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Empirical Research Study on the Determinants of Market Indicators for 41 Financial Institutions

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Abstract: Economic development must consider the evolution of the banking system in general, and the evolution of individual banks on capital markets in particular. As these financial institutions are catalysts for national economies and economic development, studying the main determinants of their market indicators is both timely and important. This research investigated the impact of various financial ratios on market indicators for a sample of 41 financial institutions during the period of Q4 2013–Q4 2021. The empirical results showed that market indicators were mainly influenced by ratios such as return on assets, total debt to assets ratio, and total debt to total capital. In light of these results, management teams in the banking system are called upon to monitor aspects related to bank revenue and bank performance with the purpose of obtaining solid market indicators and attracting potential stock market investors. Relevant policy implications regarding the market performance of listed financial institutions are also addressed.

Keywords: capital market; banking system; performance; financial system; financial institutions

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1. Introduction

The banking system is a fundamental element of any national economy because the financial resources provided to economic entities represent the lifeline of the business environment (af Jochnick 2022; Batrancea et al. 2009; Gobat 2022; Hartwell 2018; Hasan et al. 2014; Kenza and Eddine 2016; Moscviciov et al. 2010; Nguyen 2022; Petkovski and Kjosevski 2014).

As a general rule, bank loans support small, medium, and large business activities across the globe to expand their operations, innovate or update manufacturing facilities and processes, diversify products and services, digitalize, enter foreign markets, compensate employees, etc.

Besides relying on their regular operations meant to attract funds (e.g., granting of loans, managing clients' deposits, commission operations, currency exchange, bank transfers, import-export operations), banks can also enter stock markets to gather capital from potential investors. In these contexts, investors generally focus their attention on financial institutions that report high levels of financial performance and register solid market indicators such as earnings per share, price per share or dividend yield. The higher the values of such market indicators, the higher the chances of investors to gain financial benefits and be stimulated to perpetuate their investments (Blenman et al. 2010; Ritter et al. 1999; Silvia 2021).

In our view, banking institutions can be deemed as catalysts of economic activities and economic development (Abdunazarova and Christians 2014; Batrancea 2021; Haini 2020; Kindleberger 1984; McKinnon 2010). For this reason, conducting an investigation on the main factors that influence the market indicators of listed banking institutions is both timely and important for all market stakeholders.

This article presents empirical results analyzing the impact of different financial ratios on market indicators for a large sample of 41 major financial institutions. The

explanatory variables were selected based on relevant studies reported in the literature, in strict connection with the bank revenue and financial performance of the banking system. The financial institutions analyzed in our study were listed on the New York Stock Exchange (NYSE) and were selected in decreasing value of their market capitalization.

We focused on the period of Q4 2013–Q4 2021 because it comprised major economic changes that shaped the banking system after the struggle of the 2008 global financial crisis, such as a sovereign debt crisis within European banks, challenging recession periods, and an unprecedented pandemic and corresponding economic crisis.

The novelty of our research endeavor stems from the fact that the influence of the selected financial ratios on market indicators linked to earnings, capital gains, and share prices has been scarcely studied in the banking sector for the period in question. Hence, we contribute to the ongoing conversation reported in the literature with important insights from a large sample of banks that are active players in the capital market. The stock market on which these companies are traded is the biggest and the most relevant capital market at a global level, with a market capitalization exceeding 20 trillion USD.

Our economic estimations conducted via the panel first-difference generalized method of moments (GMM) indicated that market indicators such as earnings per share, price per share, dividend yield, and price to revenue from business activities were mainly shaped by financial ratios such as return on assets, total debt to assets ratio, and total debt to total capital. Starting from our empirical results, we concluded that managers of publicly listed financial institutions should keep an eye on indicators related to bank revenue and bank performance in the process of attaining solid market indicators and raise bank attractiveness in the eyes of potential investors.

The structure of our article is as follows. Section 2 delves into relevant studies reported in the literature concerning various determinants of market indicators. Section 3 provides details on the bank sample, period of analysis, variables of interest, research hypotheses, and general econometric model. Section 4 describes the empirical results corresponding to each econometric model. The last section comprises concluding remarks, policy implications, and future research directions.

