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The interaction between individual and industry momentum

Abstract

In a developing country in which the majority investors are individuals, the stock market is a contrarian one. In contrast, in a developed country in which the majority investors are institutions, the stock market is a momentum one. Furthermore, the industry type is important in explaining the momentum phenomena, with different effects in momentum and contrarian countries. Specifically, industry factors will decrease the momentum phenomenon and increase the contrarian one. The investment portfolios presented in this work are developed by buying individual stocks which are part of a winning industry in a contrarian country, and individual stocks which are part of a median industry in a momentum country, thus earning more profits.

Keywords: momentum, industry momentum, contrarian.
JEL Classification: G10, G11.

Introduction and literature review

There are three major issues with regard to the momentum strategy in the existing literature: the time period of the momentum strategy; the important factors of the strategy; and the driving forces of the phenomenon itself. From our paper, we find that: 1. The momentum effect exists within one year. 2. Industry is an important factor with regard to the momentum strategy. 3. The driving forces of the industry momentum and individual stock momentum are different and opposite.

The momentum phenomenon is that stocks that performed well in the past will keep performing well in the future, and that those performed poorly will also continue to do so. Investors who apply momentum strategies believe that they will gain significant profits by buying past winners and selling past losers (Jegadeesh & Titman, 1993).

Jegadeesh & Titman (2001) continued to investigate the momentum effect in the USA in the 1990s, and found that momentum profits continued in this period; therefore, the phenomenon was not caused by a data-snooping bias. Grinblatt et al. (1995) examined the extent to which mutual funds purchased stocks based on their past returns and their "herding" behavior. Chordia (2002) found that time-series returns due to investors' irrationality caused abnormal profits, and short-term returns or momentum was the explanation put forward for this.

The contrarian strategy relies on the negative relationship between current and previous returns, selling past winners and buying past losers to gain abnormal profits. Investors can apply these strategies in the short term (one week or one month) or the long term (three to five years) (DeBont & Thaler, 1985; Jegadeesh, 1990). DeBondt and Thaler (1985, 1987) found that investors would overreact to news and cause the stock price to be overestimated. Therefore, investors can adopt a contrarian strategy to invest in stock for three to five years. Elton (1995) considered this finding in relation to the tax-saving effect (January effect) and firm effect, and found that long-term holding can make stocks that performed worse in the past deliver better performance. Jegadeesh (1990) believed that the contrarian strategy works over the short term (one week or one month), because overreaction also exists for short periods. Some research has attributed long-term price reversals to investors' overreaction[1], market microstructure biases, and time-varying returns[2]. In addition, other studies have attributed short-horizon price reversals to return cross-autocorrelations[3] and transaction cost[4].

How long do price continuations and reversals last? Conrad and Kaul (1998) claimed that a momentum strategy is profitable in the intermediate term (3 to 12 months) and a reversal strategy is profitable in the short term (one week or one month) and long term (three to five years). Therefore, at least in the USA, the optimal strategy is a momentum one in the intermediate term and a contrarian one in the short and long terms. From our data, it is momentum in the UK's stock market in one year. The momentum period is shorter than the USA's. However, in Taiwan it is contrarian in one year.

What are the characteristics of the individual investors' behavior? Individual investors are prone to sell past winners and hold past losers based on the disposition effect (Shefrin & Stateman, 1985; Odean, 1998). In other words, due to risk aversion, loss hatred and underconfidence, investors have negative feedback trading behaviors and adopt contrarian strategies. Furthermore, the overreaction of individual investors' will cause the disposition effect to weaken the momentum effect and strengthen the reversal effect. As to the institutional investors'

[1] Chopra, Lakonishok, and Ritter (1992).
[2] Ball, Kotheri and Shanken (1995), Conrad and Kaul (1993), Ball and Kothari (1989).
[3] Lo and MacKinlay (1990).
[4] Lehmann (1990).

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behavior, they undertake positive feedback trading and tend to sell past losers and hold past winners (Grinblatt et al., 1995; Wermers, 1999; Nofsinger & Sias, 1999). Due to the representative bias and overconfidence, positive feedback trading behaviors can affect the contemporaneous stock market. Therefore, momentum profits may come from institutional strategies.

