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Firm value determinants: panel evidence from European listed companies

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Abstract
Background: To manage growth opportunities effectively and to make a significant impact on superior long-term performance, it is necessary to analyze firm value and diagnose its determinants. Increasing profit, providing prosperity to the company's stakeholders, and improving company value are the goals of every company's business.
Purpose: The paper aims to build a model of the company's optimal value by assessing company performance based on financial statement analysis of European companies over the period 2015-2020.
Study design/methodology/approach: The impact of financial indicators such as financial leverage, profitability, size, liquidity, growth, and asset tangibility on company value was thoroughly considered. The empirical research was founded on a sample of 158 Eastern and Western European companies, generating 948 observations. Panel regression analysis was conducted.
Findings/conclusions: The obtained results revealed that debt-to-assets ratio, return on equity, and assets tangibility have a significant adverse effect on company value, whereas the return on assets and firm size have a significant favorable effect. The obtained conclusions should serve as a beneficial tool for the strategy of reaching the targeted market company's value and ensuring the company's future viability by the market. Hence, stakeholders could assess the perspective of the future company's development and strengthen the importance and influence of financial variables on the company's value.
Limitations/future research: The research limitations, which are also opportunities for future research, are aimed at the investigation of company value indicators at the level of individual European economies or industries. One should look at the company's value factors before and after the Covid-19 pandemic and consider a longer time in the company's business. Other financial determinants that affect the value of the company could be considered, and the company value could be measured by some other indicators. Also, the influence of non-financial determinants on the company value could be researched.

Keywords
firm value, European companies, Tobin Q, panel analysis, financial determinants, ratio indicators, financial statement analysis

Introduction

The company value reflects the business value of the company as a whole or an economic measure of the company's performance. Improving the company's value is aimed at its sustainability by ensuring its operational continuity and improving profits and prosperity. The initial assumption of the company's market value growth is good corporate governance as a system that determines the best way corporations are managed and the purpose of management (Xie, Lin, & Li, 2022). In order to

ensure efficient company business, the corporate governance system regulates the relationship between the manager and the owner of the company, on the one hand, and ensures the coordination of various stakeholders' goals, on the other. In that direction, Kyere and Ausloos (2020) consider that good corporate governance provides strong internal mechanisms for managing different interest groups. There are several theories that have explored the relationship between the agents (managers) and the principals (shareholders). Agency theory and its associated agency costs, which are based on the shareholders' value loss due to the different interests of managers and company owners, were researched by Jensen and Meckling (1976), Famma (1980), Fama and Jensen (1983). As a normative alternative to agency theory, there is the stewardship theory based on prerequisite that managers in the achievement of organizational goals maximize the benefits of shareholders, which can lead to the minimization of agency costs (Donaldson & Davis, 1991).

One of the key corporate goals can be the maximization of the shareholders' wealth which is the basis of the shareholder theory introduced by Friedman (1970). High company value is usually accompanied by high shareholder welfare and prosperity. On the other hand, managers should be agents of all stakeholders, not only shareholders, which is the basis of the stakeholders' theory determined by Freeman (1984). In this way, Karpoff (2021) points out that this will ensure the building of stronger stakeholder relationships, reduce the company's risk, and contribute to the growth of the company's value through the growth of reputation and innovation. Well-run companies aim to maximize value or profit by promoting the interests of all stakeholders (Goyal, 2020).

In addition to financial, the company's value is affected by non-financial factors, such as technological trends, organizational structure, environmental factors, customer satisfaction, product quality and company competitiveness. In connection with technological progress, Salvi, Vitolla, Rubino, Giakoumelou and Raimo (2021) conducted studies which showed that the degree of company digitization positively affects its value. The research conducted by Bose, Shamsb, Ali and Mihret (2021) showed that companies based in countries with a more devastating impact of COVID-19 have a greater decline in enterprise value.

Belo, Gala, Salomao and Vitorino (2022) indicated the importance of intangible capital inputs and labor for company value understanding by analyzing the market value determinants of US publicly traded companies. They showed that installed labor force accounts for 14% to 22% of companies market value, physical capital accounts for 30% to 40%, knowledge capital accounts for 20% to 43%, and brand capital accounts for 6% to 25% of companies market value. In that way, Sisodia, Jadiyappa and Josep (2021) emphasize the importance of human capital in the company's performance and valuation. Human capital leads to value creation by using current growth opportunities and creating opportunities for future growth. Ullah, Irfan, Kim and Ullah (2021) points out the importance of hedging in increasing the value of the company by reducing the costs of bankruptcy, although it can also reduce the value of the company by maximizing the utility of the manager. Seth and Mahenthiran (2022) indicate that higher company value is associated with higher institutional ownership levels.

The study aims to research the direction and nature of the relationship among the financial determinants such as leverage, profitability, firm size, liquidity, sales growth, and asset tangibility on one side, and company value, on the other. Analysis of financial statements of European companies assesses a company's performance over the period 2015-2020 to build a model that will indicate the value indicators of European companies. The motives for this paper lie in the insufficient scope of research into determinants of company value. Previous research that this paper relied upon was done in other countries, outside the European market.

This paper contributes to existing research and empirical studies by providing new insights into the impact of financial determinants on company value. By identifying indicators that determine a company's value, managers seek to maximize value and improve the performance of observed companies. As an expression of company financial strength, the company value maximization is influenced by the access and availability of internal and external financing sources. Analyzing a company's value indicators provides a significant information basis for all stakeholders who want to research the factors of the company's ability to generate future income in the present value (Oh, Park, & Kim, 2020). In addition, information is provided to strengthen the competitive position and optimal use of available resources to maximize the company value. This research created the basis and added value to future research on this issue, as well

as providing a more detailed insight into understanding the value of a company and how it is improving.

