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RETURN ON EQUITY ESTIMATES AND FOUR-QUADRANT SQUARE POSITION: EVIDENCE FROM TAIWAN

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ABSTRACT

This study examines the extent to which security analysts' forecasts help improve our classifying the observations into the Damodaran's four-quadrant square box. Based on the square box, we show that companies classified into quadrant (I) by Historical Return on Equity (HROE) will move to quadrant (II) in the subsequent period. We find security analysts perform better than HROE in predicting the four-quadrant box outcome in the subsequent period. Our empirical result shows the Consensus Return on Equity (CROE) performs better than HROE in predicting the four-quadrant box in the subsequent period. Due to the fact that a firm's accounting earnings may deviate from its economic earnings, analysts may strategically pursue forecast accuracy, especially in the short term, at the expense of information users in the long term. Specifically, analysts' longer-horizon earnings forecasts may be more informative than current- and subsequent-year EPS forecasts as to the true value of a firm's long-term investment projects. Accordingly, analysts' longer-termed earnings forecasts outperform their current- and subsequent-year EPS forecasts in predicting the four-quadrant box in the subsequent period.

JEL: G17, G24, G35

KEYWORDS: Return on Equity, Analyst Consensus Estimates, Dividend Policy

INTRODUCTION

The value of a firm may be expressed as the sum of (1) its net assets, and (2) the net present value of its on-going and potential projects. Investors, nevertheless, may or may not benefit from analyst research reports in evaluating projects. Specifically, previous efforts to model such scenarios focus on two problems. First, management typically provides over-optimistic information to investors, especially when they involve themselves in large projects. Second, most analysts focus on short- instead of long-term prospects. Information regarding investment opportunities and returns on investment should be useful for investor's making earnings forecasts and cash flow projections. Making accurate and timely forecasts, nevertheless, may be a difficult task especially for firms engaging themselves in large investment projects (and thus large financing arrangements). Management of these firms may have incentives to coerce or to affect the analysts to provide unduly optimistic reports to the public.

Nevertheless, we expect some analysts may be more sophisticated than the others and act as more informed market participants. Due to the fact that a firm's accounting earnings may deviate from its economic earnings, analysts may strategically pursue forecast accuracy, especially in the short term, at the expense of informativeness. Analysts' longer-termed earnings forecasts may play a complementary role to current- and subsequent-year EPS forecasts in predicting the true value of a firm's long-term investment projects. We argue that more competent analysts are likely to differentiate themselves by conveying such value-relevant information. Firms with promising long-term projects but low concurrent cash dividends should

benefit the most from analysts who are able to foresee into longer-term prospects and better predict firm values. In this study, we aim to (1) identify more sophisticated analysts via ex-post evaluation of their performance by comparing among the analysts the frequency of longer-termed forecasts and comparing among the analysts the accuracy of the forecasts issued at the time and the actual outcome of underlying firms' investments, and (2) explore whether these identified analyst recommendations, especially for these deviating from the general market expectations at the time, were later proved to be in the right direction.

We analyze the effectiveness of cash dividend policy via measures developed by Damodaran (1999). Specifically, the setting uses free cash flows to equity (FCFE) to measure a firm's capacity to pay dividends and compare a firm's historical return on equity (HROE) to its cost of equity (RE) to measure its past project choices. Furthermore, one can identify firms with a cash surplus and firms with a cash deficit by FCFE－(Cash Dividend + Buybacks) and distinguish more profitable projects from the poor ones by the sign and magnitude of HROE－RE. Namely, this approach divides a square box into four quadrants to determine whether a firm's policy is effective. In our study, we trace the change in quadrant to which each firm is positioned and verify the appropriateness of our sample firms' dividend policies as shown in Figure 1.

Figure 1: Damodaran's Four-quadrant Square Box

FCFE –(Cash Dividend + Buybacks)	Historical Return of Equity (HROE) – Cost of Equity (R_E)	
	Negative	**Positive**
Positive	(I) Cash Surplus, NPV < 0	(II) NPV > 0
Negative	(III) Cash Deficit, NPV < 0	(IV) NPV > 0

This figure shows quadrants based on appropriateness of sample firm Dividend Policies.

However, a firm's return on equity measures may be poorer (better) during (subsequent to) its acquisition of initial investment. Namely, HROE may sometimes under-estimate profitability. Thus, we also establish an alternative measure to HROE. Specifically, historical return on equity (HROE) may be substituted by consensus return on equity (CROE), calculated as the average of consensus analyst Fy1 and Fy2 forecasts deflated by beginning book value of equity. This measure serves to distinguish the more sophisticated analysts from others, if any, who concurrently provides different opinions regarding dividend or cash flows of the firms. This results in subsequent plot moves into the "good-project" quadrants in the square box. Likewise, we may find analyst reports conveying different opinions regarding firms within quadrant (II).