From our data analysis, the UK's stock market is a momentum one while Taiwan's is contrarian within one year. This is reasonable, as the majority investors in the UK stock market are institutional investors, and those in Taiwan are individuals. This result is consistent with the previous research.

Chen et al. (2003, 2002) defined style momentum as being composed of three major factors: market value of equity, book-to-market (B/M) ratio, and dividend yield. Investors use these factors to decide their in-favor and out-of-favor stock portfolios. By selling out-of-favor stocks and buying in-favor ones, investors can earn more profits. Barberis and Shleifer (2003) proposed that style momentum strategies are based on market capitalization or B/M ratios. Lakonishok et al. (1994) showed that "value" stocks (stocks with high B/M ratios) outperform "growth" stocks (those with low B/M ratios). Bauman et al. (1998) analyzed stock market data from Asia, Europe and Australia and got the same results.

In contrast, the type test of Jegadeesh and Titman (2001) tried to distinguish different explanations of the momentum phenomenon. Most investors underestimate earnings growth for past winners, so growth stocks are more sensitive to earnings changes. This causes momentum strategies to be more efficient with growth rather than value stocks. Shen et al. (2005) discussed the relationship between value versus growth styles and momentum strategies in international markets, and found that such strategies are concentrated in the growth indices.

Aarts et al. (2005) used the UK stock market to evaluate the profits of style momentum strategies, and the results from the FTSE 350 showed that the style momentum is less profitable and riskier than the traditional momentum strategy.

The industry momentum effect means that investors buy stocks from past winning industries and sell stocks from past losing industries. Moskowitz and Grinblatt (1999) claimed that the industry is an important factor with regard to momentum strategy. They proposed several characteristics of industry momentum, and found differences between it and individual stock momentum. First, the diversification effect is not significant in industry momentum, since the winners and losers are from the same industry. Second, industry momentum generates more of its profits on the buy side than on the sell side, unlike individual stock momentum. Third, unlike individual stock momentum, industry momentum profits come from the largest, most liquid stocks. Moreover, they also found that the momentum strategy is less profitable when the industry momentum is controlled. On the other hand, industry momentum strategies are highly profitable even after controlling for many factors, such as size, book-to-market ratio, and individual stock momentum. Hong (2007) found that a number of industries lead the stock market by up to two months. More specifically, the market reacts with a delay to information on industry returns because information diffuses gradually across asset markets. Some industries are able to predict market returns, but market returns do not have this ability.

Nevertheless, some researchers do not consider the industry effect as important as the individual stock effect with regard to momentum profit. Grundy and Martin (2001) found that momentum strategies based on the winners or losers of a stock-specific component are more profitable than those based on total returns. Moreover, Theo et al. (2004) found that the momentum strategies of European stock markets were primarily driven by individual stock effects, and less by the industry effects. Finally, Grundy and Martin (2001) argued that the industry effect does not exist, while Lewellen (2002) proposed that momentum cannot be attributed to firm-specific or industry-specific returns, but to size and book-to-market factors.

Pan et al. (2004) compared three different kinds of returns and found that the industry momentum effect was mainly caused by own-autocorrelation in industry portfolio returns (price momentum), not by cross-autocorrelation returns or cross-sectional returns. Hong and Stein (1999) considered the slow diffusion of information, as industry leaders might be the first to get the information which then flows onto to their followers, causing a lead-lag effect. Berk et al. (1999) proposed that most growth opportunities are more correlated among firms within industries than across them.

Menzly and Ozbas (2006) proved that the industry momentum generates more profits from the buy side than from the sell side. They used upstream and downstream industries to define cross-industry momentum. They found that a strategy of buying and selling industries based on high and low returns in related upstream industries (representative suppliers) over the previous month yielded an annual premium as high as 7% and a Sharpe ratio of 0.85. A similar strategy with

downstream industries (representative customers) yielded an annual premium of 6% and a Sharpe ratio of 0.7. These results mean that the buy side has a stronger effect than the sell side of the industry momentum.

