Journal of
Value Creating in Business Management
https://www.jvcbm.ir

Volume 3, Issue 2, Summer 2023, Pages 62 to 79

Research Paper

eISSN: 2980-8359

Comparison of RW and PW models in profit forecasting for small and medium companies

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Receive:
12 April 2023
Revise:
24 May 2023
Accept:
27 June 2023
Published online:
05 August 2023

Keywords:
profit forecasting,
small and medium enterprises,
RW model,
PW model.

Abstract

This article aims to compare RW and PW models in profit forecasting for small and medium-sized companies. The research method is applicable in terms of its purpose, and it is an inductive and quantitative research in terms of the implementation logic and the nature of the data. Financial statements in the period of 2011 to 2021 have been used to collect data. In order to select the appropriate statistical sample, the systematic elimination sampling method was used. In this method, firstly, the small and medium-sized companies are identified, according to the number of employees and the nominal value of the capital, and conditions are defined for the selection of the sample, and those that do not have the mentioned conditions are removed from the sample. These conditions are determined according to the hypothesis test model and research variables. Also, in this article, the panel model and Eviuse software have been used to extract the proposed model from the principal component analysis approach and to fit the model to the observations. According to the results obtained from the analysis presented in this research, it can be seen that the new model provided for profit forecasting is more effective than the profit forecasting of RW and PW models, and this issue confirms the ability of regression models to forecast profit in the field of financial and profitability strategies for small and medium-sized companies.

Please cite this article as (APA): Elahi Shirvan, A., Saeidi, H., & Elahi Shirvan, G. (2023). Comparison of RW and PW models in profit forecasting for small and medium companies. *Journal of value creating in Business Management*, *3*(2), 62-79.

https://doi.org/10.22034/jvcbm.2023.397121.1092 https://dorl.net/dor/20.1001.1.00000000.1402.3.2.4.8

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Extended Abstract

Introduction

Financial analysts have grown in number and importance over the decades. The first societies of investment analysts can be traced back to 1925 in Chicago, 1937 in New York, and 1962 in Europe (Graham, 2004). The profession became formalized due to its ever-increasing presence and application in capital markets around the world. Analysts provide useful information in the form of stock releases, price targets, and earnings forecasts as a link between management and investors. Much research has been done on sell-side analysts and their earnings forecasts, as these forecasts increasingly influence investors as well as management (Azevedo, 2020). Without information about firms and their projects, financial markets cannot perform their function of capital allocation. Some information is freely available to investors, but most information is expensive and must be produced by trained professionals. The profession of financial analysts has evolved to perform this economic function and has provided investors with detailed and specialized public information that would be very difficult to do without them. Financial analysts have the necessary combination of technical expertise, industry knowledge, and financial activity needed to understand the future prospects of companies. By publishing analyst reports, they bring stock prices closer to intrinsic values, making the market more efficient in terms of information and directing capital flows to promising investments (Higashikata, 2020). Traditionally, analyst reports contain three separate pieces of information: 1) earnings forecasts, 2) price forecasts, and 3) recommendations on whether to buy, hold, or sell. These forecasts and recommendations can publish private information or create new information from public information, and the change in information has a significant impact on the stock market price. Previous research has shown that revisions to buy or sell recommendations change investor responses. Specifically, recommendation reductions and negative forecast revisions are considered to convey bad information, while recommendation updates and positive forecast revisions are considered to convey good information (Higashikata, 2020). Takamusto and Akono (2019) show that specific factors of countries' information environment can influence the importance of information disclosed by firms, such as accounting standards and governance quality. These characteristics affect the user's understanding of the information and thus the stock price. In addition, uncertainty in countries' information environment can also affect the quality of analysts' forecasts (Hou, 2019). This is reinforced for emerging markets, because the accuracy of analysts' forecasts is strongly associated with the characteristics of each country's environment (Han, 2020). However, Han (2020) stated that analysts have a better ability to understand the different accounting options of firms as well as issues related to countries' information environment.

Therefore, according to the above, in this research, we are looking for whether the profit forecasting model presented in small and medium companies is more effective compared to the RW and PW models.