Next, we explore the characteristics of these seemingly better informed analysts. The research questions asked include, "Are these analysts experienced?" "Are these analysts leaders or followers?" "Are these analysts affiliated or unaffiliated?" "If they are affiliated analysts, whether the trading performance of their parent company's dealing department has excess returns?"

With a sample of firms that involve themselves in large capital investment, we also use the analysts' dividend per share forecast to measure analysts' forecast ability. Although dividends is a "smoothed" variable and are subject to manipulation by corporate managers and are affected by the holders of equity, we construct firm-specific control variables and industry-specific control variables to reduce the noise of dividend policy. We expect that analyst dividend forecast measures can provide us information as to the characters of the better-informed analysts.

The remainder of the paper is organized as follows. The next section presents the literature review and discusses the theoretical background. Section 3 presents the data and methodology. Section 4 presents the results and finally provides the conclusions in section 5.

LITERATURE REVIEW

Dividend Policy

Extant empirical studies appear to gradually relax the assumptions imposed by Miller and Modigliani (1961), who suggest that dividend policy is irrelevant to the wealth of investors in a perfect capital market with no information asymmetry and no taxes. If we relax the assumption of symmetric information and model that managers have superior information regarding the firm's future cash flows and they incorporate this information in setting dividends, outside investors should believe that dividends also convey information as to future earnings changes.

Bhattacharya (1979), Miller and Rock (1985), and John and Williams (1985) construct a classic study on signaling models. These models imply that a change in dividend policy is an indicator of a firm's future prospects and therefore dividend increase should be followed by improvements in profitability, earnings, and investment opportunities. Nissim and Ziv (2001) document that dividend changes provide information regarding earnings changes in subsequent years. They show that dividend changes are positively related to the level of future profitability, after controlling variables such as consensus analysts' earnings forecasts. They provide evidence in support of the signaling explanation of dividends hypothesis. These results imply there should be a positive relationship between dividend changes and subsequent security returns.

On the other hand, Benartzi, Michaely, and Thaler (1997) claim only limited support for the information content of dividends hypothesis. They document that earnings of dividend-increasing firms do not subsequently increase. They also find that firms that decrease dividends experience significant increase in earnings growth in subsequent years. Grullon, Michaely and Swaminathan (2001) find that firms that increase (decrease) dividends experience a significant decline (increase) in their systematic risk. Dividend-increasing firms in general do not increase their capital expenditures and experience a decline in profitability in subsequent years. Their findings suggest that increases in cash dividend may be a key element of a firm's long-term transition from growth to mature stages. The evidence provided by these two studies strongly contradicts the signaling models, regarding which dividend changes convey news regarding future cash flows. Specifically, dividend increases convey good news. Our project, nevertheless, contrast their work in that we focus on firms with significant capital expenditures.

Firms may adopt a residual dividend policy, which is a management policy of paying out the amount "left over" after deducting of capital expenditures from internally generated cash flows. Specifically, we adopt the definition of residual dividend policy by Lease, John, Kalay, Loewenstein, and Sarig (2000), who suggest that managers "manage" dividends and that dividends are less volatile than earnings. A more operational measure is provided by Damodaran (1999), who articulates that a firm's dividend policy tends to change with the firm's life cycle. For instance, high-growth firms with great investment opportunities pay no, or very low dividends, whereas stable firms with greater cash flows and fewer projects tend to pay out more of their earnings as dividends. He documents that stockholder pressure for dividends or buybacks is greater for firms reporting poor returns, and less for firms whose projects yield high returns. In our study, we observe a firm's level of cash dividend and buyback versus the free cash flow to equity and the quality of its investment projects. Via such measures, we also investigate the extent to which quality of the projects is revealed by consensus analysts' forecasts. This approach may add to our understanding the information conveyed by the firms' dividend decisions.

Analysts' Dividend Forecast

The forecasting superiority of analysts reflects their ability to process a broader information set than statistical models, which typically confine themselves to the past time series of earnings or other data sources from published financial statements. In contrast, analysts have access to a wider range of sources, including qualitative information.

The advantage of analysts' access to a richer information set is a theme that runs throughout the literature on analyst forecasts. Lang and Lundholm (1996) provide direct confirmation of the relationship between forecast accuracy and richness of the information set. Using analyst ratings of firm disclosure practices contained in the Report on the Financial Analysts Federation Corporate Information Committee, they show that their forecasts are more accurate for firms with voluntary disclosure practices of better quality. Given the importance of management as a source of information to analysts, Lang and Lundholm's finding is not surprising.

