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Research article

White lie effects of information asymmetry on stock momentum

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ABSTRACT

This paper aims to explore the relationship between information asymmetry and stock momentum. Using winner and loser approach, we find that winners with exaggerated forecast of earnings per share are more likely to have contrarian profits in subsequent holding periods. On the contrary, winners with low or middle-low information asymmetry tend to continue their good returns in future holding periods. In addition, the losers with middle information asymmetry achieve the highest contrarian profits, which may be called "white lie effects."

1. Introduction

In this paper, we examine how information asymmetry affects the stock market and then investigate the relationship between information asymmetry and price momentum. Researchers such as Zhang (2006), Chen and Zhao (2012) have similar studies. Information asymmetry means that some of the market participants such as firm managers have more or better information than the others. This may lead to so-called informed trading, and cause subsequent price effect of stocks.

Price momentum are firstly proposed by Jegadeesh and Titman (1993). They find a profitable strategy that buying a good performing winner and selling a poor performing loser simultaneously in the stock market within one year will generate significantly positive returns over 3–12 months holding period. Gutierrez and Prinsky (2007) define two types of momenta in stock returns, one owing to returns relative to other stocks and the other owing to firm-specific abnormal returns. Relative return-momentum is based on the extreme deciles of prior six-month returns, as introduced by Jegadeesh and Titman (1993), whereas abnormal-return-momentum is based on firm-specific residual returns more than one standard deviation from zero. They show that relative-return momentum reverses strongly in the long run, whereas abnormal-return momentum persists for years. The reason is that institutions usually ignore firm specific abnormal returns and have an underreaction. This result induces us to explore another underlying factor of momentum profit. We suggest that information asymmetry may be a factor that leads to the different results, since specific abnormal return may be more related to internal information, which is much more hardly acquired than that of firm relative return.

In addition, Blitz et al. (2011) examine residual momentum and total return momentum. They suggest that investors' under-reaction is more obvious for firm-specific events than for common events. This may be because firm-specific events are earlier known by specific people related to the firm, but information diffuses only gradually. As suggested by Kracher and Johnson (1997), managers may use some special programs, such as stock repurchase programs, as a signaling device. However, the usefulness of the practice could be weakened in significance, or it may degenerate to lies and false statements.

Da et al. (2014) propose a frog-in-the pan hypothesis and find that continuous information lead to strong persistent momentum, and the return continuation does not reverse in the long term. Luo et al. (2019) suggest that skepticism causes both momentum and reversals. Investors are skeptical of others' signal quality, and believe that those early-informed investors have learned little about the information. Thus, underreaction and short-term momentum occurs. Meanwhile, if skeptical investors react to stale information, then momentum also occurs, but reversals will follow subsequently. Cujean and Andrei (2016) suggest

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that stock momentum occurs when information flows at an increasing rate. They view word-of-mouth communication as a mechanism that carried out this condition and lead to short-term momentum and subsequent long-term reversal. They prove that word-of-mouth communication help disseminate rumors and generates price continuation and subsequent reversals. Some other studies such as Chen and Lu (2017), Czaja et al. (2013) and Doukas and McKnight (2005) also investigate the relationship between information diffusion and stock momentum. These recent studies focus on the frequency and process of the information transmission regarding stock momentum. However, we are more interested in the information quality and the magnitude of information bias or inaccuracy, which in some way may also be related to lies or false statements mentioned above.

Lundquist et al. (2009) suggest that individuals have an aversion towards lying about private information and that the aversion to lying increases with the size of the lie and the strength of the promise. Clots Figueras et al. (2015) suggest that deception in Economics is a rational act if it leads to an increase in one's payoffs. Situations such as a firm overstating a project's value, or overstate the gains from a project to the employees, are common and may have acts of lying. Gneezy (2005) documents that there are several motives for lying ranging from pure selfish to altruistic. Erat and Gneezy (2012) suggest that there are two kinds of white lies, including altruistic white lies, and Pareto white lies. Those that is beneficial to others at the expense of the person telling the lie are altruistic white lies, whereas those that help both others and the liar are Pareto white lies. In some cases, information asymmetry may belong to the Pareto white lies, since it may help investors avoid loss while maintaining the profits of managers or analysts, if the information is not highly distorted.