2. Literature Review

The following paragraphs will consider insights from relevant studies that document the determinants of market indicators for the banking sector in general and for public banks in particular. This section will also emphasize the importance of studying determinants of market indicators, which are telling cues for people willing to invest in banking activities.

2.1. Earnings-per-Share- and Price-per-Share-Related Studies

For the question of the earnings per share financial (EPS) metric, de Wet (2013) conducted an interesting exploratory investigation regarding the benefits and shortcomings of EPS with data from three companies listed on the Johannesburg Stock Exchange.

Sumatri et al. (2021) focused on main determinants of bank profitability for financial institutions listed on the Indonesia Stock Exchange during the period of 2015–2019. Bank profitability was proxied by earnings per share, debt to equity ratio, and price to book value, while return on equity was regarded as a predictor. The authors concluded that the chosen predictor was relevant for shaping all of the profitability ratios.

Ariff et al. (2013) were interested in whether the price per share was influenced by the disclosures of unexpected accounting earnings and whether share price was correlated with bank risk factors in countries across Europe. According to their results, the impact of disclosures was significant. Moreover, risks concerning credit, price, exchange rate and solvency were highly correlated with share price.

Using data from 10 financial institutions listed on the Borsa Istanbul (BIST) during the period of 2007–2016, Saldanlı et al. (2017) investigated the main determinants of stock prices relevant for the Turkish banking industry. Econometric estimations indicated that

variables such as money supply, exchange rate, and the industrial production index were important predictors.

Chung and Ariff (2016) analyzed the impact of liquidity on non-bank share prices during the period of 1966–2012 in four Asian economies. Empirical results supported the idea that an increase in liquidity was followed by an increase in share prices when controlling for global financial crises, shifts in earnings, and shifts in political regimes.

With a particular interest in the Indonesia Stock Exchange, Mansyur et al. (2020) analyzed how variables such as capital structure, wealth structure, and financial structure shaped the bank share price during the period of 2014–2017 using financial performance as a mediating variable. Estimations using structure equation modelling indicated a positive relationship between wealth structure and share price, as well as a negative relationship between financial structure and share price.

Widjaja and Ariefianto (2022) focused on the influence of profitability, credit risk, and liquidity risk on share price for 21 financial institutions in Indonesia. The time frame considered was Q3 2006–Q3 2019. According to their results, bank profitability proxied by return on equity had a significant impact on share price. At the same time, risk factors did not affect the bank share price.

2.2. Dividend-Yield-Related Studies

Boldin and Leggett (1995) tackled the question of whether dividend policies signal the quality of a financial institution. Their research investigation reported the existence of a positive link between dividends per share and bank rating, as well as a negative link between the dividend payout ratio and bank rating.

Erman et al. (2020) investigated the degree to which payout policies of banks were shaped by the levels of deposit insurance. According to their results, the size of dividends was directly linked to the number of insured deposits. Hence, the more insured deposits a bank had, the higher the dividends paid.

Tripathy et al. (2021) analyzed a large sample of American banks during the period of 1986–2020 to test the relationship between dividend payout and the financial health status of the banks. They concluded that the relationship was positive and strong, especially in the period of 2007–2009 and in the case of banks registering a lower level of capital adequacy. Overall, the positive connection between dividends and financial health was identified in the case of both private and publicly traded financial institutions.

Based on data from 11 countries spanning 2010–2019, Trinh et al. (2022) examined the impact of dividend payout on the survival of financial institutions. The empirical results showed that banks willing to distribute larger dividends were more likely to survive in the long run. Nevertheless, when the size of dividends exceeded the maximum threshold, the bank's capacity to survive was threatened. The authors also showed that conventional banks were more likely to survive by paying larger dividends in comparison with financial institutions operating in an Islamic banking system.

Heba and Hegazy (2022) were mainly interested in the impact of dividend policies on stock returns and stock price risk. Using a sample of Indian economic entities, which were analyzed for the period of 1999–2018, the authors reported that increasing dividends generated higher stock returns, as investors projected more trust into the entities' performance capacities.

Grassetti et al. (2023) focused on studying the relationship between dividend policy and investors' expectations regarding future payments. The empirical results indicated that real economies are considerably affected by unusually high dividend payouts. At the same time, extremely low dividend payouts trigger economic instability. It is thus suggested to implement prudent dividend payout policies to mitigate such economic imbalances.

