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THE IMPACT OF CAPITAL REDUCTION ANNOUNCEMENTS ON STOCK PRICES

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Abstract

This study employs a rigorous research methodology, including event study methodology and multiple regression analysis. We examined domestic listed and OTC companies from January 1, 2011, to December 31, 2023. The event study methodology allowed us to analyze the impact of capital reduction announcements on stock prices. At the same time, the multiple regression analysis helped us to identify the factors influencing cumulative abnormal returns (CAR). The empirical results are as follows: Capital reduction announcements lead to positive cumulative abnormal returns on stock prices.

Return on equity (ROE) significantly impacts the effect of capital reduction announcements. Firms with stable ROE instill greater investor confidence, positively influencing stock prices. The debt and cash flow ratios positively and significantly affect the impact of capital reduction announcements. Additionally, firm size positively and significantly impacts capital reduction announcements.

This paper contributes by revealing the positive impact of capital reduction announcements on stock prices and confirming the significant roles of return on equity, debt ratio, cash flow ratio, and firm size in this effect. These findings are crucial for investors and financial professionals as they provide insights into the factors that can influence stock prices and help make informed investment decisions.

Keywords

Capital Reduction Announcement, Abnormal Returns, Event Study

1. Introduction

The capital reduction has become a prevalent trend in the Taiwan stock market in recent years. Companies release three major positive messages in their annual reports each March: financial statements, capital reduction, and dividends. These announcements often lead to fluctuations in stock prices the following day. In an era of rapid corporate profit growth and capital expansion, firms frequently utilize cash capital increases or reinvest profits into capital, commonly known as dividend distribution. Conversely, companies may need to reduce capital to address issues such as covering losses and seeking revitalization. Two scenarios often necessitate this: first, when corporate expansion leads to a larger capital base that outpaces profit growth; second, when mismanagement or economic downturns severely impact profitability, leading to losses.

For instance, Regent Taipei (2707) underwent two significant "slimming" efforts in 2002 and 2006, resulting in improved operational performance and a rise in stock prices, ultimately achieving a record-high stock price in 2008. Similarly, Yageo Corporation (2327) engaged in continuous capital adjustment and reduction from 2013 to 2017, enhancing financial indicators and strategic goals. It benefited from a price surge in passive components in 2018, with its stock price reaching new highs. In the same year, Ruentex Industries (2915) and Ruentex Development (9945) announced a 40% capital reduction.

In 2022, Evergreen Marine Corporation announced record-high revenues and profits for 2021 and simultaneously declared a cash capital reduction. However, since the announcement, Evergreen Marine's stock price has declined, raising questions about the efficacy of its capital reduction strategy.

The key to understanding the subsequent stock price development lies in examining operational methods, future planning, and the influence of major shareholders. Firms with stable operations, low debt ratios, and consistent cash flow and profitability often resort to cash capital reductions, returning capital to shareholders to enhance equity returns and streamline the company (Yang, 2007). When firms have sufficient funds but lack suitable short-term investment opportunities, they may opt to return capital to shareholders in cash, thereby improving shareholder equity returns and achieving a leaner corporate structure.

This study employs event study methodology to analyze the impact of capital reduction announcements on the stock prices of listed domestic companies. The first part investigates whether significant cumulative abnormal returns (CAR) occur around the event window. The second part uses regression analysis to identify factors influencing significant abnormal returns following capital reduction announcements, providing a basis for investment analysis and financial decision-making.

The study is structured as follows: Chapter 1 introduces the research background and objectives; Chapter 2 reviews the literature on the motives for capital reduction, its impact on stock prices, and influencing factors; Chapter 3 outlines the research methodology, hypotheses, and regression models; Chapter 4 presents empirical results and analysis, divided into capital reduction announcement effects and cumulative abnormal returns; and Chapter 5 concludes the study with empirical findings.

2. Literature Review

2.1 Motivations for Implementing Capital Reduction Decisions

Companies decide to implement capital reduction for various reasons. According to empirical findings by Shih (2009), the larger the cumulative loss per share, the lower the company's net worth per share, debt ratio, current ratio, and interest coverage ratio, creating a more challenging economic environment. This increases the likelihood of companies undertaking loss reduction through capital reduction.

