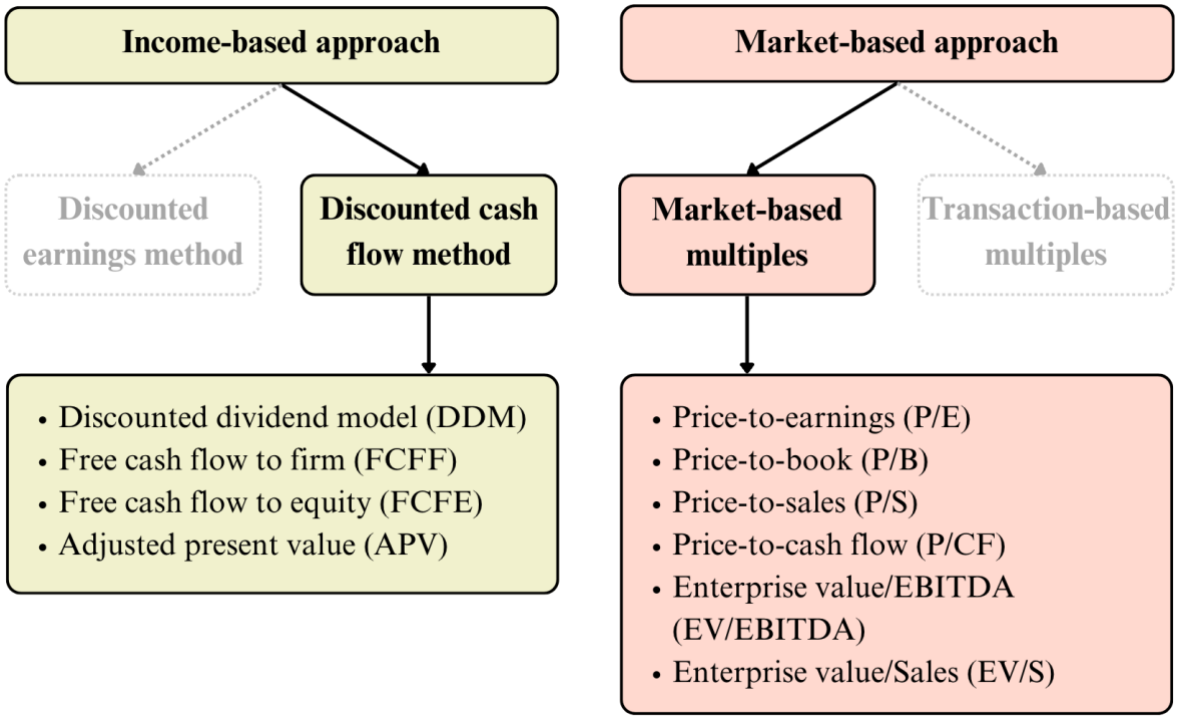

Figure 2. Overview of valuation metrics in market-based and income-based approaches
Source: Compiled by the authors

While the previous subchapter outlined the general strengths and weaknesses of each valuation approach, a more detailed comparison between market-based and income-based methods would provide clarity when analysing the effectiveness of the specific valuation

metrics within each approach. One of the main advantages of the market-based approach is that it does not require any estimates for future growth or discount rates, rather it relies solely on observable data (Laro & Pratt, 2005). Compared to the discounted cash flow (DCF) method, which requires such projections, the process of valuing stocks using valuation ratios is less complex, therefore being more convenient for investors (Hitchner, 2011). Additionally, since valuation ratios do not require many inputs, this allows for faster analysis compared to income-based models. Consequently, poor or uninformed assumptions made in the discounted cash flow model can lead to a false sense of confidence, which may negatively affect investment returns (Thomas & Gup, 2010). In general, valuation ratios provide a more accessible alternative to time-consuming and complex income-based valuation methods.

On one hand, valuation ratios are a good indicator for the relative price level of individual stocks within an industry. However, this method offers no insight on whether the current valuations are actually appropriate, as the whole industry could potentially be overvalued. (Reilly & Brown, 2011) In other words, the main pitfall of valuation ratios is that they are relative and fail to provide an absolute measure of value as opposed to discounted cash flow methods. Additionally, since relative valuation depends on a list of comparable companies, potential issues may arise when no appropriate peers exist, or they lack sufficient data for analysis (Hitchner, 2011). As both relative (valuation ratios) and intrinsic (discounted cash flow) valuations each have distinct advantages and limitations, most equity research reports use a combination of these two approaches (Damodaran, 2006). Having considered the comparative strengths and weaknesses of the two approaches, the following section will first examine the valuation metrics employed within the market-based approach before proceeding to the income-based metrics.

While some valuation ratios, known as fundamental ratios, are derived from financial variables such as return on equity, dividend payout, and expected growth, this thesis focuses on standardized ratios based on observable market data, which are more prevalent in practical stock analysis. Standardized valuation ratios can be divided into equity- and firm-value based multiples. These valuation ratios share a common trait, where the numerator represents the equity or enterprise value of a public company, and the denominator represents a corporate value driver, such as the company's net earnings, book value, revenue or earnings before interest, taxes, depreciation, and amortization (EBITDA). (Damodaran, 2012) These ratios are subsequently compared with similar companies to determine relative under- or overvaluation (Kantšukov, 2023). Valuation ratios are formed as either a trailing ratio, where the denominator value is based on the sum of the most recent four quarters, or a future ratio,

where the denominator value is derived from analysts' prediction for next four quarters (Nicholson, 1960 as cited in Ghaeli, 2017). Due to the characteristics of these formulas, a bigger ratio means investors rate the company highly and are willing to pay a higher price multiple for the company's stock (Kusmayadi et al., 2018).

Among equity-value based multiples, the most commonly used by investors are the price-to-earnings (P/E) ratio, price-to-book (P/B) ratio, price-to-cash flow (P/CF) and price-to-sales (P/S) ratio. For firm-value based ratios, the most popular among investors are enterprise value-to-EBITDA (EV/EBITDA) ratio and enterprise value-to-sales (EV/S) ratio. (Kantšukov, 2023; Khan, 2016) The following table provides an overview of the aforementioned valuation ratios.

Table 3

Valuation ratios and their formulas

Ratio	Formula
Price-to-earnings (P/E)	$\frac{Market\ capitalization}{Net\ income}$
Price-to-book (P/B)	$\frac{Market\ capitalization}{Book\ value}$
Price-to-cash flow (P/CF)	$\frac{Market\ capitalization}{Operating\ cash\ flow}$
Price-to-sales (P/S)	$\frac{Market\ capitalization}{Sales\ revenue}$
Enterprise value-to-EBITDA (EV/EBITDA)	$\frac{Enterprise\ value}{EBITDA}$
Enterprise value-to-sales (EV/S)	$\frac{Enterprise\ value}{Sales\ revenue}$

Source: Compiled by the authors

The **price-to-earnings** (P/E) ratio is one of the most widely used valuation multiples and is calculated by dividing the market price of a stock by its earnings per share. There are a number of variations on this formula, for instance, using the earnings per share of the most recent fiscal year, the sum of the last 4 quarters (trailing P/E), or forecasted earnings per share for the next year (forward P/E). (Damodaran, 2008) The P/E ratio indicates what price the stock is trading at in relation to its earnings, therefore, it is best used for companies with

positive and stable earnings (Pinto et al., 2010). Interestingly, the P/E ratio can be also used as a supplemental tool in other valuation techniques, most notably in the Gordon Growth Model (GGM), which links a company's P/E ratio with its dividend payout ratio, cost of equity, and growth rate (Khan, 2016).

The widespread use of the P/E ratio has led to many studies that tested the effectiveness of the P/E ratio in various global markets, industries, and economic conditions. Whilst multiple studies have found meaningful positive correlations for utilizing the P/E ratio to earn superior market returns (Anderson & Zastawniak, 2017; Chhaya & Nigam, 2015; San Ong et al., 2010), other studies found mixed evidence on the usefulness of the P/E ratio due to other variables contributing to investment returns (Lafmejani, 2017; Lam, 2002). Additionally, Bierman (2002) argues that whilst the P/E ratio is an important tool in determining the relative valuation of the underlying company, this metric should be adjusted for the company's extraordinary liabilities or excess cash to better reflect the company's value.

Price-to-book (P/B) multiple is computed by dividing the market price of a stock by its book value per share. Since the equity book value or "shareholders' equity" of a company reflects its net asset value (company's assets less liabilities), the P/B ratio represents a relatively stable and intuitive valuation measure for investors. (Damodaran, 2012) The P/B ratio can also be combined in the Gordon Growth Model, similar to the P/E ratio, through return on equity (ROE) and growth rate (Khan, 2016).

Whilst price-to-book ratio is a commonly used metric for stock analysis, Choi, Wang, and So (2021) claim in their research that the book-to-market ratio (inverse of the price-to-book ratio) is becoming dethatched from alternative valuation ratios and is subsequently worse at predicting stock returns. However, the P/B ratio may be appropriate in industries that have a meaningful connection between book value and price of the stock, namely in the financial industry for banks, insurance companies, brokers, and so forth (Trugman, 2012). For instance, according to a study conducted by Gambacorta, Oliviero and Shin (2020), a low P/B ratio for banks offers an incentive to distribute dividends to shareholders.

The **price-to-sales (P/S)** ratio computes the market cap (or share price) of a company to its revenue (or revenue per share). This ratio is especially useful when valuing companies that currently produce negative earnings, but eventually are able to generate profits as well. (Khan, 2016) Because earnings or book value based multiples can be negative (and thus not meaningful), many analysts opt to use the P/S multiple, especially for younger firms. Another advantage of the P/S multiple compared to earnings or book value multiples is its lower

susceptibility to accounting decisions, making the P/S ratio less volatile in comparison. (Damodaran, 2012) Whilst the P/S ratio is useful in valuing younger firms with negative or near-zero earnings, according to Martin (1998), it can also be appropriate to use for mature cyclical companies.

The disadvantage of the P/S ratio is related to its strength, as it only reflects the top-line of the company and ignores the impact of costs and debt (Pinto et al., 2010). According to Damodaran (2012), for a firm to have value it has to generate earnings or cash flow, thus using the P/S multiple to value companies with negative P/E or P/B ratios can lead to misleading valuations. Additionally, a company's debt level plays an important role in the meaningfulness of revenue multiples. Since the P/S ratio does not account for the company's debt, analysts may opt to use enterprise value-to-sales (EV/S) multiple for companies with a levered financial position. (Khan, 2016)

Price-to-cash flow (P/CF) ratio is calculated by dividing the market price of a stock by its operating cash flow. (Khan, 2016) In essence, this ratio is very similar to the P/E ratio, but since a company's cash flow is less subject to manipulation than earnings, it is generally more stable than the P/E ratio. It therefore offers an interesting basis for evaluating the relationship between a company's P/E and P/CF (Pinto et al., 2010). The cash flow multiple also possesses similar advantages and disadvantages as the P/E ratio, and can be a useful tool when analysing companies with specific financial characteristics, for instance, when a firm has negative earnings but positive cash flow (Khan, 2016).

In previously covered valuation ratios, the market capitalization is used as the numerator value in the formula. In case of enterprise value ratios, the market cap (equity value of a company) is replaced with enterprise value, which provides the economic measure of real market value of a firm as a whole (Bhullar & Bhatnagar, 2013). To compute the **enterprise value-to-EBITDA (EV/EBITDA)** ratio, first one must calculate the enterprise value of a firm as the sum of market value of equity (market capitalization), preferred stock, and debt minus cash and investment. This value is then divided by earnings before interest, taxes, depreciation, and amortization (EBITDA). (Damodaran, 2012)

There are similarities between the EV/EBITDA and P/E ratios, as both measure the cost of a stock as a ratio of the company's earnings (Khan, 2016). However, using enterprise value instead of market capitalization is more appropriate for companies with financial leverage. Additionally, because EBITDA reflects a company's earnings before accounting for various expenses (interest, depreciation, amortization, and tax), the EV/EBITDA ratio can be utilized for companies with positive EBITDA, but negative net earnings. (Pinto et al., 2010)

According to Damodaran (2012), since EV/EBITDA can be compared more easily amongst firms with different financial leverage, this ratio is especially useful for companies that require large capital expenditures. That said, the downside of using EBITDA in the valuation process is that it overestimates cash flow from operations when working capital is increasing, which may lead to biased results, and ignores the impact of revenue recognition policies on cash flow (Pinto et al., 2010).

The **enterprise value-to-sales (EV/S)** ratio is calculated by dividing the enterprise value of a stock by its revenue (Khan, 2016). The EV/S ratio expands on one of the main pitfalls of the P/S ratio which does not consider debt in the calculation. As with the EV/EBITDA ratio, the enterprise value of a firm is used in the calculation to reflect the financial position of the company in addition to the equity value (market capitalization). (Pinto et al., 2010) According to Damodaran (2012), the EV/S ratio is therefore a more robust multiple compared to the P/S ratio, as it internally more consistent. This view is supported with real-world applications, as EV/S has been preferred over P/S ratio by financial analysts (Bhullar & Bhatnagar, 2013).

Following the overview of the principal valuation ratios used in the market-based approach, the next part examines valuation metrics in the income-based framework. At the heart of the income-based approach lies the **Discounted Cash Flow method**, in which several income-based valuation models can be distinguished. Discounted cash flow valuation typically follows two main variations: valuing the equity stake in a business or the entire company, which includes the value of equity and debt. The choice between valuing the entire company or just its equity determines whether investors use free cash flow to the firm (FCFF) or free cash flow to equity (FCFE). **The Discounted Free Cash Flow to Firm (DCFF)** model is used to value a company based on its free cash flows to the firm (FCFF), discounted at the weighted average cost of capital (WACC). FCFF reflects the cash flow available to all capital providers—both equity and debt, after accounting for operating expenses, taxes, changes in working capital, and capital expenditures. WACC reflects the company's overall cost of capital, weighted by the proportion of debt and equity in its capital structure (Kantšukov, 2023).

