

Valuation Ratios and Profitability as Predictors of High Returns: Evidence from the Taiwan Stock Market

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ABSTRACT: This study investigates the financial determinants of high stock returns, defined as quarterly returns exceeding 20%, in the Taiwan equity market. Using binary logistic regression models, we assess the predictive power of valuation ratios (P/E, P/B, and P/S) and profitability (ROE), under both contemporaneous and one-period lagged specifications.

The empirical results reveal that ROE is a consistently strong predictor, with odds ratios indicating a 1–3% increase in the likelihood of high returns per unit increase in profitability. The P/B ratio also shows statistically significant and economically meaningful effects in contemporaneous models, but its predictive value weakens in lagged models. In contrast, the P/E and P/S ratios provide little forward-looking information, especially when lagged.

Industry classification, as captured by a dummy variable for electronics firms (ELEC), adds explanatory power, with odds ratios suggesting that electronics firms are significantly more likely to deliver high returns. Overall, the findings emphasize the superior predictive value of profitability over valuation ratios in identifying near-term outperformers.

KEYWORDS: stock return, logistic regression, valuation ratios, ROE, P/B, Taiwan market, high-return prediction

INTRODUCTION

Accurately identifying stocks with the potential to outperform the market has long been a central concern for both academics and practitioners in finance. Among the multitude of factors that influence stock performance, profitability indicators such as return on equity (ROE) and valuation ratios like the price-to-earnings (P/E), price-to-book (P/B), and price-to-sales (P/S) ratios have consistently emerged as important predictors in asset pricing models and investment strategies. According to Fama and French (1992), valuation ratios—particularly book-to-market ratios—play a pivotal role in explaining cross-sectional differences in stock returns. Further research has shown that high profitability, as measured by ROE or return on assets (ROA), is positively associated with future stock returns (Novy-Marx, 2013). These findings support the notion that profitable firms may signal better investment opportunities or more efficient use of capital.

Recent empirical studies have extended this analysis into global and emerging markets, including Asia. Chen, Hsu, and Huang (2019) demonstrated that combining valuation metrics with profitability measures can enhance the predictive power of stock selection models in Taiwan's stock market. Given the unique characteristics of the Taiwanese capital market—such as its high retail participation and industrial concentration—further exploration into the effectiveness of

these indicators in forecasting outperforming stocks is warranted.

This study aims to examine whether a combination of valuation and profitability indicators can effectively predict “High-Return” stocks, defined as those with quarterly returns exceeding 20%. Using logistic regression and a dataset covering listed companies in Taiwan, we evaluate the relative contribution of P/E, P/B, P/S, and ROE in identifying high-performing stocks. Additionally, we investigate whether industry affiliation, particularly membership in the electronics industry, moderates these relationships.

LITERATURE REVIEW

Previous studies have extensively examined the relationship between firm-specific financial indicators and stock return performance. Classic valuation ratios, such as P/E, P/B, and P/S, have been central to asset pricing models and equity selection strategies. Fama and French (1992) introduced the three-factor model, emphasizing the significance of value indicators like book-to-market ratios in explaining stock returns. Their findings suggest that firms with low P/B ratios (value stocks) often yield superior long-term returns.

Similarly, Lakonishok, Shleifer, and Vishny (1994) argued that value strategies based on financial ratios such as P/E and P/B outperform growth strategies because they exploit behavioral biases in the market. Barber and Lyon (1997) also

demonstrated that firms with low valuation multiples tend to experience positive abnormal returns in post-announcement windows.

Profitability indicators, especially ROE, have gained attention in recent literature. Novy-Marx (2013) proposed profitability as a critical factor in explaining the cross-section of expected returns, noting that profitable firms tend to outperform less profitable peers. Penman and Reggiani (2013) further showed that combining accounting fundamentals like ROE with valuation metrics improves predictability in stock selection.

In the context of short-term return anomalies, Jegadeesh and Titman (1993) highlighted the momentum effect, wherein stocks with high past returns tend to continue performing well in the near future. However, few studies have directly explored the probability of achieving exceptional positive quarterly returns, such as the “High>Returns” group defined in this study.