Literature

benefit predict

Profit forecasting has always been an important topic in accounting research because of its proven relationship with market returns. Profit forecasting not only reflects the development of accounting research but also uses the development of statistics and computer science topics. Early research relies on random step and time series models to predict future profits. Some researches also included basic data in the prediction model based on linear regression or logistic regression (Harris and Wang, 2018).

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Research background

In an article, Ansari (2023) discussed life cycle forecasting and financial performance evaluation of companies using decision tree algorithm and multi-criteria decision making techniques. The purpose of this research is to provide methods for decision-making that can be implemented with minimal specialized financial knowledge. For this purpose, a sample consisting of 172 companies admitted to the Tehran Stock Exchange by company-year was examined. First, financial ratios were prioritized using decision tree regression analysis for life cycle forecasting. Financial ratios have been analyzed as an independent variable and cash flow statement data as a dependent variable. In order to accurately implement the presented models, MATLAB software coding environment was used. The results showed that cash adequacy ratio and debt-to-equity ratio are the most and least important, respectively. Then, using hierarchical analysis, financial ratios were prioritized to evaluate the financial performance of companies, and leverage ratios and profitability ratios were assigned the highest and lowest ranks, respectively. The results of this research can be considered by all investors in the stock exchange to create a clear picture of the financial performance of companies.

Melkian. et al (2023) in an article investigated the liquidity shock, financial flexibility and speed of dividend adjustment in Tehran Stock Exchange. To measure the speed of dividend adjustment, which is a measure of profit smoothing, Gholtan regression was used according to the Lintner model; and also the method of De Jong et al and Falkander and Wang have been used to measure the unused debt capacity and the final value of cash, which is an index to measure financial flexibility. According to the limitations of the research, 105 companies admitted to the Tehran Stock Exchange during the period of 2010-2019 have been examined. The findings of the research show that the final value of cash and unused debt capacity do not have a significant effect on the speed of dividend adjustment. Also, the liquidity shock has no effect on the relationship between the final value of cash and unused debt capacity on the speed of dividend adjustment. Based on the obtained results, in justifying the positive relationship between the final value of cash and the speed of dividend adjustment, it can be said that any company that has higher financial flexibility, faces less risk overall and improves the performance of managers when using growth and invested opportunities, and finally smoothing their dividend is higher. Also, in justifying the negative relationship between unused debt capacity and dividend adjustment speed, it can be said that any company that has a higher unused debt capacity, their dividend adjustment is lower.

Research methodology

In this research, in order to extract the proposed model from the principal component analysis approach, and to fit the model to the observations, the panel model and Eviuse software are used. The difference between the actual and predicted profit is used to measure the efficiency of the models.

The central and dispersion indices for the research variables are determined for descriptive analysis of the variables before testing the hypotheses. In order to determine the average level of the variables, the average index is used. The dispersion of observations is measured by the standard deviation. Also, the difference of the variables from the normal distribution is measured using skewness and kurtosis indices.

In the present research, it has been used to test the hypotheses in the companies admitted to the Tehran Stock Exchange

Discussion and results:

The adjusted coefficient of determination in the first regression model is equal to 0.65 and in the case of RW model 58% and PW model 0.52; this shows that our regression model has been able to provide a more accurate relationship than the other two regression models with the components of profit forecasting, thus, model-based profit forecasting is more efficient than the other two profit forecasting models. Therefore, these results are consistent with the stated claim and at the confidence level of 95, it can be claimed that our profit forecasting model is more efficient than the RW and PW models.

Conclusion:

In this research, first, the statistical population and the companies included in this population were examined. Then the volume and sampling method were determined. After that, research hypotheses were stated. In the following, the research method and the method of data collection were discussed; Also, the variables examined in the research were introduced and how they were calculated was explained. After the definition of the research variables, the statistical methods necessary to check the statistical hypotheses and their analysis were discussed.

Based on this, the present research for the first time compares model-based forecasting and profit forecasting based on RW and PW models in small and medium-sized companies, and according to the results obtained from the analysis presented in this research, it can be found that the proposed model for profit forecasting is more efficient than profit forecasting based on the other two models, and this is a confirmation of the ability of regression models to forecast profit in financial fields and the profitability of stock price forecasting strategy in the Tehran stock exchange also confirms.