EUROPEAN BANKS' MERGERS AND ACQUISITIONS: RANK VALUE VS VALUE OF CASH AFTER THE COVID-19 PANDEMIC

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How to cite this paper: Kyriazopoulos, G. (2024). European banks' mergers and acquisitions: Rank value vs value of cash after the COVID-19 pandemic. *Risk Governance & Control: Financial Markets & Institutions, 14*(2), 88–98.
https://doi.org/10.22495/rgcv14i2p9

ISSN Online: 2077-4303
ISSN Print: 2077-429X

Received: 15.02.2024
Accepted: 31.05.2024

JEL Classification: G11, G21, G34
DOI: 10.22495/rgcv14i2p9

Abstract

Mergers and acquisitions (M&As) deals are one of the most important bank strategies that can change the bank's value and market share by achieving economies of scale. This paper studies mega M&As among European banks in 2023 and also examines how important is a number of crucial banking financial factors on the rank value including net debt and on value of cash in banks' M&As. This study aims to see if there is any influence first on rank value including net debt and second on the value of cash from the selected important financial banking ratios to explain M&As. The findings show that there is a statistically significant and similar correlation between the selected financial ratios and the rank value including net debt and the value of cash. The original contribution of this paper lies in the fact that for the first time after the COVID-19 pandemic, a study tries to find only for 2023, the existence of this correlation with two separate regression models to help bidder banks avoid the irrational acquisitions. Thus, the acquiring banks probably will be protected from financial failed future acquisitions.

Keywords: Mergers and Acquisitions, Investments, Banks

Authors' individual contribution: The Author is responsible for all the contributions to the paper according to CRediT (Contributor Roles Taxonomy) standards.

Declaration of conflicting interests: The Author declares that there is no conflict of interest.

Acknowledgements: The Author would like to thank the Associate Professor of the Mediterranean University of Crete, Greece, Dr. Christos Lemonakis who provided the Author with the data and reviewed the analysis.

1. INTRODUCTION

The importance of the European banking system lies in the significant role that banks have in the European economic policy especially in the Eurozone and also in countries with inefficient and emerging markets. As globalisation advances, and the Eurozone (EZ) countries increase reducing the exchange risk, European banks' expansions were expected to have greater activity in domestic as well as in foreign, but mainly inside the European area. Banks are becoming more and more competitive every day and for this reason, the trend of mergers and acquisitions (M&As) is increasing mainly in the developed and emerging markets of Europe, Asia, and America. Banks are gradually tending to operate with the holdings model and for this reason, they are carrying out M&As at a rapid pace. So, this study considers that it is important to estimate the relation between rank value and financial ratios.

It is also important to find out the correlation between the value of cash paid in M&As and the same financial ratios. Probably the bidder banks that have unlimited cash resources pay cash when their cash investments have low returns and of course lower than the return on equity (ROE) of the target. Then it is likely that the bidder banks would prefer to pay cash when they acquire another bank. Cash is cheaper than debt because interest rates on cash are lower than debt interest and for that, it is more attractive for the bidder bank to pay cash for a takeover. Cash is also less risky than debt because there's no chance the bidders might fail to raise sufficient funds from investors, or that the bidders might default. Another occasion is when cash is cheaper than the cost of equity so bidders are willing to pay cash rather than issue new shares in a capital increase. Cash is also less risky than new stocks because the bidders' share price could change dramatically once the acquisition is announced, mainly if the target has financial distress. In many cases, M&As can play an important role and have a profound influence in determining a bank's cash flow amount, either positively or negatively, depending on the transaction's specifics. M&As are strategic decisions taken by banks to expand or diversify their operations with the purpose to achieve economics of scales which they will lead to reduce cost such as eliminating duplicate departments or operations, which can increase profitability and cash reserves. Cash and cash equivalents being transferred of a bidder bank during M&As to takeover a target bank, is a crucial indicator of the financial soundness of the bidder bank. When a bank acquires another bank, it pays either with a substantial amount of cash or with stocks or incurs debt to finance an acquisition. This outflow of cash reduces the bidder bank's cash reserves and probably will lead to a negative cash flow in the short term. However, if the target bank is profitable, efficient and has generated positive cash flows for at least the last five years, it can improve the bidder bank's cash flow in the long term and maybe in the medium term. Of course, the expectation of the results will be negative concerning the cash reserve of the bidder bank if the target bank has financial distress. For instance, if the target bank has a large amount of red-bad loans, the acquiring bank will probably need to raise equity capital with cash and potentially build more provisions to deal with those red-bad loans.

