Investor sentiment and revenue surprises: The Taiwanese experience*

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Rather than observing the common one-period revenue surprise anomaly, we conduct a two-period revenue surprise analysis to explore the impact of sentiment because we hypothesize a role of cognitive dissonance and the cognitive dissonance theory suggests that the more number of conflicting elements the stronger the dissonance. Consistent with the hypothesis, in the market (namely, Taiwan) with sale revenue news released in a monthly basis, we find that stocks with a prior negative revenue surprise exhibit stronger revenue surprise anomaly over the next period following optimism than following pessimism, implying a cognitive dissonance occurs in the former but not the latter. This finding corroborates the prediction that cognitive dissonance is triggered by dilemma that high (low) sentiment is accompanied with bad (good) revenue news over two consecutive periods. In addition, the sentiment-driven revenue surprise anomaly extends into approximately six months, confirming sluggish investors' responses predicted by cognitive dissonance. All the significant returns are generally robust to common risk models. Moreover, the sentiment-driven revenue surprise anomaly is indifferent across stocks with variant of institutional holdings, price, book-to-market ratio, and size, implying the cognitive dissonance does not restrict to retail investors. In the long-term, returns associated with optimism deteriorates, whereas returns relative to pessimism accelerates.

Keywords: Investor sentiment; Revenue surprises; Cognitive dissonance; Anomaly

JEL Classification: G11, G14, G19

1. Introduction

This paper assesses whether the existing evident market reaction to revenue surprises found in the Taiwanese stock market is sensitive to investor sentiment. Furthermore, we predict a vital role of cognitive dissonance in triggering sentiment-driven reaction to a series of revenue surprises.

Investor sentiment has long been contended to play an ill-ignorable role in affecting stock prices.[1] Recently, several papers examine the influence of prior-period investor sentiment on market anomalies. This vein of research provides prevailing evidence supporting the existence of relation between prior-period investor sentiment and market anomalies. The results, however, are still inclusive in terms of the exact relation between investor sentiment and anomalies, as well as the driving force of the relation.

Among others, Cornelli et al. (2006) utilize the grey market prices related to European IPOs to proxy for retailer investors' sentiment for the IPOs, uncovering that in good times the sentiment measure is valid in predicting first-day aftermarket prices of the IPOs, yet not in bad times. Both Lemon and Portniaguina (2006) and Baker and Wurgler (2006) find investor sentiment inversely forecasts future returns for small stocks, so does Gao et al. (2010) for stocks with high idiosyncratic volatility. They all attribute the inverse relation to overreaction over high sentiment, which results in a later correction in the form of low future returns. Examining eleven asset pricing anomalies,[2] Stambaugh et al. (2012) report prevalently higher profitability for zero-investment hedge portfolios following high sentiment, and short position

[1] Besides earlier work, recent studies include, among others, Brown and Cliff (2004, 2005), Yuan (2005), Baker and Wurgler (2006, 2007), Kumar and Charles (2006), Kaniel et al. (2008), Bergman and Roychowdhury (2008), Frazzini and Lamont (2008), Yu and Yuan (2011), Baker at al. (2012), and Chung et al. (2012).

[2] The eleven anomalies investigated include effects of failure probability, Ohlson's O, net stock issues, composite equity issues, total accruals, net operating assets, momentum, gross profitability, asset growth, return on assets, and investment-to-assets (Stambaugh et al., 2012).

predominately contribute to the stronger profits. Accordingly, short selling constraints are taken into account as the underlying rationale. Chung et al. (2012) also find prior high sentiment predicts stronger extent of eleven anomalies.[3] More importantly, the relation only exits in economic expansion periods, not in contraction periods. Antoniou et al. (2012) disclose price momentum occurs only following optimism. The phenomenon is attributable to cognitive dissonance from disclosure of bad news in optimistic periods because poor performance of losers dominates the evident price momentum.

With respect to post-earnings-announcement drift, both Conrad et al. (2002) and Livnat and Petrovits (2009) report an inverse relation between prior-period market-state/investor-sentiment and stock price reaction. Specifically, stocks disclose extreme good news in high market-state/investor-sentiment yield relatively lower future returns than in low market-state/investor-sentiment. By contrast, Mian and Sankaraguruswamy (2010) uncover a positive (negative) relation between sentiment levels and returns post good (bad) news. That is, market response to good (negative) news is larger in absolute value following optimism (pessimism) than pessimism (optimism). In addition, they find the hard-to-arbitrage stocks exhibit stronger effect, implying overconfidence is the cause. Yumei (2011) duplicates approach of Mian and Sankaraguruswamy, confirming their positive relation in the setting of Chinese stock market. Seybert and Yang (2012) uncover that, subsequent to poor earnings surprises, stronger negative returns follow high sentiment relative to low sentiment. They assert the role of management guidance in partially correcting the overvaluation.

Turning to the Taiwanese stock market, sale revenues of listed firm are required to be disclosed in a monthly basis; that is, revenues of current month ought to be released by the 10th of the next month. The monthly announcement draws profound

[3] The eleven anomalies are associated with size, ratio of book-to-market, dividend yield, ratio of earnings to price, age, sigma, volatility, ratio of R&D expense to assets, fixed assets, sales growth, and ratio of external finance to assets (Chung et al., 2012).

attention from market participants as there is no other equally important, fundamental news announced in such a high, regular frequency.[4] Ku (2010) uncovers stocks releasing positive revenues surprises tend to be followed by higher subsequent returns than stocks with negative revenues surprises. Accordingly, we conjecture revenue surprise effect is influenced by investor sentiment as is the post-earnings-announcement returns in the U.S. stock markets as previously mentioned. Therefore, results in this paper help to resolve the controversial U.S. evidence of sentiment-driven earnings surprise effect by examining the relation between sentiment and revenue surprises as well as the role of cognitive dissonance in the setting of the Taiwanese stock market. To our best knowledge, no one has studied sentiment impact on this anomaly in any stock market.[5] We find this anomaly only exists following high sentiment, as suggested in terms of a variety of anomalies in the U.S. (see, e.g., Gao et al, 2012; Antoniou et al., 2012; Stambaugh et al., 2012; Chung et al., 2012). In addition, the strength of the revenue anomaly is mainly attributable to response to bad revenue news, consistent with Antoniou et al. (2012) and Stambaugh et al. (2012). This paper contributes to revenue surprises literature by finding a new determinant—investor sentiment, as rationales uncovered in the existing revenue surprise literature include earnings surprises, price momentum, size effect (for the above reasons see Jegadeesh and Livnat, 2006a), R&D expenses, and degree of oligopoly (for the last two rationales see Kama, 2009), among others.[6]

Furthermore, the distinct difference between this study and the existing sentiment-driven earnings surprise research is that we concentrate on effect of

[4] For instance, the next regularly announced fundamental news is quarterly earnings, which are publicized in a much lower frequency, i.e., by quarters.

[5] Baker and Wurgler (2006) and Chung et al. (2012) study the anomaly of sale growth, i.e., the difference of net sale over two adjacent years divided by sale of the prior year. By definition, besides the time-horizon difference, the yearly sale growth is different from the monthly sale revenue surprises estimated in equation (1) of this study. Consequently, the two anomalies are not likely to be the same in essence.

[6] Studies for revenue surprises include, among others, Hopewood and McKeown (1985), Swaminathan and Weintrop (1991), Ertimur et al. (2003), Ghosh et al. (2005), Gu et al. (2006), Jegadeesh and Livnat (2006a, 2006b), and Kama (2009).

announcement of a series of news, rather than disclosure of a single period of news as in all prior research. The reason for the new approach relates to the theory of cognitive dissonance. The cognitive dissonance theory asserts that individuals are instinctively pursuing consistency and strives to reduce inconsistency among behaviors, beliefs, value systems, and etc (Festinger, 1957). Festinger further suggests that the extent of dissonance increases with the number of dissonance items. In this regard, two consecutive periods of same sign revenue surprises are expected to trigger stronger cognitive dissonance than the one-period counterpart and thereby stronger stock response to the dissonance. In line with the prediction, we detect that following high (low) sentiment bigger reaction occurs for stocks with two bad (good) revenue news in a row than stocks with bad (good) news for only the adjacent prior one-period.

In the financial academic arena, cognitive dissonance has been found to be associated with financial phenomena such as, among others, investors' choice of mutual funds (Goetzmann and Peles, 1997), mispricing of assets (Drees and Eckwert, 2005), analyst' forecast error stemmed from impact of past error (Friesen and Weller, 2006), analysts' underreaction to bad/good earnings news (Lin and Wu, 2009), Hypothetical bias (Alfnes et al., 2010), and disposition effect (Borghesi, 2012).

This paper links cognitive dissonance to the sentiment-driven revenue surprise phenomenon. In the existing financial literature, the closest paper to ours is Antoniou et al. (2012), who associte cognitive dissonance to sentiment-based price momentum. The difference between our study and theirs is that we directly observe price behaviors post announcement of revenue news, a direct evidence of response of investors when receiving news adverse to preveiling sentiment. On the other hand, price momentum is likely to reflect price dynamics relative to not only earnings

surprises (revealed in their study), but also other information and/or factors.[7] Comparing with their analysis of the impact of the stylized earnings-announcement drift after a single-period news, we conduct more in-depth investigation because we take into account revenue announcement of not only one period but also two consecutive periods as mentioned above, which provides a framework for comparing strength of the cognitive dissonance under the two conditions.

We further contribution to cognitive dissonance literature by providing evidence of a relatively low individualism country since Taiwan has been ranked as the country with the third lowest individualism index among the forty-one countries investigated by Chui et al. (2005).[8] It is commonly suggested that individualistic culture encourages individuals to behave according to self-belief, while by contrast interdependent culture emphasizes interpersonal connection and harmony (Cooper, 2007). Consequently, social psychologists raise the question of whether in high individualism culture cognitive dissonance triggers stronger motivation to reduce it since beliefs are important to oneself, whereas in low individualism culture motivation is less strong (see, e.g., Markus and Kltayama, 1991). Our findings add to the existing empirical evidence that cognitive dissonance is pervasively spread across cultures.[9] We uncover significant market action to cope with the cognitive dissonance concerned, supporting the notion that in Taiwan (a country with low-individualistic culture) there exists strong motivation to reduce dissonance-invoking dilemma between revenue information and investor sentiment. In brief, the reasons to study

[7] When Antoniou et al. drop losers with low SUE (i.e., the stocks introduce the cognitive dissonance triggered by earnings news), there however still exists significant price momentum following high sentiment, that is, the price momentum decreasing from 1.925% (t-stat. 4.17) to 0.917% with t-stat. of 2.34 (see Panel B2 in Table 10 of Antoniou et al., 2012). The persistence of significant momentum after the exclusion offers a clue that price momentum represents not only reaction to earnings news but also reactions to other information and/or factors.

[8] Chui et al. (2005) disclose the list of ranking in the working paper version, but omitted in the formal publication in a journal (Chui et al., 2010).

[9] Empirical evidence relative to impact of cultural factor on cognitive dissonance can be found in, for example, Helne and Lehman (1997), Kitayama et al. (2004), Hoshino-Browne et al. (2005), and Kitayama et al. (2006).

revenue surprises in the Taiwanese stock market are twofold, besides the fact that this market is the top twelfth largest stock market in terms of market capitalization.[10] In contrast to the U.S., Taiwan is a country with low individualism which has been the concern of the cognitive dissonance literature, and sale revenues of Taiwanese firms are released in a monthly basis, which is more frequent than the quarterly basis in the U.S.

The remainder is structured as follows. Following section develops related hypotheses. Section 3 gives a description of data and methodology. Section 4 presents empirical results. Section 5 concludes.

2. Hypothesis Development

We conjecture conflicts arise when high (low) sentiment is accompanied with bad (good) revenue news. According to the theory of cognitive dissonance, one of the possible reactions is to react gradually to new information (i.e., respondents are bound by the contradictory prior belief stemmed from sentiment) (Akerlof and Dickens, 1982). In terms of revenue surprises, we predict that returns subsequent to negative (positive) revenue surprises is stronger (i.e., larger in absolute value) following high (low) sentiment relative to low (high) sentiment, a manifestation of the slow reaction. The extent of strength is measured in both magnitude and persistence. In terms of magnitude, we assess future one-month returns, whereas for persistence we observe mid-term performance. Note that without persistence the strong returns can be described as merely a shock. Shocks alone, however, cannot drive persistence which offers a role for cognitive dissonance.

With respect to investors' short-term responses, Table 1 documents our inference. Cells (1) and (5) are the instances where two types of cognitive dissonances occur,

[10] See the Economist Pocket World in Figures (London: Profile Books, 2012).

that is, stocks report extreme bad revenue news in high sentiment, and vice versa. The two cognitive dissonances with opposite directions thereby predict a significantly negative future return for cell (1) and a positive future return for cell (5) of scenario (A). On the other hands, cells (2) and (4) are circumstances without cognitive dissonance and denoted by *x* and *y*, respectively. The last row in Panel C for the column of scenario (A) reports insignificant collective effect (expressed in bold letters) stemmed from offsetting of the two opposite-sign future returns driven by the two cognitive dissonances, presumably *x* and *y* do not generate evident influence. It is worth mentioning that in the rational expected model of Veronesi (1999), dilemma between adverse news and sentiment creates incremental uncertainty of future expected returns, which in turn makes bad (good) news in good (bad) times introduce overreaction (underreaction). The underpricing for good (bad) times is corrected and followed by more positive returns relative to bad (good) times. His prediction for good news is consistent with the prediction of cognitive dissonance, namely cells (2), (5) and (8) in Table 1, whereas, by contrast, his hypothesis for bad news is contrary to (1), (4) and (7) in Table 1.

[Table 1 around here]

Note that an asymmetry of the two types of cognitive dissonance is likely to take place due to the previous findings of optimism-prone of stockholders and short sale constraints. Miller (1977) and Mayshar (1983) highlight the optimism of stockholders relative to non-stockholders causing undervaluation less likely to occur than overvaluation. Stambaugh et al. (2012) uncover the role of short sale constraints in impeding sentiment-based underpricing. Accordingly, these assertions explicitly predict a less extent of cognitive dissonance for good news in low sentiment, the times when underpricing happens. In other words, alternatively, the collective effect in Table 1 is likely to turn into significantly positive or remain insignificant, as shown

by scenario (B).[11]

Going further, we investigate the sentiment-driven effect of revenue surprises for a series of two periods, namely at month *t*-1 and *t*. The rationale is that two consecutive periods of same sign revenue surprises is expected to trigger stronger cognitive dissonance than the one-period counterpart because cognitive dissonance theory suggests that the more number of dissonance elements, the stronger the dissonance and the stronger drive to solve the conflict (Festinger, 1957).

As in Table 1, x1, y1, z1, x2, y2, and x2 in Table 2 denote incidences irrelevant to cognitive dissonance, and their impact on stock returns are assumed to be insignificant unless otherwise mentioned. In Table 2, strong cognitive dissonance is expected to occur in cell (1) (cell (15) in scenario (A)) when stocks experience bad (good) revenue news in two consecutive periods, at optimistic (pessimistic) periods. On the other hand, no cognitive dissonance emerges in the presence of only one-period of bad (good) news at month *t* as documented in cell (11) (cell (5)). Consequently, among stocks with negative (positive) revenue surprises at month *t*-1, differential returns between high and low sentiment on revenue-surprise hedge portfolios at month *t* becomes significant positive (negative for scenario (A)), as expressed in bold letters in the last row of Panel C. In addition, again due to the prior findings relative to optimism of stockholders and short sale impediment mentioned previously (Miller, 1977; Mayshar, 1983; Stambaugh et al., 2012), the cognitive dissonance effect in cell (15) of scenario (A) is probably weakened to insignificant magnitude as illustrated in scenario (B), and so are the resulted weak negative differential returns between two sentiment states for hedge portfolios as reported in cell (19).

[Table 2 around here]

In brief, discriminating stocks between those with two consecutive positive

[11] Again, it is assumed that *x* and *y* do not impose significant influence to the ultimate result.

revenue surprises and those with two consecutive negative ones, Table 2 is able to separate impact of the two types of cognitive dissonance on returns of revenue-surprise hedge portfolios.

3. Data and Methodology

To measure investor sentiment, we rely on the survey of expectation of whether there will be investment opportunities in Taiwanese stock markets over the next six months revealed by Taiwan Consumer Confidence Index (hereafter CCI). The survey for CCI is executed by Department of Statistics and Information Science, Fu Jen Catholic University, Taiwan, supervised and disclosed by the Research Center for Taiwan Economic Development, National Central University, Taiwan.[12] Beginning from January 2001, the index consists of six sub-indices uncovering respective expectation, for the subsequent six months, of the domestic price level, household economic status, country economic status, employment level, opportunities of investing in the Taiwanese stock market, and opportunities of buying durable goods. The survey is from opinions of adults with age over 20-year-old, who are randomly selected from telephone books and interviewed via telephone. Their expectation for each of the six issues is expressed in scales. For instance, the three scales for answering whether it is a good time to invest in the Taiwanese stock market over the next six-month are: yes, no, or unknown. The survey is executed in each month with CCI being publicized around 27th of the same month.