As for how information asymmetry impact on momentum, Zhang (2006) demonstrate that stocks with high information uncertainty show more obvious stock momentum. They prove that higher information uncertainty lead to relatively higher expected returns following good news and relatively lower expected returns following bad news. Chen and Zhao (2012) introduce informed trading to emphasize the role of information asymmetry regarding stock momentum, and prove that the effect of informed trading is stronger than that of informed uncertainty. They exhibit that trading strategies suggested by Zhang (2006) work well only if the stocks have high probability of informed trading (PIN), which is formed by a formula including the new information probability when the trading day begins and the arrival rate of orders from informed traders. They prove that low-PIN stocks do not exhibit price momentum even though the information uncertainty level is high, whereas the stocks with high-PIN stocks show price continuation for all uncertainty levels of the stocks. Daniel at al. (1998) and Hong and Stein (1999) argue that due to information asymmetry, investors usually respond to stock market information inadequately at the beginning, and turn out to be overreacting. However, Gutierrez and Kelley (2008) document that the reaction of stock returns to information, both private and public, presents both short-term contrarian and long-term momentum. Hence, we know that the determining factors of price momentum include information uncertainty and the reaction behavior of investors.

The above studies based on information uncertainty do not use forecast error by the analyst as an indicator. There are also few studies that classify forecast errors to analyze its relationship with momentum. We, therefore, examine how asymmetric information affects the momentum profits of past winners and contrarian profits of past losers by using two indicators of asymmetric information, classified forecast error and forecast dispersion. Considering the possibility that high forecast error may cause investors' cognitive biases and overrecation, we propose a hypothesis that high information asymmetry will bring contrarian profits; whereas, low information asymmetry will lead to momentum profits due to slow response of relatively correct or not too distorted information. We find that winners with higher information asymmetry (exaggerated forecast of earnings per share, EPS) are more likely to have contrarian profits, whereas middle-low/middle degree of information asymmetry can lead to better momentum profits for top 20% winners/contrarian profits for bottom 20% losers. Thus, it means that the momentum/contrarian profits will be best for past winners/losers, if the information asymmetry is relatively low. This result is not consistent with that of Zhang (2006).

The remainder is structured as follows: Section 2 introduces the methodology and variable construction, section3 demonstrates the main empirical results, section 4 utilizes the robustness test to validate whether different proxy have similiar results, and section 5 concludes the paper.

2. Methodology and variable construction

2.1. Data and variable construction

Our data is from the Taiwan Economic Journal (TEJ). There are 92,445 observations in our sample from 2004 to 2014. The criteria of sample selection are as follows: (1) Companies to be included in the sample should be listed on the Taiwan Stock Exchange (TSE); (2) Companies with incomplete financial data, preferred shares or TDR will also be excluded from the sample.

- As for variable construction, Elton et al. (1984) mention that a sizeable proportion of analyst forecast errors is contributed to misestimate of the firm-specific factors rather than to that of the economy or industry factors. Their finding suggests that analyst forecast errors are a reasonable proxy for the degree of information asymmetry about the firm. Therefore, we use analyst earnings forecast errors and the dispersion in analyst forecasts to gauge the degree of information asymmetry between managers and investors. These two variables definitions and their Eqs. (1) and (2) are as follow:
- Forecast error: we take the difference between mean analyst earnings forecasts and actual earnings, and then scaled it by the absolute value of actual earnings (Elton et al., 1984).

$$Forecast\_Error(FE) = \frac{\overline{F}_{i,t} - A_{i,t}}{|A_{i,t}|} \tag{1}$$

- Forecast dispersion: we take the standard deviation of analyst earnings forecast, and then scale it by the absolute value of the mean earnings forecast (Elton et al., 1984).

$$Forecast\_Dispersion(FD) = \frac{\sigma_{F_{i,t}}}{|\overline{F}_{i,t}|} \tag{2}$$

$\sigma_{F_{i,t}}$ = The standard deviation of analysts' EPS Forecast in firm i for time t
$\overline{F}_{i,t}$ = Average Analysts' EPS Forecast in firm i for time t
$A_{i,t}$ = Actual EPS in firm i for time t