2.3. Price-to-Revenue-Related Studies

In the matter of the price-to-revenue ratio, the literature acknowledges interesting results. Namely, Sezgin (2010) examined the influence of stock return and dividend yield on

price-to-revenue for the period of 2000–2009, using data from the Istanbul Stock Exchange. With the help of Granger causality tests, cointegration tests, and error-correction models, the author concluded that the predictors had a significant influence on the outcome variable both in the short run and in the long run.

By means of a panel data analysis during the time span of 2007–2014, Tahir et al. (2017) focused on the determinants of the price-to-earnings ratio. Empirical results indicated that the phenomenon was mainly driven by dividend payout, company size, variability in market price, and market return.

Rahman and Shamsuddin (2019) analyzed how investor sentiment influenced the price to revenue ratio for G7 members (i.e., Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States). According to their empirical results, the price-to-revenue ratio substantially increased as investor sentiments improved.

Using data from listed economic entities in Pakistan during the period of 2009–2018, Muhammad (2022) investigated the impact of investor sentiment on market returns and firm performance, among other phenomena. As expected, the empirical results suggested that investor sentiment drove market returns and company performance to a great extent.

3. Materials and Methods

We present details regarding the bank sample, period of analysis, variables of interest, research hypotheses, and general form of the econometric model.

The sample included 41 banks (see Appendix A) that were traded on the New York Stock Exchange (NYSE). These financial institutions are important players of the regional banking systems and were selected in descending order of their market capitalization.

The period of analysis spanned the fourth quarter of 2013 until the fourth quarter of 2021. We chose this time span because it comprised years with relevant changes in the national and regional economies that were also experienced by banking systems. As a case in point, the selected period included the aftermath of the 2008 global financial crisis (i.e., the sovereign debt crisis across Europe affecting major financial institutions, economic recession and substantial economic challenges for national economies, the COVID-19 pandemic, and the subsequent economic downturn).

The set of independent variables included the following:

- *Free revenue* (*FRE*). The market indicator is computed as a ratio of the commission revenue to the total bank revenue;
- *Efficiency ratio* (*ER*). It is an indicator measuring bank profitability and it is computed by dividing operating bank expenditure and total bank revenue. It is also called the "cost–revenue ratio";
- *Return on assets* (*ROA*). The indicator is computed as a ratio of the net income to total bank assets;
- *Total debt to total assets* (*DAR*). The indicator is determined as a ratio of bank debt to total assets;
- *Total debt to total capital* (*DAC*). The indicator is computed as a ratio of bank debt to total bank capital;
- *Total debt to total equity* (*DTEQ*). The indicator is computed as a ratio of overall debt to total equity.

The set of dependent variables included the following:

- *Earnings per share* (*EPS*), computed as a ratio of net income to the average value of common stock. This indicator shows how much money a bank gains for each of its shares and it is generally used to estimate company value. The bigger the EPS, the bigger the bank value, which is a positive sign for potential investors;
- *Price per share* (*PPS*), computed as a ratio of market value per share to sales per share;
- *Dividend yield* (*DYIELD*), computed as a ratio of dividend to share price. It shows how much money a bank distributes to its shareholders after registering the net income;

- *Price-to-revenue from business activities* (*PRBA*), computed as a ratio of the share price to bank revenue. The indicator determines the total value investors place in a bank compared with the overall revenue generated by bank operations.

All financial indicators were computed based on data retrieved from the bank financial statements, which were available online.

The analysis methodology comprised descriptive statistics, correlation analyses, and panel data analyses with a first-difference generalized method of moments (GMM) estimator. Our choice for the GMM approach stemmed from the fact that it has a good control over the endogeneity of regressors, overidentifying restrictions and heteroscedasticity (Batrancea et al. 2022; Baum and Schaffer 2002; Kiviet et al. 2017; Li et al. 2021; Mehrhoff 2009; Roodman 2009).

As a first step, we had to opt between estimating the model with the cross-section fixed or cross-section random effects. In this regard, the Hausman test was the adequate solution. When the null hypothesis corresponding to this test is accepted, econometric results should be estimated with cross-section random effects. Contrariwise, the cross-section fixed effects are recommended.