Three key points emerge from studies on choosing between cash capital reduction and treasury stock capital reduction. First, companies with higher departmental cash holdings, larger operational scale, constrained business environments, and frequent government interventions are more likely to opt for either cash capital reduction or treasury stock capital reduction. Second, when the market is sluggish and insider and director shareholding ratios are low, the probability of choosing treasury stock capital reduction increases. In addressing loss-related capital reduction, larger companies tend to respond more actively in operations and finance and are better equipped to implement corresponding actions (Tsai, 2011).

The choice of capital reduction method depends on the company's internal conditions. Liang (2017) found that companies with larger cumulative losses per share, lower net worth per share, and lower debt ratios and interest coverage ratios are more likely to undertake loss-compensating capital reduction. Companies with higher free cash flow, lower earnings per share, and larger scale are likelier to choose cash capital reduction or treasury stock capital reduction. In favorable market conditions, high debt and higher stock prices reduce the likelihood of implementing cash capital reduction.

Empirical evidence suggests that a company’s financial health, market conditions, and internal governance significantly influence the decision to reduce capital and the choice of method. These factors explain why certain companies opt for specific capital reduction strategies to effectively manage their financial and operational challenges.

2.2 The Impact of Capital Reduction on Stock Prices

Empirical studies have demonstrated a significant correlation between cash capital changes and stock prices. Different types of cash capital changes and announcement windows influence the market's reaction regarding direction and magnitude (Gao et al., 2015).

Liang (2017) employed event study methodology and found that companies implementing loss-compensating capital reduction experience negative abnormal returns on their stock prices following the announcement. In contrast, companies implementing cash capital reduction or treasury stock capital reduction see positive abnormal returns. In the short term, companies announcing capital reduction show a significant positive stock return. Over a longer period, if the companies performing capital reduction show a marked decline in operational performance in the year of the reduction, this negatively impacts future profits. However, the capital reduction ultimately leads to operational performance improvement (Wang et al., 2017).

The announcement of cash capital reduction has a positive impact on the stock returns of listed companies, but this effect is limited to the announcement day and the following day (Zhang et al., 2019). The market reacts more quickly to cash capital reduction announcements compared to cash capital increases, and stock returns are positively affected in contrast to the generally slower and less favorable response to cash capital increases (Wang et al., 2021).

These findings suggest that capital reduction announcements, particularly cash capital reduction, generally lead to positive short-term stock market reactions. However, the long-term impact on stock performance depends

on the company's operational improvements post-reduction. Investors and analysts should consider these dynamics when evaluating the implications of capital reduction announcements.

2.3 Effects of Capital Reduction Announcements

Lin and Chen (2011) confirmed that cash capital reduction announcements have positive average abnormal returns during the event window, supporting both the signaling and undervaluation hypotheses for the motivations behind capital reduction announcements. Wang and Xiao (2013) noted that executing cash capital reduction during bear markets can showcase the firm's robust financial health. Although the initial market reaction to loss-compensating capital reduction may be pessimistic, it can gradually improve. Treasury stock capital reduction is a strong signal of confidence in the firm's condition. Despite the varying implications of the three types of capital reduction announcements, long-term studies indicate that they generally lead to improved long-term stock performance post-announcement. Loss-compensating capital reductions typically yield negative abnormal returns, while cash capital reductions yield positive ones, and treasury stock capital reductions show no significant impact. Additionally, adjusting capital structure is not a primary concern in these three types of decisions. For cash capital reduction to gain investor favor, higher insider ownership and lower earnings distribution rights are crucial, as investors generally disfavor further cost burdens for loss-compensating capital reductions, especially in R&D. To elicit positive market evaluations, lower pledge ratios for treasury stock capital reduction are necessary. Chen (2021) found significant positive announcement effects for treasury stock and cash capital reduction on the event day.

Empirical results from Lin, Xu, and Shen (2009) indicated that cash capital reduction announcements lead to positive stock price effects, with notable changes observed before the announcement. The market reacts promptly and significantly to cash capital reduction announcements, stimulating market activity. Although cash capital reduction does not necessarily improve long-term profitability, it enhances asset turnover efficiency and short-term operational performance. Wang and Lü (2021) showed that the market reacts faster to cash capital reduction than to cash capital increases. While cash capital increase announcements have more sustained effects on stock prices, cash capital reduction is more suited for short-term investments due to its immediate but short-lived impact.