2.2. Methodology

We examine the momentum or contrarian strategy of winners and losers in different scenarios of information asymmetry to study the relation between information asymmetry and momentum/contrarian profits. Following Jegadeesh and Titman (1993), the formulations are given by (3), (4), (5)

$$R_{i,j} = \prod_{j=t-J}^{t-1} (1 + r_{i,j}) - 1 \tag{3}$$

$$R_{i,k} = \prod_{j=t}^{t+k-1} (1 + r_{i,j}) - 1 \tag{4}$$

$$R_P = \frac{\sum_{i=1}^{n} R_{i,k}}{n} \quad (5)$$

The $R_{i,j}$ in Eq. (3) is the return of stock i in the formation period. $R_{i,k}$ in Eq. (4) is the return of stock i in the holding period. The relative strength portfolios will be formed based on j-month lagged returns and held for K months. Eqs. (3), (4), and (5) estimate the returns of the momentum portfolios with (j) formation and (k) holding periods (j = 3 months, and k = 3, 6, 9, 12 months, respectively). Eq. (5) shows that R_P is the equal-weighted average return of the portfolio during the holding period. Accordingly, we calculate the formation period return ($R_{i,j}$) and holding period returns ($R_{i,k}$) of each time point respectively This gives us different kinds of matrix strategies along with the overlapping cumulative returns. We have two trading strategies based on price momentum in the following:

2.2.1. The traditional winner and loser strategy

The first trading strategy is stimulated by the overlapping period approach of Jegadeesh and Titman (1993). The momentum portfolio returns include 3-months formation period (j = 3 months) and different holding periods (k = 3, 6, 9, and 12 months). We classify firms into quintile portfolios according to their cumulative returns over the prior j months at each month t. The "winner'' is defined as the firms in the top quintile and the "loser" is defined as those in the bottom quintile during formation periods. Then, this portfolio is held for k months. The holding period returns are the equally weighted averages of stock returns from strategies of holding the portfolios for k months, implemented according to the returns of prior j months.

2.2.2. The winner and loser strategy in five scenarios of information asymmetry

At the beginning time t, the stocks in each portfolio will be then sorted into high, middle-high, middle, middle-low, and low information asymmetry. We combine the information asymmetry and traditional winner and loser approach to distinguish how different information asymmetry affects the performance of momentum strategies. The portfolios are formed in 3 months and held for the next 3, 6, 9, 12 months under five different levels of asymmetric information scenarios. Accordingly, the returns of the portfolios in month t are given by Eqs. (6), (7), (8), (9), and (10).

$$R_P^H = \frac{1}{N} \sum_{FE_{i,t} \in FE^{top-quintile}} R_{i,t} \quad (6)$$

$$R_P^{MH} = \frac{1}{N} \sum_{FE_{i,t} \in FE^{middle-high-quintile}} R_{i,t} \quad (7)$$

$$R_P^{M} = \frac{1}{N} \sum_{FE_{i,t} \in FE^{middle-quintile}} R_{i,t} \quad (8)$$

$$R_P^{ML} = \frac{1}{N} \sum_{FE_{i,t} \in FE^{middle-low\_quintile}} R_{i,t} \quad (9)$$

$$R_P^{L} = \frac{1}{N} \sum_{FE_{i,t} \in FE^{bottom-quintile}} R_{i,t} \quad (10)$$

$$FE^{top-quintile} = \text{forecast error} > 80\%$$

$$FE^{middle-high-quintile} = 60\% < \text{forecast error} < 60\%$$

$$FE^{middle-quintile} = 40\% < \text{forecast error} < 60\%$$

$$FE^{middle-low-quintile} = 20\% < \text{forecast error} < 40\%$$

Table 1. The portfolio returns of winners and losers in five scenarios of information asymmetry levels.