The paper consists of several parts. After Introduction, research questions were presented in the Theoretical background. The observed sample and the applied methodology are presented in Data and methodology. The presentation and results interpretation are presented in the section on Results and discussion. Finally, the Conclusion presents the research limitations and recommendations for future research.

1. Theoretical background

The Tobin Q ratio reflects the company's investment or growth opportunities, making a significant impact on the company's future business performance and superior long-term performance. Santosa (2020) considers that Tobin's Q is a better indicator than the accounting returns indicator, which minimizes the accounting distortion risk. The use of the Tobin Q ratio is suitable in situations where owners and management want to give a good signal to investors so that their perception of the company is beneficial with, of course, an appropriate company book value (Setiawanta, Utomo, Ghozali, & Jumanto, 2020). Therefore, Tobin Q as a market expression of a company's value is a suitable measure for assessing investors' expectations regarding the company's ability to create value (Salvi et al., 2021). In this paper, Tobin Q was used as a variable on which the influence of chosen financial factors was measured.

Financial leverage is the debt financing usage in the company's capital structure (Al-Slehat, 2020). By additional financing, each firm reduces potential external financing capability, through rising financing costs, as well as worsening credit rating and deteriorating credit conditions (Tica, 2023). In circumstances when the company borrows to a greater extent and uses its capital to a lesser extent, most of the control is held by investors. Companies that are highly indebted are subject to the control of the capital market and they do not have an opportunity for superior control of management (Vuković, Mijić, Jakšić, & Saković, 2022a). If a company can pay its obligations despite high indebtedness, the value of the company is considered good. On the other hand, if a company is not heavily indebted because it can finance the business with its resources, the value of the company can also be considered good (Endria & Fathony, 2020). Additionally, due to shortage of funding, companies could opt to expand ownership via recapitalization (Tica, 2022). Managers should choose the capital structure that will achieve the greatest company value. Doorasamy (2021) pointed out studies that started from Modigliani and Miller's theory of capital structure irrelevance, which assumes that capital structure does not affect company performance. On the other hand, they also emphasize studies based on agency costs and pecking order theories, in which companies strive to balance the capital structure to enhance performance through an optimal capital structure. Consistent with the requirements of agency costs and pecking order theories, Huynh, Wu and Duong (2020) proved that information asymmetry has a significant negative impact on the value of the company and that financial leverage has only a limited role in mitigating the negative impact of information asymmetry on the company value. The requirements of the pecking order theory are based on the fact that the presence of information asymmetry affects the decision-making about the company's capital structure, limiting the possibility of using external financing sources (Sony & Bhaduri, 2020).

Diantimala, Syahnur, Mulyany and Faisal (2021) point out that a company that adheres to the requirements of the trade-off theory starts from the target ratio of debt and equity and tries to move towards the goal. So small companies with higher debt ratios and lower profitability have a higher company value. Referring to the trade-off theory requirements, Alghifari, et al., (2022) indicate that any new borrowing will lead to growth in company value in circumstances where the capital structure is below the optimal level. A statistically significant positive impact of financial leverage on company value was found in research conducted by Farooq, & Masood (2016), Santosa (2020), Aprilyani, Heni Widyarti and Hamidah (2021). Zuhroh (2019) confirmed a statistically significant positive relationship emphasizing that greater leverage will affect the company's greater value due to the high investor confidence and improved company control over the freedom to use cash by management. On the other hand, Kanta, Hermanto and Surasni (2021) explained that higher indebtedness affects the reduction of the company's value, since the company will not be able to settle the debt out of the realized profit. Fajaria and Isnalita (2018) state that companies with high leverage are prone to bad credit conditions and bankruptcy and that the higher levels of borrowing would reduce the value of the company and this

impact is statistically significant. The statistically significant negative relationship was also confirmed in research conducted by Safitri, Handayani and Nuzula (2014), Tahu and Susilo (2017). Additionally, Jadiyappa, Hickman, Jyothi, Vunyale and Sireesha (2020) revealed the negative impact of debt diversification on the value of the company and the fact that changes in debt diversification were followed by corresponding inverse changes in the company value.

The relationship between the financial leverage as the debt-to-equity ratio and the Tobin Q scale was not statistically significant in research conducted by Manawaduge, De Zoysa, Chowdhury and Chandarakumara (2011), Chadha and Sharma (2015), Rachmi and Heykal (2020), Kanta and Hermanto, Surasni, (2021).

A statistically significant positive relationship between leverage as debt to asset ratio and company value was confirmed in research conducted by Manawaduge et al. (2011), Sudiyatno, Puspitasari and Kartika (2012), Obradovich and Gill (2012), Hermuningsih (2013), Rizqia, Aisjah and Sumiati (2013), Olokoyo (2013), Anton (2016), Liviani and Rachman (2021), Bose et al. (2021). Rizqia et al. (2013) asserted that financial leverage is an external means of striving to achieve the company's goal and maximizing the company's value by reducing the ability of managers to act against the interests of shareholders and providing insight into the company's performance. Kouki and Said (2011) indicated that financial leverage has a statistically significant positive impact on company value with managerial ownership between 20% and 80% which corresponds to the agency and signaling theory. Increased participation of liabilities in the financing structure leads to higher company value. On the other hand, a statistically significant negative relationship between leverage and company value as the debt-to-asset ratio was pointed out in research conducted by Salim and Yadav (2012) and Soumadi and Hayajneh (2012).

Relying on the above mentioned previous research, the following research hypothesis was set:

Hypothesis 1 (H1): Financial leverage as the debt-to-equity ratio has a statistically significant negative impact on company value.