Our project also aims to explain and understand the bias in analysts' earnings forecasts. Rationales proposed for the existence of systematic optimism include behavioral heuristics, motivational reasons, and selective coverage. McNichols and O'Brien (1997) find analysts drop coverage of firms for which they have unfavorable expectations and initiate coverage of firms only for which they have positive expectations. Therefore, while analysts may report their true beliefs, unfavorable beliefs will be underrepresented, i.e., they are censored. Therefore, the sample mean is an upwardly biased estimate of the population mean. They conclude that censoring explains some of the reported bias.

The integrity of analyst research is primarily a public concern of information transmission between securities firms and investors. On October 23, 2000, the Securities and Exchange Commission (SEC) implemented Regulation Fair Disclosure (FD). FD requires that U.S. public companies that intentionally disclose material, nonpublic information to a select group also disclose it simultaneously to the public. Gintschel and Markov (2004) examine whether Regulation FD has reduced the informativeness of analysts' information outputs. They show a significant drop in price impact of analysts' earnings forecasts following the regulation, suggesting that analysts' forecasts become less informative. Jorion, Liu and Shi (2004) provide evidence consistent with the view that security analysts are less informative post Regulation FD. They show that rating agencies now have an advantage compared to security analysts.

Security Analysts May Differ in Their Forecasting Abilities

Results of prior studies are generally consistent with the notion that security analysts differ in their forecasting abilities. Stickel (1992) documents that members of the Investor All-American Research Team are more accurate in forecasting earnings and forecast more frequently. In addition, the upward forecast revisions of All-American analysts have a greater impact on stock prices than do Non All-Americans. Sinha, Brown, and Das (1997), replicating O'Brien (1990) with more stringent controls for forecast recency, find that systematic ex-post differences exist in analysts forecast accuracy. They also examine ex-ante forecast accuracy and find that analysts identified as superior in one period continue to be superior in subsequent periods while analysts classified as inferior in one period do not necessarily continue to be inferior in subsequent periods. While Stickle and Sinha et al. identify differences in forecast accuracy, they do not explain why the differences exist.

Mikhail, Walther, and Willis (1997) examine factors that contribute to analysts' forecast accuracy. Using a time series approach, they find a decline in analysts' forecast errors as an analyst's company-specific experience increases. However, the results of Mikhail et al. may not be generalizable since they limit their initial sample to analysts who continuously forecast the same firm for at least thirty-two quarters. This requirement excludes ninety-seven percent of potential observations. Moreover, their sample may be

subject to time-series clustering which may have affected their results. Jacob, Lys, and Neale (1999) investigate the contribution of experience and brokerage house variables on analyst forecast attributes including forecast accuracy, frequency, and horizon. They find that employer size is associated with forecast accuracy. They also find that forecast accuracy is positively associated with the degree of industry specialization of brokerage house and is negatively related with brokerage house turnover. However, Jacob et al. do not find evidence that forecast accuracy improves with experience. Clement (1999) also examines factors which influence analyst forecast accuracy. The results indicate that forecast accuracy is positively associated with analyst ability, analyst skill, and available resources. He also finds that forecast accuracy is negatively related to task complexity measured by the number of firms and industries followed by the analyst.

DATA AND METHODOLOGY

Research Questions

For firms or projects in their early stages, accounting outcome measures typically serve as suboptimal indicators of firm performance or prospects. Yet security analysts' forecasts may help improve our classifying the observations into the four-quadrant box. We conjecture that many companies classified into quadrant (I) by HROE will move to quadrant (II) in the subsequent period and that security analysts performs better than HROE in predicting the four-quadrant box in the subsequent period.

H1: CROE performs better than HROE in predicting the four-quadrant box in the subsequent period.

Due to the fact that a firm's accounting earnings may deviate from its economic earnings, analysts may strategically pursue forecast accuracy, especially in the short term, at the expense of information value for long term outlooks. Namely, analysts' longer-termed earnings forecasts may be more informative than current- and subsequent-year EPS forecasts as to the true value of a firm's long-term investment projects.

H2: Analysts' longer-termed earnings forecasts outperforms their current- and subsequent-year EPS forecasts in predicting the four-quadrant box in the subsequent period.

We conjecture that analysts need to take greater efforts to communicate with firm management in order to make forecasts of cash flows, which most typically relates more heavily with the firm's expansion projects or investment plans than earnings forecasts. We test whether the analysts who provide cash flow and cash dividend forecasts outperform those who exclusively provide earnings forecasts.