The first objective of this study is to examine the impact and reactions of market participants to capital reduction announcements. Li (2006) found that firms like Regent Taipei saw improvements in key financial metrics such as EPS, book value per share, and ROE after cash capital reduction, with positive market reactions. Using event study methodology, Yang (2007) demonstrated significant positive announcement effects for cash capital reduction in a sample of 17 companies. Huang (2008) verified that cash capital reduction announcements have positive long-term and short-term effects across eight companies. The benefits of cash capital reduction include stabilizing market trading and positively influencing stock prices by reducing the total number of shares. Additionally, cash capital reduction increases EPS, cash flow per share, and ROE, leading to positive investment evaluation indicators and expected positive market reactions.

H1: The market will react positively to capital reduction announcements.

Based on the above hypothesis, the second objective is to test the linkage between the motives for cash capital reduction announcements by listed companies and market reactions. According to the signaling hypothesis, to generate positive cumulative abnormal returns (CAR), market participants expect the cash capital reduction announcement to convey information about improved future cash flows and prospects. The undervaluation hypothesis suggests positive CAR results from investors perceiving the cash capital reduction announcement as an indicator of undervalued firm value. The capital structure adjustment hypothesis posits that positive CAR arises when investors believe the cash capital reduction announcement aims to optimize the capital structure. Finally, the free cash flow hypothesis indicates positive CAR results when market participants see the cash capital reduction announcement as a means to reduce excess cash and maintain efficiency by limiting managerial discretion. Based on the above, the following hypotheses are established:

H2: The debt ratio of the announcing company is positively correlated with the cumulative abnormal returns of capital reduction.
H3: The cash flow ratio of the announcing company is positively correlated with the cumulative abnormal returns of capital reduction.
H4: The return on equity of the announcing company is positively correlated with the cumulative abnormal returns of capital reduction.
H5: The size of the announcing company is positively correlated with the cumulative abnormal returns of capital reduction.

3. Research Methodology

This study employs the event study methodology to analyze whether abnormal returns are more pronounced for companies with higher cash reduction ratios, lower debt ratios, and higher cash flow ratios upon announcing capital reduction

3.1 Sample Period and Data Sources

The study investigates Taiwanese listed and OTC companies that announced capital reductions from January 1, 2011, to December 31, 2023. The focus is examining whether stock prices exhibit abnormal returns following capital reduction announcements and identifying the factors influencing these abnormal returns. The data for this analysis is sourced from the Taiwan Economic Journal (TEJ) database.

3.2 Event Study

3.2.1 Definition

Event study methodology explores the impact of significant events or news on stock prices, particularly assessing whether such events cause abnormal returns. This method helps interpret the relationship between stock price volatility and the occurrence of specific events or news.

3.2.2 Steps

1. Determine the Research Event and Formulate Hypotheses: Investigate whether capital reduction announcements cause abnormal returns in stock prices and develop hypotheses and variable settings accordingly.
2. Identify the Event Date: The "event date" is when the market receives the information about the event, not the actual event date. Typically, this is the announcement date. For this study, the announcement date of the capital reduction is considered the event date. The event window spans from 20 trading days before to 20 after the announcement, observing stock price changes and abnormal returns during this period.
3. Market Model: To estimate "expected returns," a market model establishes a linear relationship between the stock and market returns. The model assumes a linear relationship between individual stock returns and market returns.
4. Establish the Expected Return Model: Based on the works of Fama (1968), Beja (1972), and Fama (1973), the market model is used to estimate the expected returns of individual securities during the event period.
5. Estimate Average Abnormal Returns (AAR) and Cumulative Abnormal Returns (CAR): Abnormal returns are calculated using the expected returns model. Abnormal and cumulative abnormal returns are used to detect the impact of significant events.
6. Test Abnormal Returns: Positive abnormal returns indicate a positive impact of the event on stock prices, while negative abnormal returns indicate a negative impact. Significance tests are conducted to validate the impact.
7. Analyze Results: Hypotheses are tested against the abnormal returns, and the results are analyzed and interpreted.