Hypothesis 2 (H2): Financial leverage as the debt-to-asset ratio has a statistically significant negative impact on company value.

Companies that are unable to achieve a satisfactory level of profitability have the continuity of their business threatened. A company's ability to make a profit determines its sustainability (Vuković, Tica, & Jakšić, 2022b). High profitability is an expression of the good company condition and will affect the positive response of investors to the company's shares, which will lead to an increase in the company's value (Endria & Fathony, 2020). Based on this, there is a statistically significant positive relationship between the return on assets and the company's value which was also confirmed in research conducted by Safitri et al. (2014) and Dang, Vu, Ngo and Hoang (2019). By using multiple linear regression, Aprilyani et al. (2021) pointed out that there is a statistically significant positive relationship between profitability and company value, so that a company that generates net profit can create value. Relying on the requirements of signaling theory, Rizqia et al., (2013) showed that greater company profitability leads to a more effective company, confirming a statistically significant positive impact of return on assets on company value. On the other hand, pointing to a statistically significant negative relationship between the return on assets and the value of pharmaceutical firms listed on the Indonesia Stock Exchange, Rahmantari, Sitiari and Dharmanegara (2019) indicated that profitability growth is not accompanied by growth in stock prices, which leads to a decrease in the company value. However, Kouki and Said (2011), Anton (2016), Sugianto, Oemar, Hakim and Endri (2020) found that there is no statistically significant impact of return on assets on company value.

Based on the previously mentioned theoretical studies and empirical research, as well as the research conducted by Obradovich and Gill (2012), Santosa (2020), the following research hypothesis was set:

Hypothesis 3 (H3): Profitability as the return on assets has a statistically significant positive impact on company value.

Profitability as return on equity has a statistically significant positive impact on company value which was confirmed in research conducted by Safitri et al. (2014), Rahmadianti and Asandimitra (2017), Zuhroh (2019), Kanta and Hermanto, Surasni (2021). Dang et al. (2019) claimed that achieving the maximum company value means achieving the maximum return on equity. Research conducted by Fajaria and Isnalita (2018) confirmed a statistically significant positive relationship between return on equity and company value, pointing out that the high profitability is an

expression of an efficient company's resources management so that high income and high dividends are achieved. By analyzing 150 listed companies on the Indonesia Stock Exchange from 2006 to 2010, Hermuningsih (2013) also confirmed a statistically significant positive relationship and claimed that growth in return on capital employed indicates the efficiency of capital management and operating activities in order to make a profit, which affects profitability growth and better the company's prospects. The success of management in maximizing shareholder returns leads to an increase in the company value, confirming the statistical significance between these two variables (Rachmi & Heykal, 2020). Tahu and Susilo (2017) claimed that high profitability creates company added value by increasing Tobin Q value and this relationship is statistically significant. Finally, the research conducted by Putri and Rachmawatari (2017), Rosikah, Prananingrum, Muthalib, Azis and Rohansyah (2018) showed that return on equity does not have a significant effect on company value.

By summarizing all previous research and research results obtained by Jacob (2017), the following research hypothesis was set:

Hypothesis 4 (H4): Profitability as the return on equity has a statistically significant positive impact on company value.

As an important indicator of corporate performance, company size represents the size of the company's assets so that a large company will easily obtain capital and have more resources and capacity (Dada & Ghazali, 2016). They also create favorable growth opportunities by adding more returns to their engaged assets (Vuković, Milutinović, Mijić, Krsmanović, & Jakšić, 2022c). Rahmadianti and Asandimitra (2017) consider that larger company size in terms of total assets indicates an increase in the volume of funds that participate in the regular company activities. Accordingly, the company's performance increases and leads to an increase in stock price and company value. Company size indicates the development level of a company's business and has a statistically significant positive impact on company value (Rizqia et al., 2013). Growth in company size will facilitate access to the company's assets that will be used by management to increase the company value. Research conducted by Obradovich and Gill (2012) showed that firm size has a statistically significant positive impact on the value of American firms and that employees and managers make great efforts to maximize the value of the company or maximize the wealth of shareholders. Ayuba, Bambale, Ibrahim and Sulaiman (2019) emphasize that management should ensure the growth of enterprise size through turnover growth and opening new markets for both new and existing products, proving a statistically significant positive impact of company size on the company value. Modern companies seek to increase their size to gain a competitive advantage by reducing costs of production and increasing market share. Confirming the statistically significant positive impact of the company size on the company value, Rahmantari et al. (2019) emphasize that the company size through the size of total funds is an expression of the company's development wealth according to its activities. Research conducted by Zeitun and Tian (2007), Olokoyo (2013) and Dang et al. (2019) also confirmed the statistically significant positive relationship between company size and value.

On the other hand, Chadha and Sharma (2015) start with large companies with lower volatility of assets and greater efficiency of performance, providing research results that indicate a significant negative relationship between company size and value of 422 listed Indian manufacturing companies over a period of 10 years. A significant negative impact of company size on the company value was also confirmed in research conducted by Willim (2015), Ali, Jan & Atta (2015), Ibrahim (2017), Huynh et al. (2020), Oh et al. (2020), Ullah et al. (2021), Nguyen, Cuong, Nga, Trang, Nguyen and Truong (2021), Poretti and Heo (2022), Seth and Mahenthiran (2022). Analyzing the capital structure, profitability, and value of publicly quoted companies at the Nairobi Securities Exchange, Kodongo, Mokoaleli-Mokoteli and Maina, (2015) found that company size had a statistically significant impact on the company's value for small-sized companies, but this impact is insignificant for large-sized Kenyan companies. However, research conducted by Manawaduge et al. (2011), Salim and Yadav (2012), Dada and Ghazali (2016), Farooq and Masood (2016), Putri and Rachmawatari (2017), Rahmadianti and Asandimitra (2017), Febriyanto (2018), Zuhroh (2019), Endria and Fathony (2020), Aprilyani et al. (2021), Doorasamy (2021) showed that size does not significantly affect company value.

