Information-Relevance of Analyst Expectations: Evidence from Forecasts of Earnings and Cash Flows

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***Abstract*:** Analyst consensus forecast of earnings and cash flows for the Malaysian listed-firms appears to be a close proxy of market expectations. Given the evidence supporting Fama-efficiency of the tested market, consensus forecasts are already incorporated into stock prices. However, investors with foresight information of forecast *errors* are able to earn significant risk-adjusted abnormal returns. Also, investors who are able to predict correctly the forecast revisions earn the largest abnormal returns

1. Introduction

Information economics states that expectations determine the future value of an asset (Muth 1959). If the market consensus is expecting the value of a stock to rise sharply in the coming month, the release of analysts' information would lead to a strong immediate demand, which in turn, would instantaneously lift the stock value upward to reflect the market's expectations. This market reaction is in line with the prediction of Efficient Market Theory (Fama 1970). Several studies in the developed markets such as Japan, Europe and the U.S. [see, among others Fried and Givoly (1982)], show that analyst earnings forecasts appear to be close to the market's expectations. Indeed, the information value of analyst forecasts is impounded into stock prices (Zack 1979) and analysts in general may be partly responsible for forming the expectation by disseminating their reports widely. They also discovered that investors who possess the information about the difference (or errors) between analyst forecasts and actual earnings (widely known as earning surprises) are able to select stocks that will increase/ decrease in value in the future (Elton *et al.* 1981). What appears to be the most useful information for the investors in stock selection is the foresight knowledge of the revisions in analyst forecasts, which will cause the largest change in stock prices (Bercel 1994). This finding is still not well established in empirical studies particularly in emerging markets.

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There is, therefore, a dearth of such studies in the 67 emerging markets although these markets accounted for 25 per cent of the world's total market capitalisation in 1999.[1] As portfolio managers are seeking investment opportunities in some of these emerging markets, the analyst forecasts have became an indispensable source of information for them for stock selection. Thus, a study of the information relevance of analyst expectations about future earnings is timely and warranted. We also extend this analysis to study the effect of cash flows – yet unresearched by scholars – in analyst reports.

This paper aims to investigate three basic issues. First, are analyst consensus forecasts of both earnings and cash flows incorporated into Malaysian stock prices? We selected the Malaysian market as the sample for an emerging market study because BARRA-Edinburgh Financial Publishing (U.K.) [BARRA] publishes since 1992 monthly analyst forecasts for a large number of Malaysian listed-firms. Furthermore, this market has been shown to be Fama-efficient (Anwar *et al*. 1994). Second, are investors with foresight knowledge of information about analyst forecast errors able to select stocks that will increase/decrease in value? Third, are investors with foresight information about analyst forecast revisions able to select stocks that will generate the greatest increase/decrease in value?

As cash flows contain additional information, such as depreciation charges, we expect the impact on stock returns to be greater for investors with foresight information of errors/ revisions of cash flows forecast than those with foresight information of errors/revisions in just accounting earnings forecast. We also used a more robust portfolio aggregation approach to measure the risk-adjusted stock returns as it reduces the idiosyncratic errors in individual observations.

The remainder of this paper is organised as follows: Section 2 presents a brief review of the literature. Section 3 develops and explains the test hypotheses while section 4 describes the data set, test variables and methodologies. Section 5 reports the empirical findings. We end the paper with a short summary.

2. Literature Review

Niederhoffer and Regan (1972) analysed the performance of the fifty best and fifty worst performing stocks on the New York Stock Exchange in 1970 and found that stock performance is closely related to the types of earning forecast errors. The values of stocks with underestimated earnings increase substantially while those with overestimated earnings decline in value. Zacks (1979) found that no relation exists between forecast earnings growth and actual stock returns: instead, the forecast error was the key determinant of price fluctuations. Elton *et al.* (1981) examined the earnings forecasts of U.S. firms as reported by the I/B/E/S over a three-year period. They found that the information in analyst consensus earnings forecasts has already been impounded into stock prices, hence attracting no change in values at or *ex post* the disclosure dates. They also reported that if investors select stocks based on foresight information of the consensus forecast errors, the returns of those stocks will increase substantially. Furthermore, payoff is the greatest for investors with foresight information of revisions in consensus forecasts. Their study established the foundation that the information of consensus forecasts are irrelevant to investors for predicting stock prices

[1] Source: *The World Competitiveness Yearbook 1999*.

changes since such forecasts are merely market expectations of what future earnings are likely to be. On the other hand, investors with the foresight knowledge of information of forecast errors or better still, forecast revisions over time are able to make significant abnormal returns.

Givoly and Lakonishok (1980) showed that investors, who act upon publicly available revisions of earnings forecasts, consistently out-performed the buy-and-hold portfolio by 130 per cent. Fried and Givoly (1982) suggested that analyst forecasts provide a better surrogate for market expectations than those forecasts generated by mechanical models. Hawkins *et al.* (1984) demonstrated how abnormal returns of 14.2 per cent per annum could have been realised in the U.S. market over the period 1975 to 1980 by investing in companies with positive earnings-estimate revisions.

Preliminary research in non-U.S. developed markets indicates that analyst earnings forecasts are closely related to price movements. Jacques and Rie (1988) found that consensus forecasts are more closely related to stock prices than historical earnings and current dividends in Japan, the UK and the US. Elton and Gruber (1989) found that changes in earnings-per share forecasts are correlated with the following month's risk-adjusted abnormal returns in Japan, after accounting for transactional costs.

Bercel (1994) studied changes in analyst EPS forecasts and the number of analysts changing their forecasts in France, the U.K., Germany, the Netherlands, Switzerland, U.S. and Japan. He found both U.S. and non-U.S. analyst forecasts could be used to predict correctly stock value changes in their respective markets. Dische and Zimmerman (1999) examined the stock prices around the publication dates of earnings revisions based on consensus forecasts for Swiss companies. They reported that buying a portfolio with the largest positive earnings revisions and holding it for one month could generate an abnormal return of 14 per cent per year.

Some studies cast doubts over the choice of consensus forecasts as appropriate proxy for unobservable market expectations of earnings. Brown *et al.* (1985) and O'Brien (1988) identified the problems relating to lags in reported earnings in the databases from which analyst forecasts are obtained. The researchers cannot effectively use consensus forecasts, such as earnings release or takeover announcements, to reflect market expectations at a well-defined date. Schipper (1991) found no compelling evidence that analysts and the market participants share the same expectations. Ali *et al.* (1992) similarly determined that analyst forecasts are not unbiased and that prediction errors are serially correlated.

In summary, despite some doubts about the choice of consensus forecasts as a good proxy for market expectations, there is ample evidence to show that earnings forecast errors and revisions convey valuable information to market participants in the developed markets. This view, however, has not been scrutinised in the context of emerging markets, particularly those that are Fama-efficient.

3. Theoretical Framework and Hypotheses

3.1 Analyst Expectations and Stock Value

According to Rational Expectation Theory, market expectations of a series of firm's variables, such as future earnings, cash flows and dividends, determine the value of a firm. Underlying

this theory is the assumption that stock prices are formed under the condition of rational expectations and that unexpected changes in a firm's variables effectively signal fundamental changes in the future outlook of the firm. Investors seeking high returns will presumably look to stocks in which analysts (market specialists) have forecast high earnings (and cash flow) growth rates to provide those returns. They are willing to pay the on-going market price for the selected stock in anticipation of the high forecast earnings/cash flows growth to be realised at the end of the fiscal year, which will increase the price of their stock holdings sharply. If the same criterion is adopted by a majority of market investors, then the analyst expectations will become a close enough proxy for market's expectations. Assuming the market is semi-strong form efficient, expectations about high future earnings growth should be incorporated into stock prices. It follows logically that the investor should not be able to make any significant abnormal return by trading stocks based on analyst consensus expectations about future earnings growth. Our first hypothesis is thus:

H1 : Investors who select a portfolio of stocks based on analyst consensus forecasts of high earnings growth or high cash flow growth cannot earn any positive risk-adjusted abnormal returns.

Failing to reject the null hypothesis of no relationship between abnormal returns and consensus forecasts may suggest that the forecasts are merely market expectations and hence, imply that investments based on that information set will not lead to any significant change in stock prices.

3.2 Analyst Forecast Error and Stock Value

If stock prices reflected information contained in the consensus forecasts, investors would be able to earn positive abnormal returns by selecting stocks based on the difference between consensus earnings (in this study also cash flows) forecasts and actual earnings (and cash flows) reported by the firm i.e. errors in forecasts are useful. As forecast errors do not reflect the true value of the stock, ability to recognise them before they happen should provide useful information to the investors in selecting undervalued stocks. Our second hypothesis is:

H2 : Investors who select a portfolio of stocks based on foresight information about errors in analyst consensus forecasts of earnings, and cash flows could earn positive risk-adjusted abnormal returns.

Rejecting the null of no positive relation between forecast errors and abnormal returns would imply that there are significant risk-adjusted abnormal returns to a portfolio formed using forecast errors about the earnings (and cash flows) of the firms.

In addition, we expect the additional information contained in the analyst cash flow forecast errors, such as changes in depreciation charges, would have a greater impact on stock values than the analyst earnings forecast errors. Our third hypothesis is formulated as below:

H3 : Investors who select a stock portfolio based on foresight information of underestimation in analyst consensus forecasts of cash flows could earn larger positive risk-adjusted abnormal returns than those who select stocks based on foresight information of underestimation in analyst consensus forecast of earnings alone.