Similar to Antoniou et al. (2012), investor sentiment is proxy by residual sentiment obtained by orthogonalizing investment opportunity outlook index to macroeconomic factors to free sentiment measure from macroeconomic impacts. In

[12] We thank the Research Center for Taiwan Economic Development, National Central University, Taiwan, for providing the CCI historical data on its website http://rcted.ncu.edu.tw/intro.phtml#5.

the Taiwanese literature, seven macroeconomic factors have been empirically proved as highly correlated with cross-sectional stock returns; they are growth in industrial production, in export, in unemployment rate, in M1B,[13] in trading volume of bond, in foreigner exchange rate, and in deposit in foreigner currency (Hung et al., 2007).

To cope with the availability of sentiment measure and revenues data, the sample includes common stock listed on Taiwan Stock Exchange (TAIEX) from January 1998 to July 2012. To avoid survivorship bias, stocks de-listed during this period are still included. Data is obtained from Taiwan Economic Journal. Stocks with prices below one New Taiwan Dollar are excluded to decrease microstructure effects related to low prices. I exclude stocks with prices below 1 New Taiwan Dollar or with a market capitalization in the lowest 0.5% of whole sample at portfolio formation date to avoid microstructure effects or illiquidity issues (Blume and Stambaugh, 1983). As in prior revenue surprise research (e.g., Jegadeesh and Livnat, 2006b), the standardized unexpected revenue surprises (hereafter SUR) is estimated by the following equation:

$$\mathrm{SUR_t} = \frac{\mathrm{Re}\,venue_t - \mathrm{Re}\,venue_{t-12} - \mu_t}{\sigma_t} \qquad (1)$$

where $Revenue_t$ is sale revenues announced at month t, μ_t is the mean of ($Revenue_t$ – $Revenue_{t-12}$) for the 24 months of (t-*1, t-2, ..., t-24*)[14], σ_t is the related standard error. A qualified stock is required to have at least 18 months of revenues to facilitate estimating of the SUR.

At the end of each month *t*, after excluding stocks with zero revenue surprises, we categorize stocks into big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive revenue surprise portfolios (SUR4). That is, SUR1 (SUR3)

[13] M1B is a short-term monetary supply measure, which is widely accepted by practitioners as closely related to the short-term fluctuation of stock prices in Taiwan. By definition, it consists of currency, demand deposit, and deposits in checking accounts.

[14] The equation is: $\mu_t = \frac{1}{24}\sum_{j=1}^{24}\left(Sale_{t-j} - Sale_{t-12-j}\right)$

and SUR2 (SUR4) are stocks with negative (positive) revenue surprises, and stocks with zero surprises are discarded from our sample. We assign an even number of stocks into SUR1 (SUR3) and SUR2 (SUR4) portfolios. We construct two-tier portfolios in a sequential basis. To include as many stocks in each bivariate portfolio as possible, firstly we partition stocks into two groups (instead of four groups for SUR_t) with respect to SUR at month t-1: SUR_{t-1}^{Neg} and SUR_{t-1}^{Pos}. Then, within each SUR_t-portfolio, component stocks are further categorized into negative and positive revenue surprise portfolios based on their revenue surprises at month t-1. Again, we exclude stocks with zero surprises at month t-1. As the norm in Asian studies, portfolios are value-weighted (Chui et al., 2003). Each portfolio is held for the next 60 (i.e., k=1, 2,…, 60) months, or t+1 *to* t+60.[15] We exclude outliers of 0.5% at each end of holding period returns (Jegadeesh and Livnat, 2006b).

In addition, we partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior one through six months, respectively. To illustrate, for the six-month estimation period, the month t is categorized as optimistic (pessimistic) period when the sentiment measure in each of the six months of t-5 through t is all above (below) the average sentiment measure estimated from all sample months (namely, January 2001-July 2012). Accordingly, optimistic (pessimistic) periods defined on the basis of more prior months represent more persistence of optimism (pessimism). Months that neither categorized as optimistic nor pessimistic periods are denoted as neutral periods.

To cope with the issue of limited number of sample months, t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed

[15] Strictly speaking, the estimation of subsequent returns relative to revenue surprises excludes some extent of the post-announcement drift because returns on holding period are estimated in a monthly basis, that is, the period starts from the very next month of the announcement at month-t. Consequently, we discard the drift ranging between the days after the announcement (which is made by the 10th of month-t) and before the beginning of month t+1.

by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimism is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

4. Empirical results

Table 3 documents descriptive statistics for variables used in this study. Figure 1 depicts historical trends of two residual sentiments. They are estimated by regression investment opportunity index on concurrent measures of the seven macroeconomic factors mentioned previously as well as on the seven concurrent measures plus their one-period forward measures. Visually, the two sentiment measures share similar patterns with the original investment opportunity index. Statistically, their correlation with the original index is 0.9183 and 0.8127, respectively, confirming their validity as proxies for investor sentiment.

[Table 3 around here]

[Figure 1 around here]

4.1 The One-Period Revenue Surprise Effect Conditioning on Investor Sentiment

Table 4 documents the empirical evidence of the sentiment-driven holding period returns for SUR_t-portfolios based on revenue surprises computed at month *t*, namely

one-period revenue surprises.

[Table 4 around here]

The results in Panel A are suggested in Ku (2010) that significant revenue surprises exist in Taiwan;[16] the hedge portfolios of purchasing stocks with good revenue news and selling bad-news counterparts (namely, SUR4-SUR1) is significantly positive. More importantly, results in Panel B, C, and D generally fit with predictions in Table 1. First, holding period returns among stocks with big negative revenue surprises are significantly negative following high sentiment, according with prediction of cell (1) in Table 1. By contrast, the counterpart returns following low sentiment is not negatively significant as predicted in cell (4) of Table 1, inducing sizable return difference (with a negative sign as predicted in cell (7) of Table 1) in the first row of Panel E. As mentioned previously, in the U.S. stock market, Conrad et al. (2002) and Livnat and Petrovits (2009) find similar negative relation between reaction to bad earnings news and market/sentiment states.

Second, in line with hypothesis of cell (5) in Table 1, subsequent to pessimism, big positive-news stocks yield positive returns, which are significant for estimation of sentiment over prior four through six months, marginal significant for estimation periods of prior one and three months, and insignificant for estimation period of prior two months. On the other hand, it is insignificant following optimism, in line with the hypothesis of cell (2) in Table 1. Consequently, the hypothesis of negative values in cell (8) of Table 1 is confirmed by the results of the fourth row of Panel E in Table 4, albeit the statistical significance is weaker than expected.

Consistent with prediction of cell (9) in Table 1, significance in cell (5) for scenario (A), introduces insignificant differential returns between high and low sentiments for hedge portfolios of *SUR*, namely weak positive returns for *SUR*4-*SUR*1

[16] The strong evidence also accords with similar evident findings in the U.S. (e.g., Ertimur et al., 2003; Jegadeesh and Livnat, 2006a)

in the last row of Panel E in Table 4. Inversely, insignificant cognitive dissonance (i.e., namely scenario (B) in cell (5) of Table 1) results in a significant return for *SUR*4-*SUR*1 in Panel E, i.e., 1.248% (t-statistic of 1.888) per month for sentiment estimation period of previous two months.

In brief, predictions in Table 1 are mostly corroborated by empirical evidence in Table 4. Note that stocks announcing small positive revenue news post optimism or negative (be small or big) revenue news post pessimism illustrate an inverse price behavior to the revenue news, reminiscent of Kinney et al. (2002) and Johnson and Zhao (2012). Specifically, with prior optimism (pessimism), stock returns are negative (positive) after small positive (big or small negative) news. For optimism, the inverse returns are small in magnitude, whereas for pessimism the inverse returns monotonically increase with the length of time horizon for estimation of sentiment. To illustrate, the inverse effect subsequent to low sentiment and extreme bad revenue news creates positive returns of 1.149% for prior one-month sentiment estimation period, and gradually accelerates to 3.965% per month for the prior six-month counterpart (shown in the first row of Panel D in Table 4).[17]

4.2 The Two-Period Revenue-Surprise Effect Conditioning on Investor Sentiment

In this subsection, Table 5 documents empirical results for bivariate portfolios ranked on revenue surprises for adjacent two periods. Among stocks already facing poor revenue news in the adjacent prior period, results in Table 5 are consistent with the predictions (illustrated in cells of (1), (3), (7), and (9) in Table 2) that pronounced cognitive dissonance arises in the presence of one more period of extreme poor revenue news when it is accompanied with high market-wide investor sentiment.

[17] The inverse price reaction is not the focus of this paper and thereby will be investigated in details in another research (Fu, 2013).

Furthermore, significance of the results is robust to variant length of sentiment estimation period. Moreover, the more persistent is the optimism (i.e., the longer the estimation period), generally the larger is the magnitude of return difference between high and low sentiment for hedge portfolios of *SUR*4- *SUR*1. In particular, the return difference is on average 2.011, 2.546, 2.433, 2.892, 3.484, and 3.909 percent per month for sentiment estimation period ranging from one to six months, respectively. On the other hand, stocks disclosing only one period of extreme bad revenue news (i.e., SUR is big negative at month *t*, yet positive at month *t*-1) yield only weak negative future returns following optimism, corroborating the absence of cognitive dissonance hypothesized in cell (11) of Table 2. Note that the results that revenue surprise hedge portfolios create evident profits only under prior optimism, and negative surprise stocks dominate the profits is also suggested for price momentum phenomenon in the U.S., that is, losers are the primary source of systematic profits of price momentum strategies and solely in optimistic period do the strategies yield sizable profitability (Antoniou et al., 2012).

[Table 5 around here]

Regarding stocks experiencing two periods of good news in a row at the times of low sentiment, we uncover strong cognitive dissonance (i.e., significant positive returns post revenue news) for the three cases when there are the most persistent pessimism (i.e., sentiment based on prior four through six months), and marginal significant and weak dissonance for the remaining two and one cases, respectively. The evidence is in compliance with predictions of scenario (A) and (B) for cell (15) and (16), respectively, in Table 2. Resulted return difference for hedge portfolios between high and low sentiments partially confirms hypotheses of the two scenarios in cell (19) of Table 2. Recall that inference in cell (19) argues that, if x2, y2, and z2 are all insignificant, strong (weak) cognitive dissonance relative to pessimism

generates strong profitability difference between sentiment states for hedge portfolios. Empirical evidence in Table 5 reveals prevalently weak sentiment-based return difference on hedge portfolios regardless of existence of certain significant cognitive dissonance effect. One possible explanation relates to relax the assumption of insignificant role of y2 and z2. In particular, Panel D in Table 5 reveals manifestation of inverse price reaction to revenue surprises found in Table 4, namely holding-period returns are positive (i.e., z2 in Table 2) upon releasing of extreme poor revenue news in pessimism for all the six cases. The inverse return effect also amplifies for y2 under two cases; that is, negative returns occur subsequent to disclose of extreme good revenue news coupled with optimistic sentiment. Accordingly, the contrarian direction of y2 and z2 deteriorates the magnitude of cell (19) in Table 2 (see the final equation in the cell) and thereby the related sentiment-driven return difference on hedge portfolios turns out to be insignificant negative in Table 5. The inverse return effect will be discussed in details in another paper since the topic is out of the focus of this paper (Fu, 2013).

It is worthy mentioning that returns associated with the two types of cognitive dissonance are prevalently stronger in Table 5 (i.e., the first row in Panel A, the fourth row in Panel D, and the first/fourth/last rows in Panel E) relative to the counterparts in Table 4. The stronger evidence explicitly documents that the two-period analysis is a better approach to assess the impact of cognitive dissonance on revenue surprises than the common one-period analysis. This may also shed further light to why results of prior research for relation of earnings announcement returns and investor sentiment is not clear.

Recall previously we emphasize the vital role of persistence for the manifestation of cognitive dissonance. Table 6 uncovers mid-term performance for periods of both prior and post the announcement of revenue news. Panel A (B) reports situation for

stocks with a prior negative (positive) revenue surprises. This table is for the case of sentiment estimation period of five-month, whereas results for other length of estimation periods do not materially change and are available upon request.

[Table 6 around here]

In Panel A, we look at returns over preannouncement period to explore potential explanation for the performance differential between high and low sentiment states. For the announcement of bad revenue news over two adjacent months, the first row in Panel A-2 of Table 6 shows that high sentiment stimulates gradual impounding of bad news into stock prices beginning one month prior to announcement of revenue news. The negative dynamic dies out in a slow pace as well that negative buy-and-hold returns sustain significance till the sixth month after announcement. In contrast, under low sentiment state (shown in the first row of Panel A-4), the incorporating of bad news is carried out earlier (showing a possibility of starting a negative return as early as the sixth month prior to the disclosure of bad news) and faster, resulting in marginal significant reversal over the one year post disclosure of bad news. The earlier and dramatic response to bad revenue news in pessimism corroborates the existing empirical evidence that, during preannouncement stage in the U.S. stock markets, managers are prone to release larger amount of bad earnings news with a focus on quality feature (i.e., hard to evaluate its impact and easy to result in mis-pricing), relative to smaller amount of good earnings news centering in quantity essence (Skinner, 1994; Soffer et al., 2000).[18] As for the slow market reaction to bad revenue news over high sentiment, cognitive dissonance fills the gap. It is unlikely that delay reaction to bad news over high sentiment relates to slow release of bad news because the slow disclosure assumption contradicts empirical evidence that over

[18] This strand of literature attributes the early disclosure of bad news to managers' concern of potential lawsuits and incurring reputational costs (see, e.g. Skinner, 1994, 1997). On the other hand, another strand of research asserts that reasons such as career concerns are likely to encourage managers to preserve bad news as long as possible. This vein of empirical evidence, however, also finds larger market reaction to bad news relative to good news due to accentuated magnitude (Kothari et al., 2009)

optimistic periods firms show a tendency to suppress high level of sentiment by decreasing earnings forecast activities (Bergman and Roychowdhury, 2005). Rather, cognitive dissonance induced perceptional delayed acceptance of bad news (as the bad news is not in line with the existing high sentiment) is likely to contribute to the sluggish reaction of stock price.

Panel B-1 to B-5 show reaction to revenue surprises among stocks with adjacent prior bad news. We are particularly interested in reaction to good news, the time when cognitive dissonance emerges. Panel B-2 documents that in high sentiment state reaction to good news primarily lies between months of *t*-6 and *t*, where the strongest reaction is in the pre-announcement period of (*t*-6: *t*-2) with buy-and-hold returns of 22.064 percent (t-statistic of 4.752). Returns over the post period of (*t*+1: *t*+12) alter to a weak negative return. Inversely, low sentiment stimulates a weak negative return toward good news over (*t*-6: *t*-2) but accumulates onwards to a pronounced positive return of 27.207 percent between months of *t*+1 and *t*+12, a clue of slow reaction. More importantly, we find the accumulated effect in pessimism toward two periods of good news is larger relative the counterparts with similar good news for current month but bad news over prior month (shown in Panel A-4). The larger mid-term buy-and-hold returns (i.e., 27.207% for (*t*+1: *t*+12) in Panel B-4 vs. 21.444% in Panel A-4) implies a higher extent of slow reaction and thereby also a clue of cognitive dissonance, which stems from two consecutive periods of good news (versus only one period of good news) in pessimism.

In short, the mid-term return behavior again confirms the assertion that cognitive dissonance arises when two consecutive periods of news consistently contradicting prevailing investor sentiment.

4.3 Risk Analysis

To find out whether the return difference between sentiment states on revenue-surprise hedge portfolios is driven by risks, we follow Cooper et al (2004), estimating risk adjusted returns via first computing factor loadings for CAPM, CAPM conditional on investor sentiment (Baker and Wurgler, 2006), three-factor model of Fama-French (1993, 1996), and four factor model of Carhart (1997) from equation (3) through (6), respectively. Then applying to equation (2), we calculate risk adjusted based on these risk models.

$$R_{kt}^{adj} = R_{kt} - \sum_{i} \beta_{ik} f_{it} \tag{2}$$

$$R_{kt} - R_{ft} = a + \beta_{1k}(R_{mt} - R_{ft}) + e_t \tag{3}$$

$$R_{kt} - R_{ft} = a + (\beta_{1k} + \beta_{2k} \times Sent_{t-1}^{Avg})(R_{mt} - R_{ft}) + e_t \tag{4}$$

$$R_{kt} - R_{ft} = a + \beta_{1k}(R_{mt} - R_{ft}) + \beta_{2k} SMB_t + \beta_{3k} HML_t + e_t \tag{5}$$

$$R_{kt} - R_{ft} = a + \beta_{1k}(R_{mt} - R_{ft}) + \beta_{2k} SMB_t + \beta_{3k} HML_t + \beta_{4k} UMD_t + e_t \tag{6}$$

where R_{kt}^{adj} and R_{kt} denotes monthly risk-adjusted and raw returns on SUS-portfolios[19] in calendar month *t*, also classified as in holding month *k* (where *k*=1, 2,…, 36), f_{it} is realization of factor *i* at calendar month *t*, R_{ft} is the risk-free rate proxy by the one-month time deposit rate of the First Commercial Bank, α is corresponding abnormal return, β_{1k} is the beta with respect to market risk premium, which is the return on TAIEX market index (i.e., R_{mt}) minus risk free rate (i.e., R_{ft}), β_{2k} in equation (4) is loading for market risk premium which varies with sentiment, $Sent_{t-1}^{Avg}$ is average sentiment of *n*-month beginning month *t*-1 backwards to month *t*-n, β_{2k} in equations (5) and (6), as well as β_{3k} and β_{4k} are loadings for SMB_t, HML_t, and UMD_t,

[19] For zero-cost investment portfolios, the regression is fitted with dependent variable of differences in excess returns between stocks with positive revenues surprises and those with negative surprises.

which represent size, value firm, and price momentum (i.e., returns of prior one-year winners minus returns of loser counterparts) effects. The exact computation procedure for SMB_t, HML_t, and UMD_t can be found in Fama and French (1993, 1996) and Charhart (1997).