There may exist several plausible explanations to differentiate market reactions to firms' dividend announcements. We conjecture that a difference exists in predisclosure information sets available to investors, especially market participants' perception of analyses reports. Therefore, market prices may behave as if investors adopt Figure 3 (as follows) instead of Figure 2 in responding to the dividend decisions at earnings announcement date.

Figure 2: ROE-R_E Quadrants

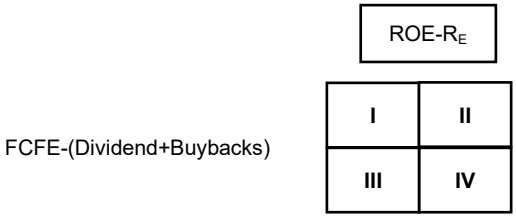
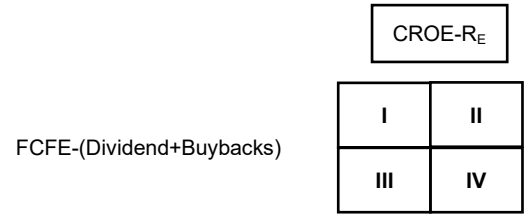


Figure 3: CROE = R_E Quadrants



These figures show quadrants for two measures of ROE. Figure 2 shows quadrants for ROE-R_E. Figure 2 shows Quadrants for ROE-R_E.

Benartzi, Michaely, and Thaler (1997) document that earnings growth rates of dividend-increasing (decreasing) firms do not increase (decrease) in the subsequent year. Consistently, we investigate whether there is a positive relationship between dividend changes and subsequent security returns. We conjecture that the market adopts the future earnings growth to complement current cash dividends payout when it determines securities prices. We use analysts' forecasts of return on equity to help evaluating the dividend decisions. We test market reactions by the four-quadrant box classified according to analysts' forecasts.

Among the observations classified into quadrant (I) by HROE, if the market overreacts to accounting earnings of the firms within quadrant (II) by analysts' forecasts, we expected to document a subsequent price drop. On the other hand, if the market underreacts to accounting measures of firms that may be classified into quadrant (II) by analysts' forecasts, we expected upward drift long after the announcement date.

Modeling Volatility

We begin our analysis by classifying the observations into the four-quadrant box.

$QUA_{i,t} = 1$ if firm i's ROE is less than its R_E and firm i is with cash surplus at year t.

$QUA_{i,t} = 2$ if firm i's ROE is greater than its R_E and firm i is with cash surplus at year t.

$QUA_{i,t} = 3$ if firm i's ROE is less than its R_E and firm i is with cash deficit at year t.

$QUA_{i,t} = 4$ if firm i's ROE is greater than its R_E and firm i is with cash deficit at year t.

The measures of excess return are specified as follows:

$$\text{Historical Return on Equity(HROE)}_{i,t} = \frac{\text{Net Income}_{i,t}}{\text{Book Value of Equity}_{i,t-1}} \quad (1)$$

$$\text{Cost of Equity}(R_E)_{i,t} = R_{ft} + \beta_{i,t} \times (R_{m,t} - R_{ft}), \quad (2)$$

where,

$$R_{m,t} = \prod_{j=-59}^{0}\left(1 + \left(\frac{\text{Index}_{\text{monthly, j}}}{\text{Index}_{\text{monthly, j-1}}}\text{-1}\right)\right) \text{-1} \quad \text{, where } j = t\times 12 \quad (3)$$

$$\text{Accounting Measures of Project Quality}_{i,t} = HROE_{i,t}\text{-}R_{E\ i,t} = \text{Historical Excess Return(HER)}_{i,t}$$

$$\text{Jensen's alpha Measures of Project Quality}_{i,t} = a - R_{ft} \times (1\text{-}\beta_{i,t}) = \text{Market Excess Return(MER)}_{i,t}$$

where,

$a =$ Intercept from the regression $R_{i,t} = a + bR_{m,t}$ (4)

We establish an alternative measure by consensus return on equity (CROE), the arithmetic average of all outstanding analysts' forecasts for a particular fiscal period, that is Fy1 or Fy2 or more than two-year-ahead earnings forecasts (Fy>2), deflated by beginning book value of equity. Data are restricted to cases where at least three analysts contributed to the consensus forecast and where dividend and earnings forecasts were made not more than six months after the previous earnings announcements.

$$\text{Analyst Forecast Measures of Project Quality}_{i,t} = \text{CROE}_{i,t}\text{-R}_{E\ i,t} = \text{"}Consensus\ Excess\ Return\text{"("}CER\text{")\_"}i,t\text{"} \quad (5)$$

$$\text{Analyst j's Forecast Measures of Project Quality} = \text{CROE}_{-j,i,t}\text{-R}_{E\ i,t}, \quad (6)$$

where -j is the set of all analysts except analyst j who forecasts ROE for firm i at year t, and n is the number of analysts in -j.