3.2.3 Event Date and Event Window

The study period spans from January 1, 2011, to December 31, 2023. The announcement date of the capital reduction is used as the event date. The estimation period is from 225 trading days to 46 trading days before the event date, totaling 180 trading days. Two event windows are selected: one from 20 trading days before to 20 trading days after the event date (41 trading days) and another from 20 trading days before to 1 trading day before the event date (21 trading days).

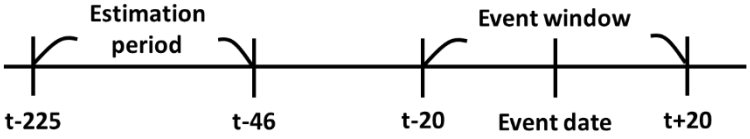

Figure 3.1 Event window

3.3 Regression Model

This study uses multiple regression models to analyze the relationship between cumulative abnormal returns (CAR) and the motives behind cash capital reduction announcements. The empirical model is defined as follows:

$$CAR_i = \beta_0 + \beta_1 LIARATE_i + \beta_2 OPCFR_i + \beta_3 ROE_i + \beta_4 SIZE_i + \varepsilon_i$$

where,
CAR_i: Cumulative abnormal returns for sample *i* during the event window;
$LIARATE_i$: Debt ratio of sample *i* in the year before the capital reduction announcement;
$OPCFR_i$: Cash flow ratio of sample *i* in the year before the capital reduction announcement;
ROE_i: Return on equity of sample *i* in the year before the capital reduction announcement;
$SIZE_i$: Company size of sample *i* in the year before the capital reduction announcement;
ε_i: error term.

1. Dependent Variable: Cumulative abnormal returns (CAR_i) is the sum of abnormal returns (AR_i) for individual samples i during the event window.

2. Independent Variables: Debt ratio ($LIARATE_i$) and Cash flow ratio ($OPCFR_i$).
    a. Debt ratio ($LIARATE_i$): The debt ratio is defined as the total liabilities at the end of the previous year divided by the total assets at the end of the previous year, multiplied by 100%. According to Dittmar (2000), who supports the capital structure adjustment hypothesis, the debt ratio is a proxy for the financial structure. When financial conditions and market reactions are poorer, the debt ratio tends to be higher. Therefore, this study expects a negative relationship between cumulative abnormal returns (*CAR*) and the debt ratio (*LIARATE*).
    b. Cash flow ratio ($OPCFR_i$): The cash flow ratio is the operating cash flow from the previous year divided by the average total assets multiplied by 100%. According to Dittmar (2000), a cash capital reduction announcement signifies the company's commitment to returning excess cash to shareholders. For investors, the greater the available cash, the higher the cash flow ratio (*OPCFR*). Therefore, this study expects a positive relationship between cumulative abnormal returns (*CAR*) and the cash flow ratio (*OPCFR*).

3. Control Variables:
    a. Return on equity (ROE_i): The return on equity (*ROE*) is defined as the net income after tax from the previous year divided by the average equity at the beginning and end of the period, expressed as a percentage. According to Ho, Liu, and Ramanan (1997), the signaling hypothesis suggests positive and negative interpretations. Investors typically associate stock buyback announcements with companies with stable profits, which is often the case for companies announcing cash capital reductions (Yang, 2007). If abnormal returns increase, it can be interpreted as being influenced by past accounting earnings. Therefore, this study hypothesizes a positive relationship between cumulative abnormal returns (*CAR*) and return on equity (ROE).
    b. Company size ($SIZE_i$): Company size is proxied by the natural logarithm of the total market value at the end of the year preceding the cash capital reduction announcement. According to Dittmar (2000) and Atiase (1985), this proxy helps address information asymmetry. Larger companies are assumed to have higher information transparency, whereas smaller companies face greater information imbalances, leading to higher stock price volatility. Therefore, this study hypothesizes a negative relationship between cumulative abnormal returns (*CAR*) and company size (*SIZE*).

4. Empirical Results

4.1 Empirical Results and Analysis of Capital Reduction Announcements

Figure 4-1 presents the trend of Average Abnormal Returns (AR) for the sample of capital reduction announcements over a 20-day event window. The results indicate that the stock prices of the sample companies were slightly above zero before the announcement date. On the announcement day and the following day, the AR showed a slight downward trend, turning from positive to negative, but then rebounded slightly on the third day. This suggests a short-term decline in the average abnormal returns following the capital reduction announcement.