Table 7 reports raw returns adjusted by variant risk models. Returns of primary concerns are in the first row of Panel A-2 (i.e., *SUR*1), the third row of Panel B-4 (i.e., *SUR*4), and the last row of Panel A-5 and Panel B-5 (i.e., *SUR*4 - *SUR*1). The majority of them survive risk factors of the four models, in spite of the deterioration of returns on *SUR*1-portfolios conditional on models of Fama-French and Carhart for sentiment estimation period of six months. The general robustness is consistent with that in Baker and Wurgler (2006) and Antoniou et al. (2012).

[Table 7 around here]

4.4 Control Variables

Ample evidence documents that various psychological biases are mainly attributable to naïve investors (Odean, 1999). Stills some evidence, however, shows that institutional investors are prone to behavioural biases as well (Puetz and Ruenzi, 2011). Here we examine whether the sentiment-driven revenue surprises as well as the cognitive dissonance is stronger among stocks with low institutional ownership, that is, stocks with high book-to-market ratio, small size, and low price, as denoted in Kumar and Lee (2006). Accordingly, we use control variables of institutional holdings, stock price (the two variables are at the end of month *t*), book-to-market ratio, and size, where the latter two variables are estimated as in Fama and French (1993, 1996).

The first rows of Panel A-2 in Table 8 reveals that cognitive dissonance toward extreme bad revenue news in optimistic months prevalently exists across categories of

all four variables, with the only exception with an absence is among low price stocks. Analogously, Panel B-4 report equally wide-spread significant cognitive dissonance relative to extreme good revenue news in pessimistic months, excepting for marginal significant results for stocks with low institutional investing or median prices. One potential reason for the prevalently strong cognitive dissonance across variable categories is due to the fact that individual investors dominate Taiwanese stock market.[20] For instance, the median institutional holdings for low, medium, and high institutional holding categories are 0.400%, 5.820%, and 24.930% respectively. Obviously, all are overwhelmed by retail investors. Further in Panel A-5, for revenue-surprise hedge portfolios, return differential between high and low sentiment is significant only for big-size, or high-price stocks where the inverse reaction to extreme negative revenue surprises in pessimism is relatively strong. In Panel B-5, generally weak negative differential returns for revenue-surprise hedge portfolios between optimism and pessimism is consistent with original results in Table 5. In sum, empirical evidence in Table 8 discloses indifferent results conditional on the control variables.

[Table 8 around here]

4.5 Long-Term Performance

The cognitive dissonance triggered price momentum reverses in long run in Antoniou et al. (2012). Hence we investigate whether similar dynamic takes place for the cognitive dissonance relative to revenue surprises. The long-term buy-and-hold returns in Table 9 employ sentiment estimation period of prior five months. The first row for the second column in Panel B reports the cognitive dissonance under

[20] In the Taiwan Stock Exchange, ownership of individuals for listed firms between 2000 and 2011 ranges from 39.84% to 56.13%, with an average of 46.19% (Taiwan Stock Exchange Corporation, 2012).

releasing of extreme bad news (among stocks with similar poor news over the prior month) in optimism disappears in long term. The return decreases from a significant negative of -2.630% at month *t*+1 to insignificant positive of 7.824% over months between *t*+1 and *t*+60, whereas the inverse reaction to extreme negative news in pessimism accumulates from weak positive return of 3.386% (in Table 5) to significant 49.426%. As a result, the strong short to mid term return differential between the two sentiment states for hedge portfolios (e.g., 3.484% and 6.707% respectively for one and six month(s) holding period, see Table 5 and 6) becomes insignificant positive of 3.989% in long term. In a reverse fashion, the short- to mid-term insignificant negative hedge portfolio return differential between sentiment states (for stocks with poor revenue news over the prior month) accentuates from weak negative of -2.055% for one-month holding period to significant positive of 37.717 for 60-month holding period. The reversal mainly stems from pronounced inverse reaction to extreme negative news in pessimism, which sharply increases from weak 1.648% in month (*t*+1) (see Panel D in Table 5) to 78.645% over long term, whereas the optimistic counterpart increases from -1.448 (see Panel B in Table 5) to merely 12.319%. Note that the cognitive dissonance in pessimism sustains in long term, enhancing from significant 5.020% (see Panel D in Table 5) in short run to as strong as 61.504% in long run (see Panel D in Table 9), confirming the underpring essence in short run. Risk adjusted returns in other columns of Table 9 generally are in line with the evidence of raw returns albeit magnitude for raw return on the third column in Panel E slightly decreases upon adjustment based on Fama-French and Carhart models, implying the effect is mildly associated with small-firm and/or value-firm effect(s) and thereby corroborating the mild difference across firm sizes and book-to-market values shown in Table 8.

[Table 9 around here]

4.6 An Alternative Sentiment Measure

Chordia and Shivakumar (2006) find that returns related to earnings news are significantly associated with future macroeconomic prospects. In views of this, a new residual sentiment is calculated by regressing original investment opportunity outlook index on macroeconomic factors of not only the concurrent month but also future one month (or one quarter) so as to purge out influence from both current and future macroeconomic status. Table 10 uncovers that the new sentiment measure yields similar return dynamic with the previous sentiment measure, confirming robustness of the sentiment-driven cognitive dissonance.

[Table 10 around here]

5. Conclusions

Rather than observing the common one-period revenue surprise anomaly, we conduct a two-period revenue surprise analysis to explore the impact of prior-period investor sentiment because we hypothesize a role of cognitive dissonance and the cognitive dissonance theory suggests that the more number of conflicting elements the stronger the dissonance. Contrast to the quarterly announcement in the U.S., revenue news is released in a monthly basis in the Taiwanese stock market. This is one reason, among others, why we study revenue surprises in this market. Consistent with the hypothesis, in this market we find that stocks with a prior negative revenue surprise exhibit stronger revenue surprise anomaly over the next period following optimism than following pessimism, implying a cognitive dissonance occurs in the former but not the latter. This finding corroborates the prediction that cognitive dissonance is

triggered by dilemma that high (low) sentiment is accompanied with bad (good) revenue news over two consecutive periods. In addition, the sentiment-driven revenue surprise anomaly extends into approximately six months, confirming sluggish investors' responses predicted by cognitive dissonance. All the significant returns are robust to common risk tests of CAPM, CAPM conditional on sentiment, Fama-French three-factor model, and Carhart's four-factor model. Moreover, the sentiment-driven revenue surprise anomaly is indifferent across stocks with variant of institutional holdings, price, book-to-market ratio, and size, implying the cognitive dissonance does not confine to retail investors. In the long-term, returns associated with optimism deteriorates, whereas returns relative to pessimism accelerates.

We also uncover the role of inverse reaction to revenue surprises, which warrants future research. Contrary to the U.S. stock market, the Taiwanese stock market is inherent with interdependent culture. The cognitive dissonance literature has been interested in the role of cultural factors. As most existing financial research for cognitive dissonance centers in markets with individualistic culture, studies for markets with interdependent culture is much fewer and warrant more research.

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Table 1

Prediction of the Collective Effect of Cognitive Dissonances on Profitability of Portfolios Based on One-Period Revenue Surprises

This table illustrates the collective effect of cognitive dissonances on sentiment-driven short-run profitability of portfolios constructed from one period of revenue surprises. At the end of each month t, stocks are partitioned into portfolios consisting of stocks with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. We also partition sample months into optimistic, neutral, and pessimistic periods based on residual sentiment of prior month(s) as described in text. The definition of scenario (A) is that the impact of cognitive dissonance is strong enough to yield a significant positive return in cell (5), whereas scenario (B) is the insignificant counterpart (see text for detailed description). Symbols of x1, y1, and z1 denote incidences irrelevant to cognitive dissonance, and their impact on stock returns are thus assumed to be insignificant, unless otherwise mentioned.

SUR_t	Effects	Expected Sign	
Panel A: Opt. Periods			
SUR1(Big Neg.)	(1)Cog. Dis.	Sig.-	
SUR4(Big Pos.)	(2)	x	
SUR4-SUR1	(3)=(2)-(1)	x-(Sig.-)=x+(Sig.+)	
Panel B: Pes. Periods		Scenario (A)	Scenario (B)
SUR1(Big Neg.)	(4)	y	y
SUR4(Big Pos.)	(5)Cog. Dis.	Sig.+	Insig.+
SUR4-SUR1	(6)=(5)-(4)	(Sig.+)-y	(Insig.+)-y
Panel C: Opt. - Pes.			
SUR1(Big Neg.)	(7)=(1)-(4)	(Sig.-)-y	(Sig.-)-y
SUR4(Big Pos.)	(8)=(2)-(5)	x-(Sig.+)	x-(Insig.+)
SUR4-SUR1	(9)=(3)-(6)	x+(Sig.+)-(Sig.+)+y= **(Insig.+/-)+x+y**	x+(Sig.+)-(Insig.+)+y= **(Sig.+)+x+y or (Insig.+/-)+x+y**

Table 2

Prediction of the Collective Effect of Cognitive Dissonance on Profitability of Portfolios Based on Two-Period Revenue Surprises

This table illustrates the expected collective effect of cognitive dissonances on sentiment-driven profitability of hedge portfolios constructed from consecutive two periods of revenue surprises. At the end of each month t, stocks are partitioned into portfolios consisting of stocks with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. Within each SURt-portfolio, component stocks are further categorized into negative and positive revenue surprise portfolios based on their revenue surprises at month t-1 (or SURt-1). We also partition sample months into optimistic, neutral, and pessimistic periods based on residual sentiment of prior month(s). Cog. Dis. stands for cognitive dissonance. The definition of scenario (A) is that the impact of cognitive dissonance is strong enough to yield a significant positive return in cell (15), whereas scenario (B) is the insignificant counterpart (see text for detailed description). Symbols of x1, y1, z1, x2, y2, and z2 denote incidences irrelevant to cognitive dissonance, and their impact on stock returns are thus assumed to be insignificant, unless otherwise mentioned.

SUR_t	SUR_{t-1}				
	Negative		Positive		
	Effects	Expected Sign	Effects	Expected Sign	
Panel A: Opt. Periods					
SUR1(Big Neg.)	(1)Cog. Dis.	Sig.-	(11)	x2	
SUR4(Big Pos.)	(2)	x1	(12)	y2	
SUR4-SUR1	(3)=(2)-(1)	x1-(Sig.-)=x1+(Sig.+)	(13)=(12)-(11)	x2-y2	
Panel B: Pes. Periods				Scenario (A)	Scenario (B)
SUR1(Big Neg.)	(4)	y1	(14)	z2	z2
SUR4(Big Pos.)	(5)	z1	(15)Cog. Dis.	Sig.+	Insig.+
SUR4-SUR1	(6)=(5)-(4)	z1-y1	(16)=(15)-(14)	(Sig.+)-z2	(Insig.+)-z2
Panel C: Opt. - Pes.					
SUR1(Big Neg.)	(7)=(1)-(4)	(Sig.-)-y1	(17)=(11)-(14)	x2-z2	x2-z2
SUR4(Big Pos.)	(8)=(2)-(5)	x1-z1	(18)=(12)-(15)	y2-(Sig.+)	y2-(Insig.+)
SUR4-SUR1	(9)=(3)-(6)	x1-(Sig.-)-(z1-y1)=	(19)=(13)-(16)	x2-y2-[(Sig.+)-z2]=	x2-y2-[(Insig.+)-z2]=
		x1+(Sig.+)-z1+y1=		x2-y2-(Sig.+)+z2=	x2-y2-(Insig.+)+z2=
		(Sig.+)+x1+y1-z1		**(Sig.-)+x2+z2-y2**	**(Insig.-)+x2+z2-y2**

Table 3

Descriptive Statistics

This table presents summary statistics for variables used in this paper. Panel A reports variables estimated for each firm at month-*t*, including standardized unexpected revenues (SUR) (see the text for exact estimation), price (in New Taiwan Dollar), one-month holding period returns in percentage at month *t*+1, book-to-market ratio in percentage (BM) estimated following Fama and French (1993, 1996), institutional holdings in percentage, and market value (in million). Panel B documents characteristics relative to four revenue-based portfolios, where SUR1, SUR2, SUR3, and SUR4 denote stocks with big negative, small negative, small positive, and big positive revenue surprises. Panel C reveals observation months, median, standard deviation, minimum, and maximum levels of three investor sentiment measures. Panel D discloses the number of sample months for sentiment states of pessimism, neutralism, and optimism under sentiment estimation periods of prior one through six months, respectively.

	Firm-Month	Mean	Std. Dev.	Min.	Max.
Panel A: Firm level					
SUR_t	84,222	0.014	1.144	-4.689	4.695
$Price_t$	84,222	27.976	41.460	1.010	1,300
Stock $Return_{t+1}$	84,222	1.260	14.456	-76.009	277.451
BM_t	84,222	0.935	8.108	-25.067	43.700
Institutional $Holdings_t$	84,222	11.068	13.878	0	81.840
Market $Value_t$	84,222	23,074.320	89,869.390	55	2,249,917

Panel B: Portfolio level

	Firm-Month	Mean					
		SUR_t	$Price_t$	Stock $Return_{t+1}$	BM_t	Institutional $Holdings_t$	Market $Value_t$
SUR1	20,427	-1.449	29.102	-0.227	0.576	11.633	24,334.910
SUR2	20,477	-0.398	25.182	0.766	0.561	10.433	20,230.050
SUR3	21,636	0.382	26.685	1.626	1.201	10.536	23,114.850
SUR4	21,682	1.415	30.841	2.760	1.357	11.665	24,532.450

Panel C: Investor sentiment

	Months	Median	Std. Dev.	Min.	Max.
Investment Opportunity Index	139	71	16.113	38.800	102.400
Residual sentiment	139	0.365	14.796	-32.266	30.047
Alternative residual sentiment	138	0.187	13.946	-36.291	24.679

Panel D: Sample months of sentiment periods based on residual sentiment over prior *n*-month

	1-month	2-month	3-month	4-month	5-month	6-month
Optimistic periods	57	47	39	34	29	26
Neutral periods	27	45	60	71	82	90
Pessimistic periods	55	47	40	34	28	23
Total months	139	139	139	139	139	139

Table 4

Sentiment-Driven Returns for Portfolios Based on One-Period Revenue Surprises

This table reports one-month holding period returns on portfolios. At the end of each month, stocks are partitioned into portfolios with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. We assign an even number of stocks into SUR1 (SUR3) and SUR2 (SUR4) portfolios. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio monthly returns with holding period of one month. We partition sample months into optimistic, neutral, and pessimistic periods based on residual sentiment of prior one through six months, respectively. The exact way of partitioning is described in text. The t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimistic state is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

Panel A: The Whole Period	
SUR1(Big Neg.)	-0.338
	(-0.511)
SUR2	0.169
	(0.240)
SUR3	0.758
	(1.112)
SUR4(Big Pos.)	1.820
	(2.465)
SUR4-SUR1	2.157
	(6.820)