$$\text{Consensus Return on Equity(CROE)}_{-j,i,t} = \frac{1}{n}\sum_{m\in -j} \text{CROE}_{m,i,t} \quad (7)$$

The measures of cash surplus are specified as follows:

$$\text{Free Cash Flow to Equity(FCFE)}_i = \text{Net Incomes}_i \text{ - (CAPX}_i \text{ + DP}_i\text{)} \times (1\text{-}\delta_i) \text{ - (Change in Non-Cash Working Capital}_i\text{)} \times (1\text{-}\delta_i) \text{ - (Debt Repayments}_i \text{ - New Debt Issued}_i \text{)} \times adj - factor_i \quad (8)$$

Where,

CAPX is the abbreviation of Capital Expenditures.

DP is the sum of Depreciation & Amortization Expenses.

$\text{Change in Non-Cash Working Capital}_i$

$= \Delta\text{Non-Cash Current Assets}_i - \Delta\text{Current Liabilities}_i$,

where Δ is the first level difference in each variable.

$$\delta_i = \text{Weighted Debt Ratio(WDR)}_i = \sum_{t=-4}^{0} \frac{t+5}{15} \times \frac{\text{Book Value of Debts}_t}{\text{BV of Debt}_t + \text{MktCap of Equty}_t} \quad (9)$$

$adj - factor_i$ is used to adjust firm i's new debt issues covered principal repayments.
Partition the sample by the level of newly issued debt.

$$\text{Cash surplus}_{i,t} = \frac{\text{FCFE}_{i,t} - (\text{Cash Dividend}_{i,t} + \text{Buybacks}_{i,t})}{\text{Total Assets}_{i,t-1}} \quad (10)$$

Both (ROE - R_E) and (FCFE - Cash Dividend) measures may be substitute by analyst forecasted measures. We use accounting measures of cash surplus by financial reports and analysts' forecast measure of cash surplus by Consensus cash flow and Consensus dividend per share. We examine: 1. analyst performance in earnings and ROE forecasts, 2. analyst performance in cash flow forecasts, and 3. analyst performance in dividend per share forecasts.

Then we partition the observations into a four-quadrant box by accounting and analyst j's or consensus forecast measures for firm i at year t to obtain $\text{AQUA}_{j,,i,t} = \text{N}$,$\text{N} = 1,2,3,4.$ and $\text{FQUA}_{j,i,t} = \text{N}$,$\text{N} = 1,2,3,4.$, respectively.

We construct a transition matrix to show the probabilities of moving from state at time t to a possible future state at time t+1. We observe four measures of existing state x , including

AQUA_t, $\mathrm{FQUA}_t^{\mathrm{Fy1}}$,$\mathrm{FQUA}_t^{\mathrm{Fy2}}$, and $\mathrm{FQUA}_t^{\mathrm{Fy>2}}$. The $x' = \mathrm{AQUA}_{t+1}$. We calculate the conditional probability, $\Pr(\mathrm{x}' \mid \mathrm{x})$. Moreover, we focus on $\Pr(\mathrm{x}' = 2 \mid \mathrm{x} = 2)$ to identify which of the following measure performs better.

1. Consensus Return on Equity (CROE) performs better than HROE in predicting the four-quadrant box in the subsequent period.

We conjecture that $x = \mathrm{FQUA}_t$ are more precise than $x = \mathrm{AQUA}_t$. That is $\Pr(x' = \mathrm{AQUA}_{t+a} \mid \mathrm{x} = \mathrm{FQUA}_t)$ is greater than $\Pr(x' = \mathrm{AQUA}_{t+a} \mid \mathrm{x} = \mathrm{AQUA}_t)$in statistic significant level, where $x' = x = \mathrm{N},\ \mathrm{N} = 1,2,3,4$. We use Pearson's Q-statistic to perform a Chi-square test of goodness of fit.

2. $x = \mathrm{FQUA}_t^{\mathrm{Fy>2}}$, $\Pr(x' \mid \mathrm{x})$is greater than $x = \mathrm{FQUA}_t^{\mathrm{Fy1}}$, and $\mathrm{FQUA}_t^{\mathrm{Fy2}}$ in statistic significant level, where $x' = x = \mathrm{N},\ \mathrm{N} = 1,2,3,4$.

We anticipate that analysts' longer-termed forecasts outperform their current- and subsequent-year forecasts in predicting the four-quadrant box in the subsequent period.