3.3 Revisions in Analyst Expectations and Stock Value

Given that an upward forecast revision resembles a new positive outlook for a selected firm in terms of the market's expectations, the stock value should increase higher to reflect new expectations. Our fourth hypothesis is:

H4 : Investors who select a portfolio of stocks based on perfect foresight information about upward revisions in analyst consensus forecasts of earnings (and cash flows) could earn large positive risk-adjusted abnormal returns.

If forecasts must be judged relative to consensus forecasts and not with the firm's actual reports, investors who could accurately predict revisions in analyst consensus forecasts may outperform those who have accurately predicted the forecast errors. We developed our last hypothesis as follows:

H5 : Investors who select a portfolio of stocks based on foresight information about upward revisions in analyst consensus forecasts of earnings (and cash flows) could earn *larger* positive risk-adjusted abnormal returns than those who select a portfolio of stocks based on foresight information about underestimation in analyst consensus forecasts of earnings (and cash flows).

4 Data, Variables and Methodologies

4.1 Data

The data set consists of all stocks listed continuously on the main board of the Kuala Lumpur Stock Exchange (KLSE) from 1993 to 1996. To be included in the sample, those stocks must have been listed in *The Estimate Directory* (TED), a monthly publication supplied by BARRA-Edinburgh Financial Publishing (U.K) [BARRA-U.K.] to the subscribers. Our sample consists of 857 fully diluted annual EPS and cash flows per share (CFPS) forecasts. To ensure that the same economic information is available to all analysts at the time forecast are prepared, we selected only companies having fiscal year ending on December 31 and their stocks must be followed by at least two analysts. This is to minimise idiosyncratic errors commonly found in individual forecasts. We also picked the forecasts made within two calendar months, namely April and December. The April report was selected because all companies are required to have reported their previous financial year's results by then. December report is the last monthly report before the announcement of unaudited current year-end results. As the unaudited results are often the same as the audited results, which must be announced before 31 March, investors often pay more attention to preaudited results. Our final sample consisted of 300 consensus EPS and CFPS forecasts (see Table 1). This

Table 1: Sample size

Year	Total number of stocks	Stocks with December closing	Stocks excluded	Final sample selected
1993	177	90	21	69
1994	259	128	49	79
1995	189	97	25	72
1996	232	114	34	80
Total	857	429	129	300

sample had 69, 79, 72 and 80 forecasts respectively in years 1993 to 1996. Although some firms were selected more than once, the consensus forecasts of these firms were different and hence we treated them as independent forecasts. The study period began in April 1993 and ended at June 1997. We designed the 15-month study window of the data in order to exclude data from July 1997 onwards because the Malaysian stock prices declined sharply from July 1997 right up till early 1999 during the Asian Financial Crisis. Nevertheless, the sample size in each year was large enough to provide reliable statistical results for generalisation of findings in this market.

The actual EPS/CFPS data for the selected firms were taken from the main board reports in The KLSE *Annual Companies Handbook* 1997. Month-end closing stock prices and index values of the value-weighted Kuala Lumpur Composite Index (KLCI) were extracted from the KLSE monthly publication, *Investors Digest*, from January 1988 to June 1997.

Table 2 contains a summary of information about the earnings of the sampled firms. Growth in the actual EPS/CFPS and the EPS/CFPS forecasts are shown. The means shown are for three portfolios namely those stocks forming the middle 40 per cent and the two top and bottom 30 per cent of the sample. The mean values are in percentages. For example, FG means forecast growth is 96 per cent against last year's growth; current year's actual growth (AG) is 73 per cent for the upper 30 per cent portfolio, etc.

4.2 Variables and Methodology

Test variables used in this study are similar to those used in other studies. A minor modification was made to suit the local conditions: each initial forecast is reported in April and forecast revisions are made in the December month. The first variable is the actual annual growth rate in EPS or CFPS in year *t* (AG_t):

$$AG_t = (E_t - E_{t-1}) / E_{t-1} \quad (1)$$

where E_t: actual reported EPS/CFPS at the end of year *t*,

E_{t-1}: actual reported EPS/CFPS at the end of year *t*-1.

The second variable is the consensus forecast (made in April) of annual growth rate for EPS/CFPS in year *t* (FG_t):

Table 2: Mean values of actual and forecast EPS and CFPS

Variables	Portfolio	Top 30%	Middle 40%	Bottom 30%	Overall
Forecast growth	EPS	96	15.00	-16	12.60
	CFPS	74	14.00	-2	15.20
Actual growth	EPS	73	11.00	-46	30.00
	CFPS	60	12.00	-25	27.10
Forecast errors:					
a. Growth	EPS	44	-3.00	-71	-17.40
	CFPS	37	-1.00	-76	-11.90
b. Percentage	EPS	25	-3.00	-75	-10.10
	CFPS	23	-1.60	-98	-4.60
Forecast revision:					
December	EPS	24	-2.00	-33	-3.70
	CFPS	21	-2.30	-27	-2.80

$$FG_t = (C_{Apr} - E_{t-1}) / E_{t-1} \quad (2)$$

where C_{Apr}: the consensus forecasts (made in April) of EPS/CFPS in year *t*.
The third variable is the actual annual growth minus forecast annual growth. This forecast error in growth of EPS/CFPS in year *t: (*FEG_t*)* can be expressed as

$$FEG_t = AG_t - FG_t \quad (3)$$

Since the error in market expectation is one of the key determinants of stock values, we computes the fourth variable, forecast error in percentage, FEP, to reaffirm the finding of the earlier variable.

$$FEP_t = (E_t - C_{Apr}) / E_t \quad (4)$$

where

FEP_t: the percentage error in consensus forecasts (April) for year *t*
E_t: the actual EPS/CFPS reported at the end of year *t*.
C_{Apr}: the consensus forecast produced in April.

The fifth variable is the percentage of forecast revision *(*$FR12_t$*)*

$$FR12_t = (C_{Dec} - C_{Apr}) / C_{Apr} \quad (5)$$

where C_{Dec} is the revised consensus forecasts made in December.

The test procedure is to pool and rank all the stocks on each variable separately for April and December months over the four-year period. Then, stocks are formed into three portfolios by each variable. For example, in the case of forecast growth, portfolio 1 consisted

of stocks in the top 30 per cent forecast growth, portfolio 2 in the middle 40 per cent, and portfolio 3 in the bottom 30 per cent. The rate of return for each of these portfolios is calculated for the forecast month and the following fourteen months. These rates of return are the 'actual returns', including dividends. In order to determine whether the forecast growth rates lead to abnormal returns, the Market Model (Sharpe 1963) is used to measure expected return, yielding an estimate of a risk-adjusted abnormal return for the forecast month and the next fourteen months.

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{6}$$

where $R_{i,t}$ is the return on portfolio i in period t; (t = -62, -61, …, -3, and t = 0 is the announcement month of the event); $R_{m,t}$ = return on the market in the same t-period as portfolio i; $\alpha_i + \beta_i$ are the parameters for portfolio i, and $\varepsilon_{i,}$ are deviations from the model. To calculate the risk-adjustment parameters for each of the 300 events, a total of 62 monthly stock price data up to the event month were collected for computing the monthly stock price returns, $R_{i,t.}$ The corresponding market returns, $R_{m,t}$ were calculated using the KLCI. Market model parameters were estimated using the 62nd month-end price to the 3rd month-end price before the event month. Risk-adjustment parameters were calculated by correcting for non-synchronous errors arising from thin trading [2] (Ariff and Johnson, 1990 : 85-98). Using the Market Model, the abnormal return (AR) is computed as follows:

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}) \tag{7}$$

where t represents month 1, 2, …, 14 and t = 0 is the announcement month of the event. The average abnormal return at a time t (AAR_t) and the cumulative abnormal return (CAR_k) are:

$$AAR_t = 1/N \Sigma AR_{j,t} \tag{8}$$

where the summation operator is for summing up the AR_j from j = 1, …, N observations, and t = 1, 2, …, 14.

$$CAR_k = \Sigma AR_t \tag{9}$$

where the summation operator is for summing the AR over time t = 1 to k, and k is any selection of 2,…, 14.

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[2] This study adopted Dimson (1979) and Fowler and Rorke's (1983) two leads and two lags model to correct the effects of non- synchronous trading of beta.

$$R_t = \alpha_t + \beta_{t-2}(R_{m,t-2}) + \beta_{t-1}(R_{m,t-1}) + \beta_t(R_{m,t}) + \beta_{t+1}(R_{m,t+1}) + \beta_2(R_{m,t+2}) \tag{11}$$

$$b_{DFR} = W_{t-2}\beta_{t-2} + W_{t-1}\beta_{t-1} + W_t\beta_t + W_{t+1}\beta_{t+1} + W_{t+2}\beta_{t+2} \tag{12}$$

where R_t is return on individual security at month t, R_m is the equally weighted market portfolio return in current month t, lags (t-2) and (t-1) as well as leads (t+1) and (t+2), The βs are the coefficients of respective market returns in current month t, lags and leads, and W's are weights proposed by Fowler-Rorke. These are derived from serial correlations in the market returns in t, t- and t+, where t = current period, (t-) = lags and (t+) = leads.