	Partition of sentiment periods based on *n*-month residual sentiment					
	One-Month	Two-Month	Three-Month	Four-Month	Five-Month	Six-Month
Panel B: Optimistic Periods						
SUR1(Big Neg.)	-1.543	-1.991	-2.256	-2.850	-2.411	-1.702
	(-2.195)	(-2.637)	(-2.666)	(-3.062)	(-2.579)	(-1.883)
SUR2	-1.033	-1.020	-1.339	-1.803	-1.431	-0.155
	(-1.303)	(-1.142)	(-1.357)	(-1.676)	(-1.254)	(-0.164)
SUR3	-0.273	-0.355	-0.784	-0.997	-0.822	-0.012
	(-0.349)	(-0.392)	(-0.730)	(-0.852)	(-0.658)	(-0.010)
SUR4(Big Pos.)	0.688	0.488	0.186	-0.335	-0.202	0.908
	(0.879)	(0.589)	(0.198)	(-0.326)	(-0.177)	(0.868)
SUR4-SUR1	2.231	2.480	2.443	2.516	2.209	2.610
	(5.791)	(6.025)	(5.216)	(4.750)	(3.645)	(4.397)
Panel C: Neutral Periods						
SUR1(Big Neg.)	-0.767	-0.209	-0.370	-0.282	-0.829	-0.995
	(-0.707)	(-0.257)	(-0.480)	(-0.376)	(-1.019)	(-1.338)
SUR2	-0.275	-0.004	-0.149	-0.005	-0.298	-0.617
	(-0.223)	(-0.004)	(-0.163)	(-0.005)	(-0.346)	(-0.751)
SUR3	1.170	1.128	0.904	0.721	0.628	0.382
	(0.952)	(1.342)	(0.965)	(0.801)	(0.702)	(0.462)
SUR4(Big Pos.)	2.331	2.558	2.007	1.864	1.537	1.242
	(1.967)	(2.999)	(2.267)	(2.020)	(1.717)	(1.499)
SUR4-SUR1	3.098	2.768	2.377	2.146	2.365	2.237
	(3.426)	(4.567)	(4.503)	(4.162)	(5.379)	(5.504)
Panel D: Pessimistic Periods						
SUR1(Big Neg.)	1.149	1.227	1.631	2.131	3.381	3.965
	(0.852)	(0.802)	(1.033)	(1.251)	(1.752)	(1.910)
SUR2	1.660	1.552	2.166	2.575	3.305	3.766
	(1.198)	(1.008)	(1.464)	(1.575)	(1.757)	(1.708)
SUR3	1.640	1.533	2.075	2.645	2.850	3.205
	(1.231)	(1.037)	(1.541)	(1.862)	(1.788)	(1.696)
SUR4(Big Pos.)	2.759	2.458	3.165	3.945	4.851	5.260
	(1.780)	(1.439)	(1.846)	(2.161)	(2.273)	(2.122)
SUR4-SUR1	1.610	1.231	1.534	1.814	1.470	1.295
	(2.884)	(2.380)	(2.952)	(3.071)	(2.233)	(1.839)
Panel E: Opt. - Pes.						
SUR1(Big Neg.)	-2.692	-3.218	-3.887	-4.981	-5.792	-5.667
	(-1.776)	(-1.886)	(-2.170)	(-2.566)	(-2.701)	(-2.503)
SUR2	-2.693	-2.572	-3.506	-4.378	-4.736	-3.921
	(-1.688)	(-1.445)	(-1.971)	(-2.237)	(-2.153)	(-1.634)
SUR3	-1.914	-1.887	-2.859	-3.643	-3.672	-3.217
	(-1.250)	(-1.089)	(-1.660)	(-1.979)	(-1.813)	(-1.441)
SUR4(Big Pos.)	-2.071	-1.969	-2.978	-4.280	-5.053	-4.352
	(-1.204)	(-1.038)	(-1.524)	(-2.043)	(-2.090)	(-1.617)
SUR4-SUR1	0.621	1.248	0.909	0.702	0.739	1.315
	(0.906)	(1.888)	(1.299)	(0.885)	(0.825)	(1.428)

Table 5
Sentiment-Driven Returns for Portfolios Based on Two-Period Revenue Surprises

This table reports one-month holding period returns on portfolios. At the end of each month *t*, stocks are partitioned into portfolios with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. Within each SUR_t-portfolio, component stocks are further categorized into negative (or SUR_{t-1}^{Neg}) and positive (or SUR_{t-1}^{Pos}) portfolios, which are composed of the half of component stocks in the SUR_t-portfolios with relatively low and high revenue surprises, respectively, at month *t*-1 compared to the other half of stocks. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio monthly returns with holding period of one month. We partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior one through six months, respectively. The exact way of partition is described in text. The t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimistic state is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

SUR_t	SUR_{t-1}	
	Negative	Positive
Panel A: The Whole Period		
SUR1(Big Neg.)	-0.527	0.146
	(-0.772)	(0.219)
SUR2	-0.019	0.937
	(-0.025)	(1.257)
SUR3	0.659	0.887
	(0.837)	(1.312)
SUR4(Big Pos.)	1.555	1.949
	(2.078)	(2.586)
SUR4-SUR1	2.081	1.803
	(3.960)	(3.415)

SUR_t	Partition of sentiment periods based on *n*-month residual sentiment											
	One-Month Sentiment		Two-Month Sentiment		Three-Month Sentiment		Four-Month Sentiment		Five-Month Sentiment		Six-Month Sentiment	
	SUR_{t-1}		SUR_{t-1}		SUR_{t-1}		SUR_{t-1}		SUR_{t-1}		SUR_{t-1}	
	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive
Panel B: Optimistic Periods												
SUR1(Big Neg.)	-1.906	-0.431	-2.362	-0.633	-2.640	-0.783	-3.199	-1.510	-2.630	-1.448	-2.050	-0.573
	(-2.636)	(-0.536)	(-2.984)	(-0.698)	(-2.934)	(-0.828)	(-3.214)	(-1.525)	(-2.699)	(-1.320)	(-2.106)	(-0.551)
SUR2	-1.412	-0.527	-1.402	-0.652	-1.939	-0.733	-2.524	-1.043	-2.038	-0.597	-0.712	0.741
	(-1.704)	(-0.604)	(-1.516)	(-0.677)	(-1.920)	(-0.655)	(-2.252)	(-0.879)	(-1.778)	(-0.485)	(-0.745)	(0.779)
SUR3	-0.444	-0.184	-0.387	-0.240	-0.562	-0.598	-0.594	-0.941	-0.272	-0.813	0.765	0.108
	(-0.523)	(-0.235)	(-0.424)	(-0.264)	(-0.531)	(-0.553)	(-0.552)	(-0.781)	(-0.254)	(-0.615)	(0.798)	(0.087)
SUR4(Big Pos.)	0.679	0.873	0.435	0.697	0.018	0.239	-0.445	-0.223	0.204	-0.131	0.870	0.906
	(0.757)	(1.117)	(0.445)	(0.832)	(0.018)	(0.259)	(-0.404)	(-0.217)	(0.188)	(-0.114)	(0.828)	(0.823)
SUR4-SUR1	2.585	1.305	2.797	1.330	2.658	1.023	2.753	1.287	2.834	1.318	2.920	1.479
	(4.222)	(2.507)	(4.011)	(2.150)	(3.848)	(1.404)	(3.583)	(1.714)	(3.163)	(1.688)	(3.633)	(1.715)
Panel C: Neutral Periods												
SUR1(Big Neg.)	-1.138	-0.341	-0.484	0.045	-0.620	0.048	-0.543	0.783	-1.071	0.215	-1.201	-0.053
	(-0.970)	(-0.273)	(-0.583)	(0.046)	(-0.767)	(0.053)	(-0.717)	(0.829)	(-1.282)	(0.244)	(-1.571)	(-0.065)
SUR2	0.266	0.137	0.226	0.377	-0.021	0.023	-0.0002	0.385	-0.440	0.278	-0.790	-0.102
	(0.234)	(0.094)	(0.260)	(0.358)	(-0.022)	(0.026)	(-0.0003)	(0.431)	(-0.479)	(0.308)	(-0.895)	(-0.121)
SUR3	0.535	1.119	0.422	1.143	0.209	0.927	0.285	0.723	0.099	0.632	-0.157	0.475
	(0.345)	(0.879)	(0.383)	(1.331)	(0.183)	(1.063)	(0.278)	(0.834)	(0.094)	(0.740)	(-0.164)	(0.599)
SUR4(Big Pos.)	2.895	2.309	2.721	2.646	2.294	2.235	2.248	2.028	1.643	1.673	1.388	1.408
	(1.611)	(1.957)	(2.274)	(3.120)	(1.902)	(2.476)	(1.940)	(2.159)	(1.539)	(1.783)	(1.409)	(1.644)
SUR4-SUR1	4.032	2.650	3.205	2.601	2.913	2.187	2.791	1.245	2.715	1.458	2.589	1.460
	(2.745)	(2.100)	(3.426)	(3.408)	(3.438)	(3.539)	(3.425)	(1.802)	(3.781)	(2.262)	(3.832)	(2.542)
Panel D: Pessimistic Periods												
SUR1(Big Neg.)	1.235	0.998	1.307	1.039	1.730	1.224	2.262	0.480	3.386	1.648	4.034	1.805
	(0.907)	(0.802)	(0.843)	(0.740)	(1.082)	(0.816)	(1.303)	(0.301)	(1.699)	(0.943)	(1.910)	(0.873)
SUR2	1.310	2.881	1.155	3.108	1.905	4.012	2.523	4.164	3.429	4.584	3.957	5.418
	(0.892)	(2.048)	(0.709)	(1.953)	(1.264)	(2.415)	(1.545)	(2.323)	(1.890)	(2.163)	(1.842)	(2.256)
SUR3	1.886	1.900	1.960	1.787	2.571	2.309	2.754	3.121	3.361	3.484	3.872	3.490
	(1.210)	(1.428)	(1.108)	(1.211)	(1.561)	(1.656)	(1.484)	(2.176)	(1.620)	(2.026)	(1.582)	(1.821)
SUR4(Big Pos.)	1.809	2.903	1.558	2.545	1.955	3.216	2.124	4.015	2.736	5.020	3.046	5.392
	(1.428)	(1.813)	(1.137)	(1.441)	(1.475)	(1.814)	(1.430)	(2.203)	(1.781)	(2.332)	(1.639)	(2.206)
SUR4-SUR1	0.574	1.905	0.251	1.505	0.225	1.993	-0.138	3.535	-0.650	3.372	-0.988	3.587
	(0.673)	(1.781)	(0.265)	(1.233)	(0.210)	(1.415)	(-0.129)	(2.620)	(-0.507)	(2.049)	(-0.903)	(2.035)
Panel E: Opt. - Pes.												
SUR1(Big Neg.)	-3.141	-1.429	-3.669	-1.673	-4.370	-2.007	-5.461	-1.990	-6.016	-3.096	-6.084	-2.378
	(-2.042)	(-0.971)	(-2.108)	(-1.000)	(-2.382)	(-1.132)	(-2.729)	(-1.061)	(-2.711)	(-1.501)	(-2.616)	(-1.028)
SUR2	-2.722	-3.408	-2.557	-3.760	-3.844	-4.744	-5.048	-5.208	-5.467	-5.181	-4.669	-4.677
	(-1.614)	(-2.080)	(-1.365)	(-2.022)	(-2.119)	(-2.369)	(-2.548)	(-2.422)	(-2.547)	(-2.114)	(-1.986)	(-1.811)
SUR3	-2.330	-2.084	-2.347	-2.026	-3.132	-2.907	-3.347	-4.062	-3.633	-4.297	-3.108	-3.382
	(-1.318)	(-1.360)	(-1.179)	(-1.170)	(-1.600)	(-1.647)	(-1.561)	(-2.168)	(-1.556)	(-1.981)	(-1.182)	(-1.481)
SUR4(Big Pos.)	-1.129	-2.030	-1.123	-1.848	-1.937	-2.977	-2.569	-4.237	-2.532	-5.151	-2.176	-4.486
	(-0.733)	(-1.149)	(-0.667)	(-0.945)	(-1.163)	(-1.489)	(-1.389)	(-2.026)	(-1.346)	(-2.112)	(-1.019)	(-1.673)
SUR4-SUR1	2.011	-0.601	2.546	-0.175	2.433	-0.970	2.892	-2.248	3.484	-2.055	3.909	-2.108
	(1.922)	(-0.504)	(2.166)	(-0.128)	(1.908)	(-0.612)	(2.198)	(-1.456)	(2.227)	(-1.128)	(2.878)	(-1.074)

Table 6

Mid-Term Sentiment-Driven Returns for Portfolios Based on Two-Period Revenue Surprises

This table reports buy-and-hold portfolio returns under variant holding periods. At the end of each month *t*, stocks are partitioned into portfolios with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. Within each SUR_t-portfolio, component stocks are further categorized into negative (or SUR_{t-1}^{Neg}) and positive (or SUR_{t-1}^{Pos}) portfolios, which are composed of the half of component stocks in the SUR_t-portfolios with relatively low and high revenue surprises, respectively, at month *t*-1 compared to the other half of stocks. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio returns with different holding periods. We partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior five months. The exact way of partition is described in text. The t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimistic state is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

SUR_t	Raw Return					
	Negative SUR_{t-1}					
	(t-6: t-2)	(t-1)	(t)	(t+1: t+3)	(t+1: t+6)	(t+1: t+12)
Panel A-1: The Whole Period						
SUR1(Big Neg.)	1.481	0.436	0.291	-1.221	0.550	3.974
	(0.541)	(0.627)	(0.403)	(-0.624)	(0.187)	(1.072)
SUR2	4.249	0.732	0.980	0.580	2.933	8.829
	(1.616)	(1.052)	(1.481)	(0.293)	(1.008)	(2.246)
SUR3	6.147	1.232	1.440	2.552	6.614	13.571
	(2.130)	(1.596)	(1.812)	(1.251)	(2.192)	(3.314)
SUR4(Big Pos.)	7.112	1.668	1.476	3.515	7.385	14.039
	(2.593)	(2.285)	(1.890)	(1.804)	(2.537)	(3.821)
SUR4-SUR1	5.631	1.232	1.184	4.736	6.835	10.065
	(4.513)	(3.047)	(2.543)	(5.390)	(5.428)	(4.935)
Panel A-2: Optimistic Periods						
SUR1(Big Neg.)	6.201	-0.584	-2.150	-5.650	-6.075	-6.254
	(1.546)	(-0.643)	(-2.189)	(-3.213)	(-2.274)	(-1.101)
SUR2	9.037	0.232	-0.458	-2.725	-2.961	-3.789
	(2.029)	(0.254)	(-0.504)	(-1.241)	(-1.078)	(-0.736)
SUR3	11.242	1.506	-0.261	1.624	3.691	5.771
	(2.500)	(1.643)	(-0.185)	(0.641)	(1.064)	(0.868)
SUR4(Big Pos.)	13.117	0.672	-0.173	1.296	2.713	1.571
	(4.440)	(0.572)	(-0.152)	(0.586)	(1.025)	(0.308)
SUR4-SUR1	6.916	1.256	1.978	6.946	8.788	7.826
	(2.503)	(2.395)	(3.523)	(4.828)	(3.936)	(2.851)
Panel A-3: Neutral Periods						
SUR1(Big Neg.)	4.462	0.674	0.659	-2.317	-1.622	3.913
	(1.310)	(0.713)	(0.766)	(-1.079)	(-0.456)	(0.873)
SUR2	7.819	0.850	1.033	-0.858	0.811	9.510
	(2.677)	(0.898)	(1.231)	(-0.390)	(0.234)	(2.168)
SUR3	9.335	0.836	1.399	1.361	4.388	13.733
	(2.749)	(0.775)	(1.331)	(0.541)	(1.231)	(2.915)
SUR4(Big Pos.)	10.017	1.763	1.391	3.134	6.146	15.920
	(3.282)	(1.794)	(1.332)	(1.366)	(1.750)	(3.932)
SUR4-SUR1	5.556	1.089	0.732	5.451	7.768	12.007
	(3.915)	(1.869)	(1.116)	(4.899)	(4.579)	(4.423)
Panel A-4: Pessimistic Periods						
SUR1(Big Neg.)	-12.137	0.809	1.795	6.577	13.772	14.744
	(-2.459)	(0.472)	(1.033)	(1.015)	(1.685)	(1.672)
SUR2	-11.163	0.911	2.365	8.215	15.250	19.900
	(-1.937)	(0.501)	(1.417)	(1.290)	(1.795)	(1.799)
SUR3	-8.467	2.144	3.393	7.004	16.163	21.177
	(-1.424)	(1.073)	(2.080)	(1.131)	(1.719)	(1.796)
SUR4(Big Pos.)	-7.615	2.449	3.501	6.929	15.852	21.444
	(-1.064)	(1.359)	(1.976)	(1.110)	(1.804)	(2.020)
SUR4-SUR1	4.522	1.640	1.707	0.352	2.080	6.699
	(1.428)	(1.414)	(1.763)	(0.155)	(0.641)	(1.443)
Panel A-5: Opt. - Pes.						
SUR1(Big Neg.)	18.338	-1.393	-3.945	-12.227	-19.847	-20.999
	(2.883)	(-0.718)	(-1.976)	(-1.821)	(-2.308)	(-2.002)
SUR2	20.200	-0.678	-2.824	-10.939	-18.211	-23.690
	(2.773)	(-0.333)	(-1.485)	(-1.623)	(-2.039)	(-1.942)
SUR3	19.710	-0.639	-3.654	-5.380	-12.473	-15.407
	(2.644)	(-0.291)	(-1.692)	(-0.804)	(-1.244)	(-1.138)
SUR4(Big Pos.)	20.732	-1.777	-3.674	-5.633	-13.139	-19.872
	(2.678)	(-0.826)	(-1.747)	(-0.850)	(-1.432)	(-1.688)
SUR4-SUR1	2.394	-0.384	0.271	6.594	6.707	1.126
	(0.570)	(-0.302)	(0.242)	(2.456)	(1.704)	(0.209)

Table 6 (Cont'd.)