In the case of our four econometric models, estimations revolved around earnings per share used cross-section fixed effects, while estimations related to price per share, dividend yield, and price to revenue from business activities used cross-section random effects.

To attain the aim of the present research study, we formulated the following four research hypotheses.

Hypothesis 1 (H1). There is a significant relationship between *EPS* and *ROA*, *FRE*, *ER*, *DAR*, *DAC*, and *DTEQ*.

Hypothesis 2 (H2). There is a significant relationship between *PPS* and *ROA*, *FRE*, *ER*, *DAR*, *DAC*, and *DTEQ*.

Hypothesis 3 (H3). There is a significant relationship between *DYIELD* and *ROA*, *FRE*, *ER*, *DAR*, *DAC*, and *DTEQ*.

Hypothesis 4 (H4). There is a significant relationship between *PRBA* and *ROA*, *FRE*, *ER*, *DAR*, *DAC*, and *DTEQ*.

The general form of the econometric model was as follows:

$$Y_{it} = b_0 + b_1 B_{1\ it} + b_2 B_{2it} + b_3 B_{3it} + b_4 B_{4it} + b_5 B_{5it} + b_6 B_{6it} + \delta_i + \varepsilon_{it}$$

where,

- Y indicates the dependent variables *EPS*, *PPS*, *DYIELD*, and *PRPS*;
- b_0 indicates the intercept of the econometric model;
- b_i indicates the coefficient of the independent variable;
- B indicates the independent variables *ROA*, *FRE*, *ER*, *DAR*, *DAC*, and *DTEQ*;
- i indicates the bank activity, taking values from 1 to 41;
- t indicates the time span taken into consideration, taking values from 1 to 33 (Q4 2013−Q4 2021);
- δ_i indicates the fixed effects controlling for bank-specific factors, regardless of the time;
- ε_{it} indicates the error term.

Statistical analyses were carried out with the statistical software EViews version 10.

4. Results

The following paragraphs detail the different types of analyses (descriptive statistics, correlations, and first-difference GMM), estimated results, and the degree to which the research hypotheses were supported.

4.1. Central Tendency and Variation Analysis

Based on the data from Table 1, it can be noted that the variables DTEQ, PPS, and DYIELD registered the highest volatility, as indicated by the standard deviation. The variable ROA registered the lowest volatility. According to skewness values, eight variables were skewed to the right, while two variables were skewed to the left. According to the kurtosis values, we concluded that nine variables had a leptokurtic distribution (values above 3) and one variable had a playkurtic distribution.

Table 1. Descriptive statistics.

	EPS	PPS	DYIELD	PRBA	ROA	FRE	ER	DAR	DAC	DTEQ
Mean	13.7866	18.0757	2.4627	3.0729	0.7329	28.3894	58.8188	14.1705	51.1975	211.9303
Median	10.9500	9.54500	1.2700	2.3500	0.5600	27.6500	54.8650	9.6500	54.1200	117.9500
Maximum	551.7400	591.000	344.200	37.6500	10.9800	282.7400	376.4600	87.2300	96.6200	2856.310
Minimum	−147.4600	0.3800	−0.0400	−1.7200	−9.0400	−183.9600	−46.8100	0.0000	0.0000	0.0000
Standard deviation	30.3079	34.1610	10.4335	2.9410	1.363783	22.3140	29.1603	13.4924	26.1072	254.4855
Skewness	12.21751	9.9036	29.8603	4.7901	1.403695	−0.1449	3.3131	1.8246	−0.3369	2.5591
Kurtosis	188.2414	144.9629	973.5113	40.9477	19.74788	38.2419	27.3048	6.7315	2.1249	15.2076
Jarque-Bera test	1,507,011 ***	1,054,683 ***	46,682,027 ***	73,462.89 ***	13,793.84 ***	59,050.53 ***	30,039.04 ***	1313.212 ***	61.3483 ***	8812.106 ***
Observations	1036	1232	1185	1151	1148	1141	1136	1157	1207	1207

Note: The symbol *** denotes statistical significance at the 1% level.

