

Do Stock Prices in China Reflect Information in Earnings Persistence?

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Abstract

The evidence on earnings persistence from the developed (non-emerging) markets indicates that the persistence of earnings is more attributed to cash flow than accrual component of earnings. However, it appears that investors in stock are fixated on earnings and fail to fully anticipate the differential information contained in the accrual and cash flow components of earnings. We extend this examination to an emerging market such as China and investigate the role of information implied in (1) earnings persistence and (2) components of earnings, in equity pricing.

Consistent with the results reported from the developed markets, our results indicate that there is a high level of earnings persistence in our sample firms, and furthermore, the earnings persistence is more attributed to cash flow than accrual component of earnings. However, our examination of whether this price relevant information is fully anticipated and utilized by investors in China produces results which are in sharp contrast to those reported from developed markets. We find that investors in China fail to anticipate the information contained in earnings persistence, and furthermore, they under-price both cash flow and accrual components of earnings.

Key Words: *Accruals, Cash Flows, Earnings persistence, Market Efficiency, China.*

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1. Introduction

The primary purpose of accrual accounting is to provide information which is not captured in the cash flow statement. Although accrual accounting system provides investors with value-relevant information it also provides managers with opportunities to exercise discretion over the financial reports. The role of accrual and cash flow in valuation has, thus become an empirical question which has motivated many research studies in the developed (non-emerging) markets. Studies such as Graham and Cottle (1962), Sloan (1996), Subramanyam and Wild (1996) and Fairfield, Whisenant and Yohn (2003) examine the role of information in earnings persistence and in accruals and cash flow component of earnings in equity pricing. The evidence, while inconclusive, suggests a market anomaly which results from fixation of investors on earnings and mispricing of earnings components. More specifically, although the evidence suggests that cash flow is more responsible for earnings persistence, investors rely more on accruals for equity pricing.

The seminal research by Ball and Brown (1968) documents the role of earnings in the capital markets by providing evidence that most of the information contained in the annual earnings is impounded in the stock prices before the earnings announcement date. However, a number of studies (for example, Hand, 1990, Sloan, 1996, and Collins, Gong and Hribar, 2003) provide evidence that investors tend not to fully recognize and use this information in equity pricing.

By using a balance sheet approach similar to Dechow, Sloan and Sweeney (1995) to estimate accruals, Sloan (1996) provides evidence that the persistence of earnings is more attributed to cash flow rather than accrual component of earnings. By employing a less restrictive model similar to the one used in Mishkin (1983), relative to the random walk model used in Ou and Penman (1989) and Bernard and Stober (1989), Sloan provides evidence of a market anomaly in that investors are shown to be fixated on the information contained in the earnings persistence and overprice accruals.

Xie (2001) partitions total accrual into discretionary and non-discretionary components and by employing a model similar to Mishkin (1983), and accrual based hedge-portfolios, finds that the market overestimates one-year-ahead persistence of abnormal accruals. She concludes that the overpricing of accruals in Sloan (1996) is due to the over-pricing of discretionary accrual. However, DeFond and Park (2001) suggest that the discretionary component of total accrual has little or no effect on permanent earnings and is likely to reverse in the future. Furthermore, Beneish and Vargus (2002) extend the examination of accrual pricing to inside trading and find that the persistence of income-increasing accruals is significantly lower in unexpected insider selling but higher in abnormal insider buying. They conclude that the accrual mispricing phenomenon observed in Sloan (1996) is attributed to opportunistic accruals manipulation. Similarly, Hanlon (2005) examines the relationship between accrual pricing and book-tax earning differences and concludes that although investors are able to correctly evaluate the book-tax difference information in accrual pricing, they constantly overestimate the accruals and underestimate the cash flow component.

While the value relevance of earnings persistence and the cash flow and accrual components of earnings have been extensively examined in the developed markets, there is a lack of evidence in emerging markets such as China where many financial reporting standards have been introduced in recent years to improve the transparency of accounting information for equity pricing. Prior studies on emerging markets (China) have focused on earnings management (Chen and Yuan, 2004, Aharony, Lee and Wong, 2000), earnings forecasts (Ang and Ma, 1999), earnings comparisons under Chinese GAAP and the IAS (Chen, Gul and Su, 1999), and earnings quality (Xiang, 1998, Chen, Sun and Wang, 2002 and Zheng, 2003). The role of earnings persistence in stock prices has, however, remained an empirical question in the Chinese market and has not been addressed.