Considering all theoretical and empirical research, as well as research conducted by

Soumadi and Hayajneh (2012), the following hypothesis was set:

Hypothesis 5 (H5): Company size has a statistically significant positive impact on company value.

The ability to cover current liabilities with available current assets is shown by current liquidity ratio (Vuković, Milutinović, Mirović, & Milićević, 2020). High liquidity may give the impression that it is a company capable of settling its obligations and able to pay dividends to investors, likely to operate with a high profit. High profit can be an expression of positive signals for investors, so it leads to an increase in company value.

A too high current ratio can also indicate poor liquidity management, and that investor concludes that the funds are not managed optimally, which affects his perception of the company's value. Research conducted by Farooq and Masood (2016) showed that liquidity, as one of the bases of financial management from the aspect of the company working capital management, has a statistically significant positive impact on the company value of Pakistani cement companies from 2008 to 2012. Thus, efficient working capital management brings an increase in the company value. Jacob (2017) and Marsha and Murtaqi (2017) found that the current ratio has a statistically significant positive impact on the company value, which means that higher liquidity means settling liabilities in the short-term and increasing the company's value. On the other hand, a significant negative relationship between liquidity and company value was found in research conducted by Ibrahim (2017), Fajaria and Isnalita (2018), Febriyanto (2018). According to Zuhroh (2019), high current liquidity means that the company has enough internal funds to cover its operating costs, but the relationship between the current ratio and the company value of the public property and real estate companies in the Indonesia Stock Exchange in the period of 2012 to 2016 was insignificant.

Sublimating all mentioned previous research, we set the following hypothesis:

Hypothesis 6 (H6): Liquidity has a statistically significant positive impact on company value.

Company growth represents the ability of management to take advantage of the opportunity to grow assets and increase the company's profits or to achieve a satisfactory level of sales growth. Growth impacts the higher value increase and strengthening of the company, as well as the increase in economic activity (Vuković, Peštović, Mirović, Jakšić, & Milutinović, 2022d) which gives a positive signal to investors. Fajaria and Isnalita (2018) pointed out that the high growth of assets indicates a greater chance for the company to realize future benefits according to the requirements of signaling theory. A company with high growth will be the subject of consideration by investors, which will affect the growth of the company's value. Their research showed that growth has a statistically significant positive effect on company value, as well as research conducted by Hermuningsih (2013), Kodongo et al. (2015), Rehman (2016), Ibrahim (2017) and Bose et al. (2021). Indicating a statistically significant positive relationship between growth and company value, Febriyanto (2018) emphasizes that the company's growth reflects the constant growth of activities and the success of the previous investment period, so that good future prospects may affect the company's value growth. Liviani and Rachman (2021) confirmed that growth has a statistically significant positive impact on the company's value showing that sales growth leads to growth of the company's operating results and a good outlook of the company, which affects the growth of trust in the company by external stakeholders. On the other hand, research conducted by Zeitun and Tian (2007), Manawaduge et al. (2011), Chadha and Sharma (2015), Dada and Ghazali (2016), Sugianto et al. (2020) showed a statistically insignificant relationship between company growth and company value. Only Huynh et al. (2020) and Nguyen et al. (2021) found a significant negative impact of sales growth on company value.

Considering all summarized theoretical and empirical studies, the following hypothesis was set:

Hypothesis 7 (H7): Company growth has a statistically significant positive impact on company value.

As one of the key indicators of the company's performance, the high value of the asset tangibility indicator presents an expression of active investment policy. Defining tangibility as the investments in collateral assets and the company's long-term resources, Chadha and Sharma (2015) found that tangibility had a statistically significant positive impact on company value. Further, Dada and Ghazali (2016) defined that asset tangibility indicates the level of collateral that serves in capital structure decisions and has an impact on the creditor's risk and bankruptcy value of assets, confirming a significant positive relationship

between the asset tangibility and company value. Expecting that companies with higher collateral assets borrow more compared to companies whose borrowing costs are higher due to less fixed assets, Ibrahim (2017) proves a statistically significant positive relationship between the tangibility of assets and the value of Nigerian companies in the manufacturing industry for the period 2012-2016. Kouki and Said (2011) found that asset tangibility has a statistically significant positive impact on shareholders' wealth, so strongly controlled companies use tangible assets to a greater extent to make investments with a certain risk level and transfer wealth at the creditor's expense. He also states that companies that have fewer fixed assets have a bigger information asymmetry problem than companies that have a larger volume of tangible assets. On the other hand, a statistically significant negative relationship between asset tangibility and company value was found in research conducted by Mule, Mukras, Nzioka and Maloba (2015), noting that higher tangible assets level of manufacturing companies will affect earnings growth through a positive impact on production capacity. For companies in the service industry and retail sectors, the high level of fixed assets jeopardizes the provision of services or the sale of goods, because money is tied to fixed assets that do not generate revenue. Kodongo et al. (2015) confirmed the negative impact on company value by observing predominantly Kenyan non-manufacturing companies and points out that the sign of the tangible assets' indicator depends on the category of companies in the sample. Reliance on tangible in relation to intangible assets on a larger scale lead to lower financial distress costs.

Bearing in mind all presented research and relying on the research conducted by Zeitun and Tian (2007), Soumadi and Hayajneh (2012), Al-Slehat (2020), Huynh et al. (2020), the following research hypothesis was set:

Hypothesis 8 (H8): Asset tangibility has a statistically significant positive impact on company value.