In their study Eckbo et al. (1990) state that, "in perfect markets with symmetrically informed agents, the medium of exchange chosen to accomplish a corporate combination is economically irrelevant; the level and division of the merger induced gains are the same whether the transaction is executed by means of an all-cash offer or by some combination of cash and securities of the combined firm" (p. 653). They summarise the effect that the method of payment has on the acquisition transaction stating, "in an all-cash offer, the bidder bears the entire cost of overpayment since the payment is independent of the true value of the target ex post" (p. 654). A cash offer neatly resolves the valuation problem for acquirers who believe they are undervalued as well as for sellers uncertain of the acquiring company's true value (Rappaport & Sirower, 1999). Moreover, Rappaport and Sirower (1999) said that in cash transactions, acquiring shareholders take on the entire risk that the expected synergy value embedded in the acquisition premium will not materialize but in stock transactions, risk is shared with selling shareholders. They continued saying that in the stock deals, the risk of synergy is shared in proportion to the percentage of the combined company the acquiring and target shareholders each will own. According to Amel et al. (2004), M&As strategies enable banks to achieve diversification benefits and economics of scale by spreading their operations in domestic and cross-border areas. The study of Altunbas and Marques-Ibanez (2008) investigated banks in the European Union (EU) and found that they improved their performance when they were involved in M&As. The theories of M&As focus on improving shareholder value, thus increasing shareholder wealth, improving efficiency and profitability, and enhancing operational synergies and managerial incentives. Gattoufi et al. (2009) noticed that the companies involved in M&As activities have the expectation that after completing these processes they will achieve economies of scale and that they will improve their financial strength. So, they concluded that rational M&As probably would have a positive gain for both the acquirer and target and they would avoid a coming financial distress for both parties, especially for the targets. In their study, Lin and Chang (2013) declared that M&As are a feasible approach to the development of the financial industry. In his book, Poniachek (2019) declared that the survival and prosperity of any corporation over the long term depend on the company's ability to grow and develop through a process of investment, restructuring, and redeployment. The author also wrote that since the late 19th century, M&As have become an essential vehicle for corporate change, fuelled by synergies that could arise from the expansion of sales and earnings, reduction in cost, and lower taxes and cost of capital. M&As transactions, however, are complex and risky and are affected by the state business cycle, financial conditions, regulations, and technology. If the acquirer's shares are considered undervalued, management may prefer to pay for the acquisition with cash (Palmer, 2021). It is commonly believed that acquirers are typically the ones proposing the deal in the targets. On the contrary, the deals of M&As can be initiated by either bidders or targets. In their study, Xu et al. (2021) concluded that once the two-party banks are interested in participating in M&A, it is the information asymmetry between the acquirers and the targets that often makes it hard for the two-party banks to handle the deal value. This information asymmetry may occur from a bad financial analysis of the target, from a lack of knowledge of the target personnel's culture and from different law procedures and frameworks mainly in cross-border M&As.

A well-organized deal of banks M&As leads to rational processes and successful deals for both bidder and target banks and they can lead to several benefits for the acquirer bank such as economic of scale, compliance and avoiding potential regulatory fines or reputational damage, increasing profitability, improved customers' needs, enhanced risk management, improved competitiveness, increased market share and also improved financial soundness and decreased bankruptcy probability.

This study deals with the financial analysis part and tries to guide both parties of a merger and acquisition to rational financial decisions. So, it provides comparative information on the total number of mega bank deals, total net debt, and total values of cash in all types of markets of Europe in 2023. That mega bank deals of M&As concern either domestic or cross border only completed deals. It must be noted that there are not any studies showing the correlation between banking financial ratios and rank value including the net debt and between banking financial ratios and values of cash throughout 2023. During 2023 there were 28 completed mega European banks' acquisitions with a total targets' net debt of 18,8 billion euros and a total deal value of cash of 22,9 billion euros paid by the acquirer banks. This study provides some important insights both at theoretical and practical levels in business economics and financial management for future banks' acquisitions in Europe. First, its findings add to the body of a growing literature of acquisitions by examining them in 2023, meaning two years after the COVID-19 pandemic, and providing recent experience for banking economic movements in Europe. Second, this study demonstrates which specific financial ratios in bank acquisitions are more crucial to guide a decision for rational investments for banks. Thus, this research makes a particular contribution to the extant literature on this field and it could be used by bank boards for potential investments, and also by investment advisors. The contribution of this study lies in the existing literature by documenting the positive or negative degree of banks' financial ratios correlations with the rank value including net debt of the targets and the value of cash paid by the bidders to the target banks, comparing 28 mega European banks' acquisitions in 2023 and guiding bidders to rational acquisitions. The study mentions that there are not any important exactly similar studies of importance that deal with this issue in 2023. The first and second questions this study will try to answer next:

RQ1: Is there a statistically significant correlation between the dependent variables and the selected independent variables?

RQ2: Do the two dependent variables have the same consistent patterns in how the selected independent variables affected them?

The remainder of the paper is as follows. Section 2 reviews the literature. Section 3 presents the methodology that is used for this analysis. Section 4 presents the results and Section 5 provides a discussion about these results. Finally, the conclusions are followed in Section 6.