Logit Model

We conduct a logit regression analyses for $Y_{j,i,t} = \beta' X_{j,i,t}$,

$Y_{j,i,t} = 1$ if quadrant of analyst j's forecast for firm i at time t hits the four-quadrant box in the subsequent period and $Y_{j,i,t} = 0$ otherwise;

β is a column vector of coefficients; and

$X_{j,i,t}$ is a matrix of observations on determined and control variables.

Determined variables are as follows:

$FOST\_Itrms_{j,i,t} = 1$ if analyst j provides cash flow and cash dividend forecasts. $FOST\_Itrms_{j,i,t} = 0$ otherwise.

We conjecture that analysts who provide cash flow and cash dividend forecasts appear to more accurately predict the four-quadrant box in the subsequent period.

$Y_{j,i,t}$ may be based on Fy1, Fy2, and Fy3. We anticipate the coefficient estimates of $FOST\_Itrms_{j,i,t}$ are more significant when $Y_{j,i,t}$ are derived by Fy >2.

$Freq_{j,i,t}$ is $ln(1 + N_{j,i,t})$, where $N_{j,i,t}$ is the number of longer-term forecasts (Fy >2) issued by analyst j for company i in year t. We use a variable $FOST\_Itrms_{j,i,t} \times Freq_{j,i,t}$ to examine the analysts who provide cash flow and cash dividend forecasts more frequently provide longer-term forecasts than those who exclusively provide earnings forecasts.

$Bold_{j,i,t} = 1$ if analyst j's forecast is above both his prior forecast and consensus forecast, or else below both; $Bold_{j,i,t} = 0$otherwise.

Control variables are as follows:

$Size_{i,t}$ is the natural log of firm i's the market value of equity at the end of year t.

$SDROE_{i,t}$ is the standard deviation of firm i's yearly ROEs observations over the past five years.

$LEV_{i,t}$ is the firm i's (Long-term debt + Debt in current liabilities) / Total assets.
$Industy_{i,t}$ is a measure of the number of firm i's two-digit SICs in year t .

$SDFOST_{i,t}$ is the standard deviation of analysts' forecasts for firm i's if at least three analysts contributed forecasts in year t and where the dividend and earnings forecasts were made not more than six months after the previous earnings announcements. We check whether our results are robust to estimate cross-sectional time-series (fixed effects) logistic regressions. Like the traditional panel data regression, the fixed effects logistic regression is equivalent to having one intercept for each firm. We examine the panel data are satisfied fixed effects or random effect.

Abnormal return (*AR*) — Four-factor Model

We estimate the monthly abnormal return as the intercept from the following monthly time-series regression:

$$R_{\mathrm{p,t}} - R_{\mathrm{f\,t}} = \alpha_p + \beta_p(R_{\mathrm{m,t}} - R_{\mathrm{f\,t}}) + s_p\mathrm{SMB}_t + h_p\mathrm{HML}_t + w_p\mathrm{WML}_t + \varepsilon_{p,t}\ , \qquad (11)$$

Where,

Small minus big (*SMB)* is the difference between the return on a portfolio of small stocks and a portfolio of large stocks and is a proxy for small firm risk. High minus low (*HML*) is the difference between returns on a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks interpreted by Fama and French (1993) as a proxy of earnings distress risk. Winner minus loser (*WML*) is the difference between the return on a portfolio of past stock market winners and a portfolio of stock market losers. The past stock market winners (losers) were defined as those stocks with the highest (lowest) 30% return over the 11 months through month t-2.

We use this model to assess whether any superior returns of investment banks' dealing activities with these bold analysts are due to better information or to their choosing stocks with these four characteristic factors. We suppose that investment banks with bold analysts' enjoy the cumulative abnormal returns in dealer activities. We conduct logit regression analyses adopting cumulative abnormal returns as the dependent variable for bold versus herding analyst forecasts with short- and long-windows, with other control variables adopted from Hypothesis 3.

Our methodology differs from that of Cooper et al. (2001), who focus on the timeliness of analyst earnings forecasts, in the following ways. First, we adopt stricter standards to identify the forerunners in both earnings forecasts and investment recommendations. Cooper et al. (2001) define an analyst as a leader if and only if his LFR exceeds one, whereas we identify the ones with LFR in the top (bottom) quintile as the lead (follow) analysts. Second, instead of using only one year to identify lead or follow analysts, our proposed sample period ranges from 1994 to 2004. Such a design helps in reducing the error of wrong identifications. Third, we exclude the observations with none or only one earnings forecasts or recommendation in the previous or subsequent year.