Because the individual stock momentum comes more from the sell side than from the buy side, Cohen and Frazzini (2008) developed the concept of economic links (customer-supplier links) momentum by buying the previous principal customer (supplier) winners and selling the previous principal customer (supplier) losers. In this earlier study, although the data for the major customers was more complete than that for the major suppliers, this work did not prove that individual stock momentum comes more from the sell rather than the buy side.

From the above analysis, it seems that the industry momentum effect has a totally different influence compared to that of the individual stock momentum effect. Moreover, similar results can be found for the issue of information issue. Momentum is caused by underreaction to news, and each individual item of news for each firm will influence its stock market immediately. However, news related to the whole market will not always immediately affect individual stock prices. Therefore, there is a more significant disposition effect for private rather than public information (Nofsinger, 2001), and so it is obvious that the firm and industry influences of momentum are different. Specifically, it seems that the industry momentum comes from the intra-industry effect, in which case the diversification strategy is inefficient.

We find the traditional momentum strategy will change when utilized with an industry perspective. In a momentum society, the short-term contrarian phenomenon of the individual stock momentum will become short-term momentum if we also include the industry factor. In contrast, in a contrarian market, the contrarian phenomenon will become momentum phenomenon if we include the industry factor.

Since individual stock and industry momentum are different, we are interested in the interaction between industry and individual stock effects with regard to momentum strategies. In this investigation we follow the method contained in the following paper "Momentum and Credit Rating" by Avramov, Chordia, Jostova and Philipov (2007). The authors used a sample of 3,578 NYSE, AMEX, and NASDAQ firms rated by S&P from 1985 to 2003. They found that momentum profits come mainly from firms with lower credit ratings. Based on their work, we want to find a bridge to connect the industry and individual stock characteristics, as mentioned above. Here, we find the answer is the momentum strategy, and our analysis reveals how the momentum effect interacts between the stock- and industry-characteristics.

1. Methodology and data

With the formation and holding periods of one, three and six months, there are 9 portfolios in our data analysis. We applied the overlapping method to avoid the small sample bias and increase the power of the test (Conrad & Kaul, 1998).

With regard to the formation return, some studies (Cooper et al., 2004; Jegadeesh and Titman, 1993; Nagel, 2001) adopted the cumulative abnormal return (CAR):

$$CAR_{it} = \sum_{t=-(J-1)}^{t=0} r^{*}_{i,T+t} \quad J=1,3,6\ldots$$

where J is the months of the formation period; $r_{i,T+t}$ is the stock i return at time $T+t$ (T: the portfolio formation date).

In contrast, Dissanaike (1994) proposed the multiplicative method:

$$R_{it} = \prod_{t=-(J-1)}^{t=0}(1+r_{i,T+t})-1 \quad J=1,3,6\ldots$$

where J is the months of the formation period; $r_{i,T+t}$ is the stock i return at time $T+t$ (T: the portfolio formation date); R_{it} is the stock i return at the previous J months before time T.

The CAR method is adopted in this paper, and because the equal-weighted (each stock has the same weight) and the value-weighted methods (the weights are proportional to total market value) have the same results, we only show the equal-weighted results here.

The portfolio j return is:

$$R_{TK} = \frac{1}{n_{j,T}} \sum_{i=1}^{n_{j,T}} \left[\sum_{t=1}^{k} r_{i,T+t} \right] \quad K=1,3,6\ldots$$

where $n_{j,T}$ is the number of stocks forming the portfolio j at time T (the portfolio formation date); $r_{i,T+t}$ is the stock i return at time $T+t$; K is the months of holding period; R_{TK} is the return of portfolio j formed at time T and held for K months.

In the same way as Jegadeesh and Titman (1993), we ranked the stocks based on their past K-month return (K = 1, 3, 6) into 10 groups at the point of forming our portfolio. We then bought the highest winner and sold the lowest loser (so our strategy looks like Max1-Min10…..Max5-Min5) to form a zero investment portfolio which we held for J months (J = 1, 3, 6). In order to control some micro structure issues, we skipped one month before the holding period.