2. Data and methodology

Financial statements retrieved from the TP Catalyst database are the source of financial information used in the research (Bureau Van Dijk, 2022). Mainly due to the Covid-19 pandemic, the most recent data accessible at the time of the study were from 2020. Considering the purpose of this paper, the sample consisted primarily of 3,558,265 companies from Western and Eastern Europe, including 27 European-origin countries. Further, the availability of necessary data for calculating the Tobin Q indicator for the period 2015–2020 decreased the sample size to 158 firms and generated 948 observations. The initial sample was therefore reduced based on data availability in the TP Catalyst database needed for the calculation of all variables in the observed period, which represents an information limitation of the research and conclusions drawn. The sample consists of very large, large, and medium-sized active private and public enterprises. This category of companies usually makes better use of advantages of the economies of scale, has greater market power, greater scope of diversification of activities, negligible risk of acquisition, expands to a larger market, and achieves a greater status and a greater volume of economic activity (Vuković, Milutinović, Mirović, & Milićević, 2020) which altogether leads to greater company value. As this category of companies has better conditions for value growth, it represents a suitable basis for evaluating the determinants of the optimal company's value.

Table 1 summarizes the final distribution of companies by Eastern and Western European countries.

Table 1 Overview of number of companies from sample per country

Country	Number of companies	Country	Number of companies
Belgium	16	Netherlands	5
Bosnia and Herzegovina	1	North Macedonia	14
Bulgaria	6	Norway	1
Croatia	9	Poland	6
Cyprus	4	Portugal	1
Czech Republic	2	Romania	18
Estonia	1	Russian Federation	3
France	3	Serbia	2
Greece	36	Slovenia	1
Hungary	2	Spain	6
Ireland	1	Switzerland	1
Italy	4	Turkey	1
Latvia	1	United Kingdom	9
Lithuania	4		
Total			158

Source: the authors

Tobin Q is selected as a dependent variable, representing company value, whereas liquidity, profitability, leverage, firm size, and asset efficiency are chosen as independent variables, including gross domestic product growth rate (GDP) and customer price index growth rate (CPI) as a control variable, in order to develop a model that indicates the factors of company value. Gross domestic product is presented in the paper as annual growth expressed in percentages, while the customer price index is presented in the paper as inflation annual growth expressed in percentages. The dependent and independent variables are in detail described in Table 2.

Table 2 Summary of variable type, name, formulation, and source

Variable type	Variable name	Formulation
Dependent	Tobin Q	(Market value of equity/Total assets)
Independent	Financial leverage measured by debt-to-equity ratio	Total debt/Equity
	Financial leverage measured by debt-to-assets ratio	Total debt/Total assets
	Profitability measured by ROA	Net income/Total assets
	Profitability measured by ROE	Net income/Equity
	Company size	Ln Total assets
	Liquidity	Current assets/current liabilities
	Company growth	$(Sales_t-Sales_{t-1})/Sales_{t-1}$
	Asset tangibility	Fixed assets/Total assets

Source: the authors

To test the regression model with financial data collected over 6 years and over 158 companies, and to use the results to statistically prove the hypotheses, panel data analysis would be considered the most convenient econometric model to apply (Chadha & Sharma, 2015; Anton, 2016; Dada & Ghazali, 2016; Ayuba et al., 2019; Endria & Fathony, 2020; Sugianto et al., 2020).

3. Results and discussion

Based on presented results in Table 3, the range of the Tobin Q value is between 0.016 and 3.989, showing a significant value dispersion. Given that Tobin Q is the ratio of the company's market value to its replacement value or cost and that the minimal and the median value is between 0 and 1, it indicates that a company's assets would cost more to replace than its shares worth, suggesting that the company value is low. In contrast, the maximum value of Tobin Q is more than 1, suggesting that a company's assets are overpriced, considering that it is more valuable than its replacement cost. Further, the debt-to-equity ratio median is 0.892, while the debt-to-assets median ratio is 0.471, implying that, in general, European stock companies rely more on equity financing, with their capital structure slightly inclined to their own sources. These indicators of financial leverage could be indicative of a significant rate of investment risk if reaching high values. The median return on assets and return on equity, as measures of profitability, were 3.2% and 6.4%, respectively, which is significantly below the reference standard of 10%. If further analysis reveals that profitability is a significant variable of company value, firms should attempt to enhance their earning power. The current ratio had an average value of 1.522 with excessive fluctuations in value between 0.036 and 33.731. When compared to the reference value of 2, the median value indicates that the majority of the sampled companies do not settle their short-term debts with their short-term assets. Hence, concerns about sustaining liquidity are expressed even though highly liquid companies are included in the sample. Generally, the sample companies are not capable of balancing the maturity of their liabilities with the monetization time of their assets. The firm size is ranging from 8.234 to 19.310, confirming that the sample includes companies of different sizes, from very large to medium-sized. Further, the median tangibility of assets is 0.616. Thus, on average, companies have asset structures oriented towards fixed assets, which consequently states that sampled companies are predominantly capital-intensive. Considering sales growth capacities, median sales growth is 0.019, ranging from -0.999 to 78.333. This indicates that the company's assets could generate a significant return in the form of sales.