The DCFF model can be expressed as:

$$V_0 = \sum_{t=1}^{N} \frac{FCFF_t}{(1+WACC)^t} + \frac{FCFF_{N+1}}{(WACC-g)(1+WACC)^N} \quad (1)$$

where

V_0 – value of the firm

$FCFF_t$ – free cash flows to the firm in year t^{th}

$WACC$ – weighted average cost of capital

g – perpetual growth rate of cash flows

N – forecast period during which free cash flows are projected

The DCFF approach provides a framework for valuing firms with predictable and measurable cash flows, making it suitable for established companies with stable operations and positive free cash flow. However, the accuracy of the model depends heavily on precise estimates of future cash flows, discount rates, and growth assumptions, which introduces significant complexity and potential for error (Koller et al., 2010). As a natural extension of the DCF the Dividend Discount Model (DDM) narrows its focus to equity valuation, emphasising the returns that shareholders directly receive in the form of dividends.

The Dividend Discount Model (DDM) is an application of DCF that calculates the value of equity based on the present value of all future expected dividends (cash payments). This model requires the company to pay a cash dividend, often used to value companies with stable dividend payout policies, such as utilities or defensive retail firms. DDM is rooted in the principle that dividends are the tangible returns received by shareholders, making them a straightforward and reliable metric for valuation.

The model for a firm in stable growth is expressed as:

$$E_0 = \frac{DPS_1}{k_e - g_d} \quad (2)$$

where

E_0 – value of equity

DPS_1 – expected dividend per share in the next period

k_e – cost of equity

g_d – perpetual growth rate of dividends

The primary limitation of the Dividend Discount Model lies in its applicability only to firms with stable and predictable dividend distributions. It does not account for firms that retain earnings for reinvestment, or for firms that generate shareholder value through mechanisms other than dividends, such as share buybacks. Furthermore, the assumption of constant growth may oversimplify real-world scenarios where growth rates fluctuate (Damodaran, 2006). To address the limitations of the DDM, the **Discounted Free Cash Flow to Equity (DCFE)** model expands the scope of equity valuation by considering all cash flows available to shareholders, not just dividends. The DCFE model focuses on the free cash flow available to shareholders after accounting for operating expenses, taxes, debt obligations, and reinvestment needs. Unlike the DDM, which limits its focus to dividends, the DCFE model captures the potential dividends a company could distribute, making it more practical for firms that do not have established dividend policies or that reinvest in growth.

The DCFE model is represented as:

$$E_0 = \sum_{t=1}^{N} \frac{FCFE_t}{(1+k_e)^t} + \frac{FCFE_{N+1}}{(k_e - g_e)(1+k_e)^N} \quad (3)$$

where

E_0 – value of equity

$FCFE_t$ – free cash flows to equity in year t^{th}

k_e – cost of equity

g_e – perpetual growth rate of cash flows

N – forecast period during which free cash flows are projected

By considering all cash flows available to equity holders, the DCFE model offers a more flexible and realistic approach to equity valuation. This makes it especially effective for high-growth firms, where cash flows may be volatile, and for firms that do not pay dividends. However, the DCFE model requires detailed forecasting and is highly sensitive to assumptions regarding future cash flows, growth rates, and discount rates.

All three DCF methods share the strength of being theoretically robust, providing intrinsic valuations grounded in the future economic potential of the company. The DCFF model's focus on the firm as a whole makes it versatile for various scenarios, while the DDM's simplicity and focus on dividends offer a conservative and transparent valuation

approach. The DCFE model, on the other hand, excels in its adaptability to firms with irregular or non-existent dividend policies (Koller et al., 2010).

However, these methods also share limitations. Their reliance on precise input assumptions—such as cash flow forecasts, discount rates, and growth projections—introduces complexity and potential for error. Additionally, these models assume that future cash flows are predictable and that firms operate as going concerns, which may not hold true in all situations. The DDM is further constrained by its focus on dividends, limiting its applicability to firms that reinvest heavily or that operate in industries where dividends are less common.

The **Adjusted Present Value (APV)** method is a valuation model that isolates the value of a company's operations from the effects of financing decisions. It divides the valuation process into two components: the value of the business assuming it is entirely equity-financed and the present value of tax benefits derived from debt financing. (Damodaran, 2002)

The formula for APV is expressed as:

$$APV = V_e + V_{tax} \quad (4)$$

where

V_e – value of the company as if it were all-equity financed

V_{tax} – value of the tax shield resulting from debt financing

The value of a levered firm can be expressed as:

$$Value\ of\ Levered\ Firm = \frac{FCFF_0(1+g)}{k_{eu}-g} + t_c D - \pi_a BC \quad (5)$$

where

$FCFF_0$ – initial free cash flow to the firm

k_{eu} – unlevered cost of equity

t_c – corporate tax rate

D – the market value of debt

π_a – probability of default after the additional debt

BC – present value of the bankruptcy cost

g – expected growth rate

This method, rooted in the principles introduced by Modigliani and Miller, emphasizes that the value of a company's assets is independent of its capital structure in a world without taxes or bankruptcy costs. The APV model explicitly accounts for market imperfections, such as tax savings from debt, by separating these effects from the core operating performance of the business (Myers, 1974; Tirtiroglu & Tirtiroglu, 2025).

The APV method is particularly useful in scenarios where a company's capital structure is expected to change significantly over time. Unlike traditional methods that rely on a constant weighted average cost of capital (WACC), APV provides flexibility by allowing separate treatment of financing effects (equity and debt). This makes it ideal for valuing highly leveraged firms, companies undergoing financial restructuring, or businesses in environments with complex tax considerations. The APV approach is especially valuable for transactions funded disproportionately with debt, where debt repayment schedules are negotiated or predetermined, which is why it has gained prominence in leveraged buyout (LBO) scenarios.

The limitation of APV is that it requires detailed projections of both unlevered free cash flows and the tax benefits of debt, making it data-intensive and complex to implement. Additionally, the accuracy of valuation depends heavily on the reliability of assumptions regarding future debt levels, interest rates, and tax rates. Despite these challenges, APV remains a good tool for understanding the interplay between operating performance and financing decisions in company valuation. (Damodaran, 2002)

The diversity of valuation metrics across different approaches reflects the varying levels of complexity, data requirements, and underlying assumptions involved in stock analysis. These factors inevitably influence the time and effort investors are willing or able to commit, often determining which metrics are applied in a given context. As a result, the preference for specific valuation models can differ widely depending on the investor's analytical goals, experience, and resources. To better understand these tendencies, the next subchapter reviews existing literature on valuation metric preferences of investors.

1.3. Valuation metric preferences – an overview of previous studies

Using valuation metrics in stock analysis provides a lot of insight into the relative over- or undervaluation of a stock. Using income-based models and standardized valuation ratios are a common practice among analysts and investors to conduct their analysis. The following chapter provides an overview of previous studies on investors' valuation metric preferences in stock analysis.

The authors note previous research conducted among investing professionals, such as equity analysts in large investment funds or CFA Institute members, highlighting the research gap of limited studies on valuation metrics used among retail investors. The summary of studies on the equity valuation practices covered in this thesis can be seen in Appendix A.

A study conducted by Pinto et al. (2019) surveyed 1980 members of the Chartered Financial Analyst (CFA) Institution, who are investing professionals equipped with skills in fundamental investment tools, valuing assets, portfolio management, and wealth planning. Their research offers valuable insight into the specific valuation practices used by investing professionals, with the survey methodology used in this study providing more current and topical data compared to content studies. The survey covered the wide field of equity valuation practices and provided valuable insight about the use of valuation metrics in various approaches. The findings from this study are referenced again later in this thesis, but the initial focus will be on the **market-based metrics**.

To set the groundwork for further analysis into the specific valuation ratios used by investors, it is worthwhile to note that in the survey conducted by Pinto et al. (2019), a remarkable 92.8% of the respondents use the market multiples approach in their valuation practices. By far the most popular ratios used by CFA members are the P/E ratio (88.1%) and various enterprise value multiples, such as EV/EBITDA or EV/S (76.7%). Whilst other valuation ratios such as P/B (59.0%), P/CF (57.2%), and P/S (40.3%) are comparatively used less than P/E and enterprise value ratios, a significant number of respondents still employ those ratios in their equity valuation practices.

A prior study by Block (1999) similarly studied financial analysts who are members of AIMR (prior name of the CFA Institute). The survey consisted of 297 responses and focused more on general analytical techniques and present value models of the income-based valuation approach. Whilst valuation ratios were not explicitly mentioned in the survey, only 54.3% of the respondents considered present value analysis—an income-based valuation approach—as a part of their regular analytical process, indicating a potentially larger focus on valuation multiples.

Bancel and Mittoo (2014) surveyed 356 investing professionals with a CFA or equivalent destination among European countries and found that 80% of the respondents indicated relative valuation as their preferred valuation method, which is in line with research conducted by Pinto et al. (2019). Whilst the relative valuation method was the most popular choice, the study also highlights that investing professionals combine many different valuation approaches in their practices. For specific valuation metrics, the most popular

multiples used by the respondents were EV/EBITDA with 83%, followed by P/E ratio with 68%. The P/B, EV/EBIT, and EV/S ratio demonstrated comparable levels of usage, each being selected by approximately 45% of respondents.

A survey conducted by KPMG (2015) among corporate financiers and financial analysts in Australia revealed that 70% of the respondents reported using market-based and income-based valuation approaches equally when assessing companies operating as going concerns. Among those who indicated they "always" use specific valuation multiples, the most commonly referenced was EV/EBITDA (75%), followed by EV/EBIT (55%), the P/E ratio (32%), the P/B ratio (10%), and the EV/S ratio (5%).

Investment analysts of Morgan Stanley Dean Witter's reported P/E ratio and EV/EBITDA as their preferred valuation ratios, followed by P/B, P/CF, EV/S and P/S ratios. (Fernandez, 2001, as cited in Morgan Stanley Dean Witters, 1999) Based on the findings of surveys conducted by Pinto et al. (2019), Bancel and Mittoo (2014), KPMG (2015), and Morgan Stanley Dean Witters (1999), the P/E and EV/EBITDA ratios emerge as the most preferred market-based metrics among investment professionals. Nevertheless, while other valuation ratios appear less dominant in preference rankings, they continue to be employed to a notable extent in professional practice.

Studies examining the use of valuation metrics through survey methodology are limited, which highlights a significant research gap. However, a number of studies have employed content analysis of financial reports to demonstrate the relevance and application of valuation ratios in stock analysis. Demirakos et al. (2004) analysed 104 financial reports of UK companies between 1997-2001, and showed that the most frequently used valuation multiples in the studied reports were the P/E ratio with 88.5% and sales multiples such as P/S and EV/S with 50%. Other market-based metrics such as cash flow multiples like P/CF were used in 12.5% of reports and book value or P/B ratio was used in only 5.8% of reports. The same authors examined 490 financial reports of companies listed on the London Stock Exchange between July 2002 to July 2004, and found that analysts slightly prefer P/E (market-based models) to discounted cash flow (income-based) models, with the most popular valuation ratios being P/E, PEG, EV/EBIT and EV/EBITDA (Demirakos et al., 2010).

Asquith et al. (2005) researched 1126 analysts' reports from more than 630 investment banks, brokerage houses, and research firms between 1997-1999. They found that 99.1% of analysts use some form of earnings multiple, such as P/E or EV/EBIT, when computing price targets for stocks. Asset multiples, for example P/B, were applied 25.1% of

the reports, whilst any other valuation multiples were used very rarely. Notably, the PEG ratio, which is calculated by dividing the P/E ratio by the company's expected earnings growth rate, was used in only 7 of the 1126 reports. In contrast, Bradshaw (2002) studied 103 analysts' reports from various industries during the first quarter of 1999, and found that P/E and PEG ratios were frequently used in valuation and forming price targets for stocks. Given the relatively similar time periods covered in both studies, the notable disparity between the results may be due to differences in sample size, industry coverage, or variations in methodologies.

For instance, Olbert (2024) studied analysts' use of valuation models and ratios across industries in the U.S. market, revealing significant variation in results. The study analysed the preferred valuation model in 25 different industry groups and found that the P/E ratio was the most popular option for 20 of them. The P/B ratio was most preferred in the financials, banking, and insurance industries; the P/CF ratio was favoured in capital goods, energy, and IT hardware; the P/S ratio was prominent in media & entertainment, auto & components, and energy; and the EV/EBITDA ratio was widely used in telecom, energy, and materials industries. These findings support previous research that the P/E ratio is amongst the most widely used valuation ratios. However, Olbert (2024) emphasizes that the choice of valuation ratio for investors varies depending on industry characteristics, investing priorities, and company specific factors. As such, investors are encouraged to consider industry context, risk-appetite, and relevant financial indicators of the company that align with their investment goals when choosing the appropriate valuation ratio for stock analysis.

Based on the review of previous literature, a ranking of commonly used market-based valuation metrics by investors has been compiled. While this ranking is not exhaustive, it offers a subjective overview derived from the synthesis of findings across several studies. The relative popularity of these ratios, along with the factors contributing to their widespread use, is presented in Appendix B.