The purpose of our study is twofold. First, we investigate persistence of earnings reported by the firms in our sample. Consistent with prior research we measure earnings persistence in the context of persistence from one period to the next. We further examine whether earnings persistence is more attributed to cash flow or accrual component of earnings. In the second part of the study, we examine if information intermediaries in China fully anticipate the information in earnings persistence, and whether investors price accrual and cash flow relative to their contributions in projection of one-year-ahead earnings.

The results indicate that there is high earnings quality (persistence) in our sample firms, and that this is more attributed to cash flow, than accrual, component of earnings. These results are consistent with those reported by studies conducted in developed markets. We, however, find that the information in earnings persistence is not fully anticipated by investors in China. Furthermore, in sharp contrast to the

evidence from the developed markets, our results suggest that both components of earnings are significantly under priced. The under-pricing of cash flow, however, appears to be more than the under-pricing of accrual.

The remainder of this paper is organized as follows. Section II describes the institutional background of the study. Sections III and IV describe the data and the methodology, respectively. Section V reports results and Section VI concludes the study.

II. Institutional background

Several fundamental changes in financial reporting system in China occurred after the establishment of the Shanghai Stock Exchange and Shenzhen Stock Exchange in the early 1990s. In response to the rapid growth of trade on the stock markets, the Chinese government issued *Accounting Regulation for Experimental Listed Companies* in 1992, under which the companies that issued shares to foreign investors (B shares), were required to restate their earnings according to the International Accounting Standards (IAS). Companies with shares issued to only domestic investors (A shares) were required to comply with the IAS adapted for Chinese institutional setting¹. In spite of the accounting harmonization efforts, several Chinese accounting practices remained at variance with the IAS (Chen, Sun and Wang, 2002). Later in 1998, a new *Accounting Regulation for Listed Companies* was issued to remove discrepancies between Chinese GAAPs and IAS (Chen, *et al.* 1999).

The two stock exchanges in China have a total market capitalization of RMB 4270 billion (equivalent to the US\$527 billion) and 1215 listed stock, which makes China the third largest capital market, after Japan and Hong Kong, in Asia. Wei

¹ Sami and Zhou (2004) provide an overview of A and B-share trading from 1993 to 2000.

(1996) argues that the low quality of accounting information in China is due to the lack of independence of auditors. Xiang (1998) states that regardless of the alignment of the Chinese GAAPs with their counterpart IAS, the lack of independence and professional knowledge in auditing results in low earnings quality. Although the evidence supports the low quality of earnings in Chinese firms, Chen (2004) finds a significant and positive price reaction to earnings announcement by Chinese firms, indicating that earnings are informative and are instantaneously impounded in the stock prices.

III. Data

We use industrial firms listed on Shanghai and Shenzhen Stock Exchanges for which we can obtain accounting and price data from DATASTREAM. Consistent with prior research we exclude financial firms and utilities from the sample. For each firm we use all available time-series data prior to 2004. The data includes accounting variables from annual reports and market-based variables. The sample firms predominantly have a 31st December fiscal-year-end. Consistent with Beaver and McNichols (2001) we exclude firms with the extreme highest (greater than 99.5%) and lowest (less than 0.5%) data. We obtain industry information from Level 6 Industrial Classifications in DATASTREAM. Sample firms belong to 91 industries with some industries having as few as one firm, and many industries appear to overlap. To allow more data points on each industry so that industry-level regressions can be undertaken we combine similar industries and arrive at 17 broad economic sectors. Financial firms (143) that are excluded from the sample consist of banks, investment banks, investment companies, consumer finance, mortgage finance, life assurance, re-insurance firms and other financial firms as classified in

DATASTREAM. Overall, the data ranges from 3170 to 3922 firm years for various tests that we undertake.