The UK's data are from DATASTREAM, while Taiwan's data are from the TEJ (Taiwan Economy Journal). The time period is from 1990 to

2006. We have 40 industries in the UK sample and 19 industries in Taiwan. The total amounts of individual stocks in each year are listed in Table 1.

Table 1. The number of firms from 1990 to 2006

No	Year	UK companies	Taiwanese companies
1	1990	465	122
2	1991	469	137
3	1992	476	157
4	1993	485	182
5	1994	511	202
6	1995	550	224
7	1996	611	263
8	1997	685	308
9	1998	756	336
10	1999	796	394
11	2000	843	459
12	2001	1007	511
13	2002	1083	568
14	2003	1151	627
15	2004	1457	653
16	2005	1777	666
17	2006	2011	688

2. Results

The majority investors in the UK are institutional ones, while in Taiwan they are individuals. The former tend to be overconfident, while the latter tend to be underconfident. From panels A and B of Table 2, it is clear that the stock market in the UK is a momentum one within one year and a contrarian one in Taiwan.

Table 2. Returns of the individual stock portfolios

Panel A: the UK's stock market			
	Holding period, K		
J formation period	1	3	6
1	-0.312 (-0.499)	0.548 (0.998)	0.732 (1.54)*
3	0.444 (0.25)	1.278 (1.39)*	1.347 (2.71)**
6	1.206 (1.34)*	1.826 (2.98)**	1.2419 (2.499)**
Panel B: Taiwan's stock market			
	Holding period, K		
J formation period	1	3	6
1	-1.42 (-1.09)	-1.12 (-1.25*)	-0.58 (-1.66**)
3	-2.61 (-1.7**)	-1.94 (2.14**)	-1.75 (-2.7***)
6	-3.2 (-2.54***)	-0.5 (-2.2**)	-0.53 (-1.57*)

Note: The stocks in the lowest decile are assigned to the loser portfolio, and the tip decile to the winner portfolio. The data are the average monthly returns over various J month formation periods and K month holding periods (overlapping) for the sample period 1990-2006. The portfolios are ranked by the previous returns of the individual firms. The t values are presented in parentheses with the following significance signs. *** 0.01 significance level, ** 0.5 significance level, * 0.1 significance level.

From panel A of Table 2, it can be seen that the maximum portfolio return exists when J=6 and K=3. In contrast, studies on the USA found the maximum return when J=6 and K=6, and thus the momentum period in the UK is shorter than that in the USA. Moreover, within the short term of one month the momentum is contrarian in the UK. This result is in line with Conrad and Kaul's finding (1998) that the contrarian phenomenon exists in the short term, while the momentum phenomenon exists in the intermediate term. From panels A and B in Table 2, it can be seen that all the portfolios of the lower-right triangle matrix are significant. The minimum portfolio return of the panel B matrix exists at the point of J=6 and K=1.

In order to combine the industry and individual stock factors, we form our portfolios by ranking the returns of the industry index first, and then by the individual stock returns. The results are shown in Table 3.

Table 3. Returns of the industry – individual momentum portfolios

Panel A: the UK's stock market			
	Holding period, K		
J formation period	1	3	6
1	0.363 (0.796)	0.598 (1.605)*	0.361 (1.21)
3	1.202 (1.91)*	0.834 (2.076)*	0.944 (3.14)**
6	0.759 (1.49)*	0.961 (2.15)*	0.977 (2.76)**
Panel B: Taiwan's stock market			
	Holding period, K		
J formation period	1	3	6
1	0.36 (0.46)	0.235 (0.57)	0.094 (0.22)
3	-0.12 (-0.05)	0.026 (0.24)	0.536 (1.1)
6	0.115 (0.32)	0.535 (1.09)	0.401 (1.4*)

Note: The stocks in the lowest decile are assigned to the loser portfolio, and the tip decile to the winner portfolio. The data are the average monthly returns over various J month formation periods and K month holding periods (overlapping) for the sample period 1990-2006. The portfolios are ranked by the previous industry returns firstly, and then by the individual firm's returns. The t values are presented in parentheses with the following significance signs. *** 0.01 significance level, ** 0.5 significance level, * 0.1 significance level.