The review of previous literature reveals a diverse range of valuation ratios utilized by investors, with varying levels of popularity depending on the industry, company's financial position, and investor's goals. For instance, companies with negative earnings and subsequently negative P/E ratios are eliminated from comparative studies, as they possess different characteristics from profitable firms (Athanassakos, 2014). This notion also explains how one stock analysis ratio may perform better among small-cap stocks with more risk and higher growth potential, and others may be better suited for larger companies with a more

established business model and higher profitability (Pätäri et al., 2018). Subsequently, an investor should consider these characteristics when analysing valuation ratios.

Continuing the overview of previous studies with **income-based metrics**, Damodaran (2012) extensively emphasizes the Discounted Cash Flow (DCF) method as the most theoretically sound approach to intrinsic valuation, provided it is supported by accurate estimations of inputs like cash flow projections and discount rates. However, he acknowledges its inherent complexity, especially for less experienced users. This complexity often results in valuation errors, as retail investors may overlook key elements such as terminal growth rates or incorrectly estimate risk premiums (Damodaran, 2012). Similarly, Pinto et al., (2010) elaborate on the DCF's practical application, noting that the model's effectiveness relies heavily on incorporating market conditions into variables like Weighted Average Cost of Capital (WACC). They argue that, without a nuanced understanding of the context, the application of valuation models may mislead investors rather than provide meaningful guidance.

Returning to the study conducted by Bancel and Mittoo (2014), respondents in their study identified the simplicity and alignment of valuation models with microeconomic theory as key advantages. These models were viewed as accessible to both executives and market participants, and their assumptions were considered historically traceable. However, the study also highlighted several significant limitations associated with their practical application.

Experts cautioned that the level of detail in discounted cash flow models can create an illusion of accuracy, as these models are highly sensitive to input assumptions. Furthermore, valuation is context-dependent, with the value of a firm influenced by specific macroeconomic conditions and market circumstances at a given point in time. This dynamic nature of valuation reinforces the need for flexibility and critical judgment when applying theoretical frameworks in practice. The study by Bancel and Mittoo (2014) also revealed the following statistics regarding the popularity of valuation metrics:

- DCF (Free Cash Flow to the Firm): used by approximately 80% of respondents;
- Free Cash Flow to Equity (FCFE): used by approximately 37% of respondents;
- The Dividend Growth Model (DDM): used by approximately 23% of respondents.

In contrast, the Brière (2023) highlights the behavioural aspects influencing the adoption of valuation techniques. The findings suggest that retail investors often lack the financial literacy to navigate intricate valuation models, such as DCF, leading them to rely on simpler metrics or even speculative strategies.

A study by Pinto et al. (2019) among 1980 CFA members found that 78.8% of respondents use the present discounted value approach and 61.4% use asset-based approaches, providing similar conclusions as Bancel & Mittoo (2014). That said, the underperformance compared to market-based metrics indicates a dominant reliance on established methods that prioritize accessibility and simplicity, potentially at the expense of exploring less conventional but theoretically robust alternatives like real options. Additionally, their analysis revealed that discounted free cash flow models were the most utilized within the present discounted value framework (86.8%), followed by dividend discount models (35.1%) and residual income approaches (20.5%).

This chapter has demonstrated that stock analysis remains a widely practiced and relevant activity among investors, serving a range of purposes from portfolio management to strategic decision-making. As a result, various valuation metrics are employed, each with its own strengths and limitations depending on the analytical context. A review of previous literature reveals that certain valuation metrics, such as the P/E and EV/EBITDA ratios, consistently rank among the most commonly used tools, particularly among professional investors. However, existing research has largely focused on the practices of institutional investors, while the valuation metric preferences of retail investors remain significantly underexplored. This gap in the literature highlights the need for further investigation into how individual, non-professional investors approach stock valuation. The following chapter addresses this gap by examining the valuation metrics utilized by retail investors in practice, based on empirical data collected through a survey of Investonian platform users.

2. Valuation metrics used by retail investors in stock analysis

2.1. Overview of the Investonian platform

Investonian is a stock analysis platform designed for retail investors. The platform was founded by the authors of this study in October 2023 and operated for approximately 15 months until January 2024, when the intellectual property and codebase were sold. The development team consisted of the two founders and five additional members. The motivation for creating the platform stemmed from the lack of stock analysis tools in Estonia that met the founders' criteria: broad data coverage across multiple stock exchanges, a modern user interface for visualizing financial information, and automated valuation tools applicable to companies of varying sizes, industries, and financial structures. As an information-based web application, Investonian operates within a competitive landscape alongside stock analysis platforms such as Seeking Alpha, Simply Wall Street, and

Bloomberg Terminal. The primary objective of Investonian is to facilitate informed investment decisions by enabling users to evaluate companies comprehensively.

Investonian provides custom screening tools that enable users to discover new stocks based on specific criteria. Screeners can be customized according to parameters such as geography, industry sector, technical indicators, growth metrics, and valuation ratios. This feature assists investors in narrowing down potential investment opportunities tailored to their strategic preferences.

The platform offers a comprehensive suite of analytical tools that present both numerical and visual data. Users can access historical earnings reports, including balance sheets, cash flow statements, and income statements. Valuation ratios and summaries of companies' main business operations are also provided, alongside insights into expected and historical growth patterns and dividend data. Various valuation models such as Discounted Cash Flow (DCF), Dividend Discount Model (DDM), book value assessments, and enterprise value calculations are integrated into the platform. Additionally, the inclusion of analyst coverage and expectations provides users with a broader market perspective.

To support investor decision-making, Investonian integrates AI-generated news summaries that concisely explain key drivers behind stock price movements, whether positive or negative. The platform also includes tools for managing portfolio holdings, tracking transaction history, and maintaining watchlists, thereby offering a comprehensive investment management solution. Recognizing the need for financial literacy, Investonian features a specialized dictionary of financial terms and calculation methods. This resource provides users with definitions and practical examples, enhancing their understanding of complex investment concepts and fostering informed decision-making.

Investonian had a user base of approximately 1500 individuals, with peak daily activity reaching 400 users during a partnership with LHV for their virtual investing competition. This collaboration significantly increased user engagement and demonstrated the platform's capacity to support large-scale, interactive investment initiatives.

The platform differentiates itself from competitors through several features. The integrated financial dictionary allows users to instantly access definitions and explanations of various financial terms and calculations, enhancing their learning experience. Additionally, Investonian incorporates advanced visualizations with interactive graphs, enabling users to better interpret data trends and patterns. The inclusion of AI-generated news updates further ensures that users remain informed about the latest market movements, thus supporting timely investment decisions.

2.2. Data and methodology

To achieve the research aim of exploring the valuation metric preferences of retail investors', the survey methodology has been employed in the form of a structured questionnaire. This method enables direct data collection from retail investors about their valuation practices, which is essential for understanding subjective preferences, such as the use of valuation metrics, which may vary across individuals. Since previous research on valuation metric preferences has focused on investing professionals through surveys or research reports, the authors consider a survey the most suitable method for investigating retail investor behaviour. The survey methodology also enables efficient data collection from a large number of retail investors, allowing responses to be gathered simultaneously, reducing the time needed for data collection. Additionally, the survey methodology enables segmentation and comparison of valuation metric preferences across different demographic groups, such as age, gender, and investing experience. The structured and quantifiable data generated by surveys aid in identifying trends, patterns and correlations with responses.

While the survey methodology offers several advantages for exploring investor preferences, certain limitations should be acknowledged. First, the reliance on self-reported data introduces the risk of response biases, such as inaccurate recall or socially desirable answers. Second, the survey format limits the depth of responses and may not fully capture the nuances behind participants' valuation decisions. Third, although Likert-scale questions allow for structured analysis, they may constrain respondents from expressing more complex or conditional reasoning. Finally, the cross-sectional design captures investor behaviour at a single point in time, limiting insights into how preferences may evolve with market conditions or personal circumstances.

Figure 3 illustrates the research methodology applied in this thesis, which consists of three main steps: preliminary research and survey design, survey distribution and data analysis, and finally, interpreting the findings and drawing conclusions. Each step outlines the specific tasks undertaken to ensure a structured and systematic approach to addressing the research aim.

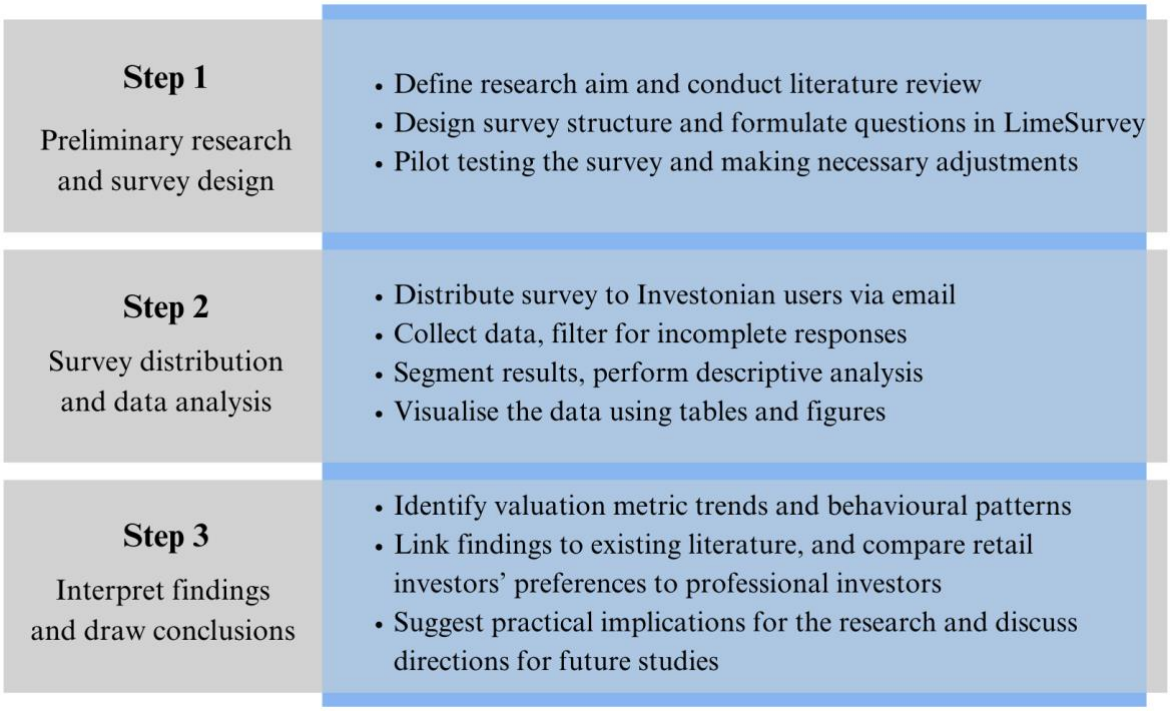

Figure 3. Explanatory research plan diagram
Source: Compiled by the authors

The Investonian platform has approximately 1500 users and can therefore be considered a representative sample of retail investors due to their intent to use various tools directly for analysing stocks based on valuation metrics. This sample group represents individuals who are actively engaged in investment decision-making processes and therefore can be considered appropriate for the study's focus in evaluating stock analysis tools. To collect data, a survey was distributed via email, which serves as the primary communication channel for Investonian users. The aim was to gather enough responses to ensure a meaningful and achievable sample size for data analysis.

The questionnaire was be conducted anonymously using LimeSurvey. This platform possesses a comprehensive set of features, facilitating ease of use and accessibility for participants. LimeSurvey provides integrated analytical tools that will assist the authors in efficiently processing and analysing the data. The survey design and data handling will adhere to GDPR regulations, ensuring that participant privacy and data protection requirements are met throughout the research process.

The questionnaire design was structured into two parts: the first identifying the demographic background information about the respondents, such as their age, gender, education level, primary field of study or profession, and investing experience. The second

part aimed to gather data on respondents' investment behaviour and stock analysis habits. For the purpose of this thesis, the questions about valuation metric preferences are analysed in the context of various demographic groups to identify potential trends or patterns.

The questionnaire design was structured into two parts. The **first part** focused on collecting demographic background information from respondents, including gender, age, educational attainment, employment level, and investing experience. These variables were selected to allow for segmentation and comparative analysis, enabling the authors to identify whether factors such as age or education correlate with valuation metric preferences. Understanding these background dimensions could help interpret behavioral differences and detect patterns that may be attributable to demographic or experiential factors rather than to investment philosophy alone.

The **second part** of the questionnaire concentrated on capturing the respondents' investment behaviors and valuation practices. This section included questions on the frequency and context in which various valuation metrics are used when making buy or sell decisions, such as price-to-earnings (P/E), free cash flow to firm (FCFF), and adjusted book value. Additionally, participants were asked about their perceived usefulness of valuation metrics and the motivations behind their preferences (e.g., simplicity, availability, perceived accuracy). This layered structure allows the study to go beyond surface-level analysis, and the authors plan to analyse how demographic profiles influence valuation strategies. The structure also aligns with the thesis objective of identifying patterns and potential explanatory factors behind individual investors' valuation approaches, contributing empirical insight into how retail investors behave in practice.

To ensure comparability with established research and maintain methodological validity, the questionnaire was designed to include Likert-scale questions (e.g., never to always) and structured behavioral prompts based on research of valuation practices observed in professional finance literature. Specifically, the structure and content of the second part of the survey were inspired by studies that examined valuation metric usage among professional analysts, such as those conducted by Pinto et al. (2019), Bancel & Mittoo (2014), and KPMG (2015). The authors believe that Likert-scale questions enable quantitative analysis of subjective behavior and preferences. It allows for ranking and frequency analysis across demographic groups, improves response consistency, and simplifies comparative statistical treatment.