Panel A: high/middle-high/middle/middle-low/low information asymmetry + top 20% winner and bottom 20% loser		M33	M36	M39	M312
Top 20% winner	High (forecast error >80%)	-2.83%	-4.19%	-8.667%	-9.75%
	p value	7.38%*	6.56%*	0.34%***	0.29%***
	Middle-high (60% < forecast error<80%)	6.17%	7.13%	6.424%	4.85%
	p value	1.53%**	4.40%**	10.81%*	17.06%
	Middle (40% < forecast error<60%)	5.23%	8.18%	7.025%	6.11%
	p value	0.21%***	0.03%***	0.40%***	1.93%**
	Middle-low (20% < forecast error <40%)	9.65%	18.60%	21.463%	27.38%
	p value	0.00%***	0.00%***	0.00%***	0.00%***
	Low (forecast error<20%)	7.58%	12.40%	12.465%	13.72%
	p value	0.01%***	0.01%***	0.076%***	0.03%***
Bottom 20% loser	High (forecast error >80%)	-0.71%	0.14%	0.674%	2.85%
	p value	35.18%	48.25%	43.542%	28.46%
	Middle-high (60% < forecast error<80%)	5.12%	8.22%	7.422%	7.40%
	p value	0.91%***	1.13%**	4.469%**	5.94%*
	Middle (40% < forecast error<60%)	8.49%	17.62%	19.723%	24.85%
	p value	0.00%***	0.00%***	0.000%***	0.00%***
	Middle-low (20% < forecast error<40%)	9.18%	18.66%	19.038%	21.52%
	p value	0.00%***	0.00%***	0.000%***	0.00%***
	Low (forecast error<20%)	1.60%	1.90%	0.72%	0.004%
	p value	23.65%	28.53%	43.14%	49.96%

Panel B: Traditional top 20% winner and bottom 20% loser	M33	M36	M39	M312
Top 20% winner	4.098%	8.437%	12.013%	15.225%
p value	0.082%***	0.00%***	0.00%***	0.00%***
Bottom 20% loser	3.076%	7.055%	10.925%	15.482%
p value	1.62%**	0.13%***	0.02%***	0.00%***

Table 2. The proportion of different levels of information asymmetry for winners and losers.

	Information asymmetry level				
	Low	Middle-low	Middle	Middle-high	High
Winners					
Observations	881	981	826	699	550
Proportion%	22.61	25.17	21.19	16.91	14.11
Losers					
Observations	917	395	489	501	891
Proportion%	27.81	11.99	14.85	18.25	27.05

$FE^{bottom-quintile} = \text{forecast error} < 20\%$

where.

R_P^H is a cross-sectional equally-weighted portfolio of firms in the top quintile asymmetric information of the top 20/bottom 20 winner/loser group.

R_P^{MH} is a cross-sectional equally weighted portfolio of firms in the middle-high quintile asymmetric information of the top 20/bottom 20 winner/loser group.

R_P^M is a cross-sectional equally weighted portfolio of firms in the middle quintile asymmetric information of the top 20/bottom 20 winner/loser group.

R_P^{ML} is a cross-sectional equally-weighted portfolio of firms in the middle-low quintile asymmetric information of the top 20/bottom 20 winner/loser group.

R_P^L is a cross-sectional equally-weighted portfolio of firms in the bottom quintile asymmetric information of the top 20/bottom 20 winner/loser group.

2.2.3. *t distribution tests*

We conduct t-distribution to test one of two possible null hypotheses:

The first one is that the population mean is equal to zero, in which a two-tailed test is applied. i.e. $H_0 : \mu_1 = 0$, when we test the portfolio returns of winners and losers in five scenarios of information asymmetry levels.

The second one is that two population means are equal, in which a two-tailed test is applied, i.e. $H_0 : \mu_1 = \mu_2$ when we execute the difference analysis between M33&M36, M36&M39, M39&M312, M312&M33, and between winners and losers in five scenarios of information asymmetry.

3. Main results

To examine the information asymmetry effects on price momentum, in Table 1 we sorted out firms with high information asymmetry (80%–100%), middle-high (60%–80%), middle information asymmetry (40%–60%), middle (20%–40%) and low information asymmetry (0%–20%) in each month to test the performance of our momentum strategy in different scenarios of information asymmetry levels. They are also compared to the traditional winner and loser strategy, which are the equally weighted portfolios constructed based on 3 months formation period returns and holding for 3, 6, 9, 12 months. Panel A in Table 1 shows the empirical results of the top 20% winner and bottom 20% loser. Winner trading strategies for holding three months, six months, nine months and twelve months of firms with high information asymmetry yield significant contrarian profits. The returns are respectively -2.835%, -4.191%, -8.677% and -9.751%. This means investors can go against existing upward market trends to generate profits. In other words, investors can make profits by selling stocks. It is reasonable that the winners with good formation period returns built on high forecast errors (i.e., exaggerated forecast of EPS) are more likely to have contrarian profits in

Table 3. The Difference Analysis among M33&M36, M36&M39, M39&M312, M312&M33 in five scenarios of information asymmetry.