The risk-adjusted *AR*s are reported before the transaction costs. The estimate of a round-trip average transaction cost for investors in this market is about 2.2 per cent (Annuar 1991). To further assess the impact of each of the variables studied on portfolio returns, a regression is run across the three portfolios for each variable. The regression uses the *AAR*s as dependent variable, against each of the four variables, *FG, FEG, FEP and FR*12, as the independent variables, F_i. The regression is as follows:

$$AAR_{i,t} = a + b\,F_{i,t} + e_{i,t} \tag{10}$$

where $t = 1, 2, \ldots, 14$.

5 Findings

The results are summarised in three sections. First, we report the risk-adjusted abnormal returns at the time of the availability of analyst EPS and CFPS forecasts, that is, on months 0 (April), the on-event month. We also present the set of price effects relating to the consensus forecasts over the post-event months up to fourteen months. The results are reported in Tables 3 and 4. Second, the risk-adjusted abnormal returns for investors who select stocks based on foresight information about analyst forecast errors are presented in Tables 5 to 8. Lastly, we show the results relating to the impacts of revisions of analyst forecasts on stock values in Tables 9 and 10.

5.1 Analyst Consensus Forecasts as Market Expectations

Table 3 is a summary of price effects of consensus EPS forecasts from months 0 to 14. Entries in the panel A of Table 3 are portfolio returns for investors who select stocks based on consensus forecasts of high EPS growth (top 30 per cent portfolio), mid-range EPS growth (middle 40 per cent portfolio), and the low and mostly negative EPS growth (bottom 30 per cent portfolio). By information theory, the top 30 per cent portfolio would lead to a positive effect; the bottom 30 per cent to negative results. As shown in the first row of entries (month 0), none of the AARs for the three portfolios are statistically significant. This result suggests that at the time of disclosure of consensus forecasts, the information or analyst expectations have already been incorporated into the stock values. Investors who select stocks based on this known information or current expectations are paying the full market value of the stocks. It is interesting to note that although the emerging Malaysian market has a smaller and less-advanced market structure, as well as a relatively higher risk environment than those in developed markets, the finding seems to support the prediction of Expectation Theory, regardless of the developmental stage of the markets.

The subsequent entries from month 1 to month 14 for the three portfolios show some anomalous findings. But the overall finding appears to support that the analyst expectations are close enough surrogates of market expectations as fully reflected in the stock prices. In the top 30 per cent portfolio (stocks with highest forecast growth that are deemed as good news), the AARs illustrates that there is no discernible pattern in the risk-adjusted abnormal returns for an investor who selects stocks on the basis of consensus forecast of high EPS growth. In two of the fourteen months, months 3 and 10, the stocks have positive AARs of

Table 3: EPS forecast growth and portfolio returns

Panel A

Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
0	-2.44	-0.25	N/A	0.59	0.93	N/A	-1.41	-1.22	N/A
1	-3.52	-3.67**	-3.52	-0.70	-1.00	-0.70	2.45	2.13*****	2.45
2	-1.28	-1.20	-4.81	0.66	0.99	-0.04	-1.62	-1.65	0.83
3	2.59	3.15**	-2.22	1.02	1.48	0.98	1.70	2.36*****	2.53
4	0.91	0.68	-1.31	-1.29	-1.78*****	-0.31	0.93	0.96	3.46
5	1.32	1.05	0.01	-0.22	-0.16	-0.53	0.39	0.37	3.86
6	-4.09	-4.06**	-4.09	-2.32	-2.88**	-2.85	-2.08	-1.54	1.78
7	-1.01	-1.00	-5.09	-1.42	-1.75*****	-4.26	-0.66	-0.63	1.12
8	-2.26	-1.90*****	-7.36	-1.34	-1.21	-5.61	-0.40	-0.23	0.72
9	-1.48	-1.23	-8.84	-0.26	-0.27	-5.87	-0.34	-0.25	0.38
10	3.33	2.46**	-5.51	0.49	0.59	-5.38	2.44	2.50**	2.82
11	-1.32	-1.40	-6.83	-0.35	-0.44	-5.73	-1.91	-2.11*****	0.91
12	-1.58	-1.54	-8.40	-0.40	-0.49	-6.13	-0.47	-0.61	0.44
13	-4.80	-4.43**	-13.20	-0.47	-0.58	-6.60	-2.38	-2.72**	-1.94
14	-0.21	-0.21	-13.41	-1.06	-1.70*****	-7.66	0.77	1.07	-1.17

Panel B

Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	-4.81	-3.03*	-0.04	-0.04	0.83	0.29
0 - 3	-2.22	-0.51	0.98	0.76	2.53	0.83
0 - 5	0.01	0.00	-0.53	-0.28	3.86	1.25
0 - 9	-8.84	-1.40	-5.87	-1.95*****	0.38	0.09
0 - 10	-5.51	-0.73	-5.38	-1.68	2.82	0.59
0 - 14	-13.41	-1.56	-7.66	-2.35*****	-1.17	-0.20

Panel C

Regression Model: $AAR = a_0 + a_1\ (EPSFG) + e$

Month	a_1	*t*-value	*F*-ratio	Adj. R^2
1	-0.0304	-2.46*	6.06*	0.4308
2	-0.0112	-1.26	1.59	0.1662
3	0.0023	0.58	0.33	0.0397
4	0.0051	0.60	0.35	0.0424
5	0.0035	0.43	0.18	0.0224
6	-0.0148	-2.15*	4.60*	0.3652
7	-0.0010	-0.15	0.02	0.0028
8	-0.0090	-0.86	0.74	0.0845
9	-0.0074	-0.98	0.95	0.1066
10	0.0100	1.08	1.16	0.1266
11	0.0000	0.00	0.00	0.0000
12	-0.0051	-0.49	0.24	0.0291
13	-0.0231	-2.65**	7.01**	0.4003
14	0.0067	0.71	0.51	0.0595

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
EPSFG: Earnings-Per-Share Forecast Growth; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tailed test; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

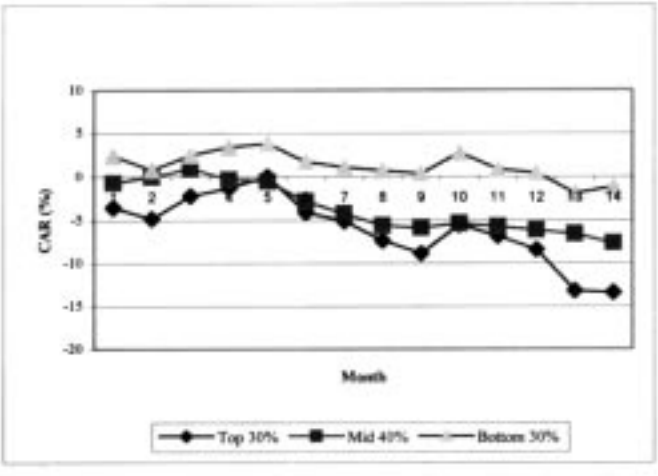

Figure 1: *EPS forecast growth and CARs*

2.59 per cent and 3.33 per cent, which are both economically and statistically significant at 1 per cent level. However, out of the same period, there are four months (months 1, 6, 8, and 13) that experienced negative AARs, which are also statistically significant. The random pattern of both positive and negative AARs indicates that there is no price effect for good news stocks within this portfolio. Note that the first month's return of –3.52 per cent has a wrong sign even though it is statistically significant. Similarly, in the bottom 30 per cent portfolio with bad news of negative forecast growth, the +2.45 per cent AAR in month 1 also has the wrong sign despite it being statistically significant. This lack of consistently positive abnormal returns pattern for good news and consistently negative AARs for bad news conveys a clear evidence that the information from consensus forecast of EPS has no value to market investors.

The time series risk-adjusted CARs are presented in the same panel. For the top 30 per cent (good news) portfolio, all CARs are negative, except for the one in month 5, which recorded a positive 0.01 per cent. To further verify the significance of the CARs, a *t*-test was conducted on the periodic CARs in each month. The results are partly presented in panel B. All the CARs are not statistically different from zero at the 5 per cent significance level, except for the negative CAR of –4.81 per cent in month 2. This negative value is opposite to what one would expect if the consensus forecast of high growth rates contains valuable information for stock selection. Similarly, there is no economically and statistically significant risk-adjusted CAR for investors holding the middle 40 per cent and bottom 30 per cent portfolios. The CARs in the bottom 30 per cent portfolio have anomalous positive signs. Nevertheless, none are significant at the 5 per cent level. Figure 1 plots the time series trend of the CARs. The three trend lines for the portfolios appear mostly either in the negative returns zone or hover around zero return. This chart confirms the discussion of the numbers in the test results.