These studies employed similar instruments to explore how often analysts use specific valuation metrics. While previous theoretical studies focused on institutional and professional

analysts and also did not examine the rationale behind analysts' choices, this thesis applies a similar structure to study retail investors, who are comparatively under-researched in this context.

Questions regarding the frequency of using valuation metrics when buying versus selling stocks, the general perceived usefulness of valuation metrics, preferences among specific valuation methods, and the underlying reasons for using certain metrics were aimed at uncovering preference patterns and cognitive motivations of individual investors.

The following subchapter presents and analyses the results of the survey, offering insights into the valuation metric preferences and behavioural patterns of retail investors, as revealed by the data collected through the methodology outlined above.

2.3. Results and discussion

To provide context for the analysis, the discussion begins with a general **overview of the survey sample** characteristics. The total number of respondents was 88, however, 12 respondents did not fill in any answers, therefore, the more accurate number of participants was 76. The survey conducted by the authors revealed a pronounced gender disparity among the respondents, with 78.9% identifying as male and only 19.7% as female. This skew may not be merely a demographic curiosity or sample bias - it reflects a broader structural trend within the retail investing space and the financial industry. Existing literature confirms that women remain significantly underrepresented in retail investment participation globally (Bucher-Koenen et al., 2021), and this imbalance is often attributed to differences in risk tolerance, financial confidence, and early exposure to financial decision-making. Research suggests that men generally exhibit higher risk-seeking behavior, which aligns with classical theories from behavioral finance (the study of how psychological biases and emotions influence financial decision-making). Barber and Odean (2001) found that men trade more frequently than women, often due to overconfidence, resulting in lower net returns. Conversely, women tend to invest more conservatively but achieve better risk-adjusted outcomes over time (Sung & Hanna, 1996). These psychological and behavioral differences are not biologically determined but are rather shaped by socialization processes, whereby men are more likely to be encouraged to engage in financial matters from an early age (Croson & Gneezy, 2009).

The underrepresentation of women in our sample, therefore, may mirror the structural underrepresentation of women in finance at large. Importantly, this has implications not only for inclusivity but also for market outcomes. A more diverse retail investor base could, in theory, lead to more stable investment patterns and a reduction in volatility. From a policy

perspective, these findings reflect on the importance of targeted financial education and inclusive investment analysis tools designed to lower the psychological and informational barriers to entry for female investors (Lusardi & Mitchell, 2014). The following figure represents the age distribution of the respondents.

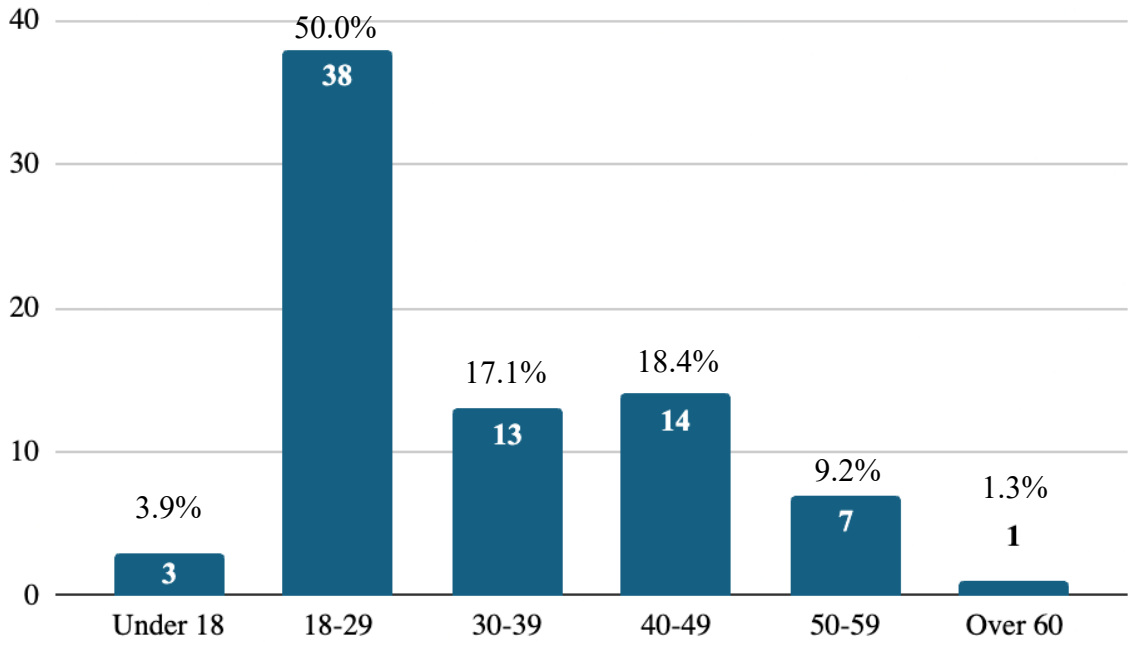

Figure 4. Age distribution of survey respondents

Note: The Y-axis represents the number of respondents

Source: Compiled by the authors

Approximately 50% of respondents were aged 18–29, which may indicate that younger adults are increasingly motivated to invest and/or cultivate sound financial habits with their disposable income. The Financial Times reports that around 30% of Gen Z begin investing during their university years, a significantly higher rate compared to 15% of millennials and just 5% of baby boomers (Quach & John, 2025). However, this concentration of younger users in the sample is likely influenced by several underlying biases. Platforms like Investonian, which are digitally native web applications, tend to attract more technologically capable, early adopters, skewing participation toward a younger demographic. Additionally, as noted by Bethlehem (2010), younger people are generally more responsive to online surveys, which may further give meaning to the age-related representativeness.

A similar pattern is observed in the educational profile of respondents to the survey. The majority reported either a high school diploma (39.5%) or a Bachelor's degree (35.5%) as their highest obtained education level, with tertiary-educated respondents making up 55.3% of the total sample. According to Deaton (2024), while retail investors come from diverse educational backgrounds, a significant proportion of new entrants are university educated, driven by easier access to investment tools and greater familiarity with financial products. Higher levels of education are positively correlated with both financial literacy and income, two factors that increase the likelihood of having savings available for investment (Lusardi & Mitchell, 2014). Thus, the overrepresentation of educated respondents in this sample is not surprising and may reflect both greater access to capital, knowledge, and generally a stronger interest in long-term financial planning.

The two largest employment segments in the sample were mid-level employees (30.3%) and students (22.4%), a diverse but skewed profile, in line with the age and educational background demographics. First, students are participating in stock markets more actively than previously assumed. As noted before, Gen Z increasingly begins investing during university years, with 30% starting before graduation (Quach & John, 2025). Second, the presence of entry-level (14.5%) and mid-level (30.3%) professionals may reflect the increasing accessibility of investing tools and information, especially among those with disposable income but limited time for professional financial advice.

Investor experience was relatively evenly distributed: 23.7% had 1–3 years, 32.9% had 3–5 years, and 27.6% reported more than 5 years of stock market involvement. While these results suggest a balanced experience range, a more specific distinction (e.g., 5–10 years vs. over 10) would have offered a clearer picture retail behavior considering the age demographics of the sample.

Beyond demographics and experience, the survey examined respondents' **behavioural patterns** in investment decision-making, revealing a notable difference in how valuation metrics are considered when buying versus selling stocks (see Figure 5).

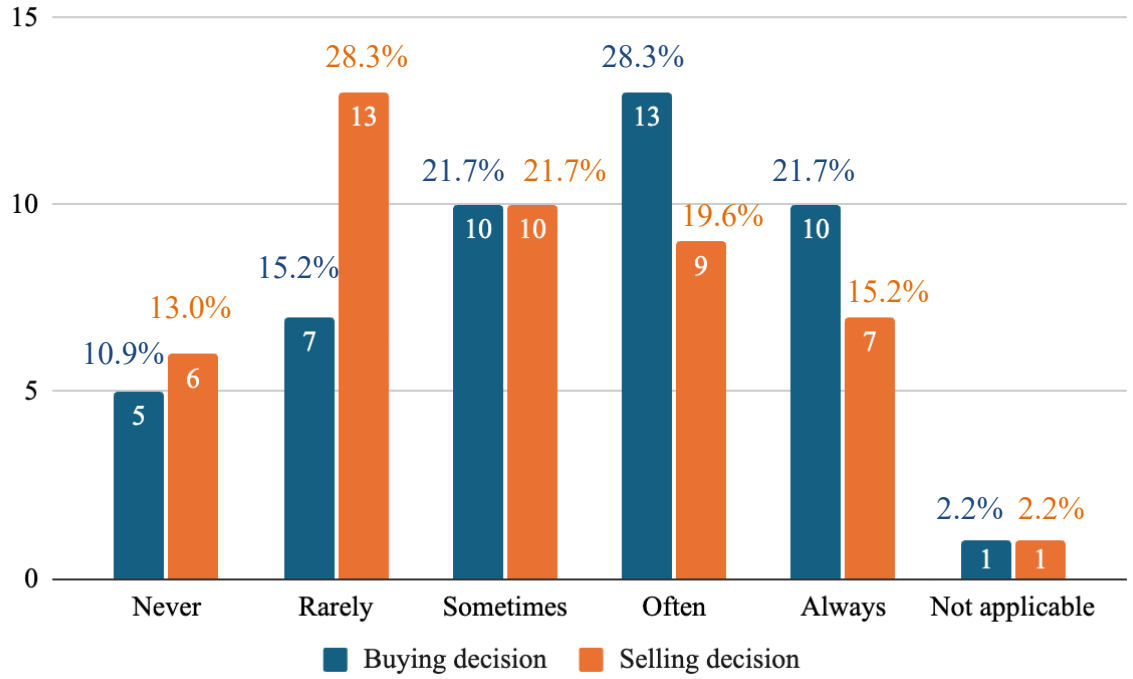

Figure 5. Survey responses for considering valuation metrics when buying or selling a stock
Source: Compiled by the authors

Interestingly, the use of valuation metrics is more prevalent when buying stocks than when selling them. A combined 50% of respondents said they "often" (28.3%) or "always" (21.7%) use valuation metrics when making purchase decisions, whereas only 34.8% did so when selling (19.6% "often"; 15.2% "always"). This difference likely reflects the motivational asymmetry of buying versus selling: purchases are typically made with return expectations in mind and thus encourage more analytical scrutiny. Selling, on the other hand, is more often influenced by external triggers such as liquidity needs, tax planning, or emotional biases (Shefrin & Statman, 1985). This behavioral divergence may also reflect the disposition effect, where investors are more inclined to sell winning stocks too early and hold onto losing ones for too long, often without reevaluating their intrinsic value (Barberis & Xiong, 2009). The data may support this: only 10.9% and 13.0% of respondents stated that they "never" use valuation metrics when buying or selling, respectively. While this suggests a solid baseline of valuation awareness, it also highlights a minority of disengaged investors who may rely on intuition or emotion rather than analysis. Among them are the 9.2% of respondents who reported not investing in individual stocks at all, possibly favoring index funds or other assets where valuation metrics are less relevant. This might suggest that a

portion of platform users may use Investonian for watchlisting, research, or broader financial learning, rather than for executing active equity analysis.

Before moving on to retail investors' specific valuation metric preferences, it would be useful to preface this topic by analysing how useful they deem valuation metrics. Figure 6 illustrates the distribution of answers for the subsequent question.

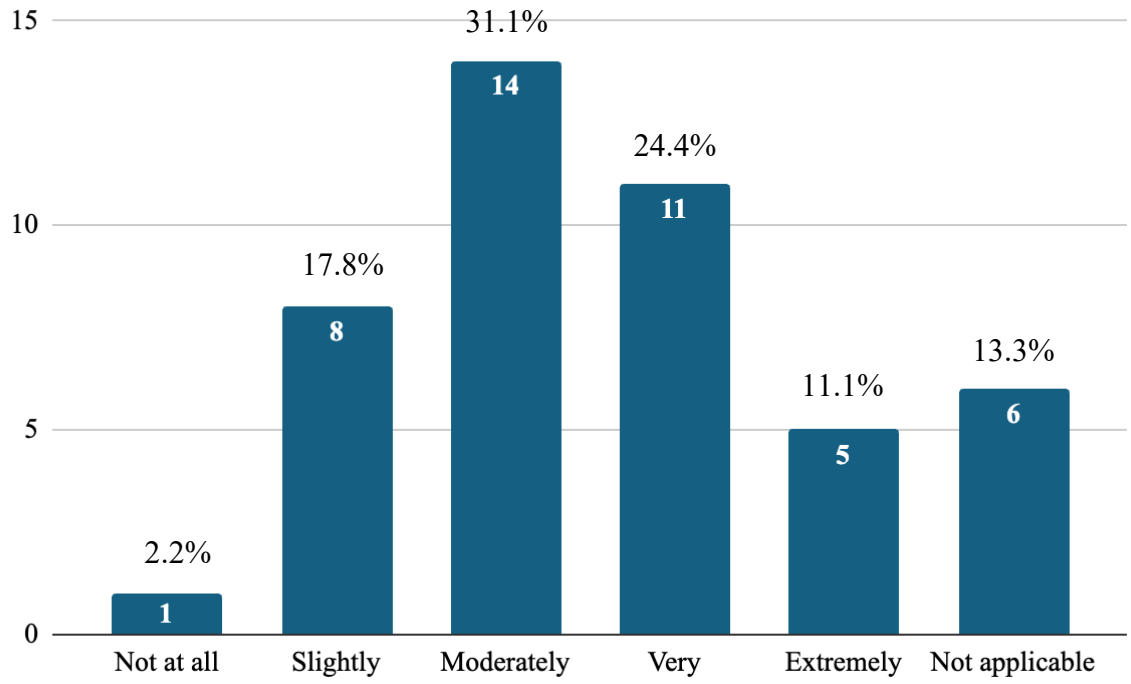

Figure 6. Usefulness of valuation metrics when making investment decisions
Source: Compiled by authors

The distribution of responses suggests that whilst valuation metrics are broadly recognized as useful in making investment decisions, their role is not decisive for all retail investors. This observation may also relate to the earlier analysis, which suggests that a portion of retail investors either do not prioritize fundamental analysis when investing in stocks or prefer different assets where valuation metrics are less applicable. The largest concentration of answers around “Moderately” and “Very” useful implies that whilst investors view valuation metrics as generally informative, they are not relied upon exclusively when making investment decisions. More likely, these tools are used in combination with other decision-making factors based on investor preferences. The relatively smaller portion of responses for “Extremely” useful supports the idea that valuation itself is not always treated as the sole reason behind an investment decision. Other aspects, such as

market sentiment, financial position, or management quality, significantly influence investors' decisions.