Table 3 Overview of descriptive statistics

Variable	Number of observations	Median	Mean	Standard deviation	Minimum	Maximum
Tobin Q	948	0.519	0.705	0.642	0.016	3.989
Financial leverage (Debt/Equity)	948	0.892	1.357	1.985	0.024	25.398
Financial leverage (Debt/Assets)	948	0.471	0.453	0.218	0.023	0.962
Profitability (ROA)	948	0.032	0.037	0.067	-0.368	0.401
Profitability (ROE)	948	0.064	0.048	0.234	-3.167	1.476
Company size	948	12.216	12.676	2.484	8.234	19.310
Liquidity	948	1.522	2.405	2.767	0.036	33.731
Company growth	948	0.019	0.182	3.096	-0.999	78.333
Asset tangibility	948	0.616	0.626	0.213	0.051	0.997
GDP	948	2.000	1.124	3.885	-10.800	25.200
CPI	948	0.800	0.985	1.926	-2.100	16.300

Source: the authors

The results, summed up in Table 4, highlighted the existence of a significant positive relationship between Tobin Q and financial leverage as the debt-to-equity, ROA, ROE, firm size, liquidity and CPI, while there is a negative and statistically significant relationship between Tobin Q and financial ratio as the debt-to-assets, as well as tangibility of assets. There is no significant relationship between Tobin Q, sales growth, and GDP. The most significant correlation is between Tobin Q and ROA (0.522), followed by the correlation between Tobin Q and ROE (0.335). Since there are no strong correlation coefficients between independent variables (above 0.80), the absence of multicollinearity could be assumed.

Table 4 Correlation matrix

	Tobin Q	Financial leverage (Debt/ Equity)	Financial leverage (Debt/ Assets)	Profitability (ROA)	Profitability (ROE)	Company size	Liquidity	Company growth	Asset tangibility	GDP	CPI
Tobin Q	1										
Financial leverage (Debt/ Equity)	0.216**	1									
Financial leverage (Debt/ Assets)	-0.290**	0.668**	1								
Profitability (ROA)	0.522**	-0.299**	-0.310**	1							
Profitability (ROE)	0.335**	-0.522**	-0.212**	0.713**	1						
Company size	0.106**	0.108**	0.399**	0.100**	0.178**	1					
Liquidity	0.194**	-0.262**	-0.560**	0.109**	0.048	-0.299**	1				
Company growth	-0.019	-0.017	-0.005	-0.014	0.005	-0.075*	-0.021	1			
Asset tangibility	-0.089**	-0.027	-0.004	-0.132**	-0.054	0.301**	-0.286**	0.030	1		
GDP	0.039	-0.142**	-0.151**	0.152**	0.153**	-0.054	0.029	0.047	0.028	1	
CPI	0.104**	-0.048	0.006	0.183**	0.207**	0.122**	-0.048	0.007	-0.054	0.167**	1

significance levels: ** $p < 0.01$; * $p < 0.05$

Source: the authors

Since the analysis data involves time dimensions in form of a six-years period from 2015 to 2020 and spatial dimensions including 948 companies from the sample, it proves necessary to apply panel data analysis. The presented results in Table 5 show an estimation of fixed-effect and random-effects panel regression analysis. The Hausman test is used to indicate the suitable category of regression model for further analysis. The Hausman test results have been revealed to be significant ($p < 0.001$), so we rejected the null hypothesis that assumes using the random-effects model. Accordingly, a model with a fixed specification would be applied to assess the significance and strength of financial factors on company value.

Table 5 Fixed-effects and Random-effects panel regression analysis results

Variable	Fixed-effects model	Random-effects model
Financial leverage (Debt/Equity)	-0.008 (0.008)	-0.004 (0.008)
Financial leverage (Debt/Assets)	-0.629*** (0.147)	-0.842*** (0.131)
Profitability (ROA)	1.003*** (0.226)	1.204*** (0.231)
Profitability (ROE)	-0.062 (0.064)	-0.107 (0.065)
Company size	-0.132*** (0.040)	-0.034** (0.016)
Liquidity	-0.008 (0.002)	-0.008 (0.005)
Company growth	-0.001 (0.002)	0.001 (0.002)
Asset tangibility	-0.068 (0.129)	-0.156 (0.113)
GDP	-0.003 (0.002)	-0.002 (0.002)
CPI	-0.002 (0.005)	-0.003 (0.005)
C	2.711*** (0.495)	0.742*** (0.196)
R^2 within between overall	 0.1206 0.0052 0.0071	 0.1007 0.2598 0.2377
F/Wald $\chi 2$	10.70***	134.16***

Dependent variable: Tobin Q **Source:** the authors
*** p < 0.01; ** p < 0.05; * p < 0.10
Note. Standard errors in parenthesis

Further, the p value results ($p < 0.001$) presented in Table 6 show that it proves necessary to evaluate the model with fixed effects, including time and individual effects.

Table 7 Time and individual fixed-effects test results

Test	Test statistics value	p
Wooldridge test	5.156	0.025
Modified Wald test for groupwise heteroskedasticity	79930.30	< 0.001
Pesaran cross-section independence test	18.379	< 0.001

Source: the authors

To overcome the assumption violation for applying panel regression analysis, an alternative model specification with panel-corrected standard errors is used in further analysis (Table 8).

Table 8 A regression model with panel-corrected standard errors results

Variable	PCSE model
Financial leverage (Debt/Equity)	-0.005 (0.007)
Financial leverage (Debt/Assets)	-0.818*** (0.095)
Profitability (ROA)	2.169*** (0.307)
Profitability (ROE)	-0.208*** (0.057)

Company size	0.083*** (0.008)
Liquidity	-0.005 (0.007)
Company growth	0.002 (0.003)
Asset tangibility	-0.424*** (0.092)
GDP	-0.002 (0.002)
CPI	0.009 (0.008)
C	0.209 (0.099)
R^2	0.4903
Wald χ^2	462.57***

Dependent variable: Tobin Q **Source:** the authors
*** p < 0.01; ** p < 0.05; * p < 0.10
Note. Standard errors in parenthesis