We adopt the four-factor model to obtain the abnormal return and calculate the cumulative abnormal returns (*CAR*) before and after the dividend announcement date. We categorize the observations by *FQUA* and *AQUA* to examine whether the *CAR*s fromτ_1 to τ_2 are significant, where $\tau_1 = -20, -3, 0$ and $\tau_2 = 0, 3, 20, 125, 250, 500$. We anticipate that significant levels of t-test are more pronounced on the criteria of FQUA.

Data

We retrieve data for individual and consensus analyst earnings forecasts, long-term growth forecasts and dividend forecasts from the Institutional Broker Estimate System (I/B/E/S) Detail History tape for years 2011-2017. Accounting data comes from the quarterly consolidated financial statements on COMPUSTAT and/or laser disclosure. Data on individual security returns, trading volume and market index returns are drawn from the Center for Research in Securities Prices (CRSP) tape. Our sample consists of stocks being MSCI Taiwan Index constituents. The Index is a market capitalization weighted index that tracks equity market performance of the large and mid cap segments of the Taiwanese market. It covers approximately 85% of the Taiwanese equity universe. The number of securities is around 90 during our sample period. The 10 sector weights are shown as Table 1. We also examine all quarterly financial statements on DATASTREAM and TEJ. The final sample of 2,842 firm-quarters is yielded. Table 2 provides additional industry grouping information.

Table 1: Sector Weights-the Final Sample of 2,842 firm-quarters Is Yielded

Sector Name	**Weight%**
Information Technology	71.73
Financials	13.14
Materials	5.76
Industrials	2.6
Consumer Discretionary	2.39
Communication Services	2.1
Consumer Staples	1.49
Energy	0.35
Real Estate	0.25
Health Care	0.18
Total	100.00

This table shows summary statistics of the sample. The table shows composition of the sample by industry.

Table 2: Industry Group Name

Industry Group Name	Weight%
Semiconductors & Semiconductor Equipment	57.07
Technology Hardware & Equipment	14.66
Banks	7.08
Materials	5.76
Insurance	4.25
Telecommunication Services	2.1
Diversified Financials	1.81
Transportation	1.72
Consumer Durables & Apparel	1.39
Food Beverage & Tobacco	0.99
Capital Goods	0.88
Retailing	0.82
Food & Staples Retailing	0.5
Energy	0.35
Real Estate	0.25
Automobiles & Components	0.19
Pharmaceuticals, Biotechnology & Life Sciences	0.18
Total	100.00

This table shows descriptive statistics of the variables in the model.

RESULTS

We compare the forecast performance between accounting financial statements and security specialists. Table 3 shows descriptive statistics of the variables in the model. Figure 4 shows the percentage in Damodaran's four-quadrant square box. There are 60.25% observations in quadrant (II) with Cash Surplus and excess returns.

Table 3: Descriptive Statistics

Variables	Mean	Median	SD	Max	Min
Free cash flows to equity (FCFE)	3,072,521	318,605	11,219,796	319,613,491	(400,531,457)
FCFE per share	0.8021	0.3892	5.5903	24.5069	(177.37)
(Cash Dividend + Buybacks) per share	(0.6251)	0.0000	1.9571	1.9979	(30.00)
Cash Surplus per share	1.4882	0.8531	5.9353	33.3045	(177.37)
Historical return of equity (HROE)%	2.6755	2.6900	10.2118	60.5800	(391.86)
CAPM_Beta 3 Mos.	0.9323	0.9008	0.4866	19.5624	(58.38)

This table shows descriptive statistics of variables used in the analysis.

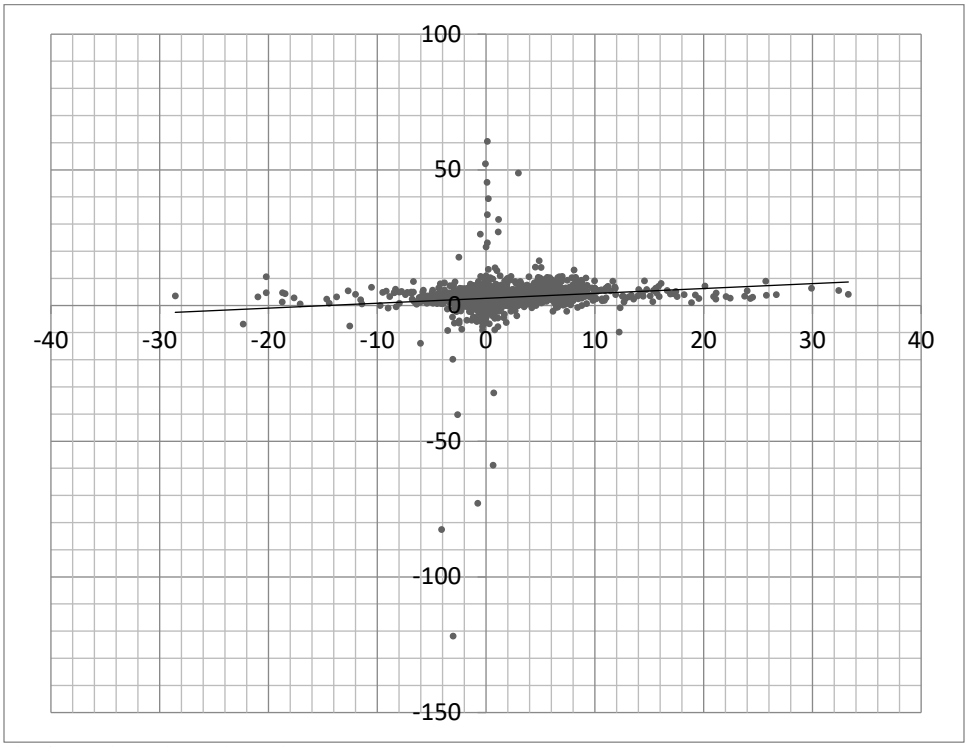
Figure 4: Damodaran's Four-quadrant Square Box