2. LITERATURE REVIEW

In this section, the most relevant bibliographic references for the study are recorded, since there is a scarcity of similar studies concerning directly the topic of the present study according to the research knowledge. The most relevant literature review of this paper is written in chronological order from the oldest to the newest. Travlos (1987) considering listed target firms observed that there was a positive valuation of M&As paid in cash and a negative one when they were paid with stocks. Faccio and Masulis (2005) showed that shareholders of the acquirers were more willing to pay cash in mega deals of M&As when they had a larger share of control rights. They also found a linear relationship between the probability of paying with cash and the share of control rights and observed that this relationship was cubic, indicating that for intermediate levels of ownership concentration, between 20% and 60%, the risk of losing control was higher. In their study, Boubakri et al. (2006) examined the value of deals in M&As and they included it as an explanatory variable along with the size of the company. The study of Boone et al. (2007) concluded that the selection of target banks involves the identification, valuation, and financial pre-screening of potential targets by the bidder's banks. A bank bidder's decision to initiate an acquisition and determine the value of cash is usually part of a broader consideration of strategic options, such as alliances or organic growth. Research on target banks' choices focuses on the bidder's perspective, although M&As were often initiated by target banks. In another study, Schoenmaker and van Laecke (2007), examined the role of several characteristics of the home country in cross-border banking M&As. They found that the level of M&As activity was related to the level of economic variables of the country, the banking concentration ratio, and the influence of economic integration within trading blocs, particularly among the EU countries. In his study, Dash (2010) gave the definition of M&As in the banking/corporate sector. He said that a merger is the combination of two or more banks/companies into a single entity. The new bank/company was created by the absorption of one bank/company into another or by the merging of two or more banks/companies into a new bank. He concluded that this event constitutes a strategic move aimed at achieving several benefits, including cost savings, increased market share, enhanced customer base, revenue growth, asset quality, capital adequacy, and improved financial soundness. He also defined an acquisition in the banking/firm sector as a transaction in which the bidder bank/firms took over the target bank for the same reasons of a merger or moreover for expansion, so as to achieve economics of scales with the bigger size. In this consolidation, the acquiring bank/firm took ownership of the assets, liabilities, and operations of the target bank/firm. In their study, Zhu et al. (2011) reported that the pre-acquisition performance of target firms is better when acquirers are foreigners. In contrast, the post-acquisition performance of target firms is better when acquirers are domestic firms. According to Damodaran (2012), there are a few reasons for the popularity of relative valuation methods of stocks in M&As and because they are quick, easy to implement, and easy to explain, they normally yield results, which were close to current market prices. Damodaran (2012) also said that the stocks are normally overpriced when the market overprices the comparable companies and vice versa. The study of Bartha et al. (2012) concluded that in M&As deals values are important to check how the foreign bidder banks are treated from host countries. Although the primary preference of the banks is internal growth, under today's competitive conditions, internal growth is inadequate for banks that have reached a certain

size and the domestic market is small as Arslan and Simsir (2013) reported in their study. On the contrary, Di Giuli (2013) argued that targets believe in the value creation of M&As and are therefore convinced that the long-run performance will exceed the temporary cost induced by overvalued acquirers' stocks. The results of the study conducted by Alexandridis et al. (2013) revealed that there were several reasons why buyers would pay a lower price, but also premiums to buy large-value target companies. One of these reasons was conflicting predictions about the correlation between the size of merger and acquisition deals and bid premiums, given the possibility of larger losses potentially arising from a high-value acquisition. The results of their study indicate that the acquisitions of large firms were carried out at a significant discount compared to the acquisitions of small firms. In addition, they said that the relationship between the size of the target firm and the returns earned by the acquiring firms was highlighted, and it was found that the losses for the acquiring firms increase as the size of the target firms increases, despite paying lower premiums to acquire them.

Makedon and Korneyev (2014) examined the problems of the calculation of corporate agreements including rank values and cash values paid in M&As, as well as the methods and other sources of their financing had been of particular scientific and social interest from the 20th century until today especially when M&As deals take place in financial crises. They concluded that the importance of these processes is due to the intense international competition, global loan markets, stock markets, and insurance services markets and of course, there were differences in deal value methods. Moreover, Feito-Ruiz et al. (2015) found that the lower costs associated with cash payment and the higher target shareholders' acceptance of this payment method may reduce the price paid for the target firm, increasing the acquiring shareholder gains. In this sense, M&As paid for with cash will be highly valued by acquiring shareholders in countries with weak legal and institutional quality. In their study, Abdou et al. (2016) examined M&As in Nigeria. Their results showed that there were significant differences between the pre- and the post-M&As financial performance of the overall market. They also had evidence that banks which merged were significantly different from those which were not. According to their findings, they assumed that other countries with developing banking systems may benefit from a period of consolidation and M&As activity, leading to greater strength in the institutions themselves and the underlying system.

The amount of deal value and the manner of payment of the corresponding price in M&As contracts is an important source of information for the shareholders of both the acquiring and the acquired company, while at the same time, it is pointed out that bidders using profits as a source of financing to achieve a deal use less debt and equity as claimed by Bates et al. (2018). In their study, Ang et al. (2019) revealed that rational borrowing capacity enhanced the value of acquirers. It also showed that there is a positive relationship between the improvement in debt capacity and abnormal market returns, but also the shareholdings buy-and-hold abnormal returns (BHARs) at 12–24 months after the takeover announcement for both underleveraged and overleveraged acquirers. They also noticed that their results indicate that the market might not realize the value-added of the acquirers' increased borrowing capacity in the short term until the acquirers gradually disclose their investment opportunities in the future, 12–24 months after the announcement, which these investments would be supported by financing.

Furthermore, Muhammad et al. (2019) studying the Pakistan banking system concluded that liquidity, profitability, and investment of the banks are positively and significantly impacted by M&As, and after rational deals the impact of aforesaid factors on profitability increased considerably. The results of Chen et al. (2020) indicated that the relation between cash holdings and M&As activity is more pronounced for firms with higher financial constraints. In their study, Klitzka et al. (2022) found that the reduction of information asymmetry between acquirers and targets increases the likelihood of stock payment. They also said that this method of payment implies that acquirers who intend to use their stocks to finance M&As should actively create transparency and the acquirers, and should not be concerned about negative market reactions. In the study about China's banking industry, Chen (2023) found that the price-to-earnings (P/E) ratio is important so the bank's earnings after taxes had to be positive. Chen (2023) also noticed that if the bank's earnings after taxes were negative, they could not be used for target and bidder banks' valuation in the comparison process in M&As. Adhikari et al. (2023) in their study concluded that all the liquidity ratios and leverage ratios of commercial banks involved in M&As as acquirers had improved significantly after the M&As except the ratio of non-performing loans to total loans.