SUR_t	Raw Return					
	Positive SUR_{t-1}					
	(t-6: t-2)	(t-1)	(t)	(t+1: t+3)	(t+1: t+6)	(t+1: t+12)
Panel B-1: The Whole Period						
SUR1(Big Neg.)	8.244	1.623	1.572	0.130	3.169	9.950
	(3.171)	(2.210)	(1.916)	(0.073)	(1.101)	(2.739)
SUR2	8.532	2.288	1.272	1.498	4.541	10.288
	(2.902)	(2.752)	(1.842)	(0.762)	(1.566)	(2.790)
SUR3	7.181	1.900	1.925	2.616	5.523	10.179
	(2.480)	(2.437)	(2.519)	(1.309)	(1.888)	(2.879)
SUR4(Big Pos.)	14.709	3.254	3.302	3.984	7.481	11.948
	(4.596)	(4.045)	(4.336)	(1.889)	(2.425)	(3.142)
SUR4-SUR1	6.465	1.630	1.730	3.854	4.312	1.998
	(4.787)	(3.639)	(3.907)	(4.519)	(4.053)	(1.099)
Panel B-2: Optimistic Periods						
SUR1(Big Neg.)	13.553	0.671	-0.274	-3.162	-4.277	-3.487
	(2.925)	(0.628)	(-0.299)	(-1.423)	(-1.428)	(-0.763)
SUR2	14.304	0.827	0.271	-0.435	0.781	2.567
	(3.391)	(0.788)	(0.330)	(-0.195)	(0.261)	(0.459)
SUR3	11.266	-0.007	-0.349	-1.116	0.546	3.963
	(2.531)	(-0.005)	(-0.280)	(-0.399)	(0.147)	(0.681)
SUR4(Big Pos.)	22.064	2.482	1.600	0.309	0.706	-0.389
	(4.752)	(2.416)	(1.658)	(0.114)	(0.181)	(-0.058)
SUR4-SUR1	8.511	1.812	1.874	3.471	4.982	3.098
	(3.821)	(3.724)	(2.038)	(2.388)	(2.795)	(0.847)
Panel B-3: Neutral Periods						
SUR1(Big Neg.)	11.411	1.794	2.277	-0.391	1.474	11.620
	(4.081)	(1.879)	(1.932)	(-0.199)	(0.472)	(2.752)
SUR2	11.658	2.031	1.593	-0.172	1.991	10.074
	(3.370)	(1.748)	(1.648)	(-0.076)	(0.578)	(2.398)
SUR3	10.848	2.378	2.348	1.733	3.573	9.829
	(3.297)	(2.308)	(2.634)	(0.810)	(1.068)	(2.443)
SUR4(Big Pos.)	18.058	3.240	3.530	2.671	4.633	11.100
	(4.826)	(2.904)	(3.293)	(1.197)	(1.399)	(2.706)
SUR4-SUR1	6.647	1.445	1.253	3.062	3.159	-0.520
	(3.427)	(2.339)	(2.317)	(2.876)	(2.438)	(-0.281)
Panel B-4: Pessimistic Periods						
SUR1(Big Neg.)	-6.530	2.127	1.413	5.067	15.843	18.976
	(-1.096)	(1.042)	(0.703)	(0.842)	(1.712)	(1.962)
SUR2	-6.600	4.640	1.373	8.390	15.904	18.913
	(-1.008)	(2.182)	(0.885)	(1.355)	(1.879)	(1.875)
SUR3	-7.786	2.496	3.085	9.069	16.386	17.643
	(-1.222)	(1.282)	(1.575)	(1.349)	(1.873)	(1.797)
SUR4(Big Pos.)	-2.717	4.124	4.437	11.636	22.839	27.207
	(-0.411)	(2.062)	(2.848)	(1.630)	(2.436)	(2.684)
SUR4-SUR1	3.813	1.998	3.024	6.569	6.996	8.231
	(1.997)	(1.581)	(2.664)	(2.941)	(2.516)	(1.603)
Panel B-5: Opt. - Pes.						
SUR1(Big Neg.)	20.082	-1.456	-1.687	-8.229	-20.120	-22.463
	(2.661)	(-0.632)	(-0.764)	(-1.282)	(-2.069)	(-2.100)
SUR2	20.904	-3.813	-1.102	-8.825	-15.122	-16.346
	(2.684)	(-1.608)	(-0.628)	(-1.341)	(-1.684)	(-1.417)
SUR3	19.052	-2.503	-3.435	-10.186	-15.840	-13.680
	(2.452)	(-1.072)	(-1.479)	(-1.399)	(-1.667)	(-1.198)
SUR4(Big Pos.)	24.780	-1.642	-2.837	-11.327	-22.133	-27.596
	(3.067)	(-0.730)	(-1.548)	(-1.483)	(-2.180)	(-2.276)
SUR4-SUR1	4.698	-0.186	-1.150	-3.099	-2.013	-5.133
	(1.601)	(-0.138)	(-0.787)	(-1.163)	(-0.610)	(-0.814)

Table 7

Risk-Adjusted Sentiment-Driven Returns for Portfolios Based on Two-Period Revenue Surprises

This table reports one-month holding period risk-adjusted returns on portfolios. At the end of each month *t*, stocks are partitioned into portfolios with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. Within each SUR_t-portfolio, component stocks are further categorized into negative (or SUR_{t-1}^{Neg}) and positive (or SUR_{t-1}^{Pos}) portfolios, which are composed of the half of component stocks in the SUR_t-portfolios with relatively low and high revenue surprises, respectively, at month *t*-1 compared to the other half of stocks. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio monthly returns with holding period of one month. We partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior one through six months, respectively. The exact way of partition is described in text. The t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimistic state is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation. We estimate risk adjusted returns as described in text based on CAPM, CAPM conditional on investor sentiment, three-factor model of Fama-French (1993, 1996), and four factor model of Carhart (1997), respectively.

SUR_t	Negative SUR_{t-1}			
	CAPM	CCAPM	F-F	Carhart
Panel A-1: The Whole Period				
SUR1(Big Neg.)	-0.403	-0.454	-0.158	-0.125
	(-0.631)	(-0.674)	(-0.266)	(-0.211)
SUR2	0.185	0.173	0.416	0.420
	(0.282)	(0.248)	(0.651)	(0.658)
SUR3	0.877	0.730	1.067	1.063
	(1.241)	(0.984)	(1.557)	(1.553)
SUR4(Big Pos.)	1.772	1.945	2.005	2.042
	(2.659)	(2.768)	(3.061)	(3.117)
SUR4-SUR1	2.174	2.399	2.163	2.167
	(4.183)	(4.398)	(4.161)	(4.169)

SUR_t	Partition of sentiment periods based on *n*-month residual sentiment																							
	One-Month Sentiment				Two-Month Sentiment				Three-Month Sentiment				Four-Month Sentiment				Five-Month Sentiment				Six-Month Sentiment			
	Negative SUR_{t-1}				Negative SUR_{t-1}				Negative SUR_{t-1}				Negative SUR_{t-1}				Negative SUR_{t-1}							
	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart
Panel A-2: Optimistic Periods																								
SUR1(Big Neg.)	-1.774	-1.770	-1.433	-1.401	-2.220	-2.222	-1.689	-1.664	-2.478	-2.477	-1.786	-1.728	-2.994	-3.120	-2.485	-2.452	-2.394	-2.473	-2.040	-2.034	-1.795	-1.749	-1.472	-1.471
	(-2.606)	(-2.596)	(-2.126)	(-2.096)	(-2.988)	(-2.998)	(-2.267)	(-2.237)	(-2.904)	(-2.909)	(-2.175)	(-2.103)	(-3.193)	(-3.235)	(-2.813)	(-2.804)	(-2.636)	(-2.655)	(-2.252)	(-2.250)	(-1.961)	(-1.929)	(-1.530)	(-1.500)
SUR2	-1.194	-1.193	-0.828	-0.824	-1.168	-1.346	-0.697	-0.693	-1.672	-1.865	-1.122	-1.115	-2.188	-2.292	-1.817	-1.813	-1.651	-1.697	-1.446	-1.446	-0.293	-0.536	-0.086	-0.086
	(-1.569)	(-1.561)	(-1.073)	(-1.070)	(-1.387)	(-1.496)	(-0.830)	(-0.828)	(-1.812)	(-1.893)	(-1.337)	(-1.331)	(-2.148)	(-2.211)	(-1.932)	(-1.933)	(-1.608)	(-1.637)	(-1.448)	(-1.449)	(-0.342)	(-0.589)	(-0.101)	(-0.101)
SUR3	-0.212	-0.290	0.058	0.055	-0.137	-0.238	0.271	0.268	-0.276	-0.385	0.248	0.242	-0.234	-0.453	0.148	0.144	0.143	-0.002	0.401	0.401	1.214	0.696	1.452	1.452
	(-0.266)	(-0.351)	(0.074)	(0.069)	(-0.160)	(-0.271)	(0.330)	(0.326)	(-0.273)	(-0.373)	(0.272)	(0.265)	(-0.235)	(-0.435)	(0.157)	(0.153)	(0.144)	(-0.002)	(0.418)	(0.418)	(1.366)	(0.722)	(1.635)	(1.640)
SUR4(Big Pos.)	0.911	0.979	1.228	1.264	0.684	0.529	1.195	1.223	0.302	0.134	0.980	1.046	-0.087	-0.037	0.417	0.455	0.616	0.744	0.976	0.983	1.316	0.978	1.641	1.643
	(1.113)	(1.224)	(1.437)	(1.495)	(0.762)	(0.562)	(1.283)	(1.320)	(0.324)	(0.137)	(1.109)	(1.195)	(-0.087)	(-0.038)	(0.434)	(0.480)	(0.637)	(0.786)	(0.999)	(1.007)	(1.429)	(0.965)	(1.722)	(1.725)
SUR4-SUR1	2.684	2.749	2.661	2.665	2.904	2.751	2.884	2.888	2.779	2.530	2.766	2.774	2.906	3.083	2.902	2.907	3.010	3.217	3.016	3.017	3.111	2.727	3.114	3.114
	(4.465)	(4.519)	(4.404)	(4.416)	(4.198)	(3.904)	(4.148)	(4.157)	(4.043)	(3.562)	(3.975)	(3.995)	(3.812)	(3.961)	(3.773)	(3.780)	(3.382)	(3.516)	(3.366)	(3.367)	(3.954)	(3.294)	(3.941)	(3.957)
Panel A-3: Neutral Periods																								
SUR1(Big Neg.)	-1.123	-1.410	-0.741	-0.687	-0.395	-0.349	-0.291	-0.258	-0.533	-0.503	-0.454	-0.441	-0.427	-0.472	-0.207	-0.182	-0.948	-1.208	-0.592	-0.551	-1.063	-0.882	-0.677	-0.639
	(-0.934)	(-1.145)	(-0.719)	(-0.660)	(-0.484)	(-0.412)	(-0.385)	(-0.345)	(-0.689)	(-0.639)	(-0.609)	(-0.596)	(-0.597)	(-0.617)	(-0.295)	(-0.262)	(-1.202)	(-1.488)	(-0.789)	(-0.740)	(-1.479)	(-1.182)	(-0.999)	(-0.954)
SUR2	0.291	0.085	0.582	0.588	0.372	0.135	0.506	0.510	0.121	-0.084	0.252	0.253	0.191	0.180	0.439	0.443	-0.237	-0.388	0.137	0.142	-0.563	-0.274	-0.175	-0.170
	(0.262)	(0.075)	(0.577)	(0.582)	(0.464)	(0.159)	(0.603)	(0.609)	(0.136)	(-0.092)	(0.273)	(0.275)	(0.234)	(0.210)	(0.508)	(0.512)	(-0.290)	(-0.457)	(0.164)	(0.171)	(-0.712)	(-0.341)	(-0.219)	(-0.213)
SUR3	0.561	0.063	0.849	0.843	0.578	0.476	0.663	0.659	0.361	0.267	0.429	0.428	0.490	0.450	0.665	0.663	0.315	0.067	0.596	0.591	0.086	0.388	0.388	0.384
	(0.357)	(0.041)	(0.592)	(0.590)	(0.552)	(0.436)	(0.644)	(0.641)	(0.341)	(0.246)	(0.406)	(0.405)	(0.524)	(0.467)	(0.712)	(0.709)	(0.330)	(0.068)	(0.635)	(0.630)	(0.099)	(0.448)	(0.456)	(0.451)
SUR4(Big Pos.)	2.921	2.810	3.297	3.358	2.876	2.547	2.969	3.007	2.445	2.169	2.510	2.525	2.451	2.602	2.654	2.682	1.859	1.900	2.191	2.239	1.629	1.789	1.993	2.036
	(1.644)	(1.530)	(2.037)	(2.014)	(2.624)	(2.166)	(2.722)	(2.743)	(2.220)	(1.893)	(2.260)	(2.274)	(2.307)	(2.355)	(2.468)	(2.500)	(1.927)	(1.900)	(2.279)	(2.334)	(1.832)	(1.903)	(2.254)	(2.312)
SUR4-SUR1	4.043	4.220	4.038	4.045	3.271	2.896	3.260	3.264	2.978	2.734	2.964	2.966	2.878	3.074	2.861	2.864	2.807	3.108	2.784	2.789	2.693	2.672	2.670	2.675
	(2.807)	(2.789)	(2.797)	(2.792)	(3.669)	(3.072)	(3.646)	(3.643)	(3.682)	(3.366)	(3.663)	(3.662)	(3.654)	(3.833)	(3.632)	(3.635)	(4.037)	(4.506)	(4.005)	(4.011)	(4.106)	(3.907)	(4.065)	(4.070)
Panel A-4: Pessimistic Periods																								
SUR1(Big Neg.)	1.405	1.765	1.479	1.503	1.447	1.477	1.537	1.578	1.874	1.904	1.926	1.964	2.319	2.711	2.345	2.395	3.392	4.598	3.183	3.219	3.946	3.926	3.521	3.570
	(1.104)	(1.212)	(1.225)	(1.240)	(0.995)	(1.057)	(1.131)	(1.154)	(1.253)	(1.330)	(1.416)	(1.432)	(1.402)	(1.483)	(1.559)	(1.580)	(1.745)	(2.207)	(1.741)	(1.749)	(1.990)	(2.009)	(1.941)	(1.935)
SUR2	1.589	1.955	1.647	1.650	1.385	1.320	1.464	1.470	2.141	2.074	2.207	2.212	2.618	3.080	2.666	2.673	3.439	4.476	3.264	3.269	3.812	3.791	3.426	3.433
	(1.200)	(1.271)	(1.275)	(1.277)	(0.938)	(0.944)	(1.036)	(1.039)	(1.596)	(1.662)	(1.786)	(1.788)	(1.739)	(1.825)	(1.931)	(1.935)	(1.998)	(2.365)	(2.019)	(2.020)	(1.952)	(2.000)	(1.893)	(1.893)
SUR3	2.184	2.408	2.241	2.238	2.206	2.177	2.275	2.271	2.823	2.793	2.866	2.862	2.854	3.002	2.877	2.872	3.371	4.189	3.212	3.208	3.717	3.666	3.390	3.385
	(1.572)	(1.563)	(1.622)	(1.621)	(1.390)	(1.427)	(1.459)	(1.458)	(1.961)	(2.049)	(2.072)	(2.072)	(1.715)	(1.729)	(1.807)	(1.806)	(1.777)	(2.077)	(1.735)	(1.736)	(1.700)	(1.820)	(1.590)	(1.591)
SUR4(Big Pos.)	2.106	2.669	2.179	2.206	1.802	1.753	1.889	1.935	2.206	2.154	2.253	2.296	2.224	2.544	2.244	2.301	2.747	3.608	2.543	2.584	2.892	2.850	2.484	2.540
	(1.870)	(2.017)	(1.935)	(1.961)	(1.488)	(1.532)	(1.613)	(1.643)	(1.905)	(1.986)	(2.048)	(2.059)	(1.668)	(1.590)	(1.806)	(1.824)	(1.981)	(2.187)	(1.892)	(1.881)	(1.758)	(1.843)	(1.599)	(1.592)
SUR4-SUR1	0.701	0.904	0.700	0.703	0.356	0.276	0.352	0.358	0.332	0.276	0.327	0.332	-0.095	-0.167	-0.101	-0.094	-0.645	-0.991	-0.640	-0.635	-1.054	-1.076	-1.037	-1.030
	(0.803)	(0.903)	(0.806)	(0.810)	(0.368)	(0.279)	(0.367)	(0.373)	(0.302)	(0.242)	(0.299)	(0.303)	(-0.088)	(-0.128)	(-0.094)	(-0.088)	(-0.510)	(-0.642)	(-0.509)	(-0.505)	(-0.935)	(-0.918)	(-0.930)	(-0.924)
Panel A-5: Opt. - Pes.																								
SUR1(Big Neg.)	-3.178	-3.535	-2.912	-2.904	-3.667	-3.699	-3.226	-3.242	-4.351	-4.359	-3.712	-3.692	-5.313	-5.831	-4.830	-4.846	-5.786	-7.072	-5.223	-5.253	-5.741	-5.675	-4.994	-5.041
	(-2.207)	(-2.202)	(-2.110)	(-2.102)	(-2.245)	(-2.338)	(-2.081)	(-2.082)	(-2.528)	(-2.598)	(-2.337)	(-2.309)	(-2.795)	(-2.821)	(-2.770)	(-2.770)	(-2.697)	(-3.098)	(-2.560)	(-2.562)	(-2.628)	(-2.634)	(-2.432)	(-2.413)
SUR2	-2.783	-3.149	-2.475	-2.474	-2.553	-2.666	-2.161	-2.163	-3.813	-3.977	-3.329	-3.327	-4.805	-5.372	-4.484	-4.486	-5.089	-6.173	-4.711	-4.714	-4.105	-4.327	-3.513	-3.519
	(-1.818)	(-1.827)	(-1.640)	(-1.640)	(-1.502)	(-1.603)	(-1.315)	(-1.316)	(-2.342)	(-2.483)	(-2.228)	(-2.227)	(-2.644)	(-2.712)	(-2.684)	(-2.686)	(-2.539)	(-2.861)	(-2.479)	(-2.480)	(-1.925)	(-2.057)	(-1.755)	(-1.754)
SUR3	-2.396	-2.697	-2.182	-2.183	-2.343	-2.415	-2.004	-2.002	-3.099	-3.272	-2.618	-2.620	-3.088	-3.455	-2.730	-2.728	-3.228	-4.191	-2.810	-2.807	-2.504	-2.971	-1.938	-1.933
	(-1.503)	(-1.548)	(-1.373)	(-1.374)	(-1.300)	(-1.372)	(-1.137)	(-1.137)	(-1.761)	(-1.919)	(-1.579)	(-1.581)	(-1.593)	(-1.706)	(-1.476)	(-1.477)	(-1.508)	(-1.849)	(-1.348)	(-1.348)	(-1.061)	(-1.330)	(-0.839)	(-0.839)
SUR4(Big Pos.)	-1.195	-1.690	-0.951	-0.942	-1.119	-1.224	-0.694	-0.712	-1.904	-2.105	-1.273	-1.250	-2.311	-2.582	-1.827	-1.846	-2.131	-2.864	-1.567	-1.600	-1.576	-1.872	-0.843	-0.897
	(-0.865)	(-1.097)	(-0.679)	(-0.676)	(-0.742)	(-0.826)	(-0.464)	(-0.475)	(-1.282)	(-1.437)	(-0.902)	(-0.882)	(-1.387)	(-1.371)	(-1.163)	(-1.169)	(-1.260)	(-1.506)	(-0.942)	(-0.949)	(-0.836)	(-1.012)	(-0.462)	(-0.483)
SUR4-SUR1	1.984	1.844	1.961	1.962	2.548	2.475	2.532	2.530	2.447	2.254	2.439	2.442	3.002	3.249	3.003	3.001	3.655	4.208	3.656	3.652	4.165	3.804	4.151	4.144
	(1.880)	(1.580)	(1.862)	(1.865)	(2.144)	(2.037)	(2.135)	(2.134)	(1.886)	(1.681)	(1.881)	(1.885)	(2.271)	(2.143)	(2.276)	(2.274)	(2.362)	(2.344)	(2.369)	(2.364)	(3.029)	(2.650)	(3.038)	(3.036)