Comparing panels A in Tables 2 and 3, we find that combining the individual stock and industry momentum changes the short-term contrarian phenomenon into a short-term momentum one. This means that the industry momentum effect is stronger than the individual stock momentum effect, in line with Moskowitz and Grinblatt (1999). In addition, all the performances in panel A in Table 3 are

better than those in Table 2. To see the difference we deduct these two matrices as a joint test and get the t-value of 1.696, with a 5% significance level. Therefore, panel A in Table 3 reveals better results than panel A in Table 2. With the same situation, almost all panel B portfolios in Table 3 are better than those in panel B of Table 2. The joint test t-value is 5.36 with a 1% significance level. Investigating Tables 2 and 3 in more detail, we can find few differences between panels A and B. The percentage increases of the upper-left triangle matrix of panel A in Tables 2 and 3 are bigger than those of the lower-right triangle matrix of panel A in both tables. In addition, in panel B in both tables the percentage increases of the lower-right triangle matrix are bigger than those of the upper-left triangle matrix.

To sum up, if we combine the industry momentum with the individual stock momentum, no matter whether in a momentum or contrarian society, the results will be those expected for a momentum society (please refer to Table 2 and Table 3). Therefore, the industry influence in the momentum strategies is stronger than the individual stock momentum effect. In a momentum society, such as the UK, the industry momentum influence will make the portfolio returns increase more in the upper-left triangle matrix. In other words, if we want to achieve improved performance, it is better if the formation period plus the holding period is less than six months. In a contrarian society such as Taiwan, the industry momentum influence will make the portfolio returns increase more in the lower-right triangle matrix. This means that the better portfolios are those for which the formation period plus the holding period is longer than six months.

3. Robustness test – Momentum profitability and industry profit rating

Following Avramov et al. (2007) with regard to the ranking of bonds and debt, we rank the stocks by the priority return of different industries. Based on this priority, we number each industry from the highest return industry with the highest score to the lowest return industry with the lowest score within each year. In other words, the industries with the lowest return will get the score of 1. To see the relationship between momentum and industry profit rating, we calculate the momentum portfolios corresponding to the three industry profit rating groups and ten momentum groups. The final results are listed in Table 4-A and Table 4-B. The best performances are the second (intermediate rating) group in the UK and the third (highest rating) group in Taiwan.

Table 4a. Momentum by UK's industry credit return groups

		Industry return rating groups (1 = Lowest rating, 3 = Highest rating)		
Panel A: J=6, K=1 1990-2006				
Item		1	2	3
Overal	P10-P1	0.40 (1.22)	0.97 (1.9**)	0.72 (1.93**)
	P1	1.50	0.91	1.13
	P10	1.90	1.88	1.85
Non-January	P10-P1	0.99 (1.39*)	1.28 (2.07**)	-0.28 (1.59*)
	P1	0.85	0.73	1.63
	P10	1.84	2.01	1.35
January	P10-P1	-3.02 (-0.41)	0.25 (0.22)	1.89 (1.55*)
	P1	2.96	1.27	0.22
	P10	-0.06	1.52	2.11
Panel B: J=6, K=3 1990-2006				
Overal	P10-P1	1.205 (2.67**)	1.601 (3.76**)	0.330 (1.65*)
	P1	0.724	0.372	1.612
	P10	1.929	1.973	1.942
Non-January	P10-P1	0.638 (2.83**)	1.589 (3.58**)	0.114 (1.57*)
	P1	1.216	0.405	1.578
	P10	1.854	1.994	1.692
January	P10-P1	1.020 (0.15)	2.457 (1.22)	0.690 (0.52)
	P1	-1.236	-0.789	-0.328
	P10	-0.216	1.668	0.362
Panel C: J=6, K=6 1990-2006				
Overal	P10-P1	0.250 (1.38*)	1.773 (4.192**)	-2.347 (0.353)
	P1	1.471	0.282	4.407
	P10	1.721	2.055	2.060
Non-January	P10-P1	0.695 (1.942*)	1.687 (3.888**)	-2.519 (0.08)
	P1	1.019	0.261	4.478
	P10	1.714	1.948	1.959
January	P10-P1	-2.637 (-1.116)	2.686 (1.509*)	1.532 (2.526**)
	P1	3.802	-0.063	-0.172
	P10	1.165	2.623	1.360