To gain deeper insight into retail investors' behavioural patterns, the survey examined how frequently investors rely on specific **valuation metrics within each valuation approach**. To analyse this, the survey questions were designed so that participants could indicate for each metric, whether they used in never, rarely, sometimes, often or always. Based on the data, it is possible to create a ranking by combining answers from "rarely", "sometimes", "often" and "always", as these indicate the use of a metric to a certain degree. This sum of answers is subsequently divided by the total number of responses for the question to arrive at the usage percentage. The following table illustrates the ranking for the **market-based valuation metrics**.

Table 4

Ranking of market-based valuation ratios by popularity based on survey results

Valuation metric	Survey	Bancel & Mittoo (2014)	Pinto et. al (2019)	Kantšukov & Sander (2016)
Dividend yield	86.7%	-	35.5%	-
P/E	84.4%	68%	88.1%	78.1%
PEG	73.3%	-	-	-
P/B	71.1%	47%	59.0%	68.8%
P/S	68.9%	-	40.3%	-
EV/EBITDA	66.7%	83%	76.7%	84.4%
P/CF	64.4%	-	57.2%	-
EV/S	46.7%	43%	-	78.1%

Note: The survey results reported by Kantšukov and Sander (2016) were adapted to align with the ranking methodology applied in the analysis of the present study's data.

Source: Compiled by authors

The dividend yield (dividend per share divided by share price) was the most widely used market-based valuation metric, with 86.7% of respondents indicating some level of usage. Although this ratio was not explicitly covered in the theoretical part, it is an integral valuation metric for determining the investment return derived from dividend payments. In the context of stock investing, returns are achieved through two primary channels: capital appreciation (i.e. stock price increase) and dividend payments (Damodaran, 2012). Whilst a company's stock performance is often based on a certain corporate value driver—such as revenue, earnings, book value—these metrics do not guarantee a movement in the stock

price. Conversely, dividends represent a tangible and quantifiable cash flow that an investor will receive from holding a stock that pays dividends. Therefore, many retail investors consider the dividend yield as a crucial metric for estimating the future returns that they will receive from an investment.

For professional investors, the dividend yield is equally a vital part of company valuation. In the theoretical part of this thesis and previous studies on the topic, the dividend yield is often left out in surveys, because for professional investors with a fundamental investing strategy, the dividend yield is always considered in the company valuation by default. Therefore, the omission of dividend yield from many previous studies does not show a lack of importance, but rather suggests that it is so commonly used by professional investors that there is no need to incorporate it into surveys.

Nearly as widely used as the dividend yield, the P/E ratio (84.4%) can be considered the most popular of the traditional market-based valuation metrics. The similar usage levels of the P/E ratio and the dividend yield highlight that retail investors view both metrics as essential in their valuation practices, reflecting the importance attributed to them by professional investors. Additionally, compared to other market-based metrics, the dividend yield and P/E ratio received the highest proportion of “always” responses among their users, at 21.1% and 20.5%, respectively.

These findings are in line with previous studies, which identify the P/E ratio as one of the most widely used valuation metrics. Additionally, retail investors in our data sample also notably use variations of the P/E ratio, such as the PEG ratio, which was used by 73.3% of the respondents. The intuitive appeal and broad adaptability of the P/E ratio, along with its variations, illustrate the widespread usage of net income-based valuation ratios.
The P/B ratio was indicated by 71.1% of participants, which aligns with theoretical research emphasizing its relevance in asset-heavy industries. However, the relatively high usage among retail investors may suggest an overextension of the ratio into sectors where it may be less informative, such as technology or service industries. Also relatively in line with theoretical studies was the P/CF ratio, which was used by 64.4% of the respondents. Whilst the P/CF ratio is not as widely used as the P/E ratio, investors with a focus on cash-generating ability recognise the value of this metric. For both P/B and P/CF, retail investors seem to be in consensus with professional investors, as both use these metrics to a moderate amount.

The aforementioned market-based metrics have been approximately in line with theoretical studies, but the usage of EV/EBITDA, EV/S, and P/S ratios in the survey results demonstrated significant deviations from previous research. Firstly, the EV/EBITDA ratio is

an increasingly favored metric by professional investors, but was used by only 66.7% of the respondents. Although this is a substantial proportion, notably similar levels to P/B and P/CF, it indicates that the metric may not have achieved the level of mainstream adoption among retail investors that it has among professional investors. For the sales-based multiples, P/S ratio was used by 68.9% and EV/S by 46.7% of the respondents. While professional investors tend to slightly favor EV/S over P/S due to its incorporation of capital structure, the opposite trend was observed in this survey. The stronger preference for P/S over EV/S suggests that the simplicity of the former outweighs the theoretical edge that enterprise value-based metrics have over market price metrics. In general, the relatively low usage of EV/EBITDA and EV/S ratios highlights a gap in the application of more sophisticated enterprise value-based metrics by retail investors. Additionally, the surprisingly strong results from the P/S ratio may suggest that retail investor have a preference for high-growth companies where profitability is not yet established.

The survey results outlining the reasons for preferring market-based valuation metrics are presented in the following figure.

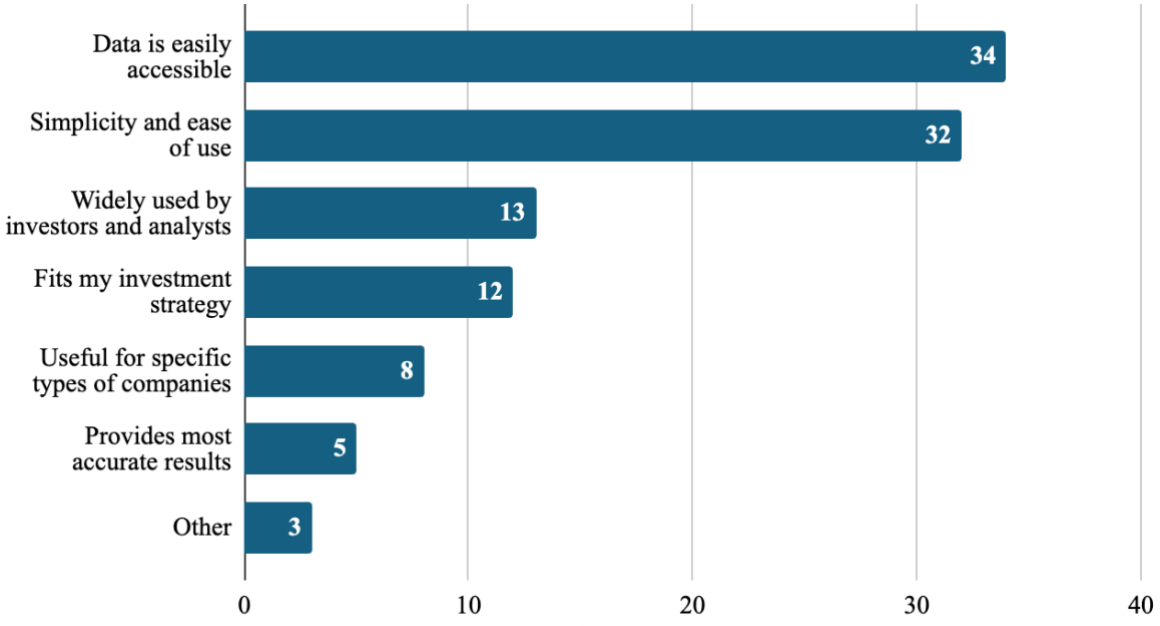

Figure 7. Retail investors' reasons for preferring market-based valuation metrics
Source: Compiled by authors

The primary reasons for choosing market-based valuation metrics were their simplicity and ease of use (32 respondents) and data is easily available (34 respondents), which aligns with theory suggesting that market-based metrics are more accessible and user-

friendly than other valuation approaches (Hitchner, 2011; Laro & Pratt, 2005). Additionally, the answer choice "provides most accurate results" received the fewest selections with only 5 respondents, which is consistent with theory, as other valuation methods typically require more inputs and can therefore yield greater accuracy.

For **income-based valuation metrics**, the survey results reveal a relatively high engagement among the survey respondents as seen from the following table.

Table 5

Comparison of income-based valuation metric preferences

Valuation metric	Survey	Bancel & Mittoo (2014)	Pinto et. al (2019)	Kantšukov & Sander (2016)
FCFE	54.3%	37%	21.1%	81.3%
FCFF	48.9%	80%	43.8%	93.8%
DDM	46.7%	23%	35.1%	43.8%
APV	31.1%	-	-	9.4%

Note: The same ranking model for market-based metrics was used for income-based metrics to achieve percentage data in our survey.

Source: Compiled by authors

Comparing the survey results against the practices of professional investors, the differences in income-based valuation metric preferences become particularly revealing. Pinto et al. (2019) reported a similar Free Cash Flow to Firm (FCFF) preference, but Bancel and Mittoo (2014) noted a significantly higher adoption of the metric. In contrast, the results from this study indicate a higher relative adoption of FCFE (53.3%) and DDM (46.7%) among retail investors. The deviations in results may indicate that these models may not be applied with the same methodological rigor seen among professional investors. Instead of showing a deep understanding of how these models work, of how the model's inputs affect the results, these preferences may simply reflect what the platform makes easy to use, with built-in settings, user-friendly design, and simple tools.

The motivations cited by respondents for using income-based valuation metrics reveal an interesting tension between perception and complexity (see Figure 8).

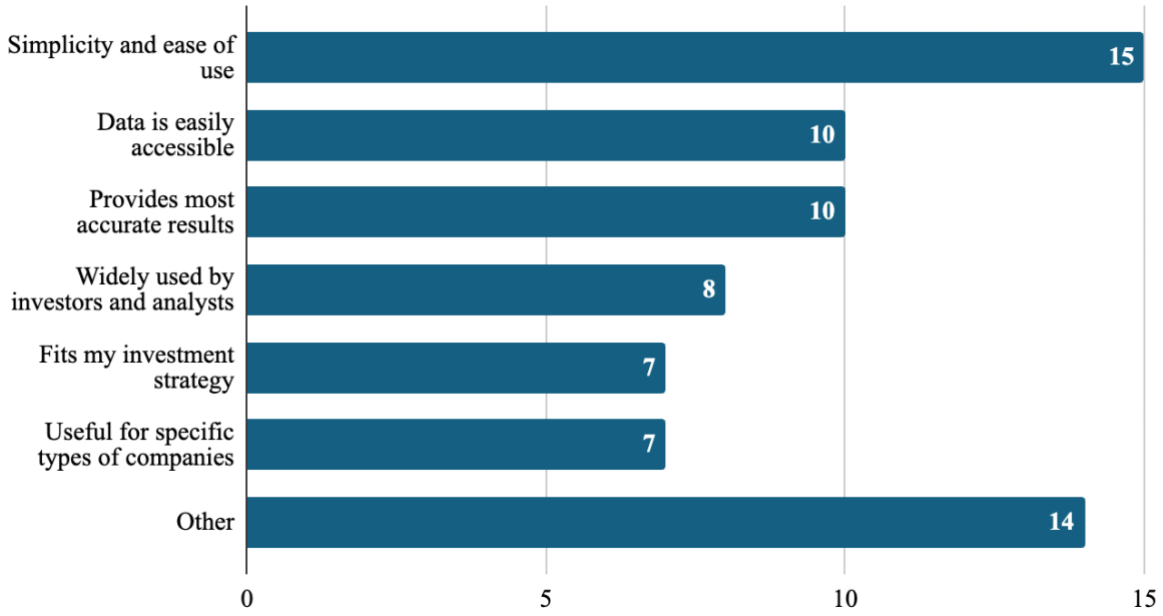

Figure 8. Retail invetors' reasons for preferring income-based valuation metrics
Source: Compiled by authors

The large number of "other" responses were all noted as investors not utilizing the income-based valuation metrics in their investment activities. While "simplicity and ease of use" was the most frequently chosen reason, it was closely followed by "provides the most accurate results" and "data is easily available". At face value, these justifications may seem contradictory, especially considering that models such as FCFF and FCFE require careful handling of assumptions related to growth, reinvestment, and discounting. However, this apparent contradiction can be better understood when considering the role of the Investonian platform design in shaping investor behavior. The income-based models are embedded within pre-structured calculators, with default parameters and automated visual outputs. This design likely gives a sense of simple usability and easily available data that masks the underlying complexity. Brière (2023) also argues that retail investors frequently rely on interface simplicity and algorithmic authority. In such contexts, the fact that people chose "simplicity and ease of use" may be driven more by the illusion of accessibility, rather than by an understanding of these models. CFA-designated professionals typically favor FCFF multi-stage modeling, which is widely regarded as a complex and sophisticated approach (Bancel & Mittoo, 2014; Pinto et al., 2015).