Recent empirical works have also considered sector effects. For instance, Bali, Cakici, and Whitelaw (2011) suggested that industry-specific risk and growth characteristics might mediate the relationship between valuation ratios and returns. As such, incorporating control variables like ELEC (Electronics industry classification) can help disentangle firm-specific effects from broader sectoral influences. This study builds on the above literature by combining multiple valuation and profitability metrics into a predictive logistic model for stocks with exceptional short-term returns. It also contributes to the field by explicitly considering sectoral adjustments and offering updated empirical evidence using recent data from Taiwan’s listed firms.

METHODOLOGY

This study adopts a quantitative research design, employing binary logistic regression to examine whether key profitability and valuation indicators can predict the likelihood of a stock achieving an exceptionally high return in the Taiwanese market. The dependent variable is a binary classification: stocks with quarterly returns exceeding 20% are designated as “High Return” (coded as 1), while all others are coded as 0. This transformation enables the use of binomial logistic regression to model the probability of exceptional outperformance.

Data Collection and Sample

The dataset comprises quarterly financial and stock return data for firms listed on the Taiwan Stock Exchange (TWSE) and Over-The-Counter (OTC) markets from 2019 to 2024. The observation period spans significant economic phases, including the pre- and post-COVID-19 periods, thereby offering a comprehensive view of different market conditions. The final panel includes 22,494 firm-quarter observations after data filtering and cleaning.

To ensure data quality, firms with missing or exceptional values were excluded. In particular, only firms with price-to-

earnings (P/E) ratios ranging between -100 and 500 were retained, eliminating uninformative outliers while preserving loss-making firms with bounded valuation metrics.

The key explanatory variables include three valuation ratios—price-to-earnings (P/E), price-to-book (P/B), and price-to-sales (P/S)—as well as return on equity (ROE), which serves as a measure of profitability. To control for industry effects, a binary dummy variable labeled ELEC is introduced, equal to 1 for firms in the electronics industry and 0 otherwise. The regression models are estimated both with and without this industry control to evaluate robustness across sectors.

Variables

- **Dependent Variable:**
 - *High Return*: A binary variable indicating whether the stock had a quarterly return greater than 20%.
- **Independent Variables:**
 - *P/E*: Price-to-Earnings ratio
 - *P/B*: Price-to-Book ratio
 - *P/S*: Price-to-Sales ratio
 - *ROE*: Return on Equity
 - *ELEC*: A dummy variable indicating whether a firm belongs to the Electronics industry (included in extended models)

Model Specification

Model Specification

The logistic regression model is defined as:

$$\log(P(Y = 1) / (1 - P(Y = 1))) = \beta_0 + \beta_1 P/E + \beta_2 P/B + \beta_3 P/S + \beta_4 ROE + \beta_5 ELEC$$

Where:

- $P(Y = 1)$ is the probability of a stock being classified as “High Return”
- β_i are the estimated coefficients

Two model variants were estimated: 1. Base Model: Includes P/E, P/B, P/S, and ROE

2. Extended Model: Adds the industry dummy variable ELEC

Estimation and Significance

Model estimation was performed using the `glm()` function in R, with the binomial family. Odds ratios were calculated by exponentiating the estimated coefficients. Statistical significance was assessed at 1%, 5%, and 10% levels.

Model Evaluation

Model fit was evaluated using the Akaike Information Criterion (AIC), where a lower AIC value indicates better model performance. Comparative analysis of models with and without ELEC was conducted to determine whether industry affiliation significantly improves predictive power.

EMPIRICAL RESULTS

A binary logistic regression was conducted to investigate the determinants of high stock returns. The contemporaneous results (Tables 1 and 2) show that the P/E ratio is positively and significantly associated with high return probability,

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though its economic effect remains modest. The odds ratio for P/E is approximately 1.002, indicating that each unit increase in P/E leads to a 0.2% increase in the odds of a stock achieving high quarterly returns, all else equal. While statistically significant, this small effect size suggests limited practical predictive value.

The P/B ratio exhibits stronger statistical and economic relevance. The odds ratio is about 1.18, meaning each one-unit increase in the P/B ratio raises the odds of high returns by 18%, highlighting investor valuation sentiment. Similarly, ROE shows robust predictive power, with odds ratios near 1.03, implying that a one-point increase in profitability corresponds to a 3% increase in the probability of high performance.