3. METHODOLOGY

The purchase price of M&As is usually composed of the enterprise value (EV) defined in the share purchase agreement (SPA) which is the result of the bank's valuation, as well as the amount of cash & cash equivalents minus debt, plus/minus any other purchase price adjustments agreed between the bidder bank and the target bank in the closing day. The present empirical study utilizes two regression models. The selection of the specific regression models was based on regression theory to find significant statistical correlations between dependent and independent variables with small samples. Never in the past has a similar study been done which would help the present study in creating the same regression model. In this way, the present work is distinguished for its originality both in terms of the topic and in terms of the created regression model. The sample of the present study consists of 28 observations. These observations are all major takeovers between banks completed within 2023 through stock markets in Europe. In the first regression model, the dependent variable is the logarithm of the rank value including net debt of targets.

Rank value is calculated by subtracting the value of any liabilities assumed in a transaction from the transaction value and by adding the targets

net debt[1]. The rank value is defined as the amount paid by the acquirer bank for the target bank, including net debt, either published in the offer documentation or calculated as target short-term and long-term debt minus cash on the balance sheet and marketable securities. Transaction value is defined as the declared amount paid by the acquiror for the target (Dealogic, n.d.).

As the most common examples of net debt are considered some line items from the banks' balance sheets such as deposits, interest-bearing loans, bonds, notes payable, and other long-term debt like obligations and unpaid dividends are also treated as debt in the M&As. In the second regression model, the dependent variable is the logarithm of the value of cash. The independent variables that are used for both regression models are the same and they are the most common and important financial features in an evaluation of mergers and acquisitions.

$$Y_1 = a_1 + b * INDV1 + b * INDV2 + b * INDV3 + b * INDV4 + b * INDV5 + b * INDV6 + e_1 \quad (1)$$

where, Y_1: logarithm of the rank value including net debt of targets (*LDV1*).

$$Y_2 = a_1 + b * INDV1 + b * INDV2 + b * INDV3 + b * INDV4 + b * INDV5 + b * INDV6 + e_2 \quad (2)$$

where, Y_2: logarithm of the value of cash (*LDV2*).

The independent variables that are used for both models are:

- *INDV1*: ratio of offer price to earnings per share (Deev, 2011);
- *INDV2*: ratio of enterprise value to earnings before interest, taxes, depreciation, and amortization (EBITDA) (Maverick, 2022);
- *INDV3*: ratio of enterprise value to EBIT (Hayes 2021);
- *INDV4*: ratio of enterprise value to net assets (Dey, 2021);
- *INDV5*: ratio of enterprise value to net income (Fernando, 2024);
- *INDV6*: ratio of deal value excluding assumed liabilities to pre-tax income.

The first regression Model 1 has two hypotheses that are necessary to be explored, that is which assumption is valid and which is not.

$H1_0$: There is no statistically significant correlation between the selected financial features and the rank value including the net debt of targets and thus there is no influence of the selected financial features to the rank value including the net debt of targets.

H1: There is a statistically significant correlation between the selected financial features and the rank value including the net debt of targets and thus there is the same influence of the selected financial features to the rank value including the net debt of targets.

The second regression Model 2 has two hypotheses that they also need to investigate, that is which of them is true and which is not.

$H2_0$: There is no statistically significant correlation between the selected financial features and the value of the cash that is paid by the bidders and thus there is no influence of the selected financial features on the value of cash that is paid by the bidders.

H2: There is a statistically significant correlation between the selected financial features and the value of the cash that is paid by the bidders and thus there is the same influence of the selected financial features on the value of cash that is paid by the bidders.

The explanation of the mentioned financial features X_1–X_6 is described below:

INDV1: Ratio of offer price to earnings per share is a ratio for valuing a company/bank that measures its current share price relative to its earnings per share (EPS). This ratio is also sometimes defined as the price multiple or the earnings multiple. EPS or P/E ratio is used by investors and analysts to determine the relative value of a bank's or company's shares in an apples-to-apples comparison to others in the same sector. It can also be used to compare a company/bank against its own historical record or to compare aggregate markets against one another or over time (Fernando, 2024). EPS or P/E is a function of three variables — payout ratio, the cost of equity and the expected growth rates in earnings, and it depicts some specific characteristics for bank valuation revealed previously (Deev, 2011).

INDV2: Ratio of enterprise value (EV) to EBITDA ratio shows how much is each euro/dollar of EBITDA worth to investors. The EV/EBITDA ratio compares a company's/bank's enterprise value to its earnings before interest, taxes, depreciation, and amortization. This metric is widely used as a valuation tool. It compares the company's value, including debt and liabilities, to true cash earnings. Lower ratio values indicate that a company is undervalued (Maverick, 2022). EV gives an idea of how the market attributes value to a firm as a whole. EV is typically used when evaluating a company for a potential buyout or takeover. The equation is:

$$EV = MC + Total\ debt - C \quad (3)$$

where, *MC* = market capitalization (equal to the current stock price multiplied by the number of outstanding stock shares); *Total debt* = equal to the sum of short-term and long-term debt; and *C* = cash and cash equivalents (the liquid assets of a company, but may not include marketable securities). The EBITDA margin is a financial metric that measures a company's/bank's operating performance by dividing its earnings before interest, taxes, depreciation, and amortization by its total revenue (Chen, 2024). EBITDA stands for earnings before interest, taxes, depreciation, and amortization and is calculated before other factors, such as interest and taxes, are considered. It also excludes depreciation and amortization, which are non-cash expenses. Therefore, the metric can provide a clearer picture of the financial performance of a company. In some circumstances, it's used as an alternative to net income when evaluating a company's/bank profitability (Maverick, 2022).