High/middle-high/middle/middle-low/low information asymmetry + top 20% winner and bottom 20% loser		M33 &M36 difference	M36&M39 difference	M39&M312 difference	M312&M33 difference
Top 20% winner	High (forecast error >80%)	1.36%	4.48%	1.08%	6.92%
	p value	34.38%	14.22%	40.82%	4.15%**
	Middle-high (60% < forecast error<80%)	0.96%	-0.71%	1.57%	-1.32%
	p value	42.39%	45.71%	41.45%	41.05%
	Middle (40% < forecast error<60%)	2.95%	1.16%	0.91%	-0.88%
	p value	15.72%	36.98%	40.74%	39.89%
	Middle-low (20% < forecast error <40%)	8.95%	2.86%	5.92%	17.73%
	p value	0.82%***	26.18%	11.84%	0.00%***
	Low (forecast error<20%)	-4.82%	0.06%	-1.26%	-6.14%
	p value	10.81%	49.51%	40.90%	8.35%*
Bottom 20% loser	High (forecast error >80%)	0.86%	2.18%	2.18%	3.57%
	p value	40.97%	36.87%	36.87%	25.23%
	Middle-high (60% < forecast error<80%)	3.10%	0.81%	0.02%	2.27%
	p value	22.77%	44.29%	49.87%	33.01%
	Middle (40% < forecast error<60%)	9.13%	2.10%	5.13%	16.36%
	p value	1.05%**	34.60%	22.57%	0.28%***
	Middle-low (20% < forecast error<40%)	9.48%	0.37%	2.49%	12.34%
	p value	5.65%**	47.94%	36.26%	1.74%**
	Low (forecast error<20%)	0.30%	1.18%	-0.72%	-1.60%
	p value	47.06%	41.26%	45.51%	38.09%

Table 4. The Difference Analysis between winner and loser in five scenarios of information asymmetry.

Winner and loser comparison in different scenarios of information asymmetry	M33 winner and loser difference	M36 winner and loser difference	M39 winner and loser difference	M312 winner and loser difference
Overall forecast error	0.51%	0.92%	0.10%	-1.60%
p value	39.97%	38.57%	48.98%	37.39%
High (forecast error >80%)	-2.12%	-4.33%	-9.34%	-12.60%
p value	21.77%	15.58%	3.67%**	1.97%**
Middle-high (60% < forecast error<80%)	1.05%	-1.09%	-1.00%	-2.54%
p value	38.34%	42.09%	44.12%	35.69%
Middle (40% < forecast error<60%)	-3.26%	-3.26%	-9.44%	-12.70%
p value	9.75%*	1.27%**	0.41%***	0.16%***
Middle-low (20% < forecast error <40%)	1.05%	0.47%	-0.06%	2.42%
p value	43.98%	49.61%	33.56%	18.45%
Low (forecast error<20%)	-2.12%	5.98%	10.50%	11.74%
p value	2.44%**	1.34%**	1.95%**	1.39%**

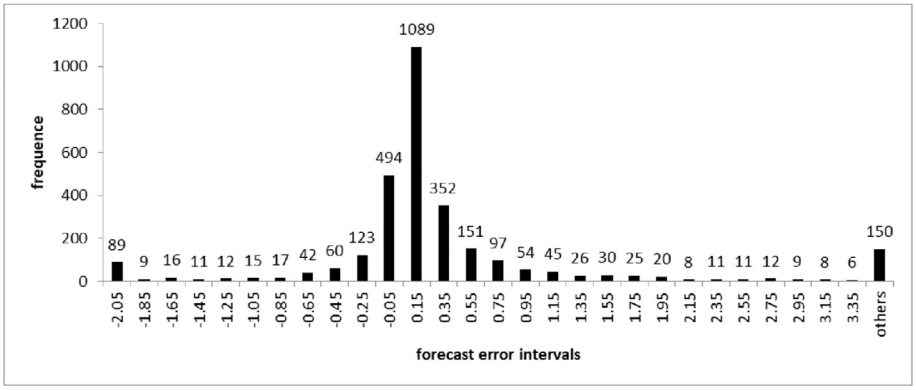

Figure 1. The distribution of information asymmetry (scaled forecast error, 2007–2017).