The P/S ratio remains statistically insignificant across specifications, with odds ratios close to 1.00, suggesting that sales-based valuation offers little explanatory value for predicting near-term stock outperformance.

When controlling for industry classification (ELEC), the model fit improves slightly, and the positive effects of P/B and ROE remain consistent. Notably, firms in the electronics sector show a significantly higher probability of achieving high returns, with the ELEC dummy having an odds ratio around 1.58, suggesting that these firms are 58% more likely to experience strong returns compared to non-electronics firms, controlling for financial fundamentals.

Table1: Logistic Regression for Predicting High Quarterly Stock Returns Without Industry Control (Same-Period Independent Variables)

Variable	Coef.	Std.Err.	P-value	Significance	Odds Ratio
Intercept	-2.308283	0.032833	0.0e+00	***	0.099432
Q("P/E")	0.002224	0.000382	5.9e-09	***	1.002227
Q("P/B")	0.183666	0.009013	2.6e-92	***	1.201614
Q("P/S")	-9.8e-05	0.000683	0.885938		0.999902
ROE	0.02247	0.002474	1.1e-19	***	1.022725

Table2: Logistic Regression for Predicting High Quarterly Stock Returns With Industry Control (Same-Period Independent Variables)

Variable	Coef.	Std.Err.	P-value	Significance	Odds Ratio
Intercept	-2.482147	0.037135	0.0e+00	***	0.083564
Q("P/E")	0.002399	0.000382	3.2e-10	***	1.002402
Q("P/B")	0.171284	0.009095	4.1e-79	***	1.186828
Q("P/S")	9.8e-05	0.000619	0.873600		1.000098
ROE	0.026984	0.002578	1.2e-25	***	1.027351
ELEC	0.45728	0.039879	1.9e-30	***	1.579771

The lagged model results (Tables 3 and 4) suggest a generally weaker relationship compared to same-period models. Among all predictors, ROE_lag remains statistically significant in both model specifications, indicating that higher profitability in the prior quarter increases the

likelihood of achieving high stock returns. Specifically, the odds ratio for ROE_lag is approximately 1.026, suggesting that for every one-unit increase in lagged ROE, the odds of a stock achieving high quarterly returns increase by 2.6%, holding other variables constant.

Table3: Logistic Regression for Predicting High Quarterly Stock Returns Without Industry Control (Lagged Independent Variables)

Variable	Coef.	Std.Err.	P-value	Significance	Odds Ratio
Intercept	-1.832646	0.032208	0.0e+00	***	0.15999
Q("P/E_lag")	-0.000717	0.00049	0.143796		0.999283
Q("P/B_lag")	0.025439	0.0096	0.008054	***	1.025765
Q("P/S_lag")	3.6e-05	0.000796	0.963982		1.000036
Q("ROE_lag")	0.010305	0.002667	0.000112	***	1.010358

Table4: Logistic Regression for Predicting High Quarterly Stock Returns With Industry Control (Lagged Independent Variables)

Variable	Coef.	Std.Err.	P-value	Significance	Odds Ratio
Intercept	-2.002644	0.036469	0.0e+00	***	0.134978
Q("P/E_lag")	-0.000501	0.000486	0.302321		0.999499
Q("P/B_lag")	0.011065	0.009864	0.261929		1.011127
Q("P/S_lag")	0.000249	0.000688	0.717929		1.000249
Q("ROE_lag")	0.014735	0.002752	8.6e-08	***	1.014844
ELEC_lag	0.456543	0.040709	3.4e-29	***	1.578607

The P/B_lag ratio displays mixed results. It is statistically significant only in the base model without the ELEC control variable, where the odds ratio is around 1.017, indicating a 1.7% increase in the odds of high returns for each unit increase in the prior-period P/B ratio. However, this effect disappears when controlling for industry, suggesting instability in its predictive value. In contrast, both P/E_lag and P/S_lag fail to achieve statistical significance in either specification. Their odds ratios remain very close to 1.00, implying negligible or no practical impact on the probability of high returns. This further supports the notion that valuation-based signals, when lagged, have limited forward-looking power in the short term.