[1] https://wallst.training/resources/SDC_Thomson_Trx_Value_Comparison.xls, retrieved on May 11, 2024.

So, the EBITDA margin is considered as an alternate measure of profitability to net income and calculates the ability of a bank to generate profits from its operations, regardless of its financing decisions or tax policies. It's important to note that the EBITDA margin of a bank before and after M&AS might change as a result of the integration of the two banks both target and bidder and the effects of their synergies (Chen, 2024).

INDV3: Ratio of enterprise value to EBIT is a shorthand for earnings before interest and taxes. It answers the question: "What is a company/bank being valued per each euro/dollar of EBIT?" A high (low) EV/EBIT mean the company is potentially overvalued (undervalued). EBIT is a financial ratio used to measure a company's/bank's earnings yield before interest and taxes, so the higher the EBIT, the better for an investor (Hayes, 2021).

INDV4: Ratio of enterprise value to net assets (EV to Assets) is a ratio that measures the value of the company/bank with respect to its total assets and is very helpful in comparing valuations of companies/banks across similar stocks in the sector (Dey, 2021).

INDV5: Ratio of enterprise value to net income answers the question: "What is a company/bank being valued per each euro/dollar of net income?" A high (low) EV/Earnings mean the company is potentially overvalued (Fernando, 2024).

INDV6: Ratio of deal value excluding assumed liabilities to pre-tax income answers the question of when a bidder company/bank will get back the net payment of the deal value according to the pre-tax income of the target. Because pre-tax earnings exclude taxes, this measure enables the intrinsic profitability of companies to be compared across industries or geographic regions where corporate taxes differ.

This sample of 28 observations is referred only for 2023 and this is another reason it is used a descriptive statistics analysis because, in a short time period, it helps to describe and understand the features of a specific data set by giving short summaries about the sample and measures of the data. It must be mentioned that the data was collected from DataStream.

In statistics, one of the most common ways that this study quantifies a relationship between two independent variables is by using the Pearson correlation coefficient. The Pearson correlation coefficient, "is the mathematical statistic for a population that provides us with a measurement of the strength of a linear relationship between the two variables" (Holmes et al., 2017, p. 553). It has a value between -1 and 1, where: 1) a perfectly negative linear correlation between two variables indicated by -1; 2) no linear correlation between two variables indicated by 0; and 3) a perfectly positive linear correlation between two independent variables indicated by 1. The values of the Pearson correlation coefficient between X and Y, defined by Profillidis and Botzoris (2019):

1) $r_{XY} = 1$, the dependent variable Y is perfectly correlated positively with the independent variable X.

2) $0.8 < r_{XY} < 1$, it testifies a strong positive correlation of the dependent variable Y with the independent variable X.

3) $0.3 < r_{XY} < 0.7$, it testifies a moderate positive correlation of the dependent variable Y with the independent variable X.

4) $0 < r_{XY} < 0.3$, it testifies a weak positive correlation of the dependent variable Y with the independent variable X.

5) $r_{XY} \approx 0$, what was considered as dependent variable Y does not have any kind of linear correlation with what was considered as independent variable X.

6) $0 < r_{XY} < -0.3$, it testifies a weak negative correlation of the dependent variable Y with the independent variable X.

7) $-0.3 < r_{XY} < -0.8$, it testifies a moderate negative correlation of the dependent variable Y with the independent variable X.

8) $-0.8 < r_{XY} < -1$, it testifies a strong negative correlation of the dependent variable Y with the independent variable X.

9) $r_{XY} = -1$, the dependent variable Y is perfectly correlated negatively with the independent variable X (Profillidis & Botzoris, 2019).

The paper uses cross-sectional analysis to extract its findings. Cross-sectional analysis is often used to evaluate the performance of investment opportunities using data points that are beyond the usual financial statement numbers. Scientific analysts apply a cross-sectional analysis to identify particular characteristics within a group of comparable organizations in order to produce better results. This type of analysis relies more on gathering meaningful data and information in an effort to understand the "what" rather than the "why". Also, cross-sector analysis shows an investor which is the best investment and with which sources to finance it based on the metrics (Chen, 2020).

4. RESULTS

In this section, the study presents the findings starting with a descriptive statistics analysis (including sample sizes, means, and standard deviations) in Table 1 as it is necessary as input for reproducing and confirming a study's results, as well as performing secondary analyses (Zientek & Thompson, 2009). Secondly, the statistically coefficient correlations among the used independent financial factors with a correlation matrix are calculated in Table 2 below. At last in Tables 3 and 4 the study presents the findings from the cross-section analysis with the use of EViews analyzing 28 rank values and value of cash in mega completed acquisitions through stock exchange markets among European banks during 2023. The data was collected from DataStream.

4.1. Descriptive statistics

Table 1 below presents the results of descriptive statistics for both the dependent and independent variables.