Retail investors may be influenced less by methodological fit and more by what the platform itself enables, and this combination of trust in the interface and overconfidence has

also been well-documented in behavioral finance. Barber and Odean (2001) show that retail investors tend to overestimate their financial abilities, leading to suboptimal decision-making. In this light, the adoption of FCFE and DDM in our sample does not necessarily indicate strategic alignment with the firm's capital structure or dividend policy, but rather reflects how digital tools mediate the learning process and potentially shape overconfidence.

This dynamic is a recurring theme in valuation literature. Damodaran (2012) stresses that the theoretical strength of discounted cash flow models does not guarantee practical results. Poorly estimated inputs - especially terminal value assumptions or discount rates - can yield misleading valuations, even if the model structure is sound. Our findings support this concern: while 10 respondents selected income-based metrics, because these "provide(s) the most accurate results," the relatively high usage of FCFE and DDM suggests that confidence may not always align with competence.

The case of APV, used by only 31.1% of respondents, reinforces this point. Unlike FCFF or FCFE, APV is rarely featured on platforms aimed at individual investors, despite its conceptual elegance in highly specific leveraged scenarios (the model is often used to evaluate companies in a leveraged buyout). The low usage here is not surprising, as the model is seldom taught outside of graduate finance programs and typically requires a deep understanding of capital structure effects.

While the accessibility of income-based valuation models through platforms like Investonian broadens participation, it also introduces new kinds of risk: not from model inaccessibility, but from model misuse. The challenge is not only technological, but educational, ensuring that ease of use does not come at the expense of analytical integrity.

Despite **asset-based valuation metrics** being often underemphasized in academic equity research compared to income- or market-based metrics, the survey data reveals a surprisingly strong engagement from retail investors. Replicating the ranking model created for other metrics, the following table illustrates investor preferences for asset-based metrics.

Table 6

Ranking of asset-based valuation metrics by popularity based on survey results

Valuation metric	Survey	Kantšukov & Sander (2016)
NAV	57.8%	78.1%
Adjusted book balue	48.9%	-
Liquidation value	42.2%	84.4%
Tangible book value	37.8%	-
Sum of the parts method	28.9%	-

Source: Compiled by authors

The preference for NAV and adjusted book value metrics suggests a focus on balance sheet-derived valuation in a relatively straightforward manner, which is likely being used in asset-heavy or liquidation-prone sectors such as real estate, banking, or distressed equity. This is consistent with the academic consensus that asset-based models are particularly relevant in scenarios where earnings are either unstable or unrepresentative of intrinsic value (Damodaran, 2012; Pinto et al., 2010).

An important nuance in the results lies in the stated rationale for using asset-based models, as seen from the following figure.

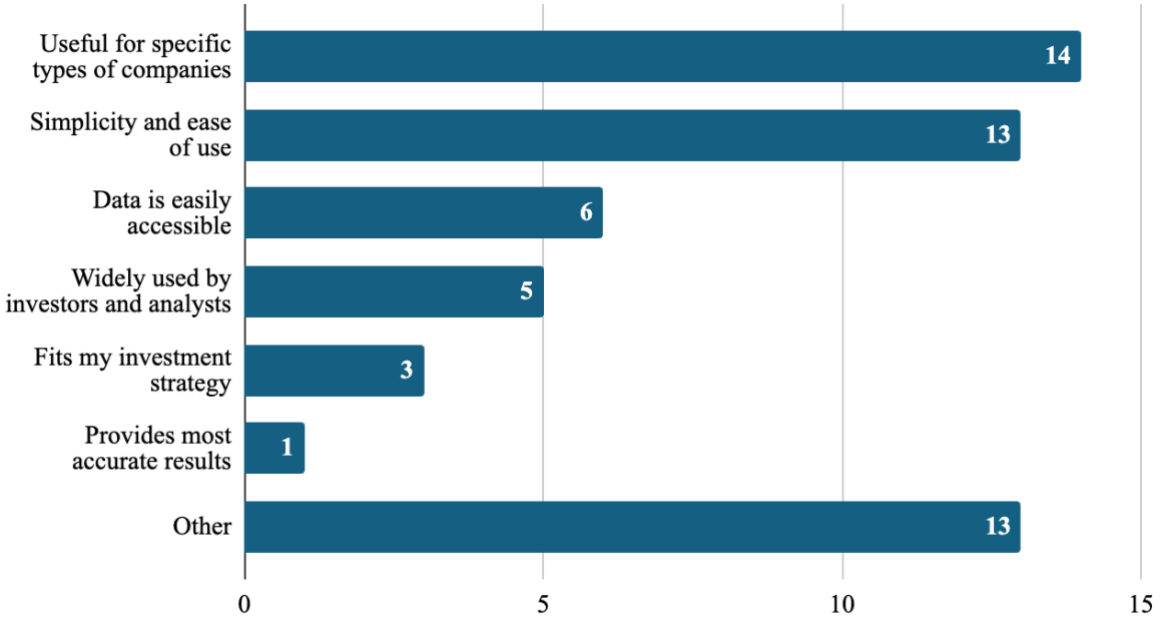

Figure 9. Retail investors' reasons for preferring asset-based valuation metrics

Source: Compiled by authors

Similarly to income-based metrics, the sizable number of "other" responses were marked as not applicable for investors. The prominence of context-specific use cases indicates a degree of financial sophistication among respondents: asset-based metrics are being deployed not indiscriminately, but where they are methodologically appropriate. The most frequently cited reasons "useful for specific types of companies" and "simplicty and ease of use" align with theoretical recommendations in equity valuation literature, where asset-based methods are reserved for firms with significant tangible assets, minimal intangible value, or undergoing liquidation (White et al., 2003). By contrast, only one respondent identified asset-based metrics as providing the most accurate results, which may reflect the general perception that these models, while useful, lack the dynamic forecasting power of income-based valuation. This perception mirrors conclusions from Pinto et al. (2019), where only 61.4% of CFA Institute members reported using asset-based methods at all, compared to 92.8% for market-based approaches and 78.8% for discounted cash flow models.

Yet, the authors believe it would be reductive to interpret the use of asset-based models purely as a fallback for simpler analysis. Rather, the data reflects a selective application informed by firm characteristics, investment strategy alignment, and data accessibility. This approach suggests that even among retail investors, there exists a growing awareness of valuation model fit.

The results presented in this subchapter offer a detailed view of retail investors' valuation practices, based on their responses to the survey. These findings reveal key behavioural patterns that align with, and at times diverge from, theoretical expectations and prior academic research. Before discussing the findings in detail, limitations regarding the survey results should be acknowledged. The study's sample size remains relatively small and may not fully reflect the broader population of retail investors. Furthermore, as participants were exclusively drawn from the Investonian platform, the sample likely reflects a segment of retail investors who are more engaged, technologically proficient, and inclined toward valuation-based analysis. This self-selection may have amplified the prominence of analytical tools and metrics that are readily available within the platform itself. As such, the results may not be generalizable to less experienced or less engaged investor groups. Additionally, as the survey was cross-sectional, it captures a snapshot of investor behaviour at a single point in time and does not reflect how preferences might shift due to changing market conditions, personal circumstances, or financial literacy over time.

Despite these limitations, the data does still provide valuable insights into how retail investors engage with valuation. The strong preference for traditional market-based ratios such as the P/E ratio and dividend yield aligns with both academic literature and surveys of professional investors by Pinto et al., (2019) and Bancel & Mittoo (2014). These metrics appear intuitive for evaluating stocks, offering a balance between simplicity and perceived relevance. Interestingly, the usage of more sophisticated enterprise value-based ratios, such as EV/EBITDA and EV/S, was notably lower than in studies of institutional investors. This suggests that while retail investors may be aware of these metrics, they are either less confident in applying them or do not view them as essential to their analysis.

The observed tendency to use valuation metrics more frequently when buying rather than selling stocks is consistent with behavioural finance literature, particularly theories concerning the disposition effect and investor overconfidence. Retail investors tend to apply greater scrutiny when initiating positions, likely viewing purchases as more deliberate and goal-oriented. By contrast, selling decisions may be driven by external pressures such as liquidity needs or emotional factors, which can reduce reliance on structured valuation analysis.

Beyond market-based metrics, the survey also showed considerable use of income-based models such as FCFE and DDM, and asset-based metrics like NAV and adjusted book value. This indicates that while retail investors favour simplicity, many are willing to apply models traditionally viewed as more complex, particularly when supported by platform features or familiar contexts. The survey also revealed that many investors select valuation metrics based on ease of use and data availability, particularly for income-based and asset-based metrics. This illustrates the role of interface design and accessibility in shaping investor behaviour, as discussed by Brière (2023). For instance, the relatively high usage of FCFE and DDM models may reflect the presence of user-friendly tools rather than a deep understanding of the models themselves. This highlights the importance of financial education and well-designed digital platforms that support both accessibility and analytical rigour.

Conclusion

The authors of this thesis set out to explore how retail investors utilize valuation metrics in practice, with a specific focus on users of the Investonian platform. Through a detailed review of academic literature and a novel empirical survey, the study has provided an understanding of how non-professional investors approach stock valuation in an increasingly accessible digital environment.

While traditional academic frameworks often prioritize income- and market-based valuation models for their robustness and empirical relevance, this study reveals that retail investors exhibit a broader and more adaptive approach. Notably, although Free Cash Flow to Firm (FCFF) remains a popular method among professionals (Bancel & Mittoo, 2014; Pinto et al., 2019), this research finds a surprisingly high uptake of Free Cash Flow to Equity (FCFE) and Dividend Discount Models (DDM) among retail investors. This divergence may be less indicative of methodological preference and more reflective of platform design, behavioral biases, and perceived usability, findings consistent with insights from Brière (2023) and Damodaran (2012).

The research also demonstrates a strong practical understanding of asset-based models, which are typically underrepresented in academic discourse but found relevant among Investonian users. This could suggest selective financial awareness among retail investors, aligning with theoretical recommendations from White et al. (2003).

Market-based valuation metrics, particularly the P/E ratio (84.4%) and dividend yield (86.7%), emerged as the most widely adopted metrics by retail investors, a result consistent with prior studies on professional investor preferences. However, the motivations for using market-based metrics diverged: while CFA professionals cite standardization and comparability (Koller et al., 2010), retail users in this study prioritized data availability and simplicity. The strong preference for the P/S ratio over the EV/S ratio, despite the latter's methodological superiority (Damodaran, 2012), further suggests that platform design and user cognitive load may shape investor preference more than analytical validity. This is confirmed by Brière (2023), who argues that simplicity, not suitability, often drives adoption among retail users.

While market-based tools are foundational in equity valuation due to their low input requirements and relative ease of interpretation, their broad application by less experienced users risks overlooking essential factors like growth potential, capital structure, and intangible value. As Kantšukov (2023) notes, metrics like P/B or P/E can fail in industries where book value or earnings are volatile or distorted. Thus, the thesis reveals a tension between metric accessibility and situational appropriateness, indicating a need for user education, especially around multiple selection and interpretation.

Income-based valuation metrics—most notably FCFE (53.3%) and DDM (46.7%)—were surprisingly prevalent, rivaling FCFF usage (48.9%) despite the latter being more theoretically robust and more popular among professionals. This pattern suggests that retail investors do not align with professional standards of model applicability. Instead, platform-

simplified versions of FCFE or DDM may boost confidence in methods that require forecasting of discount rates, growth assumptions, or payout policies—elements Damodaran (2012) and Pinto et al. (2010) warn are frequently misunderstood by non-professionals.

Despite the study's methodological limitations, most notably its sample dependence and reliance on self-reported data, the results offer valuable insight into the evolving practices of retail investors. In doing so, this thesis contributes to the limited but growing literature on non-professional investor behavior and calls for further research into how platform interfaces and investor education can better align user confidence with analytical competence.

Given the outlined limitations, future research should aim to improve the generalizability and depth of findings regarding retail investors' use of valuation metrics. First, future studies should strive for greater sample representativeness by targeting more demographically and geographically diverse investor groups, including different age brackets, gender identities, and regional markets beyond the Estonian and European context. This would improve the external validity of the findings. Second, the authors believe that incorporating a mixed-methods approach that combines quantitative survey data with qualitative interviews or open-ended responses could seek to investigate the reasoning behind metric preferences and allow for richer behavioral interpretation. Third, future research could include data such as portfolio composition, transaction histories, and product analytics (platform usage statistics and heatmaps), to validate self-reported responses and explore relationships between perceived and actual investor behavior. Additionally, while this thesis focused on a core set of traditional valuation metrics, subsequent research could explore alternative and emerging techniques, such as sentiment analysis or ESG-integrated valuation models, which may be increasingly relevant to retail investors. Lastly, longitudinal designs may help future studies capture how valuation preferences evolve over time in response to market cycles, financial education, or regulatory shifts. By addressing these directions, future studies could contribute a deeper understanding of how non-professional investors engage with valuation practices in real-world decision-making contexts.

List of references

1. Allen, F., Haas, M., Nowak, E., Pirovano, M., & Tengulov, A. (2021). Squeezing Shorts Through Social Media Platforms. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3823151

2. Anderson, K., & Zastawniak, T. (2017). Glamour, value and anchoring on the changing *P* / *E*. *The European Journal of Finance*, *23*(5), 375–406. https://doi.org/10.1080/1351847X.2015.1113192

3. Asquith, P., Mikhail, M. B., & Au, A. S. (2005). Information content of equity analyst reports. *Journal of Financial Economics*, *75*(2), 245–282.