The presented results in Table 8 showed that financial leverage as the debt-to-equity ratio (-0.005) has a negative, but statistically insignificant effect on European listed firm value, which rejects Hypothesis 1. However, leverage as the debt-to-assets ratio (-0.818) has a negative impact on company value, whereby this effect is considered statistically significant, which means that Hypothesis 2 is confirmed. Every variation in the capital structure, involving an increase in the share of debts in the entire sources of financing, would surely attract the attention of stakeholders. Oh et al., (2020) state that capital cost reduction leads to an increase in the company value. The model estimation results in this paper show that any increase in external debt reduces the firm value. Since the capital structure of the European listed companies in the sample is generally oriented towards their sources (as presented in Table 3), it could be confirmed that, on average, the companies are not over-indebted. Good value of financial leverage means that the observed European companies do not use a large debt amount in their business, so they can efficiently and effectively use sources of financing which leads to an increase in the company value. The more favorable the leverage ratio, the better European companies' reputation and, corporate credibility, consequently enhancing their market value. Additionally, the observed European companies' orientation towards their financing instills the confidence of investors and shareholders in stable and sustainable business, as well as in the expected dividend, given that the earnings would not be used to settle high financial obligations. Moreover, the equity-oriented capital structures generate further opportunities for European companies to withdraw additional funds if destructive and unstable market positions evolve. The direction of the influence of financial leverage as the debt-to-equity ratio on firm value is consistent with Kodongo et al. (2015), Putri and Rachmawatari (2017), Al-Slehat (2020), Endria and Fathony (2020). Furthermore, Ayuba et al. (2019), and Dang et al. (2019) prove that measuring leverage by debt-to-asset ratio, if indebtedness enhances, will lead to decreased company value, highlighting a negative and statistically significant effect on firm value and confirming Hypothesis 2.

Further results confirm that ROA has a positive and statistically significant (2.169) impact on the firm value, accepting Hypothesis 3. In this direction, Rosikah et al. (2018) indicate that a higher return on engaged assets indicates that the company's performance has increased and that shareholders benefit from dividends that will encourage them to invest in the company and lead to the company's growth. The company's ability to operate profitably is associated with the company's ability to pay dividends, so high amounts of dividends lead to a higher company share price or a higher company value. Profitability and high company value contribute to the long-term competitive advantage of observed European businesses. A higher percentage of profitability determines the potential of European corporations to generate internal resources to facilitate company the further expansion. This impact is also empirically proven by the research conducted by Marsha and Murtaqi (2017), Ayuba et al. (2019), Doorasamy (2021). If we recall the descriptive statistics, the sampled European firms, in general, record a low profitability rate. So, if observed European companies intend to achieve high

company values, it proves necessary to discover a means of increasing the earning capacity and utilization of assets.

Despite the logical assumption that ROE has a positive effect on the company's market value, the results showed the presence of a negative and statistically significant influence, rejecting Hypothesis 4. Investors commonly form those expectations when the capital structure is strictly or slightly oriented towards borrowed sources of financing, as well as when the capital consists of shares or bonds. In all the mentioned instances, the company is obliged to pay dividends and interest from the realized profit, which further reduces the actual rate of return on invested capital. In addition, profitability is not a static category in financial analysis, therefore its values change dynamically from year to year. Ayuba et al. (2019) agreed that higher profitability leads to lower company value.

As far as firm size is concerned, the results verify that there is a positive and statistically significant impact of company size on company value, which requires Hypothesis 5 to be accepted. Higher total company funds provide the possibility of obtaining additional sources of financing which will affect the growth of business expansion or the growth and development of the observed European companies. The size of observed European companies impacts their potential to attain stability, better access to financial markets, and lower transaction expenses compared to small and starting European businesses. Additionally, economies of scale are a major benefit of large European companies, which is subsequently reflected in raised income. Generally, large European companies are significant market actors that have better market knowledge, achieve better conditions with customers and suppliers due to the turnover they perform, hire the best managers, and are able to create more tax savings. Al-Slehat (2020) concluded that large-scale companies affect the growth of investor confidence in the value of the company, indicating a statistically significant positive relationship between the size and the company value. This relationship was confirmed in research conducted by Kristi & Yanto (2020) who claimed that the ability to make a profit in large companies is higher as the volume of funds is higher, which is a positive market signal. The fact that firm size and firm value are directly related could also be found in research performed by Mule et al. (2015) and Anton (2016).

Considering liquidity displayed results envisage the existence of a positive, but statistically insignificant effect on firm value. A high current liquidity ratio can affect the growth of investors' desire to invest in observed European companies by buying company shares which will cause the rise of the company's share price in parallel with the company's value. The ideal organization of European companies' operational activities is achieved by the efficient use of current assets, considering that a high level of current assets might signal vast inventories and receivables, which are commonly the consequence of incompetent management. Recalling descriptive statistics results (Table 3), the majority of firms from the sample do not fulfill their short-term obligations with available current assets. Moreover, the results of the regression panel analysis showed that the influence of liquidity is not of crucial importance for the assessment of the market value by investors; however, it is viewed as a current category, prone to changes. Pointing out that the company does not consider liquidity when assessing value, Rachmi and Heykal (2020) concludes that liquidity does not have a statistically significant impact on the company value, as well as research conducted by Anton (2016).

Further, the results indicate that growth measured by variations in sales in the current year compared to the previous year (0.002) is a positive and statistically insignificant predictor of firm value, rejecting Hypothesis 7. The capacity of management to capitalize on possibilities to grow the companies' assets and enhance their profitability, as well as the ability of the companies to achieve sustainable sales growth, are two metrics that may be used to evaluate the corporate growth of European companies. The level at which observed European corporations can acquire new customers and expand existing operations is represented by the company's growth. Increases in business profitability are probable to occur from management that is capable of obtaining the most effective use of the assets that the company has available transformed into sales revenue. Great opportunities for a company's growth imply the use of shares to finance the operations, which leads to a high price of the company's shares that can affect the company's value growth. Such direction is present in the case of sampled companies, however, the results showed that the growth of revenues from sales is not crucial for stakeholders in the case of European listed companies in terms of determining the value of the company. Similar conducted research by Salim and Yadav (2012), Ali et al. (2015), Dang et al. (2019), Endria &

Fathony (2020) confirmed a statistically insignificant relationship between company growth and company value.