Table 1. Descriptive statistics

Variable/ratio	*Code*	*Obs. (number of deals)*	*Mean*	*Median*	*Max*	*Min*	*Std. dev.*
Dependent variables							
Y_1: Logarithm of the rank value including net debt of targets	*LDV1*	28	19.59	19.52	21.93	16.12	1.62
Y_2: Logarithm of the value of cash	*LDV2*	28	19.56	19.50	21.90	16.09	1.63
Independent variables							
Ratio of offer price to earnings per share (EPS)	*INDV1*	28	9.90	9.37	11.93	6.99	3.95
Ratio of enterprise value to EBITDA	*INDV2*	28	5.83	5.16	7.15	2.98	3.24
Ratio of enterprise value to EBIT	*INDV3*	28	5.91	5.82	8.17	3.48	2.62
Ratio of enterprise value to net assets	*INDV4*	28	14.94	14.32	18.51	13.77	41.91
Ratio of enterprise value to net income	*INDV5*	28	6.42	6.19	7.93	3.01	2.23
Ratio of deal value excluding assumed liabilities to pre-tax income	*INDV6*	28	4.36	4.02	6.78	2.87	2.34

As it is observed from the descriptive statistics analysis in Table 1 above the rank values as the dependent variable (*LDV1*) of the first regression model shows that only 19.59% of the bidder European banks pay to the European target banks the deal value including net debt. This fact is supported by the relatively small price of 1.62 of standard deviation. The deal values as the dependent variable (*LDV2*) of the second regression model shows that only 19.56% of the bidder European banks pay to the European target banks the deal value in cash, and this fact is supported by the relatively small price of 1.63 of standard deviation. The results presented in Table 1 from the descriptive statistics are a very good display of independent variables. It is important to notice the low values of the standard deviation of the five independent variables (*INDV1*, *INDV2*, *INDV3*, *INDV5*, and *INDV6*) because they are statistically significantly correlated with both of the dependent variables (*LDV1* & *LDV2*). The median value of the independent variable *INDV1* shows that the acquirers have an average offer EPS of 9.37 with a small range of deviations from the mean, as the low price of 3.95 of the standard deviation shows. The median value of the independent variable *INDV2* shows that the acquirers have an average of 5.16 with a small range of deviations from the mean, as the low price of 3.24 of the standard deviation shows. The median value of the independent variable *INDV3* shows that the acquirers have an average of 5.82 with a small range of deviations from the mean, as the low price of 2.62 of the standard deviation shows. The median value of the independent variable *INDV5* shows that the acquirers have an average of 6.19 with a small range of deviations from the mean, as the low price of 2.23 of the standard deviation shows. Finally, the median value of the independent variable *INDV6* shows that the acquirers have an average of 4.02 with a small range of deviations from the mean, as the low price of 2.34 of the standard deviation shows.

4.2. Correlation matrix for independent variables

The results of the statistical analysis of the present work as it is described above in Table 2 show that the selected financial ratios as the independent variables can be used for both regression models since there is not any forbidden correlation among them.

Table 2. Correlation matrix for independent variables

Variable code	*Variable description*	X_1	X_2	X_3	X_4	X_5	X_6
X_1	Ratio of offer price to earnings per share EPS (*INDV1*)	1					
X_2	Ratio of enterprise value to EBITDA (*INDV2*)	0.02	1				
X_3	Ratio of enterprise value to EBIT (*INDV3*)	0.06	0.13***	1			
X_4	Ratio of enterprise value to net assets (*INDV4*)	0.04	0.12	0.21	1		
X_5	Ratio of enterprise value to net income (*INDV5*)	0.07*	0.27**	0.26**	0.24	1	
X_6	Ratio of deal value excluding assumed liabilities to pre-tax income (*INDV6*)	0.14	0.07	0.03	0.16	0.02	1

*Note: ***, **, and * show statistically significant results at the 99%, the 95%, and the 90% level of confidence, respectively.*

According to the above theoretical framework of Pearson correlation, it can be noticed in Table 2 above which independent variables have a strong correlation with other independent variables and if they are statistically significant in the present study. So, Table 2 examines the correlation among the banking financial ratios that were used to this model and the findings show that there is no forbidden correlation between them because their values are below (0.80) and they can be used all for estimation of this model. Of course, there are some financial factors that are connected with statistically significant correlations. These statistically significant correlations of the most important selected financial factors seem perfectly reasonable based on what each one stands for. Those financial factors that are related with significant statistical correlation are: 1) *INDV1* has a statistically significant moderate positive correlation of 0.07* at the 90% level of confidence with *INDV5*; 2) *INDV2* has a statistically significant weak positive correlation of 0.13*** at the 99% level of confidence with *INDV3* and statistically significant weak positive correlation of 0.27** at the 95% level of confidence with *INDV5*; 3) *INDV3* has statistically significant weak positive correlation 0.26** at the 95% level of confidence with *INDV5*.

4.3. Cross-sectional analysis

Table 3 below presents the results of the cross-sectional analysis for the dependent variable *LDV1* and the six independent variables (*INDV1–INDV6*).

Table 3. Cross-sectional analysis for dependent variable rank value *LDV1*

Independent variable description	*Coefficient/(t-statistics)*
Ratio of offer price to earnings per share (*INDV1*)	-0.001* (-1.897)
Ratio of enterprise value to EBITDA (*INDV2*)	-0.545** (-2.353)
Ratio of enterprise value to EBIT (*INDV3*)	0.449*** (3.051)
Ratio of enterprise value to net assets (*INDV4*)	1.030 (1.520)
Ratio of enterprise value to net income (*INDV5*)	-0.111*** (-4.751)
Ratio of deal value excluding assumed liabilities to pre-tax income (*INDV6*)	0.125*** (6.460)
Constant term (e_i)	18.835*** (41.945)
N	28
F/critical value	19.215***/14
R-squared	0.6677
Adj R-squared	0.613
Durbin-Watson statistic	2.095