Table 7 (Cont'd)

SUR_t	Positive SUR_{t-1}			
	CAPM	CCAPM	F-F	Carhart
Panel B-1: The Whole Period				
SUR1(Big Neg.)	0.280	0.412	0.185	0.189
	(0.450)	(0.648)	(0.301)	(0.308)
SUR2	1.071	0.943	1.344	1.393
	(1.534)	(1.285)	(1.994)	(2.068)
SUR3	1.092	0.982	1.316	1.310
	(1.846)	(1.556)	(2.372)	(2.360)
SUR4(Big Pos.)	2.156	2.259	2.354	2.364
	(3.202)	(3.169)	(3.589)	(3.605)
SUR4-SUR1	1.875	1.847	2.170	2.175
	(3.624)	(3.443)	(4.535)	(4.543)

SUR_t	Partition of sentiment periods based on *n*-month residual sentiment																							
	One-Month Sentiment				Two-Month Sentiment				Three-Month Sentiment				Four-Month Sentiment				Five-Month Sentiment				Six-Month Sentiment			
	Positive SUR_{t-1}				Positive SUR_{t-1}				Positive SUR_{t-1}				Positive SUR_{t-1}				Positive SUR_{t-1}				Positive SUR_{t-1}			
	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart	CAPM	CCAPM	F-F	Carhart
Panel B-2: Optimistic Periods																								
SUR1(Big Neg.)	-0.288	-0.302	-0.501	-0.497	-0.479	-0.667	-0.633	-0.630	-0.607	-0.739	-0.689	-0.682	-1.287	-1.406	-1.287	-1.283	-1.192	-1.211	-1.095	-1.095	-0.296	-0.236	-0.244	-0.244
	(-0.382)	(-0.398)	(-0.699)	(-0.694)	(-0.561)	(-0.733)	(-0.781)	(-0.777)	(-0.687)	(-0.777)	(-0.807)	(-0.799)	(-1.384)	(-1.450)	(-1.408)	(-1.406)	(-1.171)	(-1.183)	(-1.092)	(-1.094)	(-0.310)	(-0.252)	(-0.253)	(-0.253)
SUR2	-0.383	-0.409	0.037	0.084	-0.498	-0.646	0.067	0.104	-0.557	-0.641	0.121	0.208	-0.822	-0.876	-0.353	-0.303	-0.342	-0.302	-0.064	-0.055	1.017	1.114	1.288	1.290
	(-0.467)	(-0.489)	(0.044)	(0.104)	(-0.547)	(-0.677)	(0.074)	(0.117)	(-0.523)	(-0.586)	(0.121)	(0.213)	(-0.734)	(-0.776)	(-0.337)	(-0.299)	(-0.297)	(-0.265)	(-0.057)	(-0.051)	(1.163)	(1.314)	(1.453)	(1.445)
SUR3	0.036	0.023	0.344	0.338	-0.004	-0.067	0.484	0.479	-0.329	-0.399	0.313	0.302	-0.601	-0.689	-0.127	-0.133	-0.421	-0.474	-0.087	-0.088	0.531	0.537	0.835	0.835
	(0.051)	(0.032)	(0.507)	(0.497)	(-0.005)	(-0.080)	(0.618)	(0.611)	(-0.336)	(-0.398)	(0.342)	(0.329)	(-0.558)	(-0.631)	(-0.124)	(-0.130)	(-0.357)	(-0.399)	(-0.075)	(-0.076)	(0.479)	(0.484)	(0.754)	(0.754)
SUR4(Big Pos.)	1.094	1.117	1.373	1.381	0.935	0.852	1.365	1.372	0.511	0.439	1.069	1.085	0.120	0.073	0.529	0.538	0.263	0.282	0.546	0.547	1.333	1.397	1.591	1.592
	(1.547)	(1.599)	(1.868)	(1.880)	(1.222)	(1.076)	(1.732)	(1.737)	(0.600)	(0.499)	(1.292)	(1.309)	(0.127)	(0.076)	(0.588)	(0.599)	(0.249)	(0.267)	(0.528)	(0.529)	(1.296)	(1.384)	(1.527)	(1.518)
SUR4-SUR1	1.382	1.420	1.874	1.879	1.414	1.518	1.998	2.001	1.118	1.178	1.758	1.767	1.407	1.478	1.816	1.821	1.455	1.493	1.641	1.642	1.629	1.633	1.835	1.835
	(2.634)	(2.737)	(4.102)	(4.099)	(2.256)	(2.412)	(3.814)	(3.806)	(1.511)	(1.569)	(2.929)	(2.932)	(1.869)	(1.946)	(2.645)	(2.640)	(1.834)	(1.880)	(2.190)	(2.178)	(1.844)	(1.857)	(2.159)	(2.147)
Panel B-3: Neutral Periods																								
SUR1(Big Neg.)	-0.325	-0.718	-0.349	-0.342	0.142	0.254	0.036	0.041	0.142	0.121	0.009	0.011	0.909	0.823	0.749	0.752	0.349	0.272	0.141	0.146	0.097	0.085	-0.098	-0.093
	(-0.250)	(-0.549)	(-0.263)	(-0.258)	(0.146)	(0.265)	(0.037)	(0.041)	(0.164)	(0.138)	(0.011)	(0.013)	(0.998)	(0.864)	(0.836)	(0.841)	(0.418)	(0.309)	(0.171)	(0.178)	(0.126)	(0.104)	(-0.129)	(-0.123)
SUR2	0.153	-0.065	0.517	0.597	0.474	0.697	0.622	0.671	0.117	0.155	0.255	0.275	0.511	0.440	0.793	0.830	0.412	0.151	0.842	0.905	0.047	-0.107	0.499	0.556
	(0.104)	(-0.043)	(0.399)	(0.442)	(0.463)	(0.675)	(0.616)	(0.670)	(0.137)	(0.177)	(0.297)	(0.322)	(0.600)	(0.494)	(0.909)	(0.959)	(0.482)	(0.177)	(0.982)	(1.061)	(0.059)	(-0.133)	(0.622)	(0.701)
SUR3	1.144	0.978	1.499	1.489	1.290	1.380	1.382	1.376	1.071	1.063	1.138	1.135	0.916	0.832	1.114	1.109	0.837	0.636	1.159	1.151	0.704	0.504	1.055	1.048
	(0.898)	(0.742)	(1.385)	(1.387)	(1.620)	(1.668)	(1.911)	(1.905)	(1.343)	(1.254)	(1.479)	(1.476)	(1.188)	(1.018)	(1.484)	(1.479)	(1.098)	(0.801)	(1.585)	(1.574)	(0.993)	(0.682)	(1.557)	(1.546)
SUR4(Big Pos.)	2.334	2.096	2.641	2.656	2.795	2.900	2.880	2.889	2.380	2.437	2.446	2.449	2.222	2.187	2.402	2.409	1.879	1.722	2.169	2.180	1.638	1.577	1.952	1.963
	(1.944)	(1.723)	(2.473)	(2.466)	(3.496)	(3.542)	(3.478)	(3.502)	(2.885)	(2.807)	(2.858)	(2.872)	(2.635)	(2.448)	(2.747)	(2.762)	(2.251)	(1.980)	(2.553)	(2.572)	(2.145)	(1.982)	(2.528)	(2.550)
SUR4-SUR1	2.659	2.814	2.990	2.998	2.653	2.646	2.844	2.849	2.237	2.316	2.436	2.438	1.313	1.364	1.653	1.657	1.530	1.450	2.028	2.034	1.541	1.493	2.050	2.056
	(2.143)	(2.220)	(2.444)	(2.445)	(3.509)	(3.483)	(3.714)	(3.716)	(3.674)	(3.826)	(3.840)	(3.842)	(1.954)	(1.953)	(2.404)	(2.407)	(2.433)	(2.205)	(3.343)	(3.353)	(2.760)	(2.527)	(3.783)	(3.794)
Panel B-4: Pessimistic Periods																								
SUR1(Big Neg.)	1.183	1.970	1.176	1.179	1.191	1.741	1.166	1.171	1.380	2.115	1.329	1.334	0.542	1.574	0.487	0.494	1.654	3.123	1.694	1.699	1.710	3.353	1.848	1.854
	(1.021)	(1.681)	(1.018)	(1.020)	(0.908)	(1.390)	(0.892)	(0.895)	(0.983)	(1.647)	(0.950)	(0.952)	(0.364)	(1.241)	(0.321)	(0.325)	(1.009)	(2.318)	(1.029)	(1.029)	(0.895)	(1.920)	(0.972)	(0.973)
SUR2	3.065	3.237	3.137	3.173	3.259	3.103	3.354	3.415	4.167	4.227	4.241	4.298	4.226	4.566	4.277	4.352	4.591	5.699	4.378	4.432	5.322	6.433	4.863	4.936
	(2.325)	(2.162)	(2.419)	(2.432)	(2.183)	(1.871)	(2.329)	(2.346)	(2.685)	(2.432)	(2.888)	(2.875)	(2.502)	(2.374)	(2.740)	(2.732)	(2.258)	(2.443)	(2.273)	(2.257)	(2.372)	(2.353)	(2.305)	(2.278)
SUR3	2.182	2.198	2.251	2.247	2.019	1.789	2.102	2.094	2.547	2.413	2.594	2.587	3.216	3.357	3.237	3.228	3.494	4.042	3.301	3.294	3.343	4.003	2.954	2.944
	(1.859)	(1.602)	(1.971)	(1.967)	(1.541)	(1.180)	(1.678)	(1.673)	(2.100)	(1.748)	(2.335)	(2.333)	(2.485)	(2.252)	(2.722)	(2.718)	(2.174)	(2.139)	(2.198)	(2.196)	(1.988)	(2.018)	(1.900)	(1.899)
SUR4(Big Pos.)	3.187	3.800	3.247	3.254	2.779	3.069	2.852	2.863	3.456	3.882	3.500	3.510	4.111	4.980	4.132	4.146	5.030	6.649	4.861	4.871	5.245	6.883	4.901	4.915
	(2.173)	(2.227)	(2.266)	(2.272)	(1.725)	(1.653)	(1.849)	(1.855)	(2.155)	(2.156)	(2.334)	(2.336)	(2.408)	(2.639)	(2.595)	(2.599)	(2.425)	(2.988)	(2.460)	(2.462)	(2.341)	(2.744)	(2.356)	(2.354)
SUR4-SUR1	2.005	1.830	2.071	2.075	1.587	1.328	1.686	1.692	2.077	1.768	2.171	2.176	3.568	3.406	3.645	3.652	3.376	3.526	3.167	3.172	3.536	3.530	3.053	3.061
	(1.902)	(1.520)	(2.095)	(2.101)	(1.321)	(0.957)	(1.537)	(1.544)	(1.493)	(1.086)	(1.716)	(1.721)	(2.626)	(2.213)	(2.904)	(2.913)	(2.021)	(1.781)	(2.096)	(2.103)	(2.006)	(1.717)	(1.996)	(2.005)
Panel B-5: Opt. - Pes.																								
SUR1(Big Neg.)	-1.470	-2.272	-1.677	-1.676	-1.670	-2.408	-1.799	-1.801	-1.670	-2.335	-1.799	-1.801	-1.829	-2.980	-1.775	-1.777	-2.846	-4.334	-2.790	-2.793	-2.005	-3.589	-2.091	-2.097
	(-1.071)	(-1.643)	(-1.242)	(-1.242)	(-1.067)	(-1.556)	(-1.169)	(-1.170)	(-1.067)	(-1.493)	(-1.169)	(-1.170)	(-1.041)	(-1.866)	(-1.002)	(-1.003)	(-1.475)	(-2.561)	(-1.447)	(-1.447)	(-0.939)	(-1.810)	(-0.982)	(-0.982)
SUR2	-3.448	-3.646	-3.100	-3.089	-3.757	-3.749	-3.287	-3.311	-3.757	-3.693	-3.287	-3.311	-5.048	-5.442	-4.631	-4.655	-4.933	-6.001	-4.443	-4.487	-4.305	-5.320	-3.575	-3.646
	(-2.245)	(-2.147)	(-2.039)	(-2.036)	(-2.149)	(-1.959)	(-1.932)	(-1.939)	(-2.149)	(-1.922)	(-1.932)	(-1.939)	(-2.491)	(-2.440)	(-2.462)	(-2.466)	(-2.112)	(-2.310)	(-1.992)	(-2.001)	(-1.788)	(-1.859)	(-1.562)	(-1.555)
SUR3	-2.146	-2.175	-1.908	-1.909	-2.023	-1.856	-1.617	-1.614	-2.023	-1.832	-1.617	-1.614	-3.817	-4.046	-3.364	-3.361	-3.916	-4.516	-3.388	-3.382	-2.812	-3.466	-2.119	-2.110
	(-1.582)	(-1.415)	(-1.455)	(-1.455)	(-1.313)	(-1.072)	(-1.095)	(-1.093)	(-1.313)	(-1.065)	(-1.095)	(-1.093)	(-2.267)	(-2.189)	(-2.150)	(-2.147)	(-1.964)	(-2.023)	(-1.788)	(-1.786)	(-1.396)	(-1.525)	(-1.110)	(-1.108)
SUR4(Big Pos.)	-2.093	-2.683	-1.875	-1.873	-1.844	-2.217	-1.487	-1.491	-1.844	-2.184	-1.487	-1.491	-3.991	-4.907	-3.604	-3.608	-4.767	-6.368	-4.315	-4.324	-3.912	-5.486	-3.310	-3.323
	(-1.297)	(-1.462)	(-1.173)	(-1.173)	(-1.034)	(-1.098)	(-0.859)	(-0.860)	(-1.034)	(-1.082)	(-0.859)	(-0.860)	(-2.048)	(-2.321)	(-1.971)	(-1.971)	(-2.047)	(-2.585)	(-1.935)	(-1.936)	(-1.587)	(-2.029)	(-1.422)	(-1.422)
SUR4-SUR1	-0.623	-0.411	-0.197	-0.196	-0.174	0.191	0.312	0.310	-0.174	0.151	0.312	0.310	-2.161	-1.928	-1.829	-1.831	-1.920	-2.033	-1.526	-1.530	-1.907	-1.897	-1.218	-1.225
	(-0.528)	(-0.313)	(-0.181)	(-0.180)	(-0.128)	(0.125)	(0.257)	(0.255)	(-0.128)	(0.099)	(0.257)	(0.255)	(-1.391)	(-1.123)	(-1.278)	(-1.280)	(-1.038)	(-0.953)	(-0.904)	(-0.907)	(-0.967)	(-0.848)	(-0.696)	(-0.700)

Table 8

Sentiment-Driven Returns for Portfolios Based on Two-Period Revenue Surprises Controlled for Variant Variables

This table reports one-month holding period portfolio returns controlled for variant variables. At the end of each month t, stocks are discriminated by institutional holdings, book-to-market ratio, size, and stock price, respectively, where book-to-market ratio and size follows definination in Fama and French (1993, 1996). Within each variable-controlled subgroup, stocks are partitioned into portfolios based on big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. Within each SURt-portfolio, component stocks are further categorized into negative (or SUR_{t-1}^{Neg}) and positive (or SUR_{t-1}^{Pos}) portfolios, which are composed of the half of component stocks in the SURt-portfolios with relatively low and high revenue surprises, respectively, at month t-1 compared to the other half of stocks. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio monthly returns with holding period of one month. We partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior five months. The exact way of partition is described in text. The t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimistic state is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