In addition to the *t*-tests, a cross-sectional linear regression (across all three portfolios) was done for each of the fourteen months using risk-adjusted AARs as dependent variables and the value of consensus EPS forecasts as independent variables. The purpose was to

Table 4: CFPS forecast growth and portfolio returns

Panel A

Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
0	-1.84	-1.47	N/A	-0.24	-0.36	N/A	-1.17	-1.02	N/A
1	-3.97	-3.97**	-3.97	-1.26	-1.94*	-1.26	3.87	3.55**	3.87
2	-0.91	-0.91	-4.89	0.32	0.49	-0.94	-1.55	-1.45	2.32
3	2.52	3.18**	-2.36	0.94	1.34	0.01	1.82	2.52**	4.14
4	1.44	1.20	-0.92	-1.77	-2.23*	-1.76	1.39	1.35	5.54
5	0.41	0.47	-0.51	-0.18	-0.16	-1.94	1.62	0.93	7.16
6	-4.03	-4.79**	-4.54	-2.22	-2.18*	-4.16	-1.87	-1.58	5.29
7	-0.54	-0.55	-5.08	-2.21	-2.67**	-6.37	-0.10	-0.09	5.20
8	-1.60	-1.55	-6.68	-2.82	-2.41**	-9.19	0.24	0.14	5.44
9	-0.91	-0.72	-7.59	0.24	0.23	-8.95	-1.70	-1.41	3.74
10	1.23	1.03	-6.37	0.62	0.61	-8.33	2.15	2.30*	5.89
11	-2.67	-2.97**	-9.04	0.06	0.08	-8.27	-1.21	-1.34	4.68
12	-0.97	-1.08	-10.01	-0.71	-0.85	-8.98	-0.67	-0.75	4.01
13	-4.70	-5.14**	-14.71	-1.02	-1.33	-10.00	-2.05	-1.86*	1.96
14	-0.06	-0.07	-14.77	-0.98	-1.34	-10.98	0.26	0.37	2.22

Panel B

Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	-4.89	-2.26	-0.94	-0.84	2.32	0.61
0 - 3	-2.36	-0.51	0.01	0.00	4.14	1.07
0 - 5	-0.51	-0.10	-1.94	-0.87	7.16	1.85
0 - 9	-7.59	-1.22	-8.95	-2.34*	3.74	0.68
0 - 10	-6.37	-0.98	-8.33	-2.02*	5.89	1.03
0 - 14	-14.77	-1.89*	-10.98	-2.60*	2.22	0.34

Panel C

Regression Model: $AAR = b_0 + b_1\ (CFPSFG) + e$

Month	b_1	*t*-value	*F*-ratio	Adj. R^2
1	-0.0706	-2.40*	5.78*	0.3466
2	-0.0722	-2.87**	8.25**	0.4462
3	-0.0592	-2.04*	4.18*	0.2609
4	-0.0411	-1.01	1.03	0.1136
5	-0.0355	-0.65	0.42	0.0497
6	-0.0588	-0.89	0.79	0.0903
7	-0.0513	-0.69	0.48	0.0566
8	-0.0629	-0.70	0.49	0.0576
9	-0.0645	-0.89	0.80	0.0908
10	-0.0624	-0.77	0.59	0.0682
11	-0.0676	-0.86	0.73	0.0841
12	-0.0680	-0.78	0.61	0.0710
13	-0.1263	-1.55	2.40	0.1347
14	-0.1268	-1.38	1.90	0.0910

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
CFPSFG: Cash Flow-Per-Share Forecast Growth; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tailed test; Panel C is using two-tailed test
Regression coefficients are computed across portfolios.

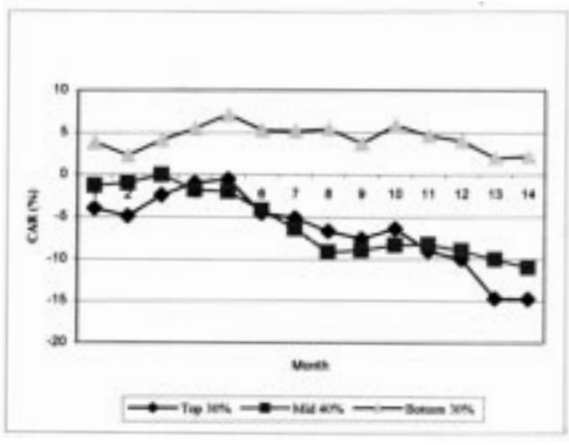

Figure 2: *CFPS forecast growth and CARs*

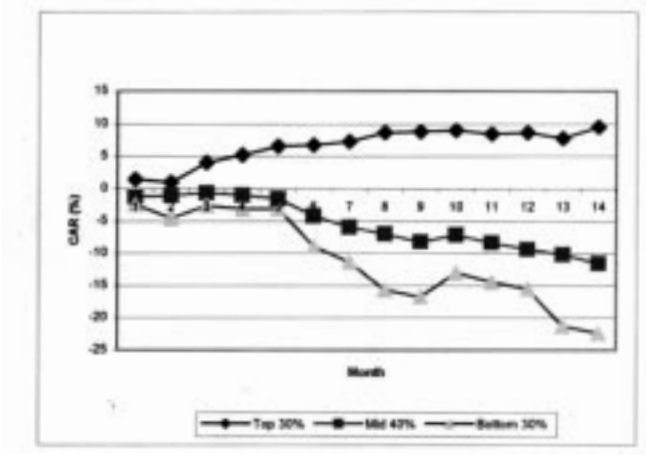

Figure 3: *EPS forecast error (growth) and CARs*

examine their relationship and the magnitude of changes in the AARs when consensus EPS forecasts change. The result, as presented in panel C of Table 3, indicates that the positive response coefficients are not significant at the 5 per cent levels. Although three of the coefficients in months 1, 6 and 13 are significant, they are in fact, negative returns. These results appear to suggest that to a large extent, there is no significant relationship between AARs and the consensus EPS forecasts. In comparison with the studies in developed markets (see, among others, Elton *et al.* 1981; Dowen 1989), the finding of merely three significant negative coefficients is not at all a clear support for their findings of a negative relationship between AARs and consensus EPS forecasts.

Table 4 reports for the first time, the effect of analyst consensus CFPS forecast *growth* on stock values. Similar to the results in Table 3, there is also no discernible pattern in the

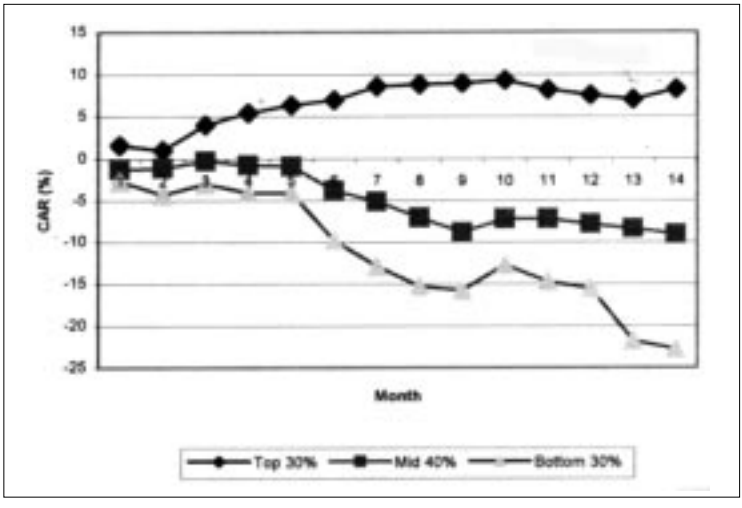

Figure 4: *CFPS forecast error (growth) and CARs*

risk-adjusted AARs for stocks selected based on consensus forecasts of CFPS. In the top 30 per cent portfolio, the AAR in month 1 of –3.97 per cent is significant at the 1 per cent level, but again it shows a wrong negative sign (opposite to the prediction of theory). Further, in the fourteen-month period of study, there is only one single month, that is month 3, which has a significant positive AAR of 2.52 per cent as against four other months (months 1, 6, 11, and 13) with significant negative AARs. A similar pattern of AARs is also found in the middle 40 per cent and bottom 30 per cent portfolios. For instance, in the bottom 30 per cent portfolio, three months (months 1, 3, and 10) out of the fourteen months under study had significant positive AARs while only one month (month 13) had a significant negative AAR of –2.05 per cent. The time series analysis of risk-adjusted CARs showed a distinctive yet anomalous pattern, that is, high growth forecast (supposedly good news) portfolios consistently showed negative CARs, whereas both the low and negative growth forecasts (supposedly bad news) portfolios consistently produced positive CARs. This is another clear indication that consensus forecasts of CFPS had no value to stock investors. Figure 2 provides visual evidence on the time path of the CARs.

The results of the regression, as shown in panel C of Table 4, indicate that there is no significant positive relationship between risk-adjusted AARs and consensus forecasts of CFPS. The significant association that does exist in the first three months is, however, anomalous and negative.

Overall, the summarised results from Tables 3 to 4 show that information contained in the analyst consensus EPS/CFPS forecast growth is efficiently incorporated into the Malaysian stock prices. There is no significant change in stock values at both the on-event and post-event months. These findings appear, to a large extent, to support our first hypothesis. The regression coefficients are generally not significant. However, of the forty-two monthly AARs, there are four AARs each in Tables 3 and 4, which are both statistically and economically significant. It appears that there may be a random chance of inefficiencies existing in this emerging market. But there is no value to be gained from earnings forecasts.