subsequent holding periods. This reflects the phenomenon due to the overreaction as suggested by Hong and Stein (1999).

In contrast, there are significant momentum profits in all the other scenarios of information asymmetry. Noticeably, the momentum profits of the top 20% winners with middle-low forecast errors are respectively 9.656%, 18.604%, 21.463%, and 27.387%. These are the highest among the different scenarios of information asymmetry. As seen in Table 2, there are 981 winners with middle-low information asymmetry, which are also the highest observations among various scenarios of information asymmetry levels. The proportion of winners with low (22.61%), middle-low (25.17%) and middle (21.19%) sum up to be 68.97%, which is majority of the winners. Most of them are winners with underestimated forecast errors or relatively accurate forecasts of earnings. It appears that these winners can have good performance of momentum profits, and those with middle-low information asymmetry lead to the best momentum performance.

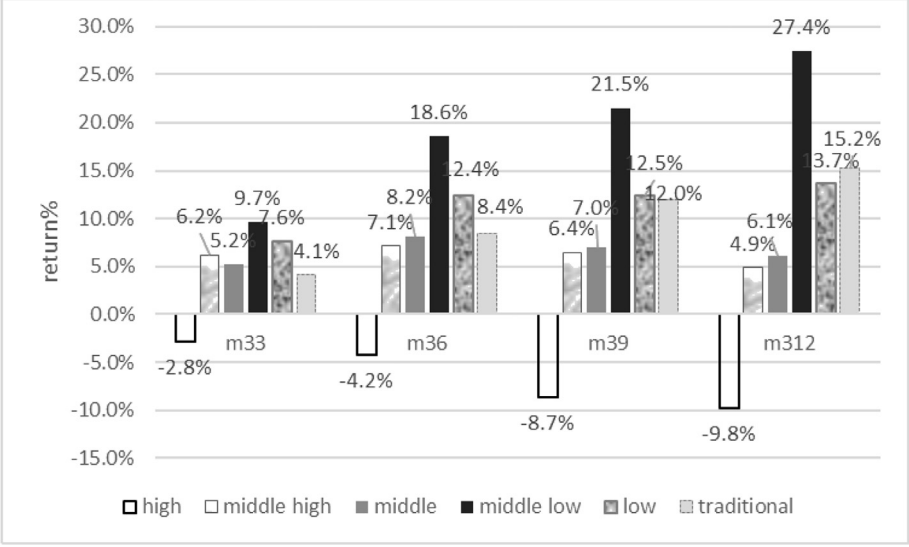

Figure 2. The momentum profit comparisons between the top 20 winners in five information asymmetry scenarios and those of traditional top 20 winners.