	Panel A: Negative SUR_{t-1}										
SUR_t	Institutional Holdings			BM			Size		Stock Price		
	High	Median	Low	Low	Median	High	Big	Small	High	Median	Low
Panel A-1: The Whole Period											
SUR1(Big Neg.)	-0.738	-0.758	-0.360	-0.505	-0.158	0.020	-0.385	-0.478	-0.679	-0.405	0.267
	(-1.052)	(-1.036)	(-0.427)	(-0.720)	(-0.226)	(0.022)	(-0.565)	(-0.562)	(-0.913)	(-0.562)	(0.277)
SUR2	-0.139	0.402	0.509	-0.045	0.020	1.064	-0.023	0.602	-0.341	0.427	0.752
	(-0.185)	(0.501)	(0.584)	(-0.057)	(0.029)	(1.088)	(-0.031)	(0.704)	(-0.492)	(0.482)	(0.775)
SUR3	0.822	0.684	1.430	1.010	0.452	1.938	0.706	0.578	1.132	0.705	2.197
	(1.094)	(0.827)	(1.689)	(1.459)	(0.520)	(1.957)	(0.905)	(0.694)	(1.737)	(0.891)	(1.991)
SUR4(Big Pos.)	1.399	1.590	1.303	1.881	1.540	2.403	1.588	1.458	1.479	0.917	1.453
	(1.728)	(1.897)	(1.451)	(2.512)	(1.654)	(2.402)	(2.006)	(1.603)	(2.175)	(1.019)	(1.514)
SUR4-SUR1	2.137	2.348	1.663	2.386	1.698	2.382	1.972	1.936	2.158	1.322	1.186
	(3.370)	(5.711)	(3.268)	(4.629)	(2.816)	(4.584)	(3.367)	(4.239)	(3.663)	(2.825)	(2.770)
Panel A-2: Optimistic Periods											
SUR1(Big Neg.)	-2.805	-3.024	-2.844	-2.225	-2.647	-2.541	-2.180	-3.228	-3.061	-2.364	-1.937
	(-2.872)	(-2.551)	(-2.051)	(-2.363)	(-1.970)	(-1.941)	(-2.238)	(-2.924)	(-2.889)	(-1.881)	(-1.312)
SUR2	-2.131	-1.920	-2.245	-2.289	-2.013	-1.605	-1.995	-2.430	-2.490	-1.741	-2.461
	(-1.863)	(-1.605)	(-1.908)	(-2.012)	(-1.513)	(-1.222)	(-1.659)	(-2.189)	(-2.253)	(-1.288)	(-2.013)
SUR3	-0.358	-1.679	-0.489	-0.724	0.275	0.282	-0.335	-1.164	0.010	-0.266	-0.442
	(-0.346)	(-1.803)	(-0.423)	(-0.577)	(0.227)	(0.208)	(-0.278)	(-1.246)	(0.008)	(-0.240)	(-0.319)
SUR4(Big Pos.)	-0.288	0.170	-1.476	-0.683	0.685	-0.405	0.408	-1.005	-0.156	-1.152	-0.097
	(-0.255)	(0.148)	(-1.114)	(-0.728)	(0.619)	(-0.265)	(0.355)	(-0.842)	(-0.207)	(-0.958)	(-0.055)
SUR4-SUR1	2.517	3.195	1.368	1.542	3.332	2.136	2.588	2.223	2.905	1.212	1.839
	(2.253)	(3.832)	(1.770)	(1.561)	(3.614)	(2.589)	(2.485)	(3.046)	(2.858)	(1.293)	(1.700)
Panel A-3: Neutral Periods											
SUR1(Big Neg.)	-1.512	-0.725	0.031	-1.135	-0.187	0.479	-1.035	-0.197	-1.346	-0.680	0.340
	(-1.795)	(-0.778)	(0.027)	(-1.291)	(-0.216)	(0.356)	(-1.209)	(-0.169)	(-1.501)	(-0.767)	(0.254)
SUR2	-0.634	0.333	0.830	-0.690	-0.090	1.608	-0.501	1.002	-0.894	0.136	1.049
	(-0.695)	(0.320)	(0.705)	(-0.724)	(-0.101)	(1.154)	(-0.568)	(0.853)	(-1.036)	(0.130)	(0.795)
SUR3	0.374	0.811	1.895	1.061	-0.235	2.535	0.189	0.493	0.735	0.752	2.446
	(0.377)	(0.773)	(1.583)	(1.210)	(-0.216)	(1.833)	(0.181)	(0.429)	(0.931)	(0.720)	(1.748)
SUR4(Big Pos.)	1.277	1.202	1.321	2.068	1.173	2.903	1.688	1.337	1.526	0.827	1.594
	(1.144)	(1.145)	(1.208)	(2.193)	(0.926)	(2.065)	(1.511)	(1.165)	(1.614)	(0.759)	(1.223)
SUR4-SUR1	2.790	1.927	1.291	3.203	1.359	2.424	2.723	1.535	2.872	1.507	1.255
	(2.975)	(3.801)	(1.972)	(4.158)	(1.692)	(3.159)	(3.482)	(2.584)	(3.362)	(2.694)	(2.323)
Panel A-4: Pessimistic Periods											
SUR1(Big Neg.)	3.835	1.576	1.121	3.254	2.602	1.379	3.518	1.622	3.905	2.535	2.415
	(1.871)	(0.834)	(0.613)	(1.504)	(1.639)	(0.671)	(1.766)	(0.867)	(1.855)	(1.348)	(1.050)
SUR2	3.505	3.105	2.494	4.321	2.538	2.278	3.549	2.647	3.649	3.641	3.300
	(1.822)	(1.510)	(1.239)	(2.228)	(1.456)	(1.074)	(1.870)	(1.490)	(2.157)	(1.566)	(1.369)
SUR3	3.452	2.838	2.081	2.719	2.729	1.905	3.394	2.708	3.542	1.602	4.275
	(1.851)	(1.141)	(1.043)	(1.529)	(1.054)	(0.778)	(1.736)	(1.303)	(2.011)	(0.719)	(1.284)
SUR4(Big Pos.)	3.583	4.296	4.232	4.065	3.574	3.898	2.548	4.467	3.090	3.415	2.688
	(1.988)	(1.728)	(1.676)	(2.259)	(1.475)	(1.751)	(1.516)	(1.846)	(1.936)	(1.277)	(1.290)
SUR4-SUR1	-0.252	2.720	3.111	0.812	0.972	2.520	-0.969	2.845	-0.815	0.880	0.273
	(-0.145)	(2.912)	(2.149)	(0.534)	(0.772)	(2.934)	(-0.654)	(2.556)	(-0.561)	(0.708)	(0.251)
Panel A-5: Opt. - Pes.											
SUR1(Big Neg.)	-6.640	-4.600	-3.965	-5.479	-5.249	-3.919	-5.698	-4.851	-6.966	-4.899	-4.351
	(-2.925)	(-2.062)	(-1.728)	(-2.322)	(-2.523)	(-1.608)	(-2.569)	(-2.232)	(-2.956)	(-2.166)	(-1.592)
SUR2	-5.636	-5.025	-4.740	-6.609	-4.551	-3.882	-5.544	-5.078	-6.140	-5.382	-5.760
	(-2.518)	(-2.112)	(-2.033)	(-2.940)	(-2.075)	(-1.556)	(-2.468)	(-2.423)	(-3.037)	(-2.001)	(-2.131)
SUR3	-3.810	-4.517	-2.570	-3.443	-2.454	-1.623	-3.730	-3.871	-3.532	-1.869	-4.717
	(-1.787)	(-1.701)	(-1.114)	(-1.582)	(-0.859)	(-0.580)	(-1.624)	(-1.699)	(-1.639)	(-0.751)	(-1.308)
SUR4(Big Pos.)	-3.871	-4.126	-5.708	-4.748	-2.890	-4.303	-2.140	-5.472	-3.246	-4.567	-2.785
	(-1.819)	(-1.506)	(-2.002)	(-2.339)	(-1.085)	(-1.594)	(-1.050)	(-2.028)	(-1.839)	(-1.558)	(-1.017)
SUR4-SUR1	2.769	0.474	-1.743	0.731	2.360	-0.384	3.558	-0.622	3.720	0.332	1.566
	(1.337)	(0.379)	(-1.062)	(0.403)	(1.512)	(-0.323)	(1.964)	(-0.467)	(2.098)	(0.213)	(1.020)

Table 8 (Cont'd)

SUR_t	Panel B: Positive SUR_{t-1}										
	Institutional Holdings			BM			Size		Stock Price		
	High	Median	Low	Low	Median	High	Big	Small	High	Median	Low
Panel B-1: The Whole Period											
SUR1(Big Neg.)	0.026	0.288	0.876	-0.081	0.985	1.316	0.016	1.643	-0.336	0.522	1.744
	(0.038)	(0.392)	(1.233)	(-0.130)	(1.437)	(1.526)	(0.025)	(1.852)	(-0.550)	(0.795)	(1.755)
SUR2	0.527	1.424	1.224	0.289	1.862	0.735	0.464	1.452	0.067	1.291	1.111
	(0.735)	(1.634)	(1.447)	(0.402)	(2.158)	(0.843)	(0.606)	(1.707)	(0.096)	(1.764)	(1.061)
SUR3	0.996	1.133	1.770	0.957	1.340	1.778	0.951	1.873	1.143	0.712	1.688
	(1.468)	(1.388)	(2.223)	(1.316)	(1.880)	(2.012)	(1.385)	(2.231)	(1.637)	(0.932)	(1.857)
SUR4(Big Pos.)	1.866	2.015	3.020	1.361	1.954	2.828	1.784	3.181	1.723	2.089	2.425
	(2.365)	(2.502)	(3.219)	(1.672)	(2.660)	(2.857)	(2.377)	(3.807)	(2.125)	(2.756)	(2.564)
SUR4-SUR1	1.839	1.728	2.145	1.442	0.970	1.513	1.768	1.538	2.059	1.567	0.681
	(2.863)	(3.261)	(3.980)	(2.227)	(2.204)	(2.932)	(3.023)	(3.608)	(2.942)	(3.949)	(1.063)
Panel B-2: Optimistic Periods											
SUR1(Big Neg.)	-1.307	-0.772	-0.782	-1.541	0.303	-0.748	-1.596	-0.596	-1.628	-0.894	-0.811
	(-1.478)	(-0.551)	(-0.638)	(-1.470)	(0.297)	(-0.534)	(-1.378)	(-0.488)	(-1.398)	(-0.855)	(-0.706)
SUR2	0.498	-1.685	-0.433	-1.026	0.752	-0.574	-0.937	-0.138	-0.055	0.266	-0.994
	(0.396)	(-1.339)	(-0.321)	(-0.733)	(0.560)	(-0.374)	(-0.724)	(-0.103)	(-0.043)	(0.273)	(-0.573)
SUR3	-0.633	-1.048	-0.832	-1.182	0.485	-0.178	-0.793	-0.811	-0.774	-0.932	-0.091
	(-0.470)	(-0.831)	(-1.012)	(-0.897)	(0.431)	(-0.132)	(-0.594)	(-0.846)	(-0.574)	(-0.776)	(-0.071)
SUR4(Big Pos.)	0.044	-0.519	-0.394	-1.044	0.388	0.516	-0.125	-0.092	-0.076	0.287	-0.119
	(0.039)	(-0.421)	(-0.319)	(-0.774)	(0.319)	(0.385)	(-0.108)	(-0.085)	(-0.063)	(0.229)	(-0.099)
SUR4-SUR1	1.351	0.254	0.387	0.497	0.085	1.264	1.471	0.503	1.552	1.181	0.692
	(1.609)	(0.276)	(0.618)	(0.589)	(0.080)	(1.375)	(1.599)	(0.880)	(1.711)	(1.523)	(0.842)
Panel B-3: Neutral Periods											
SUR1(Big Neg.)	0.006	-0.166	1.227	-0.149	0.827	1.855	0.112	2.139	-0.624	0.621	2.092
	(0.005)	(-0.203)	(1.207)	(-0.186)	(0.842)	(1.517)	(0.123)	(1.754)	(-0.848)	(0.663)	(1.521)
SUR2	-0.450	1.701	0.723	-0.234	1.690	0.260	-0.352	1.090	-0.547	0.885	0.995
	(-0.507)	(1.574)	(0.654)	(-0.270)	(1.421)	(0.240)	(-0.404)	(1.025)	(-0.617)	(0.902)	(0.784)
SUR3	0.739	0.794	2.286	0.638	1.146	2.069	0.707	2.350	0.889	0.435	1.965
	(0.861)	(0.794)	(2.006)	(0.695)	(1.158)	(1.705)	(0.801)	(2.063)	(1.033)	(0.433)	(1.558)
SUR4(Big Pos.)	1.453	2.009	3.681	1.092	1.821	3.061	1.404	3.722	1.072	2.338	2.602
	(1.512)	(1.836)	(3.223)	(1.179)	(1.770)	(2.173)	(1.531)	(3.278)	(1.082)	(2.221)	(1.900)
SUR4-SUR1	1.448	2.175	2.454	1.240	0.994	1.206	1.292	1.582	1.695	1.717	0.510
	(2.079)	(2.965)	(4.038)	(2.005)	(1.726)	(1.660)	(1.824)	(2.485)	(2.187)	(3.051)	(0.660)
Panel B-4: Pessimistic Periods											
SUR1(Big Neg.)	1.522	2.804	1.588	1.691	2.197	1.894	1.459	2.537	1.927	1.744	3.431
	(1.005)	(1.278)	(1.106)	(0.914)	(1.513)	(1.010)	(0.834)	(1.341)	(1.124)	(1.222)	(1.283)
SUR2	3.524	3.921	4.526	3.289	3.576	3.583	4.445	4.262	2.064	3.628	3.728
	(1.929)	(1.374)	(2.192)	(1.904)	(1.546)	(1.544)	(2.098)	(1.801)	(1.153)	(1.709)	(1.236)
SUR3	3.525	4.504	2.998	4.225	2.846	2.994	3.564	3.308	3.975	3.317	2.758
	(2.119)	(1.872)	(1.651)	(2.267)	(1.643)	(1.442)	(2.079)	(1.591)	(2.202)	(1.719)	(1.271)
SUR4(Big Pos.)	5.075	4.756	4.682	4.761	4.041	4.606	4.989	5.053	5.636	3.272	4.621
	(2.151)	(2.236)	(1.694)	(1.932)	(2.512)	(2.216)	(2.222)	(2.539)	(2.308)	(1.662)	(2.297)
SUR4-SUR1	3.553	1.952	3.094	3.070	1.845	2.711	3.530	2.515	3.709	1.528	1.190
	(1.733)	(1.429)	(1.748)	(1.280)	(2.078)	(2.800)	(2.011)	(3.533)	(1.571)	(1.593)	(0.609)
Panel B-5: Opt. - Pes.											
SUR1(Big Neg.)	-2.829	-3.576	-2.370	-3.232	-1.894	-2.643	-3.055	-3.133	-3.555	-2.637	-4.242
	(-1.613)	(-1.374)	(-1.256)	(-1.520)	(-1.068)	(-1.128)	(-1.456)	(-1.391)	(-1.715)	(-1.491)	(-1.458)
SUR2	-3.026	-5.605	-4.959	-4.315	-2.825	-4.157	-5.382	-4.400	-2.118	-3.362	-4.722
	(-1.364)	(-1.798)	(-2.011)	(-1.942)	(-1.056)	(-1.493)	(-2.168)	(-1.618)	(-0.965)	(-1.440)	(-1.357)
SUR3	-4.158	-5.552	-3.830	-5.407	-2.361	-3.172	-4.357	-4.119	-4.748	-4.248	-2.850
	(-1.943)	(-2.044)	(-1.921)	(-2.369)	(-1.143)	(-1.282)	(-2.006)	(-1.799)	(-2.108)	(-1.870)	(-1.128)
SUR4(Big Pos.)	-5.030	-5.275	-5.076	-5.806	-3.654	-4.090	-5.114	-5.145	-5.712	-2.985	-4.740
	(-1.916)	(-2.146)	(-1.677)	(-2.067)	(-1.811)	(-1.654)	(-2.027)	(-2.271)	(-2.094)	(-1.279)	(-2.021)
SUR4-SUR1	-2.201	-1.699	-2.707	-2.574	-1.760	-1.448	-2.059	-2.012	-2.157	-0.347	-0.498
	(-0.994)	(-1.031)	(-1.442)	(-1.012)	(-1.269)	(-1.084)	(-1.039)	(-2.203)	(-0.853)	(-0.282)	(-0.235)

Table 9

Long-Term Sentiment-Driven Returns for Portfolios Based on Two-Period Revenue Surprises

This table reports buy-and-hold portfolio returns over holding period of 60 months ranging from month t+1 to month t+60. At the end of each month *t*, stocks are partitioned into portfolios with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. Within each SUR_t-portfolio, component stocks are further categorized into negative (or SUR_{t-1}^{Neg}) and positive (or SUR_{t-1}^{Pos}) portfolios, which are composed of the half of component stocks in the SUR_t-portfolios with relatively low and high revenue surprises, respectively, at month *t*-1 compared to the other half of stocks. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio returns with different holding periods. We partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior one through six months, respectively. The exact way of partition is described in text. The t-statistics for portfolio returns following optimistic, neutral, and pessimistic periods are computed by regressing all portfolio returns on three dummy variables with no intercept, each of the dummy denoting one sentiment state. As for the differential returns between the optimistic and pessimistic states, we obtain t-statistics via regressing returns of portfolios on three dummy variables (without intercept) denoting non-neutral, neutral, and optimistic states, respectively. As such, the regression coefficient for the dummy variable of optimistic state is the incremental returns for optimistic periods over pessimistic periods. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