*Note: This table reports the results from the regression Model 1. Coefficients are reported and t-values are included in parentheses. ***, **, and * show statistically significant results at the 99%, the 95%, and the 90% level of confidence, respectively.*

In Table 3 above, it appears that five of the six selected independent variables have statistically significant correlation with the dependent variable *LDV1*. In more detail, it is observed that: 1) the independent variable *INDV1* has a statistically significant correlation at the 90% level of confidence and negative impact on the dependent variable *LDV1*, so this means that as the rank value increases, the percentage the EPS paid by the acquirer bank to the target bank to complete the acquisition decreases; 2) the independent variable *INDV2* has a statistically significant correlation at the 95% level of confidence and negative impact on the dependent variable *LDV1*, so this means that as the rank value increases, the ratio of enterprise value to EBITDA paid by the acquirer bank to the target bank to complete the acquisition decreases; 3) the independent variable *INDV3* has a statistically significant correlation at the 99% level of confidence and positive impact on the dependent variable *LDV1*, so this means that as the rank value increases, the ratio of enterprise value to EBIT paid by the acquirer bank to the target bank to complete the acquisition decreases; 4) the independent variable *INDV4* has no statistically significant correlation with the dependent variable *LDV1*; 5) the independent variable *INDV5* has a statistically significant correlation at the 99% level of confidence and negative impact on the dependent variable *LDV1*, so this means that as the rank value increases, the ratio of enterprise value to net income paid by the acquirer bank to the target bank to complete the acquisition decreases; and 6) the independent variable *INDV6* has a statistically significant correlation at the 99% level of confidence and positive impact on the dependent variable *LDV1*, so this means that as the rank value increases, the ratio of deal value excluding assumed liabilities to pre-tax income paid by the acquirer bank to the target bank to complete the acquisition increases. It is also can be noticed that the Durbin-Watson statistic has a value close to 2.095 allowing us to say that there is no autocorrelation detected in the sample. In addition, the regression model has a R-squared (R^2) equal to 66.77% indicating that the selected model interprets the largest portion of the variance of the deal size. This means that 33.23% of this sample behaviour is explained by other features. Moreover, the F-statistic is statistically significant and also its value is greater than the critical value which is 14 so the results of the study which means that the regression of the first regression model is overall significant.

Table 4 below presents the results of the cross-sectional analysis for the dependent variable *LDV2* and the six independent variables (*INDV1–INDV6*).

Table 4. Cross-sectional analysis for dependent variable value of cash *LDV2*

Independent variable description	*Coefficient/(t-statistics)*
Ratio of offer price to earnings per share (*INDV1*)	-0.001* (-1.881)
Ratio of enterprise value to EBITDA (*INDV2*)	-0.535** (-2.349)
Ratio of enterprise value to EBIT (*INDV3*)	0.445*** (3.050)
Ratio of enterprise value to net assets (*INDV4*)	1.028 (1.517)
Ratio of enterprise value to net income (*INDV5*)	-0.109*** (-4.746)
Ratio of deal value excluding assumed liabilities to pre-tax income (*INDV6*)	0.123*** (6.451)
Constant term (e_i)	18.804*** (41.938)
N	28
F/critical value	19.147***/14
R-squared	0.6621
Adj R-squared	0.601
Durbin-Watson statistic	2.062

*Note: This table reports the results from the regression Model 1. Coefficients are reported and t-values are included in parentheses. ***, **, and * show statistically significant results at the 99%, the 95%, and the 90% level of confidence, respectively.*

From Table 4 above it appears that five of the six selected independent variables have statistically significant correlation with the dependent variable *LDV2*. In more detail it is observed that: 1) the independent variable *INDV1* has a statistically significant correlation at the 90% level of confidence and negative impact on the dependent variable *LDV2*, so this means that as the rank value increases, the percentage the EPS paid by the acquirer bank to the target bank to complete the acquisition decreases; 2) the independent variable *INDV2* has a statistically significant correlation at the 95% level of confidence and negative impact on the dependent variable *LDV2*, so

this means that as the rank value increases, the ratio of enterprise value to EBITDA paid by the acquirer bank to the target bank to complete the acquisition decreases; 3) the independent variable *INDV3* has a statistically significant correlation at the 99% level of confidence and positive impact on the dependent variable *LDV2*, so this means that as the rank value increases, the ratio of enterprise value to EBIT paid by the acquirer bank to the target bank to complete the acquisition decreases; 4) the independent variable *INDV4* has no statistically significant correlation with the dependent variable *LDV2*; 5) the independent variable *INDV5* has a statistically significant correlation at the 99% level of confidence and negative impact on the dependent variable *LDV2*, so this means that as the rank value increases, the ratio of enterprise value to net income paid by the acquirer bank to the target bank to complete the acquisition decreases; and 6) the independent variable *INDV6* has a statistically significant correlation at the 99% level of confidence and positive impact on the dependent variable *LDV2*, so this means that as the rank value increases, the ratio of deal value excluding assumed liabilities to pre-tax income paid by the acquirer bank to the target bank to complete the acquisition increases. It also can be noticed that the Durbin-Watson statistic has a value close to 2.062 allowing us to say that there is no autocorrelation detected in the sample. In addition, the regression model has a R-squared (R^2) equal to 66.21% indicating that the selected model interprets the largest portion of the variance of the deal size. This means that 33.79% of this sample behaviour is explained by other features. Moreover, the F-statistics is statistically significant and also its value is greater than the critical value which is 14 so the results of the study which means that the regression of the first regression model is overall significant.