Table 5: EPS forecast error (growth) and portfolio returns

Panel A

Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
1	1.48	1.81*	1.48	-1.22	-1.31	-1.22	-2.48	-2.40**	-2.48
2	-0.44	-0.49	1.04	0.16	0.22	-1.06	-2.07	-2.00*	-4.55
3	2.97	3.94**	4.01	0.39	0.63	-0.67	1.94	2.24*	-2.62
4	1.21	1.36	5.22	-0.32	-0.43	-0.99	-0.48	-0.35	-3.09
5	1.33	1.20	6.56	-0.56	-0.43	-1.55	0.02	0.01	-3.08
6	0.18	0.16	6.73	-2.63	-3.70**	-4.17	-5.85	-4.58**	-8.93
7	0.57	0.58	7.30	-1.75	-1.93*	-5.93	-2.46	-2.81**	-11.39
8	1.37	1.02	8.67	-1.01	-0.78	-6.93	-4.26	-3.17**	-15.65
9	0.13	0.12	8.80	-1.25	-1.07	-8.18	-1.11	-0.88	-16.76
10	0.19	0.19	8.99	1.07	1.12	-7.11	3.76	3.29**	-13.00
11	-0.51	-0.60	8.48	-1.20	-1.51	-8.31	-1.43	-1.44	-14.43
12	0.17	0.23	8.65	-1.05	-1.20	-9.36	-1.09	-1.14	-15.51
13	-0.86	-1.01	7.78	-0.81	-0.91	-10.17	-5.73	-6.00**	-21.25
14	1.75	2.96**	9.53	-1.39	-2.22*	-11.57	-1.08	-1.01	-22.32

Panel B

Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	1.04	0.76	-1.06	-1.08	-4.55	-15.76**
0 - 3	4.01	1.66	-0.67	-0.54	-2.62	-0.76
0 - 5	6.56	2.71*	-1.55	-1.22	-3.08	-0.87
0 - 9	8.80	3.09**	-8.18	-3.05**	-16.76	-2.56*
0 - 10	8.99	3.05**	-7.11	-2.17*	-13.00	-1.54
0 - 14	9.53	2.52*	-11.57	-3.43**	-22.32	-2.35*

Panel C

Regression Model: $AAR = e_0 + e_1 (EPSFEG) + e$

Month	e_1	*t*-value	*F*-ratio	Adj. R^2
1	0.0361	5.45**	29.715**	0.7879
2	0.0257	3.75**	14.090**	0.6378
3	0.0201	2.43*	5.885*	0.4238
4	0.0123	1.22	1.486	0.1566
5	0.0023	0.26	0.068	0.0084
6	0.0453	3.89**	15.164**	0.6546
7	0.0146	1.97*	3.874	0.3263
8	0.0354	2.97**	8.848**	0.5252
9	0.0187	1.58	2.503	0.2383
10	-0.0295	-2.62**	6.868**	0.4619
11	0.0022	0.29	0.086	0.0107
12	0.0133	1.40	1.959	0.1967
13	0.0377	3.45**	11.919**	0.5984
14	0.0150	1.64	2.696	0.2520

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
EPSFEG: Earnings-Per-Share Forecast Error in Growth; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tailed test; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

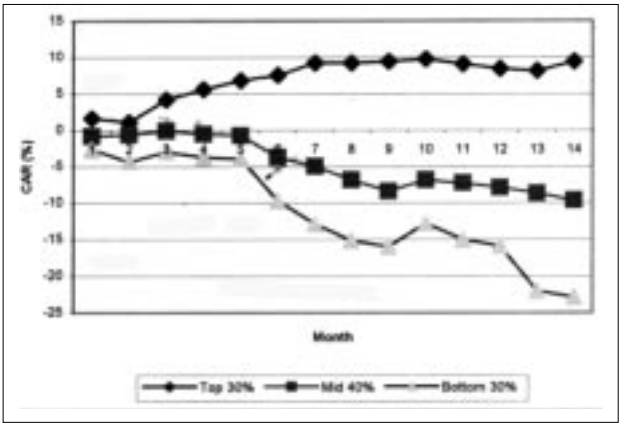

Figure 5: *EPS forecast error (per cent) and CARs*

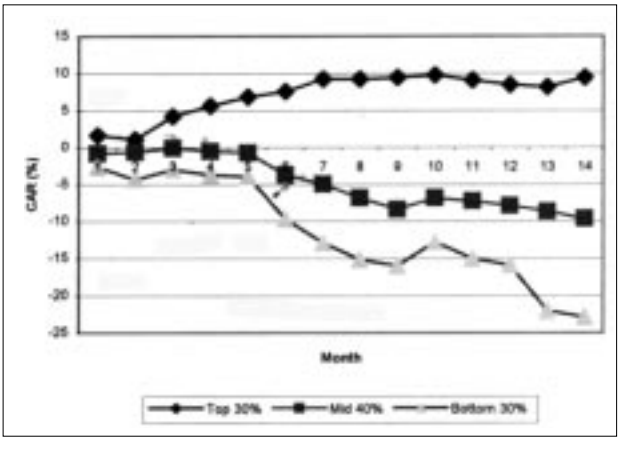

Figure 6: *CFPS forecast error (per cent) and CARs*

5.2 Analyst Forecast Errors and Stock Values

The differences between consensus forecasts and the actual earnings (and cash flows) could be a proxy of *errors* in analyst expectations of the true value of the stocks. Foresight knowledge of information about such errors, for instance, an error that the forecast is an underestimate of the growth rates would provide profitable investment opportunities to the investors. The results of the effects of these errors on stock values are reported in Tables 5 to 8. The plots of the numbers relating to these four tables are from Figures 3 to 6.

Table 5 displays the risk-adjusted abnormal returns for investors who select stocks based on the foresight knowledge of errors in EPS forecast growth rates. A quick look at the AARs for the three portfolios over the 14 months shows a significant number of abnormal returns. For example, most of the AARs for the top 30 per cent portfolio are positive, as is expected for good news. The other two portfolios have negative returns dominating, as these are bad news of negative errors. The *t*-values for some of the AARs are statistically

significant. For example, a return of –5.73 per cent is noted as the extreme value with a t-ratio of 6.00, significant at the 1 per cent level. There are several large and small AARs, with significant *t*-values for all three portfolios.

The CARs in Panel B for the three portfolios reveal significant profit opportunities. For instance, the CAR for the top 30 per cent portfolio for month 14 is 9.53 per cent, which is both statistically and economically significant. The corresponding figure for the bottom 30 per cent portfolio is –22.32 per cent significant at the 5 per cent level. The middle 40 per cent portfolio yields a significant –11.57 per cent CAR on the same month. As is commonly found in most studies, bad news (overvalued) stocks in the bottom 30 per cent portfolio experiences a larger drop in value than the good news (undervalued) stocks in the top 30 per cent portfolio. This finding is consistent with the Prospect Theory (Kahneman and Tversky 1979), which states that choice behaviour involving gains is usually risk-averse, that is, the response to losses is more extreme than the response to gain. In this scenario, risk-adverse investors are more inclined to sell down a much larger quantity of overvalued stocks than buying those that are undervalued, if good news is prevalent.

Therefore, in the post-event period over months 1 to 14, an investor using the foresight information of forecast *errors* in EPS growth would have earned a positive CAR in his top 30 per cent portfolio while avoiding even larger losses in the other two portfolios by disposing the overvalued stocks from the initial portfolios.[3] This new piece of evidence establishes the importance of the ability of investors to predict correctly analyst forecast errors in EPS growth for the firms listed in this emerging market. Figure 3 depicts the time series pattern of CARs. The trend lines of the three portfolios clearly reflect the market responses to the 'positive' and 'negative' EPS forecast errors.

All the regressions in Panel C, with the exception of the one for month 10, reveal a positive impact of forecast growth errors on the stock prices. Among the fourteen coefficients, seven of them are significant and their adjusted *R*-squared values are reasonably large. This means that the independent variable does affect a substantial part of the variation in the stock values.

Table 6 presents the risk-adjusted abnormal returns for investors who select stocks based on foresight of errors in consensus CFPS forecast growth: cash flows have yet to be studied. A close examination of the AARs for the three portfolios over the fourteen-month period reveals that there is no major difference from those AARs in Table 5. For example, the AARs for the top 30 per cent portfolio are mostly positive while those in the middle 40 per cent and bottom 30 per cent portfolios are mostly negative. One minor difference is, however, the increase in CARs for the top 30 per cent portfolio is from 1.02 per cent in month 2 to the largest value of 9.28 per cent in month 10. This reflects the shorter time needed and/or faster speed for the market to recognise the information contained in the errors of CFPS forecast growth than those errors of EPS forecast growth. In this case, the CAR that is economically and statistically significant at the 1 per cent significance level has peaked in month 10 instead of month 14 as depicted in Table 5. Both the largest negative CARs for the middle 40 per cent and bottom 30 per cent portfolios are –9.06 per cent and

[3] Short-selling of stocks was prohibited during the study period under the rules of KLSE. Thus, investors have no opportunity to make profits by short-selling their overvalued stocks, that is, stocks with over-estimated EPS growth rates. However, investors could sell overvalued stocks, and thus reduce losses.