SUR_t	SUR_{t-1}									
	Raw Returns		CAPM Adjusted Returns		CCAPM Adjusted Returns		Fama-French Adjusted Returns		Carhart Adjusted Returns	
	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.
Panel A: The Whole Period										
SUR1(Big Neg.)	35.556	54.434	34.623	53.212	38.822	59.738	35.233	55.236	35.267	54.454
	(5.283)	(5.938)	(5.151)	(5.836)	(5.585)	(6.446)	(5.253)	(6.149)	(5.258)	(6.147)
SUR2	41.454	42.058	40.401	40.384	45.199	45.234	41.063	40.213	40.784	40.175
	(6.202)	(6.341)	(6.067)	(6.257)	(6.666)	(6.925)	(6.213)	(6.229)	(6.192)	(6.225)
SUR3	45.525	40.752	44.498	39.500	49.130	44.005	46.285	39.944	46.651	39.482
	(7.088)	(7.173)	(6.940)	(7.100)	(7.552)	(7.956)	(7.331)	(7.206)	(7.331)	(7.204)
SUR4(Big Pos.)	59.498	45.189	59.469	43.701	65.855	48.755	60.802	44.308	60.051	43.606
	(6.605)	(5.502)	(6.602)	(5.393)	(7.151)	(5.807)	(6.751)	(5.480)	(6.812)	(5.448)
SUR4-SUR1	23.942	-9.244	24.846	-9.511	27.032	-10.983	25.568	-10.927	24.784	-10.848
	(3.944)	(-1.351)	(4.085)	(-1.391)	(4.174)	(-1.491)	(4.192)	(-1.629)	(4.264)	(-1.619)
Panel B: Optimistic Periods										
SUR1(Big Neg.)	7.824	12.319	6.030	9.971	6.317	11.804	6.159	11.340	6.165	11.197
	(0.628)	(0.806)	(0.505)	(0.684)	(0.529)	(0.804)	(0.514)	(0.787)	(0.514)	(0.799)
SUR2	16.075	32.203	14.051	28.986	14.830	30.009	14.956	28.131	14.905	28.124
	(1.103)	(1.684)	(1.011)	(1.599)	(1.070)	(1.663)	(1.079)	(1.548)	(1.087)	(1.549)
SUR3	33.817	20.459	31.842	18.052	32.310	18.663	32.517	18.024	32.584	17.940
	(1.927)	(1.851)	(1.874)	(1.724)	(1.904)	(1.788)	(1.913)	(1.726)	(1.890)	(1.767)
SUR4(Big Pos.)	32.457	32.864	32.400	30.003	33.790	31.338	32.735	29.360	32.598	29.232
	(1.567)	(1.182)	(1.565)	(1.115)	(1.633)	(1.165)	(1.579)	(1.089)	(1.602)	(1.099)
SUR4-SUR1	24.633	20.544	26.370	20.032	27.473	19.534	26.577	18.021	26.434	18.035
	(2.417)	(1.509)	(2.470)	(1.489)	(2.576)	(1.442)	(2.493)	(1.328)	(2.598)	(1.325)
Panel C: Neutral Periods										
SUR1(Big Neg.)	40.628	61.050	39.689	59.821	42.361	63.807	40.842	63.373	40.888	62.289
	(4.714)	(5.809)	(4.603)	(5.747)	(4.721)	(6.128)	(4.777)	(6.099)	(4.784)	(6.091)
SUR2	45.794	41.936	44.735	40.254	47.657	43.069	45.767	40.164	45.380	40.111
	(6.663)	(6.186)	(6.458)	(6.005)	(6.767)	(6.361)	(6.695)	(5.981)	(6.636)	(5.970)
SUR3	45.776	46.462	44.743	45.204	47.076	48.022	48.031	46.075	48.539	45.434
	(6.687)	(6.712)	(6.533)	(6.785)	(6.684)	(7.182)	(7.130)	(6.965)	(7.188)	(6.910)
SUR4(Big Pos.)	65.452	43.978	65.422	42.481	69.624	44.858	67.923	43.847	66.881	42.873
	(6.615)	(6.122)	(6.611)	(5.922)	(6.908)	(6.244)	(6.814)	(6.187)	(6.924)	(6.030)
SUR4-SUR1	24.824	-17.072	25.733	-17.340	27.263	-18.949	27.081	-19.526	25.993	-19.416
	(3.264)	(-2.360)	(3.428)	(-2.387)	(3.442)	(-2.482)	(3.539)	(-2.694)	(3.650)	(-2.688)
Panel D: Pessimistic Periods										
SUR1(Big Neg.)	49.426	78.675	49.399	78.640	69.287	108.679	48.921	76.867	48.945	76.310
	(4.129)	(3.564)	(4.095)	(3.573)	(13.775)	(5.758)	(4.070)	(3.679)	(4.064)	(3.668)
SUR2	55.027	52.619	54.997	52.572	76.627	72.880	54.325	52.871	54.126	52.844
	(3.201)	(4.176)	(3.229)	(4.262)	(5.005)	(11.086)	(3.206)	(4.330)	(3.206)	(4.336)
SUR3	56.916	45.048	56.887	45.012	78.488	63.351	55.429	44.691	55.690	44.361
	(3.622)	(3.715)	(3.614)	(3.647)	(6.505)	(7.705)	(3.716)	(3.625)	(3.708)	(3.716)
SUR4(Big Pos.)	70.070	61.503	70.069	61.460	94.932	85.354	69.015	61.141	68.480	60.641
	(3.211)	(4.024)	(3.212)	(4.042)	(4.464)	(9.415)	(3.241)	(4.051)	(3.239)	(4.151)
SUR4-SUR1	20.644	-17.173	20.670	-17.180	25.645	-23.326	20.094	-15.726	19.535	-15.669
	(1.334)	(-1.014)	(1.309)	(-1.014)	(1.322)	(-1.100)	(1.302)	(-0.979)	(1.249)	(-0.973)
Panel E: Opt. - Pes.										
SUR1(Big Neg.)	-41.601	-66.356	-43.370	-68.669	-62.971	-96.875	-42.763	-65.528	-42.781	-65.113
	(-2.407)	(-2.472)	(-2.556)	(-2.602)	(-4.858)	(-4.051)	(-2.521)	(-2.582)	(-2.518)	(-2.596)
SUR2	-38.952	-20.416	-40.946	-23.585	-61.796	-42.871	-39.369	-24.740	-39.221	-24.720
	(-1.728)	(-0.891)	(-1.862)	(-1.076)	(-2.993)	(-2.232)	(-1.798)	(-1.130)	(-1.803)	(-1.130)
SUR3	-23.099	-24.589	-25.045	-26.960	-46.178	-44.688	-22.912	-26.667	-23.106	-26.422
	(-0.981)	(-1.499)	(-1.081)	(-1.666)	(-2.218)	(-3.363)	(-1.013)	(-1.651)	(-1.011)	(-1.686)
SUR4(Big Pos.)	-37.612	-28.639	-37.669	-31.457	-61.142	-54.016	-36.280	-31.781	-35.882	-31.409
	(-1.250)	(-0.903)	(-1.253)	(-1.018)	(-2.061)	(-1.902)	(-1.221)	(-1.028)	(-1.223)	(-1.035)
SUR4-SUR1	3.989	37.717	5.701	37.212	1.828	42.859	6.483	33.746	6.899	33.704
	(0.215)	(1.736)	(0.299)	(1.720)	(0.083)	(1.704)	(0.346)	(1.605)	(0.370)	(1.599)

Table 10

Sentiment-Driven Returns for Portfolios Based on Two-Period Revenue Surprises—An Alternative Sentiment Measure

This table reports one-month holding period returns for portfolios. At the end of each month *t*, stocks are partitioned into portfolios with big negative (SUR1), small negative (SUR2), small positive (SUR3), and big positive (SUR4) revenue surprises. The revenue surprise is computed based on equation (1) described in text. Within each SUR_t-portfolio, component stocks are further categorized into negative (or SUR_{t-1}^{Neg}) and positive (or SUR_{t-1}^{Pos}) portfolios, which are composed of the half of component stocks in the SUR_t-portfolios with relatively low and high revenue surprises, respectively, at month *t*-1 compared to the other half of stocks. The sample is composed of qualifying common stocks on TAIEX from January 1998 to July 2010. Return in percentage is the average of time-series of value-weighted portfolio monthly returns with holding period of one month. We partition sample months into optimistic, neutral, and pessimistic periods based on sentiment measures of prior one through six months, respectively. The exact way of partition is described in text. We estimate t-statistics according to equation (2) through (4) as described in text. We utilize Newey-West standard errors to correct for heteroscedasticity and autocorrelation.

SUR_t	SUR_{t-1}	
	Negative	Positive
Panel A: The Whole Period		
SUR1(Big Neg.)	-0.527	0.146
	(-0.772)	(0.219)
SUR2	-0.019	0.937
	(-0.025)	(1.257)
SUR3	0.659	0.887
	(0.837)	(1.312)
SUR4(Big Pos.)	1.555	1.949
	(2.078)	(2.586)
SUR4-SUR1	2.081	1.803
	(3.960)	(3.415)

SUR_t	Partition of sentiment periods based on *n*-month residual sentiment											
	One-Month Sentiment		Two-Month Sentiment		Three-Month Sentiment		Four-Month Sentiment		Five-Month Sentiment		Six-Month Sentiment	
	SUR_{t-1}		SUR_{t-1}		SUR_{t-1}		SUR_{t-1}		SUR_{t-1}		SUR_{t-1}	
	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive	Negative	Positive
Panel B: Optimistic Periods												
SUR1(Big Neg.)	-1.926	-0.648	-2.264	-0.896	-2.349	-0.957	-2.826	-1.215	-2.540	-1.459	-1.927	-0.549
	(-2.700)	(-0.746)	(-3.052)	(-0.917)	(-2.893)	(-1.024)	(-2.972)	(-1.262)	(-2.579)	(-1.281)	(-1.979)	(-0.511)
SUR2	-1.571	-0.524	-1.577	-0.401	-1.863	-0.296	-2.165	-0.415	-1.863	-0.464	-0.463	0.943
	(-1.828)	(-0.593)	(-1.663)	(-0.426)	(-1.949)	(-0.292)	(-1.987)	(-0.381)	(-1.628)	(-0.368)	(-0.515)	(0.990)
SUR3	-0.578	-0.077	-0.518	-0.107	-0.540	-0.109	0.043	-0.591	0.003	-0.541	1.115	0.449
	(-0.613)	(-0.097)	(-0.523)	(-0.118)	(-0.534)	(-0.106)	(0.044)	(-0.504)	(0.003)	(-0.415)	(1.329)	(0.380)
SUR4(Big Pos.)	0.715	1.162	0.553	0.974	0.122	0.903	0.160	0.546	0.474	0.318	1.199	1.451
	(0.740)	(1.581)	(0.549)	(1.301)	(0.123)	(1.186)	(0.161)	(0.623)	(0.445)	(0.307)	(1.203)	(1.602)
SUR4-SUR1	2.640	1.810	2.816	1.870	2.471	1.860	2.986	1.761	3.014	1.777	3.126	2.000
	(3.839)	(3.191)	(3.646)	(2.899)	(3.263)	(2.475)	(3.791)	(2.472)	(3.230)	(2.486)	(3.733)	(2.538)
Panel C: Neutral Periods												
SUR1(Big Neg.)	-1.208	-0.135	-0.732	0.957	-1.142	0.606	-1.040	0.303	-0.884	0.387	-0.820	-0.027
	(-0.996)	(-0.096)	(-0.740)	(0.866)	(-1.137)	(0.638)	(-1.242)	(0.333)	(-1.093)	(0.454)	(-0.891)	(-0.032)
SUR2	0.795	0.107	0.302	0.402	-0.188	-0.017	-0.395	-0.040	-0.324	0.188	-0.488	0.103
	(0.605)	(0.071)	(0.320)	(0.335)	(-0.182)	(-0.017)	(-0.410)	(-0.043)	(-0.352)	(0.210)	(-0.469)	(0.104)
SUR3	0.494	0.786	0.426	0.623	0.255	0.310	-0.111	0.462	-0.032	0.555	-0.090	0.572
	(0.314)	(0.640)	(0.379)	(0.616)	(0.214)	(0.328)	(-0.100)	(0.531)	(-0.031)	(0.646)	(-0.087)	(0.630)
SUR4(Big Pos.)	3.011	1.686	3.115	1.962	2.503	1.405	1.730	1.507	1.331	1.678	1.352	1.663
	(1.673)	(1.148)	(2.435)	(2.032)	(2.041)	(1.403)	(1.501)	(1.661)	(1.225)	(1.798)	(1.279)	(1.532)
SUR4-SUR1	4.219	1.821	3.846	1.005	3.646	0.799	2.769	1.204	2.215	1.290	2.172	1.690
	(2.781)	(1.557)	(3.709)	(1.000)	(4.137)	(0.941)	(3.498)	(1.698)	(2.806)	(1.867)	(2.899)	(2.177)
Panel D: Pessimistic Periods												
SUR1(Big Neg.)	1.189	1.070	1.315	0.449	2.030	0.582	2.564	1.091	2.306	0.999	1.908	1.448
	(0.918)	(0.876)	(0.926)	(0.339)	(1.281)	(0.401)	(1.626)	(0.710)	(1.506)	(0.598)	(1.269)	(0.768)
SUR2	1.156	2.783	1.202	2.678	1.965	3.383	2.670	4.047	2.517	4.241	2.076	3.866
	(0.862)	(2.042)	(0.818)	(1.748)	(1.215)	(1.956)	(1.724)	(2.318)	(1.686)	(2.384)	(1.477)	(2.028)
SUR3	1.972	1.897	1.987	2.066	2.339	2.604	2.700	3.055	3.114	3.102	2.839	2.430
	(1.387)	(1.564)	(1.236)	(1.585)	(1.369)	(1.751)	(1.621)	(2.287)	(1.656)	(2.154)	(1.330)	(1.754)
SUR4(Big Pos.)	1.719	2.857	1.179	2.872	1.654	3.669	2.498	4.080	3.161	4.193	2.624	3.452
	(1.428)	(1.930)	(0.856)	(1.728)	(1.188)	(1.945)	(1.865)	(2.243)	(2.199)	(2.493)	(1.660)	(2.260)
SUR4-SUR1	0.530	1.787	-0.136	2.423	-0.375	3.087	-0.067	2.990	0.855	3.194	0.717	2.004
	(0.665)	(1.711)	(-0.173)	(2.410)	(-0.406)	(2.598)	(-0.078)	(2.592)	(1.213)	(2.737)	(0.996)	(2.413)
Panel E: Opt. - Pes.												
SUR1(Big Neg.)	-3.114	-1.718	-3.579	-1.345	-3.903	-1.739	-5.391	-2.305	-4.846	-2.458	-3.835	-1.998
	(-2.110)	(-1.145)	(-2.234)	(-0.817)	(-2.630)	(-1.160)	(-2.927)	(-1.272)	(-2.661)	(-1.215)	(-2.141)	(-0.920)
SUR2	-2.726	-3.307	-2.779	-3.079	-2.882	-2.779	-4.836	-4.461	-4.380	-4.705	-2.539	-2.922
	(-1.709)	(-2.046)	(-1.590)	(-1.712)	(-1.824)	(-1.643)	(-2.553)	(-2.169)	(-2.329)	(-2.157)	(-1.522)	(-1.371)
SUR3	-2.550	-1.975	-2.505	-2.173	-2.186	-1.843	-2.657	-3.646	-3.110	-3.643	-1.724	-1.981
	(-1.496)	(-1.363)	(-1.327)	(-1.369)	(-1.303)	(-1.175)	(-1.379)	(-2.052)	(-1.453)	(-1.876)	(-0.752)	(-1.089)
SUR4(Big Pos.)	-1.004	-1.696	-0.627	-1.898	-0.884	-1.722	-2.338	-3.534	-2.687	-3.875	-1.426	-2.001
	(-0.647)	(-1.029)	(-0.367)	(-1.042)	(-0.583)	(-1.039)	(-1.401)	(-1.750)	(-1.502)	(-1.962)	(-0.763)	(-1.127)
SUR4-SUR1	2.110	0.023	2.953	-0.554	3.019	0.017	3.053	-1.229	2.159	-1.418	2.409	-0.004
	(2.000)	(0.019)	(2.674)	(-0.463)	(2.633)	(0.014)	(2.632)	(-0.906)	(1.846)	(-1.036)	(2.182)	(-0.003)

Figure 1

Time Series of Investor Sentiment Measures

At each month, investment opportunity index is released based on survey of individuals' expectation of whether there are investment opportunities in the Taiwanese stock markets over the subsequent six months. Plotted are investment opportunity index, residual sentiment, and alternative residual sentiment. The sentiment measures are proxy by residuals of regression of the investment opportunity index on (1) concurrent measures of seven macroeconomic factors including growth in industrial production, in export, in unemployment rate, in M1B, in trading volume of bond, in foreigner exchange rate, and in deposit in foreigner currency, and (2) the concurrent measures plus their forward one-period counterparts.