IV. Methodology

One measure of earnings quality is the persistence of earnings which provides information about the level of transitory earnings and the noise embedded in reported earnings. The lower the transitory component of earnings; the higher is the earnings persistence and higher quality of earnings. Therefore, earnings persistence which provides information on the level of one-year-ahead earnings is regarded as value relevant information and rational investors are expected to fully utilize this information for equity pricing. The failure to fully anticipate this information will lead to securities mispricing and an opportunity to earn abnormal stock returns in the market. We first examine the persistence of earnings for our sample firms. If the newly introduced accounting standards by Chinese regulatory agencies have been effective in the context of improving the quality of firms' financial reports, one would expect to observe significant earnings persistence for the firms.

Following prior research (Sloan 1996, and Freeman, Ohlson and Penman, 1982) we employ the following model to measure earnings persistence:

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + v_{t+1} \tag{1}$$

Where $Earnings_{t+1}$ is the lead earnings performance, defined as operating income scaled by total assets (i.e., accounting rate of return), $Earnings_t$ is current earnings performance, α_0 and α_1 are coefficients of the Ordinary Least Square (OLS) regression model, and v_{t+1} is the error term. Equation (1) measures the persistence of earnings by

testing α_1 . Given the competition in the market, the excess profits (higher rate of accounting return) experienced by firms will tend to decline toward the mean (mean reverting property) over time and therefore the coefficient on accounting rate of return (α_1) is expected to be less than unity (Beaver 1970, and Freeman *et al.*, 1982).

Prior studies show that managers use flexibilities inherent in the accrual accounting system to report a desired level of earnings. Financial statement analysis textbooks recommend steps that can be taken to mitigate the effects of accounting flexibilities exercised by management. Larger accruals are perceived as containing more noise, hence less quality. Indeed, the evidence suggests that firms with large accruals tend to use reputable auditors as a proprietary signal to the market about the quality of their earnings. Cash flow component of earnings, on the other hand, is free from this bias and is expected to have more value relevance for equity pricing. Because earnings consist of accrual and cash flow, by using only earnings variable in equation (1) we constrain the coefficients on both accrual and cash flow to be equal. Equation (2) removes the equality constraint and allows the coefficient of accrual and cash flow to vary. The equation tests whether earnings persistence is more attributable to accruals or cash flows component of earnings:

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 CashFlows_t + v_{t+1} \quad (2)$$

Where $Accruals_t$ is current accruals, $CashFlows_t$ is current operating cash flows, and γ_0 , γ_1 and γ_2 are the estimates of coefficients from the OLS regression model.

Consistent with Sloan (1996) we determine accruals using balance sheet items as follows²:

² Given the lack of cash flow statements data for some firms, the decision to define accruals based on cash flows would have resulted in loss of many observations.

$$\text{Accruals} = (\Delta\text{CA} - \Delta\text{Cash}) - (\Delta\text{CL} - \Delta\text{STD} - \Delta\text{TP}) - \text{Dep} \quad (2.1)$$

where ΔCA is change in current assets, ΔCash is change in cash/cash equivalent, ΔCL is change in current liability, ΔSTD is change in short-term debt included in current liabilities, ΔTP is change in income taxes payable, and Dep is depreciation and amortization expenses. Short-term debt is excluded from current liabilities because it relates to financing activities, as opposed to operating activities. The definition of income from operating activities excludes tax expense, thus taxes payable are excluded from the definition of accruals. The cash flow component of earnings is measured as the difference between earnings and the accrual component of earnings. Earnings, measured as net operating income before extraordinary items, and its components (cash flow and accrual) are standardized by firm size to facilitate cross-sectional and temporal comparisons. Firm size is measured as the average of beginning and end of year book values of assets.

The coefficients of accruals (γ_1) and cash flows (γ_2) indicate the magnitude of earnings persistence attributed to these two components. If the persistence of earnings is significantly more attributed to cash flow component, than to accrual, then one would expect that investors would rely more heavily on cash flow in predicting the level of future earnings, and thus in equity pricing.

We use Mishkin (1982) and Sloan (1996) models to investigate whether investors in China use the information in earnings persistence and earnings components to price stock. Theoretically, participants in an efficient market would be unable to form trading strategies to earn abnormal stock returns. Assuming that information in accounting earnings is price relevant; we can expect the following to hold:

$$r_{t+1} - r_{t+1} / \phi_t = \beta(X_{t+1} - X_{t+1}^e) + \varepsilon_{t+1} \quad (3)$$

where r_{t+1} is the actual return³ for holding a security during $t+1$, r_{t+1} / ϕ_t is the expectation of the return for holding a security during $t+1$ given the set of information ϕ in time t , X_{t+1} is a stock price value relevant accounting variable (earnings in this study), X_{t+1}^e is the rational forecast of X_{t+1} in time t , and β is a valuation multiplier (earnings response coefficient).