Table 4b. Momentum by Taiwan's industry credit return groups

		Industry return rating groups (1 = Lowest rating, 3 = Highest rating)		
Panel A: J=6, K=1 1990-2006				
Item		1	2	3
Overal	P10-P1	-1.7 (-1.66*)	-1.96 (-1.96*)	-5.2 (-3.2**)
	P1	2.17	3.01	4.53
	P10	0.47	1.05	-0.67
Non-January	P10-P1	-1.86 (-1.77*)	-2.37 (-2.14*)	-5.7 (-3.51**)
	P1	3.03	3.48	5.41
	P10	1.17	1.11	-0.29
January	P10-P1	0.23 (0.84)	1.01 (0.65)	0.9 (0.3)
	P1	-5.1	-1.07	-2.7
	P10	-4.87	-0.06	-1.8

Table 4b (cont.). Momentum by Taiwan's industry credit return groups

		Industry return rating groups (1 = Lowest rating, 3 = Highest rating)		
Panel B: J=6, K=3 1990-2006				
Item		1	2	3
Overal	P10-P1	0.54 (1.22)	-1.30 (-2.53***)	-2.36 (-3.67***)
	P1	1.29	2.73	2.87
	P10	1.83	1.43	0.51
Non-January	P10-P1	0.38 (-1.59*)	-1.62 (-2.55**)	-2.91 (-3.75***)
	P1	1.97	3.43	4.22
	P10	2.35	1.81	1.31
January	P10-P1	4.5 (0.79)	-0.07 (-0.31)	0.24 (-0.17)
	P1	-3.2	-1.91	-2.07
	P10	1.3	-1.98	-1.83
Panel C: J=6, K=6 1990-2006				
Overal	P10-P1	-0.75 (-1.68**)	-0.23 (-1.33*)	-1.51 (-3.43***)
	P1	1.4	1.53	1.25
	P10	0.65	1.3	-0.26
Non-January	P10-P1	-0.76 (-1.58*)	-0.21 (-1.27)	-1.38 (-3.38***)
	P1	1.43	1.51	1.33
	P10	0.67	1.3	-0.05
January	P10-P1	-0.69 (-0.59*)	-0.47 (-0.41*)	-0.65 (-0.62*)
	P1	1.16	1.77	0.24
	P10	0.47	1.3	-0.41

In order to realize the momentum differences between "value" (high book-to-market (B/M) ratio) and "growth" (low B/M ratio) stocks, we again form our momentum portfolios corresponding to the three B/M ratio rating groups and ten momentum groups. The final results are listed in Table 5-A and Table 5-B. The best performances are the third group (high B/M ratio) in the UK and the first group (low B/M ratio) in Taiwan. This means that value stocks (high B/M ratios) outperform growth stocks in a momentum country, such as the UK. This result is in line with Lakonishok et al. (1994) and Bauman et al. (1998). In contrast, the growth stocks outperform value ones in a contrarian country, such as Taiwan.