We investigated the distribution of our variables by running the Jarque–Bera test. As the theory states, data are normally distributed when the null hypothesis is accepted. In the case of our data, the results showed that data were not normally distributed at the 1% level of significance.

4.2. Correlation Analysis

We also conducted a correlation analysis to control for potential multicollinearity biases among the estimated results. Table 2 displays the results of this analysis.

Table 2. Correlation analysis results.

	PPS	DYELD	EPS	PRBA	ROA	FRE	ER	DAR	DAC	DTEQ
PPS	1									
DYELD	−0.087	1								
EPS	0.007	−0.081	1							
PRBA	0.149	−0.088	−0.091	1						
ROA	0.059	−0.005	−0.098	0.229	1					
FRE	−0.017	0.021	0.048	−0.010	0.081	1				
ER	−0.014	0.069	0.138	−0.269	−0.321 *	0.069	1			
DAR	−0.114	0.123	0.057	0.156	0.309 *	0.075	−0.205	1		
DAC	−0.109	0.072	0.102	−0.097	−0.118	−0.023	−0.017	0.695 ***	1	
DTEQ	−0.113	0.124	0.074	0.125	−0.176	−0.098	−0.100	0.758 ***	0.811 ***	1

Note: The symbols *, *** indicated statistical significance at the 10% and 1% levels.

Table 2 indicates that the biggest correlations were registered between the independent variables DAR and DTEQ, followed by DAR and DAC. At the same time, the lowest correlation was reported between the variables ROA and DAR. Based on the literature,

as none of the correlations exceeded the threshold of 0.9, we concluded that there was no multicollinearity risk for our estimated results. Nevertheless, to support this conclusion, we also determined the values of the variance inflation factor (see Table 3). The VIF results, which were below the recommended threshold of 10, strengthened the belief that the estimated results were unbiased and reliable.

Table 3. Econometric models for the dependent variable earnings per share, price per share, dividend yield, and price to revenue from business activity.

	VIF	Model EPS	VIF	Model PPS	VIF	Model DYELD	VIF	Model PRBA
EPS (−1)	-	0.3197 *** (71.9324)	-	-	-	-	-	-
PPS (−1)	-	-	-	0.8179 *** (29931.55)	-	-	-	-
DYELD (−1)	-	-	-	-	-	0.0666 *** (190.6504)	-	-
PRBA (−1)	-	-	-	-	-	-	-	0.8142 *** (578.2638)
ROA	2.1172	−3.7960 *** (−6.4903)	1.9334	1.0984 *** (388.1346)	1.9568	0.5345 *** (34.6964)	1.9572	−0.0857 *** (−3.1157)
FRE	1.0881	−0.0069 (−0.8692)	1.0691	−0.0049 *** (−12.5366)	1.0698	0.0037 *** (13.4544)	1.0693	0.0014 (0.7114)
ER	1.1769	0.0245 *** (2.3521)	1.3445	−0.0458 *** (−624.1559)	1.3461	−0.0019 *** (−54.5567)	1.3466	−0.0009 *** (−4.3657)
DAR	4.8936	3.8023 *** (25.4824)	3.9943	−0.1335 *** (−33.5042)	4.0063	−0.0618 *** (−18.3909)	4.0659	−0.0727 *** (−11.9621)
DAC	3.1539	−0.7019 ** (−13.6999)	2.8727	−0.0686 *** (−52.9559)	2.8545	0.0013 *** (7.1877)	2.8839	0.0123 *** (9.3556)
DTEQ	5.6317	−0.0587 (−9.9267)	5.2356	0.0089 *** (13.5972)	5.1993	0.0039 *** (22.4063)	5.2352	0.0042 *** (5.8074)
Chi-square statistic	-	56.9182	-	10.2652	-	1.7166	-	7.5249
Probability	-	0.0000	-	0.1139	-	0.9438	-	0.2750
Cross-section effects	-	Fixed	-	Random	-	Random	-	Random
White period standard errors and covariance (d.f. corrected)	-	Yes	-	Yes	-	Yes	-	Yes
Hansen *J*-statistic	-	25.9563	-	15.6753	-	18.3291	-	23.7478
Prob(*J*-statistic)	-	0.3554	-	0.9853	-	0.8635	-	0.5904
AR(1)	-	0.1510	-	0.2945	-	0.3040	-	0.4361
AR(2)	-	0.3291	-	0.2055	-	0.4662	-	0.5073
Observations	-	668	-	855	-	807	-	843
Instrument rank	-	31	-	37	-	33	-	33