4. Athanassakos, G. (2014). Are negative P/E ratio firms different than positive P/E firms? The case of interlisted vs. Non-interlisted firms in Canada. *The Journal of Financial Perspectives*, *5*(1), 23–33.

5. Bancel, F., & Mittoo, U. R. (2014). The Gap between Theory and Practice of Firm Valuation: Survey of European Valuation Experts. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2420380

6. Barber, B. M., & Odean, T. (2001). Boys will be Boys: Gender, Overconfidence, and Common Stock Investment. *The Quarterly Journal of Economics*, *116*(1), 261–292. https://doi.org/10.1162/003355301556400

7. Barberis, N., & Xiong, W. (2009). What Drives the Disposition Effect? An Analysis of a Long-Standing Preference-Based Explanation. *The Journal of Finance*, *64*(2), 751–784. https://doi.org/10.1111/j.1540-6261.2009.01448.x

8. Bardoscia, M., d'Arienzo, D., Marsili, M., & Volpati, V. (2019). Lost in diversification. *Comptes Rendus. Physique*, *20*(4), 364–370. https://doi.org/10.1016/j.crhy.2019.05.015

9. Bethlehem, J. (2010). Selection Bias in Web Surveys. *International Statistical Review / Revue Internationale de Statistique*, *78*(2), 161–188. JSTOR.

10. Bhullar, P. S., & Bhatnagar, D. (2013). Theoretical framework EV vs. Stock price–A better measurement of firm value. *International Journal of Commerce, Business and Management*, *2*(6), 335–343.

11. Bierman, H. (2002). The Price-Earnings Ratio. *The Journal of Portfolio Management*, *28*(4), 57–60. https://doi.org/10.3905/jpm.2002.319854

12. Block, S. B. (1999). A Study of Financial Analysts: Practice and Theory. *Financial Analysts Journal*, *55*(4), 86–95. JSTOR.

13. Bradshaw, M. T. (2002). The use of target prices to justify sell-side analysts' stock recommendations. *Accounting Horizons*, *16*(1), 27–41.

14. Brière, M. (2023). *Retail Investors' Behaviour in the Digital Age: How Digitalisation is Impacting Investment Decisions* [Research report]. Amundi Institute. https://research-center.amundi.com/files/nuxeo/dl/e54b61a9-ff09-49e7-9bba-47b0178351fb?inline=

15. Brigham, E., & Houston, J. (2009). *Fundamentals of Financial Management*. Cengage Learning. https://books.google.ee/books?id=zepGuo84-8AC

16. Broekema, M. J. R., Strohmaier, N., Adriaanse, J. A. A., & Van Der Rest, J.-P. I. (2022). Are Business Valuators Biased? A Psychological Perspective on the Causes of Valuation Disputes. *Journal of Behavioral Finance*, *23*(1), 23–42. https://doi.org/10.1080/15427560.2020.1821687

17. Bucher-Koenen, T., Alessie, R. J., Lusardi, A., & Van Rooij, M. (2021). *Fearless woman: Financial literacy and stock market participation*. National Bureau of Economic Research.

18. CFA Institute. (2024). *CFA Level 1 2024—Volume 3: Financial Statement Analysis, Equity Investments* (Vol. 3). CFA Institute.

19. Chhaya, G., & Nigam, P. (2015). Value investing with price-earnings ratio in India. *IUP Journal of Applied Finance*, *21*(2), 34.

20. Choi, K.-S., So, E. C., & Wang, C. C. Y. (2021). Going by the Book: Valuation Ratios and Stock Returns. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3854022

21. Croson, R., & Gneezy, U. (2009). Gender Differences in Preferences. *Journal of Economic Literature*, *47*(2), 448–474. https://doi.org/10.1257/jel.47.2.448

22. CRSP. (2024, December 2). *2024 the Big Picture*. Center for Research in Secutiry Prices. https://www.crsp.org/investments-illustrated/

23. Damodaran, A. (2002). *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* (2nd ed.). John Wiley & Sons.

24. Damodaran, A. (2006). *Damodaran on valuation: Security analysis for investment and corporate finance* (2nd ed.). John Wiley & Sons.

25. Damodaran, A. (2008). *Valuation*. https://pages.stern.nyu.edu/~adamodar/pdfiles/country/korea2day.pdf

26. Damodaran, A. (2012). *Investment Valuation: Tools and Techniques for Determining the Value of Any Asset* (3rd ed.). John Wiley & Sons.

27. Deaton, H. (2024, May 22). These Are the Shifting Demographics of Retail Investors. *Institutional Investor*. https://www.institutionalinvestor.com/article/2d9k3lbzvh1gcntypfcw0/ria-intel/these-are-the-shifting-demographics-of-retail-investors

28. Demirakos, E. G., Strong, N. C., & Walker, M. (2004). What valuation models do analysts use? *Accounting Horizons*, *18*(4), 221–240.

29. Demirakos, E. G., Strong, N. C., & Walker, M. (2010). Does valuation model choice affect target price accuracy? *European Accounting Review*, *19*(1), 35–72.

30. Drakopoulou, V. (2016). A Review of Fundamental and Technical Stock Analysis Techniques. *Journal of Stock & Forex Trading*, *05*(01). https://doi.org/10.4172/2168-9458.1000163

31. Fernandez, P. (2001). Valuation using multiples. How do analysts reach their conclusions. *IESE Business School*, *1*(2001), 1–13.

32. Fernando, J. (2024, August 6). *Moving Average (MA): Purpose, Uses, Formula, and Examples*. Investopedia. https://www.investopedia.com/terms/m/movingaverage.asp

33. Galaasen, S., & Raja, A. (2024). The Dynamics of Stock Market Participation. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.4711620

34. Gambacorta, L., Oliviero, T., & Shin, H. S. (2020). Low Price-To-Book Ratios and Bank Dividend Payout Policies. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.3761864

35. Ghaeli, M. R. (2017). Price-to-earnings ratio: A state-of-art review. *Accounting*, *3*(2), 131–136. https://doi.org/10.5267/j.ac.2016.7.002

36. Hagstrom, R. G. (2006). *The Warren Buffet Way*. John Wiley & Sons.

37. Hitchner, J. R. (2011). *Financial valuation: Applications and models* (Vol. 545). John Wiley & Sons.

38. Kantšukov, M. (2023). *Valuation of companies under the distributed profit taxation system*. https://doi.org/10.13140/RG.2.2.16107.11045

39. Kantšukov, M., & Sander, P. (2016). Value in the eye of the beholder: A survey of valuation practices of Estonian financial professionals. *Investment Management and Financial Innovations*, *13*(2), 157–172.

40. Khan, M. A. H. (2016). *Testing the Predictive Power of Equity Valuation Metrics: A Minskyian Approach*.

41. Koller, T., Goedhart, M., & Wessels, D. (2010). *Valuation: Measuring and managing the value of companies* (5th ed.). John Wiley & Sons.

42. KPMG. (2015). *Australian Valuations Practices Survey 2015*. KPMG. https://assets.kpmg.com/content/dam/kpmg/pdf/2015/05/valuation-practices-survey-2015.pdf

43. Kusmayadi, D., Rahman, R., & Abdullah, Y. (2018). Analysis of the effect of net profit margin, price to book value, and debt to equity ratio on stock return. *International Journal of Recent Scientific Research*, *9*(7), 28091–28095.

44. Lafmejani, M. (2017). The relationship between size, book-to-market equity ratio, earnings–price ratio, and return for the Tehran stock Exchange. *Accounting*, *3*(1), 11–18.

45. Lam, K. S. (2002). The relationship between size, book-to-market equity ratio, earnings–price ratio, and return for the Hong Kong stock market. *Global Finance Journal*, *13*(2), 163–179.

46. Laro, D., & Pratt, S. P. (2005). *Business Valuation and Taxes: Procedure, Law and Perspective*. John Wiley & Sons.

47. Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, *52*(1), 5–44. https://doi.org/10.1257/jel.52.1.5

48. MacGrath, S. (2016). *A Guide to Active versus Passive Investing*. Davy Select. https://www.davyselect.ie/binaries/content/assets/davyselect/pdfs/guide-to-active-vs-passive.pdf

49. Martin, T. A. Jr. (1998). *Traditional Equity Valuation Methods*. Equity Research and Valuation Techniques. http://csinvesting.org/wp-content/uploads/2012/09/equity-research-and-valuation-b-kemp-dolliver.pdf

50. Matthews, G. E. (2012). Valuation Methods in Fairness Opinions: An Empirical Study of Cash Transactions. *Business Valuation Review*, *31*(2–3), 55–74. https://doi.org/10.5791/12-00009.1

51. Morgan Stanley Dean Witters. (1999). *How We Value Stocks*. Morgan Stanley Dean Witters.

52. Myers, S. C. (1974). INTERACTIONS OF CORPORATE FINANCING AND INVESTMENT DECISIONS—IMPLICATIONS FOR CAPITAL BUDGETING. *The Journal of Finance*, *29*(1), 1–25. https://doi.org/10.1111/j.1540-6261.1974.tb00021.x

53. Nasdaq. (2024). *The Ascension of Gen Z Investors: Generational Comparisons and Other Economic and Social Trends Driving ETF Opportunities*. Nasdaq. nasdaq.com/solutions/nasdaq-etf-retail-study

54. Nicholson, S. F. (1960). Price-Earnings Ratios. *Financial Analysts Journal*, *16*(4), 43–45. https://doi.org/10.2469/faj.v16.n4.43

55. Olbert, L. (2024). Industry-specific stock valuation methods – a literature review. *Journal of Accounting Literature*. https://doi.org/10.1108/JAL-04-2023-0065

56. Pätäri, E., Karell, V., Luukka, P., & Yeomans, J. (2018). The dirty dozen of valuation ratios: Is one better than another? *The Journal Of Investment Management*, *16*, 65–98.

57. Pinto, J. E., Henry, E., Robinson, T. R., & Stowe, J. D. (2015). *Equity Asset Valuation* (2nd ed.). Wiley.

58. Pinto, J. E., Henry, E., Robinson, T. R., Stowe, J. D., & Cohen, A. (2010). *Equity Asset Valuation* (1st ed.). Wiley. https://books.google.ee/books?id=XCL9bkrOrpcC

59. Pinto, J. E., Robinson, T. R., & Stowe, J. D. (2019). Equity valuation: A survey of professional practice. *Review of Financial Economics*, *37*(2), 219–233. https://doi.org/10.1002/rfe.1040

60. Quach, G., & John, J. (2025, March 27). A third of Gen Z invest by 'early adulthood', poll finds. *Financial Times*. https://www.ft.com/content/fe28b535-0a92-42c2-90fc-50f1bee2dabc

61. Reilly, F. K., & Brown, K. C. (2011). *Investment Analysis and Portfolio Management*. Cengage Learning. https://books.google.ee/books?id=CfB-qTXqRWEC

62. Rowley, J. J. (2024). Active Passive Special Issue: Guest Editor's Letter. *The Journal of Beta Investment Strategies*, *15*(4), 2–3. https://doi.org/10.3905/jbis.2024.15.4.002

63. San Ong, T., Yichen, Y. N., & Teh, B. H. (2010). Can high price earnings ratio act as an indicator of the coming bear market in the Malaysia? *International Journal of Business and Social Science*, *1*(1).

64. Segal, T. (2025, April 29). *Fundamental Analysis: Principles, Types, and How to Use It*. Investopedia. https://www.investopedia.com/terms/f/fundamentalanalysis.asp

65. Seth, S. (2024, November 22). *Technical Analysis for Stocks: Beginners Overview*. Investopedia. https://www.investopedia.com/articles/active-trading/102914/technical-analysis-strategies-beginners.asp

66. Sharma, M., & Prashar, E. (2013). A Conceptual Framework for Relative Valuation. *The Journal of Private Equity*, *16*(3), 29–32. JSTOR.

67. Shefrin, H., & Statman, M. (1985). The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence. *The Journal of Finance*, *40*(3), 777–790. JSTOR. https://doi.org/10.2307/2327802

68. Sung, J., & Hanna, S. D. (1996). Factors related to risk tolerance. *Financial Counseling and Planning*, *7*, 11–20.

69. Thomas, R., & Gup, B. E. (2010). *The valuation handbook: Valuation techniques from today's top practitioners* (Vol. 480). John Wiley & Sons.

70. Tirtiroglu, D., & Tirtiroglu, E. (2025). Capital Structure, the Adjusted Present Value, and Mortgage Choice. *Journal of Housing Economics*, 102066. https://doi.org/10.1016/j.jhe.2025.102066

71. Trugman, G. R. (2012). *Understanding Business Valuation: A Practical Guide to Valuing Small to Medium Sized Businesses* (4th ed.). Linda Cohen. https://egrove.olemiss.edu/aicpa_guides/1353

72. van Rooij, M., Lusardi, A., & Alessie, R. (2011). Financial literacy and stock market participation. *Journal of Financial Economics*, *101*(2), 449–472. https://doi.org/10.1016/j.jfineco.2011.03.006

73. White, G. I., Sondhi, A. C., & Fried, D. (2003). *The analysis and use of financial statements* (3rd ed.). John Wiley & Sons.