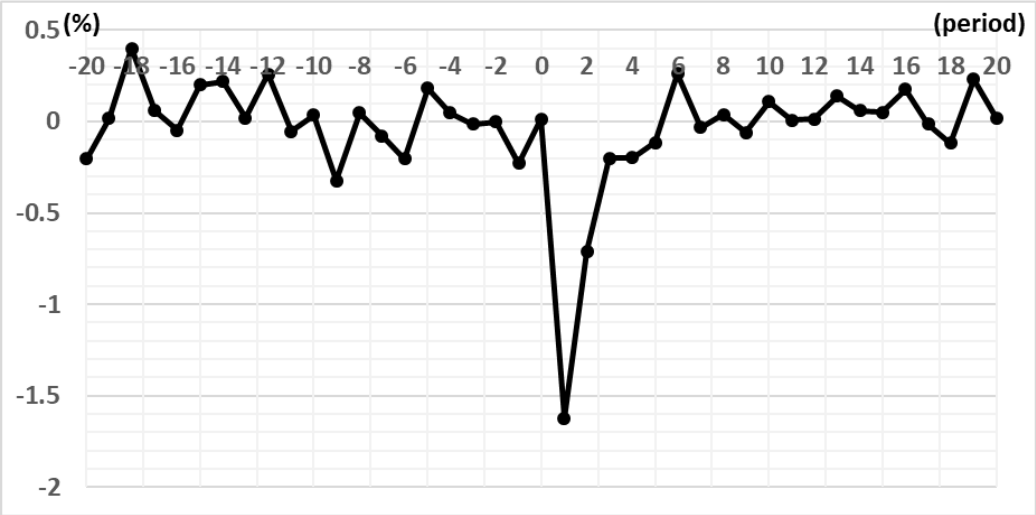

Figure 4.1 Average abnormal return (AAR) of capital reduction announcement

Table 4-1 shows the AR and cross-sectional statistics. During the 20-day event window, the AR on the announcement day was 0.044, which dropped to -1.5761 the following day, representing a shift from positive to negative and reaching its lowest point. The AR began to recover on the third day, with values of -0.2987. The cross-sectional statistics for the second and third days were -4.8739 (p=0.000) and -3.4086 (p=0.0007), respectively, indicating significance at the 1% and 5% levels. This demonstrates a short-term negative market reaction to the capital reduction announcement.

AAR of 20 Days Event Window（N=330）			
Event Window	**AAR**	**t value**	**Prob.Value**
-20	-0.211	-1.4402	0.1498
-19	-0.08	-0.5383	0.5904
-18	0.4433	3.0901	0.002
-17	0	0	1
-16	-0.0427	-0.3259	0.7445
-15	0.1624	1.2453	0.213
-14	0.2648	1.9423	0.0521
-13	-0.0787	-0.5841	0.5592
-12	0.2434	1.6649	0.0959
-11	-0.0632	-0.4696	0.6387
-10	0.0291	0.2306	0.8176
-9	-0.2647	-1.9287	0.0538
-8	0.0774	0.5396	0.5895
-7	-0.0798	-0.4863	0.6267
-6	-0.2162	-1.5234	0.1277
-5	0.2988	1.9165	0.0553
-4	0.1262	0.7979	0.4249
-3	-0.0711	-0.465	0.6419
-2	0.0196	0.1201	0.9044
-1	-0.198	-1.3462	0.1782
0	0.0693	0.4564	0.6481
1	-1.5761	-4.6523	0
2	-0.6692	-3.103	0.0019
3	-0.2632	-1.4997	0.1337
4	-0.2234	-1.4109	0.1583
5	-0.1378	-0.8057	0.4204
6	0.2016	1.223	0.2213
7	-0.014	-0.0823	0.9344
8	0.0167	0.1078	0.9141
9	-0.1646	-1.2085	0.2269
10	0.1196	0.7528	0.4516
11	-0.0758	-0.4904	0.6239

12	0.0905	0.5373	0.591
13	0.1097	0.7007	0.4835
14	0.0729	0.4838	0.6285
15	-0.0322	-0.2198	0.826
16	0.11	0.7974	0.4252
17	0.1792	1.165	0.244
18	-0.1623	-1.1237	0.2611
19	0.1384	0.9319	0.3514
20	-0.2366	-1.5094	0.1312
Note: *, **, and *** represent 10%, 5%, and 1% statistically significant, respectively.			