Table 6: CFPS forecast error (growth) and portfolio returns

Panel A

Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
1	1.62	1.90*	1.62	-1.27	-1.45	-1.27	-2.70	-2.53**	-2.70
2	-0.60	-0.66	1.02	0.15	0.20	-1.12	-1.59	-1.53	-4.29
3	2.97	3.68**	3.99	0.86	1.41	-0.26	1.26	1.49	-3.03
4	1.44	1.64	5.43	-0.50	-0.56	-0.75	-1.00	-0.82	-4.03
5	0.91	0.88	6.34	-0.16	-0.11	-0.92	-0.08	-0.07	-4.11
6	0.63	0.56	6.97	-2.86	-3.19**	-3.78	-5.68	-5.75**	-9.79
7	1.59	1.61	8.56	-1.33	-1.49	-5.11	-3.04	-3.45**	-12.83
8	0.26	0.20	8.83	-1.93	-1.57	-7.04	-2.48	-1.64	-15.30
9	0.15	0.14	8.98	-1.77	-1.58	-8.81	-0.48	-0.37	-15.78
10	0.31	0.29	9.28	1.65	1.74*	-7.16	3.09	2.68**	-12.69
11	-1.11	-1.39	8.18	0.00	0.00	-7.16	-2.08	-1.99*	-14.76
12	-0.62	-0.80	7.56	-0.66	-0.79	-7.82	-0.78	-0.79	-15.55
13	-0.55	-0.64	7.01	-0.55	-0.65	-8.37	-6.20	-6.20**	-21.75
14	1.21	1.91*	8.22	-0.69	-1.05	-9.06	-0.98	-0.95	-22.73

Panel B

Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	1.02	0.65	-1.12	-1.11	-4.29	-5.46*
0 - 3	3.99	1.57	-0.26	-0.17	-3.03	-1.05
0 - 5	6.34	2.46*	-0.92	-0.58	-4.11	-1.37
0 - 9	8.98	3.03**	-8.81	-2.67*	-15.78	-2.76*
0 - 10	9.28	3.06**	-7.16	-1.73	-12.69	-1.73
0 - 14	8.22	2.03*	-9.06	-2.16*	-22.73	-2.59*

Panel C

Regression Model: $AAR = f_0 + f_1\ (CFPSFEG) + e$

Month	f_1	*t*-value	*F*-ratio	Adj. R^2
1	0.0471	2.44*	5.97*	0.3558
2	0.0383	2.64**	6.95**	0.3980
3	0.0284	2.62**	6.87**	0.3948
4	0.0336	2.79**	7.77**	0.4293
5	0.0020	0.11	0.01	0.0015
6	0.0683	4.72**	22.25**	0.7024
7	0.0253	1.94	3.76	0.2345
8	0.0419	2.50*	6.23*	0.3677
9	0.0142	0.76	0.58	0.0672
10	-0.0299	-1.79	3.22	0.1980
11	0.0137	0.87	0.76	0.0866
12	0.0084	0.80	0.65	0.0749
13	0.0508	3.74**	13.95**	0.5901
14	0.0181	1.22	1.48	0.0507

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
CFPSFEG: Cash Flow-Per-Share Forecast Error in Growth; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tailed test; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

– 22.73 per cent respectively in month 14. The above findings are probably establishing for the first time the value-relevance of foresight information on errors in consensus forecast of CFPS growth rates in an emerging market. Figure 4 illustrates the path of CARs.

The regression results in Panel C show that there is a positive relationship between errors in CFPS forecast growth and stock values. All regression coefficients are positive, except the one for month 10; among them seven are statistically significant. Note that the coefficients are larger than those reported in Table 5. The adjusted *R*-squared values for those significant coefficients are reasonably large, ranging from 35.58 per cent to 70.24 per cent.

In conclusion, the findings in Tables 5 and 6 give us the first set of confirmatory results for the second hypothesis. Nevertheless, those findings do not support our third hypothesis that investors who select a portfolio of stock based on perfect foresight knowledge about underestimation in analyst consensus forecasts of cash flows could earn larger positive risk-adjusted abnormal returns than analyst consensus forecast of earnings. In fact the results appear to show there is not much difference between the two sets of CARs.

Since the effect of difference between expectations and realisation is the key phenomenon of this study, an additional measure of forecast errors is used: the errors of EPS and CFPS forecast errors in percentage. Tables 7 and 8 present the results of risk-adjusted abnormal returns for investors with perfect foresight knowledge of error in EPS and CFPS forecasts in percentage.

In Table 7, nine out of the 14 AARs for the top 30 per cent portfolio have positive values and among them, four AARs are statistically significant. In contrast, none of the five negative AARs are significant. There are ten negative AARs in the middle 40 per cent portfolio and eleven negative AARs in the bottom 30 per cent portfolio. Most of the negative AARs are significant as well. These results are consistent with the theory that bad news would drive away investors and in turn cause larger falls in stock values. The CARs for the top 30 per cent portfolio increase steadily from 1.33 per cent in month 2 to the largest value of 10.57 per cent in month 14, which is statistically significant at the 1 per cent significance level and ought to be economically meaningful. It appears that stock selection based on perfect foresight knowledge of under-estimated CFPS forecast in percentage could earn a relatively larger CAR by month 14 than the corresponding CAR reported in Table 5, which is 9.53 per cent. The CARs in month 14 for the middle 40 per cent and bottom 30 per cent portfolios are –11.38 per cent and –21.78 per cent respectively, both being economically and statistically significant. Figure 5 displays the plots of CARs.

An examination of the regression results in Panel C reaffirms that there is a close association between EPS forecast errors in percentage and stock values. Among the fourteen coefficients, twelve are positive. Three of them are significant at the 1 per cent level while another three are significant at the 5 per cent level. The adjusted *R*-squared values range from 30 per cent to 63 per cent.

Table 8 presents the time series risk-adjusted abnormal returns that could be earned by investors who select shares based on perfect foresight knowledge of CFPS forecast errors in percentage. Ten out of the fourteen AARs in the top 30 per cent portfolio had positive returns while both the middle 40 per cent and bottom 30 per cent portfolios had 11 and 12 negative AARs respectively. The CARs for the top 30 per cent portfolio increase from 1.09 per cent in month 2 to the largest value of 9.74 per cent by month 10. Note that this value is

Table 7: EPS forecast error (percentage) and portfolio returns

Panel A									
Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
1	1.71	1.92*	1.71	-1.27	-1.47	-1.27	-2.15	-2.00*	-2.15
2	-0.38	-0.43	1.33	0.07	0.10	-1.20	-2.00	-1.93*	-4.15
3	2.98	3.81**	4.31	0.65	1.08	-0.55	1.83	2.13*	-2.32
4	1.14	1.35	5.45	0.01	0.01	-0.54	-0.96	-0.77	-3.28
5	1.25	1.14	6.69	-0.42	-0.29	-0.96	0.01	0.01	-3.27
6	-0.06	-0.06	6.63	-2.82	-3.98**	-3.78	-5.30	-4.08**	-8.56
7	1.70	1.75*	8.33	-1.77	-1.93*	-5.55	-2.50	-2.95**	-11.07
8	1.11	0.83	9.44	-1.29	-1.02	-6.84	-3.34	-2.45**	-14.40
9	0.26	0.25	9.71	-1.79	-1.57	-8.63	-0.75	-0.59	-15.16
10	-0.06	-0.06	9.65	1.70	1.76*	-6.93	3.10	2.72**	-12.06
11	-0.57	-0.67	9.08	-0.96	-1.22	-7.89	-1.83	-1.83*	-13.89
12	0.34	0.47	9.41	-1.53	-1.77*	-9.42	-0.44	-0.45	-14.33
13	-0.74	-0.85	8.67	-0.31	-0.36	-9.73	-6.39	-6.61**	-20.72
14	1.90	3.18**	10.57	-1.65	-2.63**	-11.38	-1.06	-1.00	-21.78

Panel B						
Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	1.33	0.90	-1.20	-1.26	-4.15	-41.22**
0 - 3	4.31	1.79	-0.55	-0.39	-2.32	-0.73
0 - 5	6.69	2.77*	-0.96	-0.67	-3.27	-1.00
0 - 9	9.71	3.32**	-8.63	-2.74*	-15.16	-2.62*
0 - 10	9.65	3.10**	-6.93	-1.72	-12.06	-1.64
0 - 14	10.57	2.67**	-11.38	-2.69**	-21.78	-2.43*

Panel C				
Regression Model: $AAR = i_0 + i_1 (EPSFEP) + e$				
Month	i_1	*t*-value	*F*-ratio	Adj. R^2
1	0.0387	4.08**	16.63**	0.6346
2	0.0197	1.61	2.60	0.1507
3	0.0210	1.56	2.45	0.1385
4	0.0228	2.52*	6.33*	0.3719
5	-0.0006	-0.03	0.00	0.0001
6	0.0559	3.43**	11.76**	0.5445
7	0.0219	2.21*	4.91*	0.3026
8	0.0519	2.77**	7.66**	0.4251
9	0.0046	0.19	0.03	0.0043
10	-0.0200	-1.69	2.84	0.1700
11	0.0124	1.60	2.57	0.1487
12	0.0058	0.37	0.14	0.0172
13	0.0398	2.22*	4.91*	0.3028
14	0.0205	1.77	3.12	0.1905

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
EPSFEP: Earnings-Per-Share Forecast Error in Percentage; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tail tested; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