74. Yousaf, I., Pham, L., & Goodell, J. W. (2023). The connectedness between meme tokens, meme stocks, and other asset classes: Evidence from a quantile connectedness approach. *Journal of International Financial Markets, Institutions and Money*, *82*, 101694. https://doi.org/10.1016/j.intfin.2022.101694

75. Zerbato, G. (2024). *Relative Valuation for Value Investing: Theoretical Aspects and Empirical Evidence*.

APPENDIX A

Summary of studies on equity valuation practices

Authors	Focus of the study	Findings
Pinto et al. (2019)	Equity valuation practices of CFA members	• Analysts use sophisticated valuation methods • Market multiples approach is the most popular valuation method • P/E is the most preferred valuation ratio
Block (1999)	Analytical techniques used by AIMR financial analysts	• Present value techniques are used less in practice than theory • The use of future multiples is the industry standard
Bancel & Mittoo (2014)	Valuation practices of designated financial analysts	• Most experts use both DCF and relative valuation models • EV/EBITDA is the most preferred valuation ratio
KPMG (2015)	Valuation practices in Australian corporate finance	• Income- and market approach in valuation are equally popular • EV/EBITDA is the most preferred valuation ratio
Demirakos et al. (2004)	Valuation models used by financial analysts	• Analysts tailor valuation methodologies to industry circumstances • P/E is the most preferred valuation ratio
Demirakos et al. (2010)	Impact of valuation model on target price forecast accuracy	• P/E, PEG, EV/EBIT and EV/EBITDA are the most preferred valuation ratios
Fernandez (2001)	Equity valuation using multiples and addressing their broad dispersion.	• Valuation ratios help verify valuations by comparing similar companies. • P/E ratio and EV/EBITDA are the preferred valuation ratios
Asquith et al. (2005)	Market reaction to information in security analyst reports.	• All analysts studied use earnings multiples to compute price targets • Valuation models based on asset multiples are commonly used
Bradshaw (2002)	Use of target prices in sell-side analysts'	• Stock recommendations often use P/E ratios and forecasted

	stock recommendations.	earnings growth.
Olbert (2024)	Industry-specific valuation methods used by financial analysts.	• The choice of valuation ratio varies across industries • P/E is the most preferred valuation ratio
Brière (2023)	Retail investors' behaviour related to technological change	• Retail investors prefer simple tools over methodologically sound ones. • Interface design and defaults often guide choices. • Limited financial literacy leads to reliance on speculative strategies.

Source: Compiled by the authors

APPENDIX B

The most popular valuation metrics according to academic literature

Ratio	Description
Market-based metrics	
Price-to-earnings (P/E)	• The most popular and widely used valuation ratio, highly favoured by investors across all industries • Its simplicity and broad applicability make it a core metric of stock analysis
Enterprise value-to-EBITDA (EV/EBITDA)	• Increasingly popular, especially for comparing companies with different capital structures • Commonly used in modern analyses for its ability to standardize across firms with varying debt levels
Price-to-book (P/B)	• Favoured in sectors with significant tangible assets, such as banking and insurance • Less applicable in tech and service-based industries
Price-to-cash flow (P/CF)	• Moderately popular, often used by investors prioritizing cash flow over net income • Especially appealing for evaluating companies in sectors where accounting profits can be misleading
Enterprise value-to-sales (EV/S)	• Less commonly used but useful for analysing companies with inconsistent profitability • Often preferred over P/S as it accounts for a company's capital structure
Price-to-sales (P/S)	• Less commonly used but useful for analysing companies with inconsistent profitability • Useful in analysing high-growth companies or industries where profitability is not yet established
Income-based metrics	
Free cash flow to firm (FCFF)	• Most widely used income-based valuation metric, particularly effective for companies with complex or changing capital structures. • Calculates the present value of all future free cash flows available to both equity and debt holders, making it neutral in regard to the capital-structure.
Dividend discount model (DDM)	• Favoured for valuing mature, dividend-paying companies, particularly in utilities and consumer staples. • Based on the assumption that a stock's value equals the present value of future dividend payments, making it highly sensitive to dividend policy and stability of earnings growth.
Free cash flow to equity (FCFE)	• Similar in popularity to DDM, focuses on cash flows available to equity shareholders after debt obligations are met, making it useful for

	estimating direct equity value. • Preferred in contexts where a company's leverage is stable, and dividend payout does not reflect actual shareholder value distribution.
Adjusted present value (APV)	• Less popular than other income-based metrics. Separates the firm's core operating value from the value of its financing side-effects, mainly tax shields arising from debt. • Especially useful in scenarios involving high leverage, such as real estate and leveraged buyouts (LBOs).

Source: Compiled by the authors

APPENDIX C

Survey conducted about retail investors' stock analysis practices

Part 1: Demographic and background information

1. What is your gender?
   Choose one of the following answers

   - Male
   - Female
   - Prefer not to answer

2. What is your age?
   Choose one of the following answers

   - Under 18
   - 18-29
   - 30-39
   - 40-49
   - 50-59
   - Over 60

3. What is your highest education level?
   Choose one of the following answers

   - No formal education
   - High school diploma
   - Bachelor's degree
   - Master's degree
   - Doctorate degree
   - Other (please specify):

4. What is your employment level?
   Choose one of the following answers

   - Entry-level
   - Mid-level
   - Senior-level
   - Executive
   - Self-employed
   - Unemployed
   - Retired
   - Student
   - Other (please specify):

5. How long have you been investing in individual stocks?
   Choose one of the following answers

   - Less than one year
   - 1-3 years
   - 3-5 years
   - More than 5 years
   - I do not invest in individual stocks

Part 2: Investment behaviour and stock analysis habits

1. How often do you consider valuation metrics when buying a new stock
   Choose one of the following answers

   - Never
   - Rarely
   - Sometimes
   - Often
   - Always
   - Not applicable

2. How often do you consider valuation metrics when selling a stock
   Choose one of the following answers

   - Never
   - Rarely
   - Sometimes
   - Often
   - Always
   - Not applicable

3. How often do you consider the following market-based valuation metrics when making investment decisions?

	Never	**Rarely**	**Sometimes**	**Often**	**Always**	**Not applicable**
Price-to-earnings (P/E)	☐	☐	☐	☐	☐	☐
Price-to-book (P/B)	☐	☐	☐	☐	☐	☐
Price-to-sales (P/S)	☐	☐	☐	☐	☐	☐
Price-to-cash flow (P/CF)	☐	☐	☐	☐	☐	☐
Enterprise value-to-EBITDA (EV/EBITDA)	☐	☐	☐	☐	☐	☐
Enterprise value-to-sales (EV/S)	☐	☐	☐	☐	☐	☐
Dividend yield	☐	☐	☐	☐	☐	☐
Price-to-earnings / growth (PEG)	☐	☐	☐	☐	☐	☐

4. What are some of the reasons you prefer market-based valuation metric?
   Select all that apply

   - Simplicity and ease of use
   - Data is easily available
   - Provides most accurate results
   - Widely used by investors and analysts
   - Fits my investment strategy
   - Useful for specific types of companies
   - Other (please specify):

5. How often do you consider the following income-based valuation metrics when making investment decisions?
   Note: Free cash flow to firm (FCFF) and free cash flow to equity (FCFE) valuation metrics are used in the discounted cash flow (DCF) model

	Never	**Rarely**	**Sometimes**	**Often**	**Always**	**Not applicable**
Free cash flow to firm (FCFF)	☐	☐	☐	☐	☐	☐
Free cash flow to equity (FCFE)	☐	☐	☐	☐	☐	☐
Dividend discount model	☐	☐	☐	☐	☐	☐
Adjusted present value (APV)	☐	☐	☐	☐	☐	☐

6. What are some of the reasons you prefer income-based valuation metric?
   Select all that apply

   - Simplicity and ease of use
   - Data is easily available
   - Provides most accurate results
   - Widely used by investors and analysts
   - Fits my investment strategy
   - Useful for specific types of companies
   - Other (please specify):

7. How often do you consider the following asset-based valuation metrics when making investment decisions?

	Never	**Rarely**	**Sometimes**	**Often**	**Always**	**Not applicable**
Adjusted book value	☐	☐	☐	☐	☐	☐
Liquidation value	☐	☐	☐	☐	☐	☐
Net asset value (NAV)	☐	☐	☐	☐	☐	☐
Tangible book value (TBV)	☐	☐	☐	☐	☐	☐
Sum of the parts value	☐	☐	☐	☐	☐	☐

8. What are some of the reasons you prefer asset-based valuation metric?
   Select all that apply

   - Simplicity and ease of use
   - Data is easily available
   - Provides most accurate results
   - Widely used by investors and analysts
   - Fits my investment strategy
   - Useful for specific types of companies
   - Other (please specify):

9. Has using valuation metrics been useful when making investment decisions?
   Choose one of the following answers

   - Not at all
   - Slightly
   - Moderately
   - Very
   - Extremely
   - Not applicable

Resümee

JAEINVESTORITE POOLT KASUTATAVAD HINDAMISMÕÕDIKUD AKTSIAANALÜÜSIS: UURING INVESTONIANI KASUTAJATE SEAS

Hans Albert Allik & Uku Joost Annus

Käesolev bakalaureusetöö uurib jaeinvestorite hindamismõõdikute eelistusi aktsiate väärtuse määramisel, keskendudes sellele, milliseid finantsnäitajaid ja meetodeid nad reaalses investeerimispraktikas kasutavad ning kuidas need valikud suhestuvad akadeemilise teooria ja professionaalsete investorite tavadega. Uuringu lähtekohaks on olukord, kus viimastel aastatel on jaeinvestorite osakaal finantsturgudel oluliselt kasvanud, ent akadeemiline ja praktiline arusaam nende analüütilistest töövõtetest on endiselt piiratud.

Teoreetilises osas antakse ülevaade kolmest klassikalisest aktsiate väärtustamise lähenemisest: varapõhisest, tulupõhisest ja turupõhisest. Iga lähenemisviisi juures tutvustatakse peamisi kasutatavaid suhtarve ja mudeleid ning tuuakse välja nende peamised tugevused ja nõrkused. Samuti analüüsitakse varasemate uuringute põhjal professionaalsete investorite eelistusi, pöörates tähelepanu sellele, millised näitajad domineerivad institutsionaalses finantsanalüüsis ning kuidas neid tavaliselt rakendatakse.

Empiirilise osa tarbeks viidi läbi kvantitatiivne küsitlus Investonian'i platvormi kasutajate seas, kogudes 76 terviklikku vastust. Uuringust selgus, et jaeinvestorid eelistavad selgelt turupõhiseid väärtuskordajaid, eriti dividendimäära (86,7%), hinna-kasumi suhtarvu (P/E, 84,4%) ning hinna-kasumi-kasvu suhtarvu (PEG, 73,3%). Võrreldes professionaalsete investoritega, kes sageli toetuvad kapitalistruktuurile põhinevatele suhtarvudele nagu EV/EBITDA, kasutavad jaeinvestorid neid märksa vähem (vaid 66,7% puhul). Samuti on võrreldes professionaalsete investoritega suhtarvu EV/Sales kasutus madal (46,7%), mis viitab asjaolule, et keerulisemad ja rohkem analüütilisi eeldusi nõudvad näitajad on jaeinvestorite seas vähem levinud.

Tulupõhise lähenemise puhul olid populaarsemad hindamismõõdikud vaba rahavoog omanikele (FCFE, 53,3%), vaba rahavoog ettevõttele (FCFF, 48,9%) ja dividendide diskonteerimismudel (DDM, 46,7%). Siinpuhul on märkimisväärne, et jaeinvestorid eelistasid FCFE-d FCFF-le, mis on erinev professionaalidest, kes eelistavad ettevõtte väärtuse hindamisel arvestada kogu ettevõtte väärtusega, mitte ainult omanike osaga. See viitab investori eelistusele keskenduda otsesele tulule ja dividendide mõistmisele, jättes tagaplaanile ettevõtte tervikliku finantsstruktuuri analüüsimise.

Varadepõhise hindamismõõdikute rakendamine oli küsitluse põhjal üsna väike: näitajad nagu kohandatud bilansiline väärtus ja likvideerimisväärtus oli kasutatud vähesel

määral. See võib osutada mudelite keerukusele, aga ka sobimatust näiteks kasvuettevõtete puhul, kellel on thiti suur hulk immateriaalseid varasid.

Lisaks küsitluses mõõdetud eelistustele, kujunes andmetest välja oluline käitumuslik muster: jaeinvestorid kasutavad väärtuse hindamismõõdikuid rohkem ostuotsuste tegemisel kui müügiotsuste puhul. See viitab kalduvusele põhjendada müügiotsuseid analüütiliselt vähem, tuginedes enam emotsionaalsetele või välistele teguritele, võrreldes ostuotsustega, mille puhul kasutatakse enamasti objektiivseid hindamismõõdikuid. Samuti on tõenäoline, et analüütilise platvormi visuaalne ülesehitus ja andmete kättesaadavus mõjutavad oluliselt seda, millised näitajad praktikasse jõuavad.

Kokkuvõttes näitab uurimus, et jaeinvestorid eelistavad hindamismõõdikute puhul lihtsust ja nende rakendamise mugavust, samas kui professionaalid toetuvad keerukamatele ja kontekstipõhisematele suhtarvudele. Erinevus teoreetiliste mudelite ja praktika vahel viitab vajadusele arendada investeerimisanalüütika platvorme ja finantsalast haridust suunal, mis aitaks kujundada teadlikumat ja andmepõhisemat investeerimiskäitumiseni. Töö annab olulise panuse finantskäitumise empiirilisse mõistmisesse ja loob aluse edasisteks teadustöödeks jaeinvestorite hindamismõõdikute valikute, suhtumise ning nende tulemuslikuse kohta.

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