Table 4.1 Average abnormal return (AAR) and cross-section data

Figure 4-2 shows the trend of Cumulative Abnormal Returns (CAR) for cash capital reduction announcements. During the 20-day event window, the CAR turned positive to negative the day after the announcement and continued to decline, reaching a trough five days after the announcement. This indicates a negative impact on CAR following cash capital reduction announcements, consistent with Hypothesis H1.

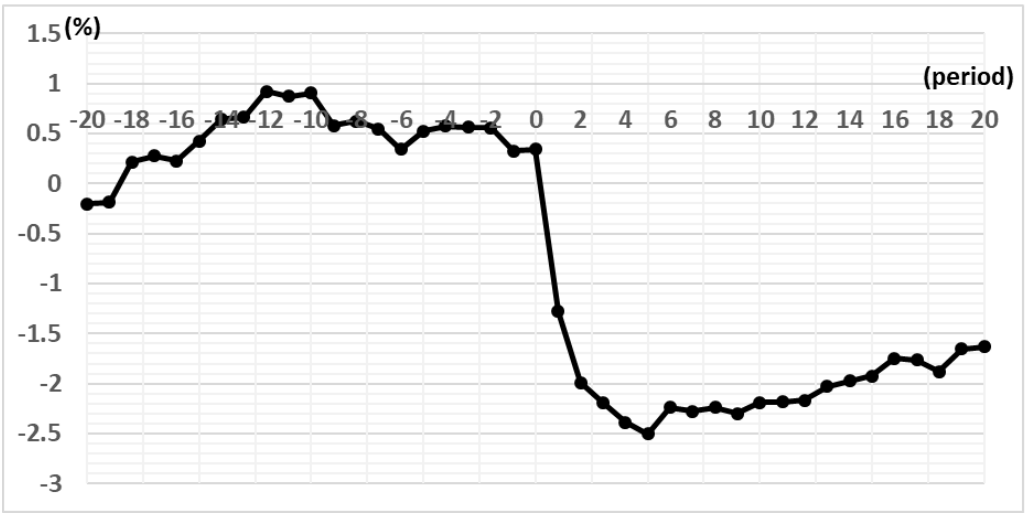

Figure 4.2 Cumulative abnormal return (CAR) of capital reduction announcement

Table 4-2 provides CAR and cross-sectional statistics. During the 20-day event window, the CAR turned negative the day after the announcement and showed a declining trend, accumulating a significant negative correlation by the fifth day. This indicates that cash capital reduction announcements negatively affect cumulative abnormal returns.

CAR of 20 Days Event Window（N=330）			
Event Window	**CAR**	**t value**	**Prob.Value**
-20	-0.211	-1.4402	0.1498
-19	-0.291	-1.2874	0.198
-18	0.1523	0.5368	0.5914
-17	0.1523	0.5157	0.6061
-16	0.1096	0.3683	0.7126
-15	0.272	0.8725	0.3829
-14	0.5368	1.607	0.1081
-13	0.458	1.2454	0.213
-12	0.7014	1.799	0.072
-11	0.6382	1.5967	0.1103
-10	0.6673	1.515	0.1298
-9	0.4026	0.9033	0.3663
-8	0.48	1.0227	0.3064
-7	0.4001	0.7904	0.4293
-6	0.1839	0.3527	0.7243
-5	0.4827	0.862	0.3887
-4	0.6089	1.0201	0.3077
-3	0.5378	0.8804	0.3787

-2	0.5574	0.8706	0.384
-1	0.3594	0.5497	0.5825
0	0.4287	0.6211	0.5346
1	-1.1474	-1.5317	0.1256
2	-1.8166	-2.2542	0.0242
3	-2.0798	-2.6267	0.0086
4	-2.3032	-2.8032	0.0051
5	-2.441	-2.8829	0.0039
6	-2.2394	-2.5948	0.0095
7	-2.2534	-2.5985	0.0094
8	-2.2367	-2.5351	0.0112
9	-2.4013	-2.6533	0.008
10	-2.2817	-2.4743	0.0134
11	-2.3575	-2.5634	0.0104
12	-2.2669	-2.4047	0.0162
13	-2.1572	-2.2301	0.0257
14	-2.0843	-2.0635	0.0391
15	-2.1165	-2.0647	0.039
16	-2.0065	-1.9191	0.055
17	-1.8273	-1.7069	0.0878
18	-1.9896	-1.8247	0.068
19	-1.8512	-1.6662	0.0957
20	-2.0878	-1.8926	0.0584
Note: *, **, and *** represent 10%, 5%, and 1% statistically significant, respectively.			