Note: The symbols *** and ** indicate statistical significance at the 1% and 5% levels, respectively. Robust *t*-statistics are indicated in parentheses. The White test did not support the null hypothesis of heteroscedasticity. The GMM estimator was examined via the Arellano–Bond test for AR(2): results indicated that models presented no second-order serial correlations and it supported the validity of instruments. In addition, the Hansen *J*-statistic for over-identifying restrictions was not significant (see *p*-values). We thus concluded that all econometric models passed the test of significance and robustness.

4.3. Econometric Modeling

Table 3 displays the estimated results corresponding to our four econometric models (one for every research hypothesis). As stated before, the VIF values did not identify any multicollinearity issues. In addition, the White test rejected the null hypothesis of heteroscedasticity.

According to the first econometric model estimating the evolution of EPS, one could notice that the impact of the variables ROA, ER, DAR, and DAC was significant. In this sense, when ROA and DAC improved by one percentage point, earnings per share decreased by 3.80 and 0.7 percentage points, respectively. At the same time, should ER and DAR improve by one percentage point, earnings per share would augment by 0.03 and 3.8 percentage points. Overall, based on the *J*-statistic values ($J = 25.96$; $p = 0.355$) and the Arellano–Bond tests for AR(1) and AR(2), it can be stated that the combined effect of the independent variables was statistically significant and that the econometric model is valid. Therefore, we concluded that our first research hypothesis was supported.

The second econometric model investigating the evolution of price per share under the impact of the independent variables implied the following. All predictors played a relevant part in this evolution: when ROA and DTEQ increased by 1%, the price per share increased by 1.09% and 0.01%, respectively. The other predictors had a negative impact, namely when FRE, ER, DAR, and DAC registered an ascending trend, PPS decreased by 0.001%, 0.05%, 0.13%, and 0.07%, respectively. The *J*-statistic values ($J = 15.68$; $p = 0.985$) and the Arellano–Bond tests for AR(1) and AR(2) suggested that the combined effect of all predictors was statistically significant and that the econometric model was valid. Therefore, we concluded that our second research hypothesis was supported.

As indicated by the estimations of the third econometric model centered around dividend yield, all of the independent variables exerted a significant influence on the phenomenon. Hence, when ROA, FRE, DAC, and DTEQ improved by 1%, the dividend yield was augmented by 0.53%, 0.004%, and 0.001%, respectively. At the same time, should ER and DAR record an increase of 1%, the phenomenon would decrease by 0.001% and 0.06%, respectively. Starting from the *J*-statistic values ($J = 18.33$; $p = 0.8635$) and the Arellano–Bond tests for AR(1) and AR(2), we concluded that the overall effect of all independent variables was statistically significant. Hence, the proposed econometric model was valid, which supported our third research hypothesis.

Last, but not least, we also investigated the evolution of price to revenue from business activities for our 41-bank sample, under the impact of the same predictors. The econometric estimations indicated that five out of the six predictors played a relevant part in this evolution. That is, should ROA, ER, and DAR register a positive trend, the phenomenon PRBA would decrease by 0.09%, 0.0009%, and 0.07%, respectively. At the same time, if the independent variables DAC and DTEQ improved by one unit, then PRBA increased by 0.01% and 0.004%, respectively. The *J*-statistic results ($J = 23.75$; $p = 0.5904$) and the Arellano–Bond tests for AR(1) and AR(2) indicated that the total impact of all predictors was statistically significant. Therefore, our econometric model was valid and supported the fourth research hypothesis.

5. Conclusions

Hendrith Smith, a renowned American banker and real estate investment professional stated that "a healthy banking system is one of the vital parts of a nation's foundation". Considering the importance of financial institutions for national economies and business activities, we focused on investigating the degree to which relevant market indicators would be impacted by financial ratios built around banking revenue and performance. Moreover, as stock markets are dynamic environments, running such an investigation across several years was sensible and necessary.