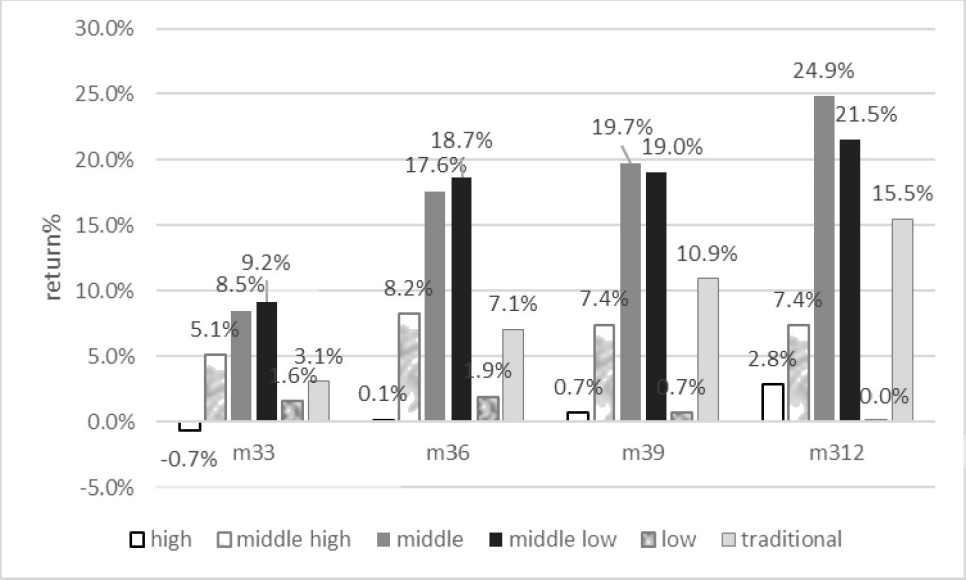

Figure 3. The momentum profit comparisons between the bottom 20 losers in five information asymmetry scenarios and those of traditional bottom 20 losers.

In addition, Table 3 and Table 4 show the performance differences between these M33, M36, M39, and M312 as well as between the winners and losers. The test results show that the differences between M33 and M36, and between M33 and M312 for the top 20% winners with middle-low information asymmetry are significant. This strengthen our argument that those winners with middle-low information asymmetry have the best momentum performance, but the performance leap occurs when entering the second period (M36) or when the time period is long enough (M312). Similarly, this phenomenon also occurs when we compare the differences between M33 and M36, and between M33 and M312 for the top 20% losers with middle-low and middle information asymmetry. Apparently, the performance changes are not significant between the third period and the second period or between the fourth period and the third period. As for the comparison of winners and losers for different levels of information asymmetry, only the winners and losers with low information asymmetry has significant positive difference. In such case, the analyst forecasts are relatively correct and investors can have momentum profits by buying winners and selling losers at the same

Table 5. Robustness check -use forecast dispersion as an alternative proxy variable for information asymmetry to test on price momentum.

Panel A: high/middle-high/middle/middle-low/low information asymmetry + top 20% winner and bottom 20% loser)		M33	M36	M39	M312
Top20% winner	High (forecast dispersion >80%)	-3.087%	-3.582%	-0.322%	-0.319%
	p value	7.041%*	15.875%	46.748%	46.995%
	Middle-high (60% < forecast dispersion <80%)	3.989%	6.952%	7.028%	9.208%
	p value	2.292%**	1.479%**	2.829%**	1.924%**
	Middle (40% < forecast dispersion<60%)	5.442%	11.344%	14.131%	16.848%
	p value	0.267%***	0.012%***	0.006%***	0.006%***
	Middle-low (20% < forecast dispersion <40%)	10.996%	13.120%	12.751%	15.122%
	p value	0.00%***	0.00%***	0.00%***	0.00%***
	Low (forecast dispersion<20%)	7.952%	14.813%	16.382%	18.296%
	p value	0.007%***	0.001***%	0.001***%	0.003%***
Bottom 20% loser	High (forecast dispersion >80%)	-0.744%	2.566%	4.066%	5.492%
	p value	35.199%	23.132%	18.402%	15.128%
	Middle-high (60% < forecast dispersion<80%)	3.103%	6.514%	5.104%	7.429%
	p value	7.190%*	2.387%**	8.926%*	5.135%**
	Middle (40% < forecast dispersion<60%)	5.636%	8.024%	11.271%	16.267%
	p value	0.627%***	1.096%**	0.499%***	0.289%***
	Middle-low (20% < forecast dispersion<40%)	10.996%	13.120%	12.751%	15.122%
	p value	0.000%***	0.000%***	0.000%***	0.000%***
	Low (forecast dispersion<20%)	7.014%	9.975%	8.059%	15.422%
	p value	2.816%**	4.556%**	10.00%*	5.358%**

Panel B: Traditional top 20% winner and bottom 20% loser	M33	M36	M39	M312
Top 20% winner	4.098%	8.437%	12.013%	15.225%
p value	0.082%***	0.00%***	0.00%***	0.00%***
Bottom 20% loser	3.076%	7.055%	10.925%	15.482%
p value	1.62%**	0.13%***	0.02%***	0.002%***

time. Meanwhile, those with middle level of information asymmetry show significant negative difference. This means investors can earn contrarian profits by buying losers and selling winners if the forecast errors are in the middle levels.