Table 4.2 Cumulative abnormal return (CAR) and cross-section data

4.2 Descriptive Statistics

Table 4-3 presents the descriptive statistics for the variables. The annual return (AR) had a maximum value of 3.6861 and a minimum value of -0.7010. The debt ratio (LIRATE) had a maximum value of 89.38 and a minimum of 0.9. The accounts receivable turnover ratio (OPCFR) in the year before the cash capital reduction announcement had a maximum value of 0.9874 and a minimum of -3618.3052. The return on equity (ROE) in the year before the announcement had a maximum value of 244.42 and a minimum of -91.17. The company size (SIZE) had a maximum value of 8.9918 and a minimum of 5.1046.

	N	Minimum	Maximum	Mean	Standard Deviation
$LIRATE_i$	330	0.900	89.380	43.352	20.301
$OPCFR_i$	330	-3,618.305	0.987	-14.035	221.847
ROE_i	330	-91.170	244.420	2.126	26.947
$SIZE_i$	330	5.105	8.992	6.564	0.592
Note: $LIRATE_i$ is Debt ratio; $OPCFR_i$ is Cash flow ratio; ROE_i is Return on equity; $SIZE_i$ is the company size					

Table 4.3 Descriptive statistics

4.3 Correlation Analysis

Table 4-4 shows the correlation matrix of the variables influencing the effect of capital reduction announcements. The Pearson correlation coefficient was used to analyze the relationships between the variables. The analysis revealed a significant positive correlation between annual return and return on equity. Conversely, the debt ratio was significantly negatively correlated with return on equity and company size.

	CAR_i	$LIARATE_i$	$OPCFR_i$	ROE_i	$SIZE_i$
CAR_i		0.115	0.017	0.248**	0.167**
$LIARATE_i$	0.115		-0.032	-0.230**	-0.130*
$OPCFR_i$	0.017	-0.032		-0.019	-0.024
ROE_i	0.248**	-0.230**	-0.019		0.415**
$SIZE_i$	0.167**	-0.130*	-0.024	0.415**	
Note: 1. *, **, and *** represent 10%, 5%, and 1% statistically significant, respectively. 2. $LIRATE_i$ is the Debt ratio; $OPCFR_i$ is the Cash flow ratio; ROE_i is the Return on equity; $SIZE_i$ is the company size. 3. The lower part is the Pearson correlation, and the upper part is the Spearman correlation.					

Table 4.4 Correlation analysis

4.4 Regression Analysis

This study investigates the factors influencing cumulative abnormal returns (CAR) following cash capital reduction announcements. The regression analysis uses the CAR from 20 days before to 20 days after the announcement as the dependent variable and various control variables.

The annual return (*AR*) is significantly positively correlated with CAR (t=5.002, p<0.01), supporting Hypothesis H2. The return on equity (*ROE*) is also significantly positively correlated with CAR (t=3.109, p<0.05), consistent with the expected sign, validating Hypothesis H3. The debt ratio (*LIRATE*) and cash flow ratio (*OPCFR*) from the year before the announcement are significantly positively correlated with CAR, thus supporting the hypotheses. Company size is also significantly positively correlated with CAR (p<0.10), supporting the hypothesis. These findings indicate that annual return, return on equity, debt ratio, cash flow ratio, and company size are significant predictors of cumulative abnormal returns following capital reduction announcements.