Table 5a. Momentum by UK's book-to-market ratio (B/M) groups

		B/M rating groups (1 = Lowest rating, 3 = Highest rating)		
Panel A: J=6, K=1 1990-2006				
Item		1	2	3
Overal	P10-P1	0.909 (1.22)	1.437 (1.48*)	2.165 (1.68**)
	P1	1.346	0.706	0.636
	P10	2.255	2.143	2.801
Non-January	P10-P1	1.173 (1.35*)	1.492 (1.59**)	2.017 (1.43*)
	P1	1.144	0.599	0.742
	P10	2.317	2.091	2.759
January	P10-P1	-0.761 (0.01)	0.607 (0.13)	2.994 (1.15)
	P1	3.348	1.715	3.356
	P10	2.587	2.322	3.356
Panel B: J=6, K=3 1990-2006				
Overal	P10-P1	1.371 (3.27***)	1.585 (2.57***)	2.336 (2.52***)
	P1	1.053	0.422	0.083
	P10	2.424	2.007	2.419
Non-January	P10-P1	1.402 (2.41***)	1.589 (2.49***)	0.114 (2.32**)
	P1	1.147	0.466	0.383
	P10	2.549	2.473	2.802
January	P10-P1	2.449 (1.60*)	1.948 (1.05)	4.018 (2.55***)
	P1	-0.456	-0.337	-1.867
	P10	1.993	1.611	2.151
Panel C: J=6, K=6 1990-2006				
Overal	P10-P1	1.423 (3.73***)	1.490 (2.98***)	1.500 (2.70***)
	P1	1.007	0.918	0.800
	P10	2.430	2.408	2.300
Non-January	P10-P1	1.443 (3.22***)	1.517 (2.84***)	1.003 (2.31***)
	P1	1.019	0.884	0.936
	P10	2.462	2.401	1.939
January	P10-P1	2.568 (1.19)	2.313 (1.13)	4.406 (2.05**)
	P1	1.019	1.281	0.15
	P10	3.587	3.594	4.556

Table 5b. Momentum by Taiwan's book-to-market ratio (B/M) groups

		B/M rating groups (1 = Lowest rating, 3 = Highest rating)		
Panel A: J=6, K=1 1990-2006				
Item		1	2	3
Overal	P10-P1	-3.819 (-2.32***)	-2.776 (-1.96**)	-2.601 (-2.30***)
	P1	4.129	3.773	3.118
	P10	0.310	0.997	0.517
Non-January	P10-P1	-4.266 (-2.58***)	-3.208 (-2.32***)	-2.668 (-2.55***)
	P1	4.754	4.477	3.64
	P10	0.488	1.269	0.972
January	P10-P1	-0.039 (0.14)	1.558 (0.72)	-1.543 (-0.04)
	P1	-1.585	-2.232	-1.041
	P10	-1.624	-0.674	-2.584
Panel B: J=6, K=3 1990-2006				
Overal	P10-P1	-2.116 (-2.44***)	-1.229 (-2.42***)	-1.860 (-2.93***)
	P1	3.046	3.068	3.025
	P10	0.930	1.839	1.165
Non-January	P10-P1	-2.166 (-2.42***)	-1.734 (-2.59***)	-1.928 (-2.82***)
	P1	3.665	3.884	3.635
	P10	1.499	2.150	1.707
January	P10-P1	-1.103 (-0.57)	1.205 (0.339)	-0.914 (-0.90)
	P1	-1.883	-1.873	-1.438
	P10	-2.986	-0.668	-2.352

Table 5b (cont.). Momentum by Taiwan's book-to-market ratio (B/M) groups

		B/M rating groups (1 = Lowest rating, 3 = Highest rating)		
Panel C: J=6, K=6 1990-2006				
Item		1	2	3
Overal	P10-P1	-0.707 (-1.45*)	-0.377 (-1.34*)	-0.643 (-1.86**)
	P1	1.779	1.444	1.407
	P10	1.072	1.067	0.764
Non-January	P10-P1	-0.747 (-1.43*)	-0.456 (-1.45*)	-0.694 (-1.72**)
	P1	1.851	1.437	1.395
	P10	1.104	0.981	0.701
January	P10-P1	-0.236 (-0.41)	0.444 (0.07)	-0.534 (-0.88)
	P1	0.883	1.354	1.38
	P10	0.647	1.798	0.846