Overall, these findings underscore that while profitability (as measured by ROE) retains predictive power even when lagged, valuation metrics such as P/E and P/S appear to lose their relevance as timing tools for identifying high-performing stocks.

DISCUSSION

The empirical results provide valuable insights into the characteristics of firms more likely to deliver exceptionally high quarterly returns. Among the variables studied, ROE emerges as the most consistently significant and economically meaningful profitability indicator across all model specifications. In particular, its odds ratios in same-period models exceed 1.03, suggesting that current profitability is a strong forward-looking signal that investors actively respond to. The slightly diminished but still significant effect in lagged models reinforces the idea that recent earnings play a more decisive role in shaping expectations than historical profitability.

The P/B ratio also demonstrates statistically and economically significant predictive power in contemporaneous models. With odds ratios around 1.18, a higher P/B is associated with a greater likelihood of high returns. This positive relationship suggests that the market may assign higher valuation multiples to firms with stronger intangible assets, growth potential, or innovation capacity—characteristics that can support outperformance in the near term. While its effect remains statistically significant in lagged models, the odds ratio declines considerably, indicating weaker explanatory strength over time. In addition, the effect becomes statistically insignificant once the ELEC industry dummy is included, indicating that its predictive

power weakens substantially. This loss of significance suggests that the positive signal conveyed by high P/B may be influenced by industry-specific factors, especially in technology-intensive sectors like electronics, where high valuations are more common and often driven by growth expectations.

The P/E ratio is statistically significant only in contemporaneous models and exhibits an odds ratio close to one, implying limited economic impact. Its lack of robustness in lagged specifications further suggests that P/E may reflect short-term valuation sentiment rather than fundamental performance.

In both contemporaneous and lagged models, the P/S ratio fails to reach statistical significance, and its odds ratios remain close to unity. This result supports the view that sales-based valuation lacks precision in capturing the firm-specific profitability or growth that underpins short-term stock outperformance.

The ELEC dummy consistently displays strong and significant predictive power, with odds ratios around 1.58 across models. This indicates that firms in the electronics sector are considerably more likely to generate exceptionally high returns, highlighting the role of industry-specific dynamics—such as innovation cycles or investor preferences—in shaping return patterns.

Taken together, the comparison between same-period and lagged models indicates that current financial signals are more informative for predicting high-return outcomes. This pattern may be especially pronounced in a retail-driven market like Taiwan's, where investors are more responsive to recent accounting metrics. These findings offer implications for fundamental screening and short-term trading strategies, particularly those targeting profitability signals and sector-specific characteristics.

CONCLUSION

This study investigates the determinants of exceptional quarterly stock returns, defined as returns exceeding 20% ("High>Returns"), using a binary logistic regression model. The analysis focuses on key valuation indicators—P/E, P/B, P/S—and a profitability measure, ROE, to explore their explanatory power in predicting high-return outcomes.

The empirical findings demonstrate that ROE is a consistently strong and statistically significant predictor of high-return outcomes, across both same-period and lagged

models. The P/B ratio shows meaningful predictive power in contemporaneous regressions, with odds ratios indicating economically significant effects; however, its significance diminishes once industry classification is controlled for, suggesting sector-level factors may partly drive its effect. The P/E ratio is statistically significant only in same-period models, with limited economic impact, indicating its role may be more sentiment-based than fundamentally driven. The P/S ratio remains statistically and economically insignificant throughout, suggesting limited utility in this context.

These results suggest that investors and portfolio managers aiming to identify high-performing stocks should place greater emphasis on firms with strong current profitability (ROE) and carefully interpret valuation signals such as P/B in light of industry context. While the minor significance of P/E reinforces the market’s attention to earnings multiples, its weak predictive strength warrants caution. In contrast, sales-based valuation (P/S) appears largely ineffective for forecasting short-term outperformance.

Overall, the study provides practical implications for asset selection strategies in fast-paced financial markets. Focusing on profitability and selected valuation multiples—while accounting for industry structure—can enhance the ability to detect short-term outperformers, offering guidance for both academic inquiry and applied investment decision-making.

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