The present research article analyzed the main determinants of market indicators for a sample of 41 financial institutions during the time span of Q4 2013−Q4 2021. The rationale for conducting this longitudinal study stemmed from the need to analyze the

market performance of important banks that were traded on the New York Stock Exchange during a period with multiple economic challenges.

The methodology of analysis comprised descriptive statistics, correlation analysis, and panel first-difference generalized method of moments. Our predictors were free revenue, the cost–revenue ratio, return on assets, total debt to total assets, total debt to total capital, and total debt to total equity. The set of market indicators comprised earnings per share, price per share, dividend yield, and price to revenue from business activities.

For the purpose of this study, we estimated four econometric models, each corresponding to one market indicator mentioned above. According to our empirical results, the predictors that played the most important role for earnings per share and price per share were return on assets, total debt to total assets, and total debt to total capital. In the case of dividend yield, the significant predictors were mainly return on assets and total debt to total assets. Last, but not least, the price to revenue from business activities was again considerably influenced by return on assets and total debt to total assets.

A series of important policy implications can be listed based on our results, which serve all the stakeholders of the banking sector. In the first place, as earnings per share increased considerably when the total debt to total assets was augmented, managers could aim to improve bank value by gradually increasing debt exposure, while maintaining it as relatively safe. In the second place, as ROA had the biggest influence on price per share, bank managers are encouraged to continue investing in profitable bank assets that secure financial performance (e.g., loans to medium and large businesses, security investments, loans to individuals, expanding their network with opening new bank branches, and investing in digitalization). In the third place, for banks with high levels of return on asset ratios that increased their dividend payout, financial institutions should diversify their asset portfolios to stir the interest of more and more investors. In this context, a growing bank network signals financial strength, performance, and successful managerial strategy, which are important criteria for businesspeople shopping for a lucrative investment. In the fourth place, the efforts for boosting return on assets ratios should be carefully considered so they do not mitigate the price to revenue metric to a large extent.

Our research study entails some limitations. First, the sample included 41 financial institutions listed on the NYSE. Future studies could focus on expanding the sample by comprising banks traded on other stock exchanges. Second, the time frame included eight years of trading activity. Other endeavors could test our empirical models on various decades and report other important insights for the banking sector. Furthermore, studies could also analyze how the proposed relationships were impacted by major economic crises in recent decades. Third, the set of predictors focused on financial indicators related to bank revenue and bank performance. Future studies could focus on investigating the evolution of market indicators under the impact of other variables, including macroeconomic ones.

All in all, our empirical results provide important insights for investors willing to expand their portfolios by owning bank stocks in the long run. At the same time, managers of listed financial institutions should supervise revenue-related variables and performance-related variables, which were shown to determine the level of market indicators.

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Abbreviations

The following abbreviations were used in this manuscript:

DAC	Total debt to total capital
DAR	Total debt to total assets
DTEQ	Total debt to total equity
DYIELD	Dividend yield
EPS	Earnings per share
ER	Efficiency ratio
FRE	Free revenue
GMM	Generalized method of moments
PPS	Price per share
PRBA	Price to revenue from business activities
ROA	Return on assets
VIF	Variance inflation factor

Appendix A

The sample of financial institutions included the following banks: ABN Amro, Aib Group, Banca Generali, Banca Popolare Di Sondrio, Banca Transilvania, Bano BPI, Bank Millennium, Bank Norwegian, Bank of Ireland Group, Bankinter, BankNordik, BNP Paribas, Commerzbank, Credit Agricole, Danske Bank, Credit Suisse Group, Deutsche Bank, Erste Group Bank, Eurobank Ergasias Services and Holdings, Israel Discount, Svenska Handelsbanken, HSBC Holdings, ING Bank Slaski, Intesa Sanpaolo, JT Banka, Kbc Groep, Lloyds Banking Group, Mizrahi Tefahot Bank, National Bank of Greece, Natwest Group, Nordea Bank, Nordjyske Bank, Oberbank, Powszechna Kasa Oszczednosci Bank Polski, Raiffeisen Bank International, Santander Bank Polska, Banco Santander, Société Générale, S Immo, Swedbank, UBS Group.

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