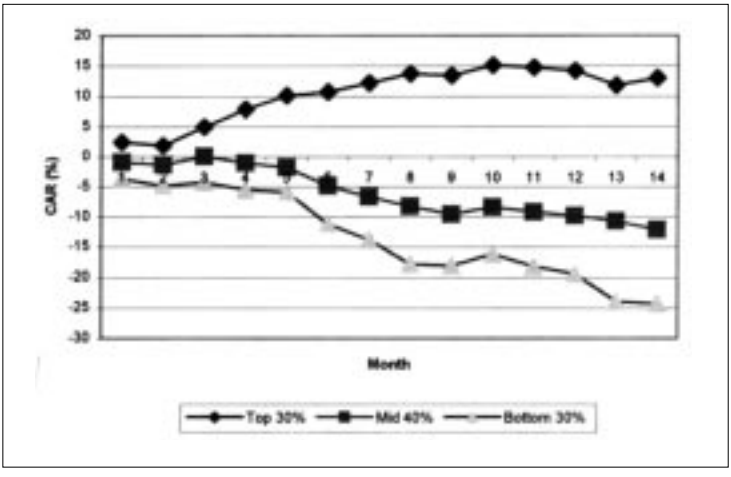

Figure 7: *EPS forecast revision (December) and CARs*

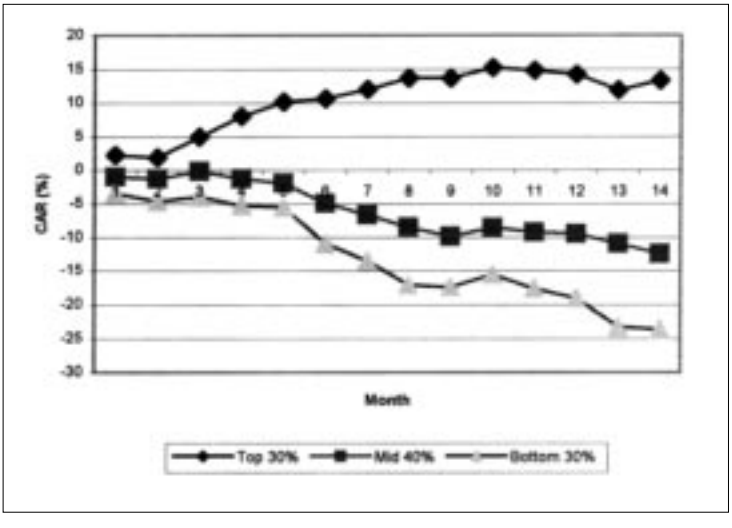

Figure 8: *CFPS forecast revision (December) and CARs*

again larger than the largest CAR value in the top 30 per cent portfolios for CFPS forecast error in growth (9.28 per cent in month 10). The largest negative CAR values for the middle 40 per cent and bottom 30 per cent portfolios are –9.65 per cent and –22.84 per cent, both significant at the 5 per cent level. Figure 6 illustrates the directions of CARs.

The regression results in Panel C indicate that there is a strong price impact of CFPS forecast errors in percentage. All the coefficients are positive, except in month 10. Note that the coefficient in months 1, 6, 7, 13 and 14 are significant at the 1 per cent level. The adjusted *R*-squared value of the regressions ranged from 39.53 per cent to 82.75 per cent.

Table 8: CFPS forecast error (percentage) and portfolio returns

Panel A									
Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
1	1.66	1.95*	1.66	-0.86	-0.97	-0.86	-2.66	-2.50**	-2.66
2	-0.56	-0.62	1.09	0.20	0.26	-0.66	-1.68	-1.64	-4.35
3	3.10	3.83**	4.19	0.53	0.87	-0.13	1.34	1.59	-3.00
4	1.45	1.64	5.64	-0.42	-0.47	-0.54	-0.71	-0.59	-3.71
5	1.17	1.11	6.81	-0.22	-0.15	-0.76	-0.26	-0.23	-3.98
6	0.75	0.68	7.57	-2.93	-3.24**	-3.69	-5.72	-5.79**	-9.69
7	1.63	1.65	9.20	-1.26	-1.36	-4.96	-3.15	-3.89**	-12.85
8	0.00	0.00	9.20	-1.88	-1.49	-6.84	-2.29	-1.56	-15.13
9	0.20	0.20	9.40	-1.55	-1.34	-8.39	-0.82	-0.64	-15.96
10	0.34	0.33	9.74	1.56	1.64	-6.83	3.18	2.77**	-12.78
11	-0.69	-0.83	9.06	-0.44	-0.56	-7.27	-2.21	-2.20*	-14.98
12	-0.61	-0.80	8.44	-0.60	-0.71	-7.87	-0.87	-0.89	-15.86
13	-0.28	-0.33	8.16	-0.79	-0.93	-8.67	-6.15	-6.11**	-22.00
14	1.26	2.13*	9.42	-0.99	-1.48	-9.65	-0.84	-0.81	-22.84

Panel B						
Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	1.09	0.70	-0.66	-0.88	-4.35	-6.29*
0 - 3	4.19	1.61	-0.13	-0.12	-3.00	-1.02
0 - 5	6.81	2.60*	-0.76	-0.71	-3.98	-1.31
0 - 9	9.40	3.04**	-8.39	-2.71*	-15.96	-2.80*
0 - 10	9.74	3.08**	-6.83	-1.75*	-12.78	-1.73*
0 - 14	9.42	2.38*	-9.65	-2.46*	-22.84	-2.59*

Panel C				
Regression Model: $AAR = j_0 + j_1\ (CFPSFEP) + e$				
Month	j_1	*t*-value	*F*-ratio	Adj. R^2
1	0.0563	2.62**	6.88**	0.3953
2	0.0181	0.76	1.58	0.0676
3	0.0262	1.25	1.56	0.0581
4	0.0302	1.25	1.56	0.0590
5	0.0040	0.17	0.03	0.0037
6	0.1025	6.65**	44.18**	0.8275
7	0.0522	3.00**	8.99**	0.4701
8	0.0335	0.98	0.96	0.1068
9	0.0054	0.22	0.05	0.0057
10	-0.0399	-1.93	3.73	0.2330
11	0.0088	0.43	0.18	0.0223
12	0.0075	0.42	0.18	0.0215
13	0.0690	3.00**	8.99**	0.4703
14	0.0483	4.19**	17.54**	0.6476

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
CFPSFEP: Cash Flow-Per-Share Forecast Error in Percentage; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tail tested; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

In conclusion, investors who selected stocks based on foresight of errors in consensus EPS/CFPS forecasts are able to earn risk-adjusted abnormal returns. The observed price effects for both EPS and CFPS consensus forecast errors measured in growth rates or percentages, however, do not show any significant difference between them. These results appear to support the prediction of our second hypothesis, but not our third hypothesis.

5.3 Analyst Forecast Revisions and Stock Values

Our last analysis is to examine whether foresight of analyst EPS and CFPS forecast revisions – i.e. the revision of April forecast to a new December forecast – provides useful information to investors for selecting undervalued stocks. Theories suggest that such a revision in the analyst expectations can be regarded as analysts having to incorporate newly acquired information into the stock valuation, and therefore may send strong signals to the market about revised valuation of the stocks. The results are summarised in Tables 9 and 10: the plots are illustrated in Figures 7 and 8.

Table 9 reveals the value relevance of the foresight information contained in the analyst consensus EPS forecast revisions made in December to the investors. In Panel A, thirty-three of the forty-two AARs have the correct signs, and are significant. For example, the positive AAR of 2.4 per cent in month 1 for the top 30 per cent portfolio is higher than the transaction cost, and is significant at the 1 per cent level. The subsequent two large positive AARs of 3.09 per cent and 2.92 per cent in months 3 and 4 respectively, are both economically and statistically significant at the 1 per cent level. Similarly, large significant negative AARs are common for the middle 40 per cent and bottom 30 per cent portfolios. For instance, the negative returns in months 6 and 7 for the middle 40 per cent portfolio as well as in months 1, 6, 7, 8 and 13 for the bottom 30 per cent portfolio are all significant at the 1 per cent level.

The CARs for the top 30 per cent portfolio increase very rapidly from 1.86 per cent in month 2 to the highest value of 15.12 per cent in month 10. Thereafter this is maintained above the 11 per cent level for the remaining four months. The *t*-values of CARs for months 5, 9 and 10 are significant at the 1 per cent level. Similarly, the largest negative CARs for the middle 40 per cent as well as the bottom 30 per cent portfolios are –12.12 per cent and –24.31 per cent respectively, by month 14. The corresponding *t*-values are also statistically significant. It is worthwhile to highlight that the positive CAR of 15.12 per cent is the largest CAR compared to those in previous tables. This largest return is consistent with the earlier findings (O'Brien 1988), which suggest that the latest most recent EPS forecast is the most accurate valuation as it has presumably incorporated all up-to-date information concerning the stocks. As we compare the CARs in Table 9 to those in Tables 5 and 7, these figures appear to be consistently larger than the latter. This finding provides strong evidence to support our fifth hypothesis. The distinctive visual trend for the CAR values is graphically presented in Figure 7.

The regression coefficient for month 6 in Panel C has a *t*-value of 6.78, which is significant at the 1 per cent level along with an adjusted *R*-squared value of 0.83. These numbers appear to support our fourth hypothesis. Furthermore, the coefficients are consistently larger than those displayed in Panel C of Tables 5 and 7. This also provides an affirmation of our fifth hypothesis.