Conclusions

Individual investors tend to adopt contrarian strategies due to both their generally conservative nature and the disposition effects. This is in contrast to institutional investors, who tend to be overconfident and adopt momentum strategies. However, industry and individual stock momentum have different and opposite influences. Moreover, if we form our portfolio by combining the industry and the individual stock momentum, we can achieve higher returns, especially when the formation period plus the holding period is less than six months in a momentum society, such as the UK. In other words, such a strategy would be more profitable over the short term in a momentum society. In contrast, we can obtain higher returns when the formation period plus the holding period is longer than six months in a contrarian society, such as Taiwan. Furthermore, it can be seen from the interest rate trends in the UK and Taiwan (Figure 1) and the exchange rate between the UK and Taiwan (Figure 2) during this period that the economic situations of these two countries were stable and both had conservative monetary policies. This means that this strategy would be more profitable in the long term in a contrarian society. Specifically, the industry momentum will weaken the individual winner effect in a momentum stock market and strengthen the individual winner effect in a contrarian one. Therefore, the longer the formation and holding periods, the more trade-off influences between the individual stock and industry momentum in a momentum country. Of course, the strategy would be more profitable if the formation and holding periods are longer than six months in a contrarian country.

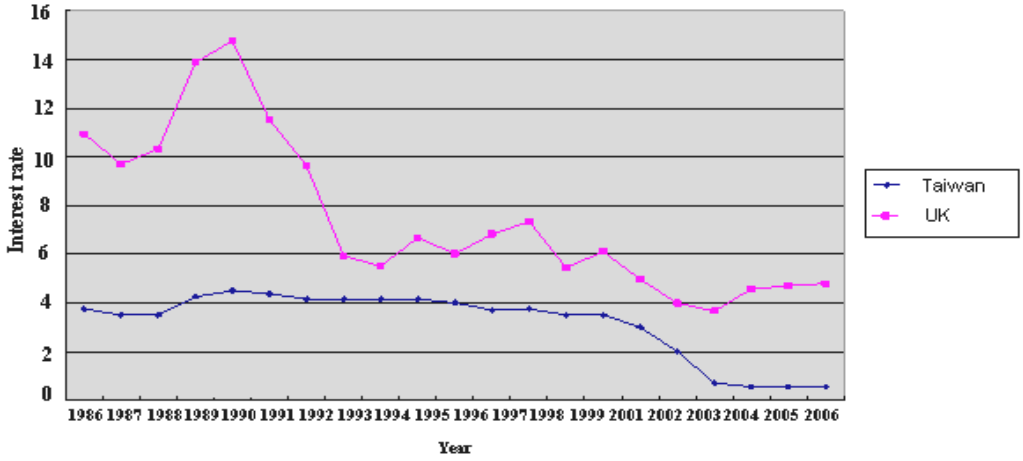

Fig. 1. The line chart of the UK's and Taiwan's interest rates

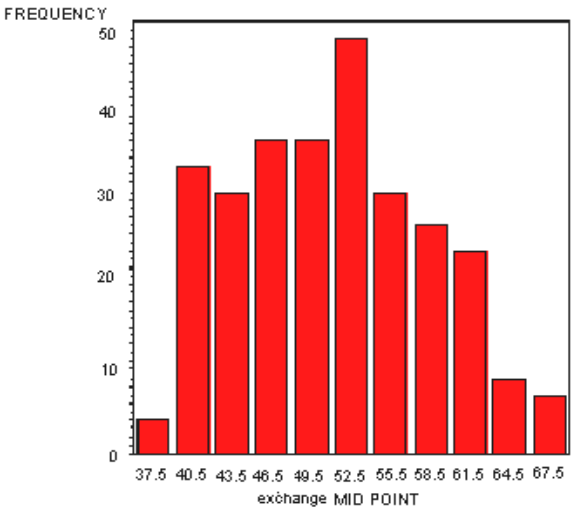

Fig. 2. The bar chart of the exchange rate (Pound/New Taiwan Dollar)

The contributions of this paper

In this work we find some interesting relationships between the individual stock momentum strategy and the industry momentum strategy, and it seems that they basically work against each other. We thus develop our investment strategy based on our findings. In a momentum market, such as the UK, we can invest in past winning stocks which belong to middle return industries within six months of the formation plus holding periods. In a contrarian market, such as Taiwan, we can invest in past losing stocks that belong to the winning industries over the long term, especially when the formation plus the holding periods are longer than six months.

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