Variables	Expected Sign	Coefficient	t-value	VIF
(Constant)	-	3.578***	9.819	
$LIARATE_i$	+	0.041***	6.795	1.061
$OPCFR_i$	+	0.002*	1.461	1.004
ROE_i	+	0.091**	3.109	1.309
$SIZE_i$	+	0.397*	1.205	1.256
Adj R^2	0.321			
F value	42.529			

Note: 1. *, **, and *** represent 10%, 5%, and 1% statistically significant, respectively. 2. $LIRATE_i$ is the Debt ratio; $OPCFR_i$ is the Cash flow ratio; ROE_i is the Return on equity; $SIZE_i$ is the company size.

Table 4.5 Regression Analysis [Y=CAR(-20,20)]

5. Conclusion

The success of Evergreen Marine's capital reduction has prompted many companies to attempt similar strategies, with numerous instances where cash capital reductions have significantly boosted stock prices. Consequently, cash capital reduction announcements have become a crucial indicator in the investment market.

From the empirical results of this study, it is observed that cash capital reduction announcements result in a short-term negative abnormal return on stock prices within two days post-announcement. This indicates that the initial message conveyed to the market is perceived negatively in the short term. However, the long-term effects of capital reduction should be assessed based on the company's future development, operational conditions, and various financial indicators.

The study also investigates factors influencing the effects of cash capital reduction announcements. The empirical results show that a company's annual return and return on equity (ROE) significantly affect the development of capital reduction announcements. Firms with stable annual returns and ROE instill greater investor confidence in their operations, indirectly positively impacting stock prices. Both the debt and cash flow ratios are significantly positively correlated with the impact of capital reduction announcements, indicating that higher values in these ratios lead to more positive market reactions. Additionally, firm size is significantly positively correlated with the impact of capital reduction announcements, showing that larger firms tend to experience more favorable market responses.

These findings indicate that annual return, return on equity, debt ratio, cash flow ratio, and company size are significant predictors of the positive effects of cash capital reduction announcements.

References

Chang, C. B., Wang, Y. W. and Hu, S. Y., 2019, 'Exploring the impact of cash capital reduction on stock price returns using the BCG matrix.' *Journal of Financial Review*, 31, 13-35.

Chen, Y. T., 2021, 'Comparison of the announcement effects of treasury stock capital reduction and cash capital reduction: A case study of listed companies in Taiwan.' *Journal of Data Analysis*, 16:2, 59-84.

Jegadeesh, N. and Titman, S., 2001. 'Profitability of momentum strategies: An evaluation of alternative explanations.' *Journal of Finance*, 56:2, 699-720.

Kao, L. P., Chen, Y. H., Wu, T. L., Lee, G. L., Hsu, C. K., Lin, M. J., and Chen, Y. W., 2015, 'Cash capital reduction, cash capital increase, and stock price reactions.' *Journal of Chihlee Institute of Technology*, 35, 119-149.

Kayhan, A and Titman, S., 2007, 'Firms' histories and their capital structures. *Journal of Financial Economics, 83*:1, 1-32.

Liang, Y. Y., 2017, '*A study on the motivation of capital reduction in listed companies in Taiwan*.' Master's Thesis, Department of Finance, National Chung Cheng University, Chiayi County.

Lin, H. K., Hsu, Y. S. and Shen, C. Y., 2009, 'The announcement effects and operating performance impact of cash capital reduction.' *Taiwan Academy of Management Journal*, 9:2, 185-203.

Lin, Y. C. and Chen, H. P., 2011, 'The announcement effects of cash capital reduction.' *Journal of Contemporary Accounting*, 12:1, 31-56.

Shih, N. S., 2009, '*Determinants and operating performance of capital reduction choices*.' PhD Dissertation, Department of Accounting, National Cheng Kung University, Tainan City.

Tsai, S. P., 2011, '*A study on company characteristics and responses after capital reduction*.' Master's Thesis, Department of Finance, Tunghai University, Taichung City.

Wang, M. J. and Lu, M. Y., 2021, 'The announcement effects and operating performance of capital reduction and SEO.' *Management Information Computing*, 10:2, 185-201.

Wang, M. R. and Hsiao, C. Y., 2013, 'Market announcement effects of loss-compensating capital reduction, cash capital reduction, and treasury stock capital reduction.' *International Journal of Accounting Studies*, 57, 105-135.

Wang, R. L., Hsiung, H. H. and Lin, M. H., 2017. 'A study on the long- term operating performance of companies undertaking capital reduction.' *Chaoyang Business and Management Review*, 16:1, 61-80.