Table 9: EPS forecast revision (December) and portfolio returns

Panel A

Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
1	2.40	2.88**	2.40	-0.93	-1.00	-0.93	-3.64	-4.00**	-3.64
2	-0.54	-0.56	1.86	-0.44	-0.58	-1.36	-1.15	-1.34	-4.79
3	3.09	4.14**	4.95	1.43	2.30*	0.06	0.59	0.77	-4.20
4	2.92	3.72**	7.87	-1.14	-1.41	-1.07	-1.29	-1.54	-5.49
5	2.30	2.17*	10.17	-0.68	-0.85	-1.75	-0.35	-0.39	-5.84
6	0.57	0.60	10.74	-3.05	-3.36**	-4.80	-5.37	-5.93**	-11.21
7	1.49	1.85*	12.23	-1.85	-2.43**	-6.64	-2.52	-3.37**	-13.73
8	1.48	1.35	13.71	-1.57	-1.18	-8.21	-4.12	-3.65**	-17.85
9	-0.26	-0.25	13.45	-1.35	-1.21	-9.57	-0.22	-0.19	-18.07
10	1.67	1.75*	15.12	1.21	1.29	-8.36	1.92	1.99*	-16.15
11	-0.33	-0.43	14.79	-0.84	-1.08	-9.20	-2.04	-2.24*	-18.19
12	-0.59	-0.92	14.20	-0.60	-0.74	-9.80	-0.01	-1.38	-19.38
13	-2.35	-2.75**	11.85	-0.93	-1.12	-10.73	-4.54	-5.24**	-23.92
14	1.14	1.81*	12.99	-1.39	-2.14*	-12.12	-0.39	-0.53	-24.31

Panel B

Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	1.86	0.90	-1.36	-3.92*	-4.79	-2.73
0 - 3	4.95	1.82	0.06	0.04	-4.20	-1.40
0 - 5	10.17	3.44**	-1.75	-0.85	-5.84	-1.86
0 - 9	13.45	3.58**	-9.57	-2.80*	-18.07	-3.16**
0 - 10	15.12	4.02**	-8.36	-2.07*	-16.15	-2.37*
0 - 14	12.99	2.29*	-12.12	-2.97**	-24.31	-3.23**

Panel C

Regression Model: $AAR = m_0 + m_1\ (EPSFR12) + e$

Month	m_1	*t*-value	*F*-ratio	Adj. R^2
1	0.0854	3.67**	13.43**	0.5801
2	0.0445	2.17*	4.72	0.2926
3	0.0435	2.43*	5.88*	0.3518
4	0.0446	1.72	2.97	0.1797
5	0.0059	0.17	0.03	0.0036
6	0.1102	6.78**	45.91**	0.8331
7	0.0605	2.31*	5.34*	0.3256
8	0.0681	3.41**	11.60**	0.5409
9	0.0080	0.22	0.05	0.0061
10	-0.0228	-1.06	1.13	0.0141
11	0.0086	0.65	0.43	0.0508
12	0.0314	3.23**	10.46**	0.5123
13	0.0409	1.54	2.37	0.1318
14	0.0209	1.26	1.58	0.0610

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
EPSFR12: Earnings-Per-Share Forecast Revision in December; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tail tested; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

Table 10: CFPS forecast (December) and portfolio returns

Panel A

Month	Upper 30% portfolio			Middle 40% portfolio			Lower 30% portfolio		
	AAR	*t*-value	CAR	AAR	*t*-value	CAR	AAR	*t*-value	CAR
1	2.30	2.62**	2.30	-0.97	-1.04	-0.97	-3.48	-3.80**	-3.48
2	-0.40	-0.41	1.90	-0.32	-0.42	-1.28	-1.17	-1.18	-4.65
3	3.12	4.17**	5.02	1.16	1.87*	-0.13	0.69	0.79	-3.96
4	3.04	3.08**	8.06	-1.18	-1.47	-1.30	-1.35	-1.12	-5.32
5	2.13	1.21	10.18	-0.64	-0.81	-1.94	-0.22	-0.16	-5.54
6	0.50	0.44	10.68	-3.01	-3.32**	-4.95	-5.36	-5.48**	-10.89
7	1.36	1.17	12.04	-1.70	-2.24*	-6.65	-2.59	-2.97**	-13.48
8	1.66	1.20	13.70	-1.82	-1.37	-8.47	-3.58	-2.94**	-17.06
9	-0.04	-0.04	13.66	-1.44	-1.29	-9.91	-0.33	-0.26	-17.38
10	1.52	1.34	15.18	1.36	1.44	-8.56	1.87	1.68*	-15.52
11	-0.40	-0.46	14.78	-0.73	-0.93	-9.28	-2.11	-2.15*	-17.63
12	-0.55	-0.63	14.24	-0.21	-0.26	-9.50	-1.45	-1.56	-19.08
13	-2.32	-2.39**	11.91	-1.47	-1.73*	-10.97	-4.15	-4.43**	-23.23
14	1.43	2.14*	13.34	-1.46	-2.27*	-12.43	-0.37	-0.37	-23.60

Panel B

Period	CAR	*t*-value	CAR	*t*-value	CAR	*t*-value
0 - 2	1.90	0.99	-1.28	-2.79	-4.65	-2.85
0 - 3	5.02	1.93	-0.13	-0.08	-3.96	-1.34
0 - 5	10.18	3.56**	-1.94	-1.05	-5.54	-1.78
0 - 9	13.66	3.78**	-9.91	-3.05**	-17.38	-3.14**
0 - 10	15.18	4.20**	-8.56	-2.14*	-15.52	-2.35*
0 - 14	13.34	2.39*	-12.43	-3.00**	-23.60	-3.28**

Panel C

Regression Model: $AAR = n_0 + n_1(CFPSFR12) + e$

Month	n_1	*t*-value	*F*-ratio	Adj. R^2
1	0.1079	4.12**	17.01**	0.6401
2	0.0432	2.11*	4.47*	0.2782
3	0.0459	2.07*	4.29*	0.2679
4	0.0588	2.13*	4.52*	0.2814
5	0.0094	0.26	0.07	0.0087
6	0.1169	4.04**	16.28**	0.6294
7	0.0809	3.14**	9.87**	0.4965
8	0.0755	2.98**	8.89**	0.4673
9	0.0101	0.27	0.07	0.0090
10	-0.0207	-0.79	0.63	0.0726
11	0.0056	0.28	0.08	0.0096
12	0.0246	1.15	1.33	0.0353
13	0.0520	1.58	2.51	0.1433
14	0.0243	1.13	1.29	0.0309

AAR: Average Abnormal Returns. CAR: Cumulative Abnormal Returns.
CFPSFR12: Cash Flow-Per-Share Forecast Revision in December; N/A: Not Applicable.
Significance levels: ** 1 per cent and * 5 per cent.
t-values in Panel A and Panel B are based on one-tailed tested; Panel C is using two-tailed test.
Regression coefficients are computed across portfolios.

Finally, Table 10 shows the time series risk-adjusted abnormal returns that could be earned by investors who select stocks based on foresight knowledge of analyst consensus CFPS forecast revisions made in December. Nine out of the fourteen AARs for the top 30 per cent portfolio are positive. Of these nine, positive AARs in months 1, 3, and 4 are statistically significant at the 1 per cent level; the large returns indicate economic significance. Likewise, the AARs for the middle 40 per cent and bottom 30 per cent portfolios are mostly negative and significant, for instance in month 6, the AARs for these two portfolios are statistically significant at the 1 per cent level.

The CARs for the top 30 per cent portfolio jump from 1.9 per cent in month 2 to the largest value of 15.18 per cent in month 10. Incidentally, this 15.18 per cent is the largest CAR recorded in this study compared to the CARs in the previous tables (marginally larger than the 15.12 per cent in Table 9). Subsequent CARs are maintained at well above the 11 per cent level for the next four months. The corresponding highest negative CAR for the middle 40 per cent and bottom 30 per cent portfolios are –12.43 per cent and –23.60 per cent respectively, in month 14. Most of the CARs for the three portfolios are significant at the 1 per cent level. Note that over the fourteen-month period, investors who select stocks based on foresight information of upward-revisions in December CFPS forecasts, appear to be able to earn consistently higher CARs than those who selected stocks using the foresight information of errors in CFPS forecasts as reported in Tables 6 and 8. This finding is similar to the earlier finding on EPS forecast revisions, which may reaffirm our fifth hypothesis. Figure 8 illustrates the highly distinctive path of CARs.

An examination of the regression results reveals that all coefficients have positive signs, with the exception of that in month 10, and are mostly larger than those reported in Table 9. Note that the coefficient in month 1 is significant at the 1 per cent level. The corresponding adjusted *R*-squared value of 0.64 is reasonably large. Similarly, the coefficients are consistently larger than those reported in Tables 6 and 8.

In conclusion, the empirical evidence reaffirms our fourth hypothesis, which suggests that the ability of investors to predict correctly the revisions in consensus EPS and CFPS forecasts could bring them large risk-adjusted abnormal returns. Similarly, these results also show a clear support for the fifth hypothesis, which implies that investors who can predict correctly the upward revisions in analyst consensus forecasts of earnings (and cash flows) could earn much larger positive risk-adjusted abnormal returns than those based on accurate prediction of underestimation in analyst consensus forecasts of earnings (and cash flows).

6. Summary

This paper presents new evidence in an emerging market concerning (a) the appropriateness of using analyst consensus forecasts as market expectations, and (b) the value relevance of analyst consensus earnings forecast to investors in their stock selection process. It also explores the value relevance of another value driver namely the CFPS forecasts, for the first time, in predicting future value of the stocks. The findings are interesting. First, analyst current consensus forecasts of EPS and CFPS appear to be very much a proxy of market expectations, which are already impounded into the stock prices. Thus for investors who select stocks based on just earnings or cash flows, such information may not earn any risk-

adjusted abnormal returns. Second, investors who select stocks based on foresight information about the stock for which analysts will most likely underestimate the EPS or CFPS should earn significant abnormal returns: i.e. forecast errors have values. Lastly, investors may harvest the largest abnormal returns by selecting stocks based on their foresight knowledge of the stocks for which analysts will make the greatest upward revisions in their EPS and CFPS forecasts. These results suggest that future stock values are, to a large extent, affected by future expectations about EPS as well as CFPS. They are consistent with the predictions of contemporary theories. The novelty of this set of results is perhaps that it is probably the first comprehensive study on the effects of analyst expectations on stock valuation in an emerging market context, adding by the way usefulness of earnings revisions and cash flow forecast revisions.

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