Figure 1 shows the distribution of information asymmetry (scaled forecast error). We can see there is a high incidence of slightly positive forecast errors. From Figure 2, we can see the contrarian returns (negative return bars) of winners with high information asymmetry are getting larger if holding longer. Meanwhile, the momentum profits of winners with all the middle-low (20% < forecast error<40%) and most of the low (forecast error<20%) information asymmetry are higher than those of traditional top 20% winner strategy (also seen in panel B of Table 1). It also makes sense that the winners with underestimated forecast errors or relatively accurate forecasts of earnings by analysts tend to continue their good returns in the future holding periods. Especially when there is slightly negative information asymmetry (between 20% and 40%), the momentum profits are highest in four holding periods.

On the other hand, the contrarian profits occur in losers with middle information asymmetry (more than 95% of them are with slightly positive forecast errors) are respectively 8.496%, 17.626%, 19.723%, and 24.852%. In Figure 3, it appears that the losers with middle forecast errors are higher than the other ones in all different holding periods, especially greatly higher than those with low forecast errors and those with high forecast errors. Furthermore, they are also higher than the traditional ones. It demonstrates that the losers with middle information asymmetry have higher contrarian profits than those losers with higher or lower information asymmetry. The reason may well be that the slightly positive errors (slight overestimation) can thereafter help the losers obtain better market reactions. The overestimation, although not necessarily being altruistic or Pareto as suggested by Gneezy (2005) and Erat and Gneezy (2012), may not mean to harm others' benefits. As such, it may well be called "White lie effects." These effects can bring positive contrarian performance for the past losers, whereas the conservative forecasts by analysts can lead to better momentum performance for the past winners. Combining the results of top 20% winners and bottom 20% losers, we may deduce that middle-low/middle degree of information asymmetry can lead to better performance of momentum profits of the top 20% winners/contrarian profits of bottom 20 losers.

4. Robustness test

We adopt forecast dispersion as a proxy variable of information asymmetry to check how another measure of information asymmetry affects price momentum. The momentum profits of the top 20% winner with low/middle information asymmetry are respectively higher than those of traditional top 20 winners. Meanwhile, the contrarian profits of the bottom 20% loser with middle information asymmetry are higher than those of the other bottom 20 losers. As shown in Table 5, we have similar results as the main report of Table 1.

5. Conclusion

We aim to explore the effect of information asymmetry upon stock market. Using winner and loser approach, we find that winners whose good returns in the formation periods are built on the forecast error (i.e., exaggerated forecast of EPS) are more likely to have contrarian profits in subsequent holding periods. On the contrary, winners with underestimated forecast errors or relatively accurate forecasts of earnings by analysts tend to continue their good returns in the future holding periods. In addition, the losers with middle information asymmetry have the highest contrarian profits. Compared to other recent studies regarding stock momentum, this paper focuses on the information quality and the magnitude of information bias or inaccuracy, rather than the frequency and process of the information transmission regarding stock momentum. Our finding shows how Taiwan investors make decisions in investment strategies when facing the magnitude of information asymmetry. The finding of slightly positive forecast errors can lead to the best performance of contrarian profits may suggest some degree of information asymmetry can help the past losers gain better performance. We may call these phenomena "white lie effects," which to some degree would help the investors gain profits or avoid unnecessary losses, although that may be arguable in the moral sense. In contrast, the conservativeness of forecasts by analysts can help the winners to continue their momentum reward.

This paper makes three valuable contributions to the continuing discussion on the cause of the evidence on stock momentum. First, this paper links individual finance behavior to information asymmetry. Secondly, we compare the performances of portfolios based on momentum or contrarian strategy of past winners or losers in alternative scenarios of information asymmetry with those from the traditional winner and loser momentum strategy. Thirdly, it highlights the "white lie effects" that commonly exist in financial markets.

Declarations

Author contribution statement

S.H. Lin: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

H.H. Lai: Conceived and designed the experiments; Performed the experiments; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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The authors declare no conflict of interest.

Additional information

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