FCFE –(Cash Dividend + Buybacks)	Historical Return of Equity (HROE) – Cost of Equity (R_E)	
	Negative	**Positive**
Positive	(I) 17.05%	(II) 60.25%
Negative	(III) 7.82%	(IV) 14.88%
	Poor Projects	**Good Projects**

Figure 4 shows the percentage in Damodaran's four-quadrant square box

Figure 5: shows Cash surplus vs. Excess Returns Without Four Outliers (Cash Surplus Per Share Is Less Than -162 and Excess Returns Are Less Than -252%).

Figure 5: Cash Surplus vs. Excess Returns



This figure shows the Cash Surplus versus Excess Returns.

Table 4 illustrates the difference in accounting measure HROEs and specialist measure CROEs. Model 2 shows R square 0.0110 more than in Model 1. Accordingly, we address the impacts of difference between HROE and CROE to control variables. In Model 3, the coefficient of firm size (0.121, $p>0.01$), Debt Ratio (0.092, $p>0.01$), MSCI Sector (-0.233, $p>0.01$) are not significant. However, the cross Sector × CROE (-0.294, $p<0.1$) is significant, explaining the firm excess return performance from quadrant (I) with negative present value projects to quadrant (II) with positive present value projects.

Table 4: Regression Results of Excess Returns

Dep. Variable-ROE-E(R)>0	1	2	3
Intercept	–0.113*	–0.134**	–0.134**
	(–1.89)	(–1.98)	(–1.98)
HROE	0.024		0.021
	(1.08)		(1.03)
CROE		0.049**	0.041**
		(2.02)	(2.00)
Size			0.121
			(0.92)
Debt Ratio			0.092
			(1.64)
Sector (Industries)			–0.233
			(–1.31)
Sector × CROE			–0.294*
			(–1.95)
Years			Yes
R^2	0.0086	0.0110	0.0370
Adj- R^2	0.0083	0.0107	0.0366
N	2,962	686	686

** p<0.1; ** p<0.05; *** p<0.01; numbers in the parentheses are t values.*

The most striking aspect of the results is the industry Sector cataloging by MSCI in the causality relation between the specialists. CROE bias are larger in some industries to influence their forecast capabilities. However, after controlling the variable, Consensus Return on Equity (CROE) dynamic changes from quadrant (I) to quadrant (II) become a more significant leading factor in s the subsequent period than accounting financial measures.

CONCLUDING COMMENTS

Our empirical result shows that Consensus Return on Equity (CROE) performs better than HROE in predicting the four-quadrant box in the subsequent period. Due to the fact that a firm's accounting earnings may deviate from its economic earnings, analysts may strategically pursue forecast accuracy, especially in the short term, at the expense of information users in the long term. Namely, analysts' longer-termed earnings forecasts may be more informative than current- and subsequent-year EPS forecasts as to the true value of a firm's long-term investment projects. Analysts' longer-termed earnings forecasts outperforms their current- and subsequent-year EPS forecasts in predicting the four-quadrant box in the subsequent period.

Moreover, we explore that analysts need to take greater efforts to communicate with firm management in order to make forecasts of cash flows, which most typically relates heavily with the firm's expansion projects or investment plans, than earnings forecasts. The analysts who provide cash flow and cash dividend forecasts outperform those who exclusively provide earnings forecasts. They appear to more accurately predict the four-quadrant box in the subsequent period and more accurate longer-term forecasts than those who exclusively provide earnings forecasts.

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