Considering the tangibility of assets, results show the existence of a negative (-0.424) and statistically significant effect on observed company value. This means that Hypothesis 8 is rejected. Although fixed assets increase the value of European companies because of their high values as well as the ability to represent collateral in debt-creditor relationships with financial institutions or with customers and suppliers, fixed assets due to their long-term characteristics make it challenging for the companies to be flexible for business transformations accompanied by rapid market changes. The higher value of this indicator in observed European companies leads to inefficient working capital usage, low management efficiency level, or a low level of cash reserves. Sampled European companies probably borrow at a relatively higher interest rate, providing a low degree of security to creditors. Stating that the nature of the relationship is conditioned by the usage of tangible assets efficiency, Manawaduge et al. (2011) also proved a significant negative impact of asset tangibility on the company value of Sri Lankan-listed firms showing that there is an inefficient non-current assets utilization. Researching a similar topic, Farooq and Masood (2016) obtained the same results.

Conclusion

A company's purpose is to engage all stakeholders in shared and sustained creation of value (Bose et al., 2021). Once a firm's value is high, investors are more inclined to invest in that company. Investors perform further investigation by a deeper financial analysis of various indicators that affect the company value. In that manner, examining trends in previous years, investors and other stakeholders could project the trends of stock prices, returns, and investment viability. Hence, the purpose of this research is to identify the firm value predictors. Applying panel regression analysis, the variables of firm value, including financial leverage, profitability, size, liquidity, growth, and tangibility of assets, were examined on the observations of a sample of 948 European companies.

The findings suggested that financial leverage has a negative effect on firm value. When leverage is observed as a debt-to-equity ratio, the impact is statistically insignificant. On the other hand, in the case of observing using a debt-to-asset ratio, the effect is judged as a statistically significant predictor of firm value as was in previous research conducted by Setiawanta et al. (2020), Oh et al. (2020) and Diantimala et al. (2021). A direct result of financial leverage oriented towards own financial funds is an enhancement in the European companies' image and corporate financial reliability. Consequently, the market value of the observed European companies would rise. In addition, the European companies rely on their financing to generate trust among shareholders and creditors in the companies' effort to maintain a sustained and profitable operation, followed by the distributed dividend. Considering the importance of profitability variables in financial planning, empirical analysis envisages that ROA is a positive and statistically significant factor of firm value which is consistent with the research of Oh et al. (2020), Diantimala et al. (2021), Salvi et al. (2021), Sisodia et al. (2021), Seth and Mahenthiran (2022) and Poretti and Heo (2022). However, the evaluation of ROE as a firm value determinant resulted in a statistically insignificant impact. As was to be anticipated, higher profitability establishes the foundation for advancements and tendencies in the observed European companies that are predictable, regulated, and sustainable over the course of several years, which is of crucial importance for investors trading in market investments. Given that the sampled businesses are categorized as a medium, large, and very large, the panel analysis findings indicate that firm size contributes positively and statistically significantly to company value as previously explored by Diantimala et al. (2021) and Salvi et al. (2021). Depending on its size, a company's capacity to achieve economies of scale, favorable negotiate terms, sustainable production, or provision of services due to long-term contracts, greater access to financial institutions, and reduced transaction fees as compared to small and startup companies may vary in favor of large corporations. Exactly such capacities and benefits that observed large European companies generate due to the high values of tangible and intangible assets, enhance the trust of stakeholders in the prospective high value of a company. Additionally, it was further confirmed that liquidity has a statistically significant negative effect on firm value. This outcome is supported by the principle of not permitting an excess of existing cash, which is perceived as a lost chance for investment or the accomplishment of expanded short objectives. Moreover, these results indicate that European enterprises should attempt to convert their short-

term obligations into long-term debts to alleviate the strain imposed by such obligations. Moreover, sales growth has a statistically insignificant positive impact on firm value. These results indicate that a high rate of increased growth might reflect the observed European companies' strong production or progress. Investors recognize a favorable signal from businesses, resulting in increased demand for the European companies' shares and a rise in the worth of the business. Finally, the obtained findings have shown that tangibility is a negative and statistically significant determinant of company value in line with the research of Sisodia et al. (2021). Given their long-term nature, fixed assets pose a challenge for a European corporation to be adaptable to business changes and turbulent market flows and trends.

The study comprises a couple of limitations, which may be seen as a suggestion for more investigation. It proves necessary to highlight that the sample contains enterprises from Western and Eastern Europe. In the future, research should be directed toward the investigation of the factors that determine firm value in individual European economies. Furthermore, a prospective analysis could target a particular sector. Additionally, it could be fundamental to compare company value determinants prior, and following the pandemic, to reveal the consequences of global disturbances. Also, future analysis may be devoted to investigating the impact of internal factors on the value of the company, which could be calculated using another market indicator. Any additional studies on this subject would extend to the primary conclusions of empirical analysis conducted in this paper. Awareness about the direction, strength, and significance of the influence of individual internal variables on the firm value provides a shortcut for the management and other responsible employees to the improvement of the mentioned categories with the aim of market value expansion. Other stakeholders opt to assess the results, since they could contribute to a clearer insight into the aspects to estimate future company value development prospects.

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