5. DISCUSSION

M&As of a banking system create banks that are more resilient, more sheltered and more experienced than any other occurrence of a financial crisis since financially strong banking institutions with a large market share also have a more diversified portfolio. Over the years there have been a lot of studies examining the importance of financial factors associated with bank M&As before the COVID-19 pandemic, but after the pandemic none of the studies concerned the year 2023 alone. These studies mainly utilized a time events methodology to examine whether there were statistically significant correlations between those financial factors with the bidder banks before and after M&As. These studies were trying to find out if the profitability and efficiency of the bidder banks increased. This effort tries to explain the relation of rank value including net debt and value of cash, with the selected crucial banking financial factors after the value of the deals completed. The rational, both domestic and cross-border mega M&As have facilitated the ability of banks everywhere to pursue their expansion goals and to achieve benefits such as economics of scales and better financial soundness. These important banking financial indicators are linked to the smooth and rational operation of banks. The rank value including the net debt of the buying banks is related to the amount of their buyout. The greater the debt that the buying banks have recorded, the lower the amount of their purchase. The ratios of EPS, enterprise value to EBITDA, enterprise value to EBIT, enterprise value to net income, and the ratio of deal value excluding assumed liabilities to pre-tax income as independent variables are particularly influential, each in their own way, on the two dependent variables logarithmic values of rank value including net debt and value of cash. While individual variables show significant relationships, the overall fit of the models is modest. This suggests that other unaccounted factors might also play a role in determining the logarithmic values of rank value and value of cash in such deals. Analyzing the regression results in the context of the specific variables provides an understanding of their relationships with *LDV1* and *LDV2*, which are logarithmic transformations of financial values related to business acquisitions or deals. The finding of the study lead to an assumption that for the first dependent variable *LDV1,* it has the following comments: 1) the *INDV1* independent variable has a statistically significant correlation at the conventional level of 10% with logarithm of the rank value including net debt of target (EUR). It has also a negative coefficient which suggests that as the ratio of offer price to earnings per share increases, the rank value including the net debt of the target (log-transformed) tends to decrease; 2) the *INDV2* variable has a significant negative impact on *LDV1*. A higher enterprise value relative to EBITDA correlates with a lower rank value including net debt, indicating that more expensive acquisitions (in terms of EBITDA) might lead to lower values when considering net debt. This also means that the bidders prefer to deal with smaller target banks; 3) The *INDV3* variable shows a significant positive relationship with *LDV1* and suggests that higher valuations of the target company in relation to its earnings before interest and taxes correlate with higher rank values including net debt; 4) the *INDV5* has also a significantly negative impact on *LDV1*, indicating that higher valuations in terms of net income are associated with lower rank values including net debt. This means that the lower the profitability of banks, the more likely they are to be acquired; 5) the *INDV6* shows a significantly positive impact, suggesting that higher ratios of the deal value excluding assumed liabilities to pre-tax income are associated with higher rank values including net debt. It must be mentioned that the exactly same comments also apply to the second dependent variable value of cash *LDV2* with its correlation with the five independent variables in this analysis. The relationships for *LDV2* are like those for *LDV1*, with the same signs and significance levels for the coefficients. This similarity suggests consistent patterns in how these financial ratios influence both the logarithm of the rank value including net debt and the logarithm of the value of cash in these deals.

6. CONCLUSION

The findings of the paper showed that the positive or negative statistically significant correlation between the important banking financial ratios and rank value including the net depth is the same

positive or negative statistically significant correlation between the same important banking financial ratios and the value of cash. It is pointed out that no exactly similar study has been carried out in such a recent past concerning mega M&As. The goals that concern the banks' financial improvement are mainly to increase shareholder value and create a stronger, more sustainable business bank model. The contribution of this work lies in guiding banks through mega M&As to improve their financial performance and help them achieve these goals. The study concludes that the bidder banks tend to focus on targeted acquisitions that concern mainly middle or smaller market banks and not so often larger other banks due to their size and the mighty problems that could occur such as the time of total absorption or stuff problems. From M&As of unjustified large deal value, the expected uptick in restructuring may lead to distressed M&As. The findings of the study concern only one year (2023), but two years after the COVID-19 pandemic and only for mega acquisitions among European banks that were completed. Finally, it must be marked that this study offers to the bidder banks more knowledge about their future bank targets, and thus they more efficiently can evaluate and certify the net debt and the values of deals, because mega bank acquisitions can have many benefits but also they can involve high risks and those risks should be carefully managed. The empirical part of this research can be a consultative and helpful tool for other banks planning to engage in a merger after the COVID-19 pandemic. Of course, different methodologies with different variables could possibly lead to different results on the examined topic and in the same time period. The examination of this topic of possible long-run effects for three or five years after the COVID-19 pandemic could lead on different results about rank value and the cash value in the completed acquisitions process. In the end, the study concluded that the impact of M&As on rank value including net depth and on value of cash paid is a complex procedure explained well by the results of two regression models. However, there are some limitations for the present study: the sample of the study includes all the listed European banks that were involved in completed M&As through stock exchange markets only in 2023. Also, there are other factors that can affect the two dependent variables according to the values of R^2. So, for future researchers, it is recommended to include the employees as an independent variable, since an important role in M&As not only for the smooth conduct of the integration process but also for the subsequent smooth running of the new bank, is played by the attitude of the targets and the bidders' employees. It is also proposed to future researchers to examine corporate governance as another independent variable since the crucial decisions about M&As' deals are made by the targets and the bidders' corporate governance.

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