Assuming that variable X in equation (3) represents earnings performance, the equation implies that for the condition of market efficiency to be met, a significant persistence between performance of the current and one-year ahead earnings must exist. In such a case, $X_{t+1} = X_{t+1}^e$ and equation (3) collapses to zero and expressed as follows:

$$r_{t+1} - r_{t+1} / \phi_t = 0, \quad (3.1)$$

Equation (3.1) implies that, given market efficiency, where there is significant earnings persistence, investors correctly anticipate the value relevance of earnings persistence and price stock correctly so no abnormality could occur in the market.

We restate the above theoretical models in the form of the following equations to test whether financial analysts in China use (1) information in earnings persistence, and (2) information in differential effects of the cash flow and accrual components on earnings.

³ To measure the holding returns, we use stock prices four months after the end of a firm's fiscal-year-end. This allows all relevant information to be impounded in the stock prices (Alford, Jones, and Zmijewski, 1994). We use standard market model to estimate beta for each annual portfolio (decile rankings) which is formed based on the magnitude of accruals.

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + v_{t+1}$$

$$r_{t+1} - r_{t+1} / \phi_t = \beta(Earnings_{t+1} - \alpha_0 + \alpha_1^* Earnings_t) + \varepsilon_{t+1}$$

(4)

Note that the independent variable in brackets in the Generalized Ordinary Least Square equation (4) represents abnormal earnings which is determined by estimating equation (1) and re-arranging it to obtain v_{t+1} . If investors fully anticipate the average information in earnings persistence (i.e., $a_1 = a_1^*$) then market efficiency for the persistence of earnings is validated. That is, the estimate of α_1 from forecasting equation (1) and the estimate of α_1^* from estimating a regression of stock prices on earnings will not be different, indicating that the information in the earnings persistence is utilized by the investors promptly, rather than a delay until the actual future earnings become available. The same hypothesis can be tested for the components of earnings using equation (5):

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 CashFlows_t + v_{t+1}$$

$$r_{t+1} - r_{t+1} / \phi_t = \beta(Earnings_{t+1} - \gamma_0 - \gamma_1^* Accruals_t - \gamma_2^* CashFlow_t) + \varepsilon_{t+1}$$

(5)

Again, if the stock prices correctly anticipate the average persistence of the components of earnings we would expect $\gamma_1 = \gamma_1^*$ and $\gamma_2 = \gamma_2^*$. That is, no securities mispricing will occur and therefore no opportunity will be available for earning abnormal stock returns.

V. Empirical Results

Table 1 reports descriptive statistics for selected characteristics of 4370 firm-year observations. Firms are assigned to ten portfolios formed annually based on the magnitude of accruals so that portfolio 1 includes the smallest accruals and portfolio 10 includes the largest accruals.

INSERT TABLE 1 ABOUT HERE

In panel A, Table 1, the mean (median) total accruals for portfolio 1 is -0.26 (-0.20), and the mean (median) for portfolio 10 is 0.29 (0.22). Accruals portfolios are from smallest to largest by construction. Cash flows corresponding to the accruals portfolios decrease monotonically with the mean (median) of 0.19 (0.20) for portfolio 1 and -0.25 (-0.19) for portfolio 10. Consistent with prior research (Sloan, 1996), cash flows are defined as the difference between earnings and accruals. Hence, firms with lowest (highest) accruals have the highest (lowest) cash flows. The mean (median) earnings for portfolio 1 is -0.07 (-0.01) and for portfolio 10 is 0.04 (0.04). The earnings pattern across portfolios is consistent with the increasing pattern of accruals. It appears that portfolios with lowest (highest) accruals have lowest (highest) earnings. The statistics also indicate that a significant portion of firms have operated profitably during 1989–2003.

Panel B, Table 1, reports descriptive statistics on a risk proxy (beta) for the ten portfolios formed annually based on the magnitude of accruals. On the whole, beta has an increasing trend from portfolio 1 to portfolio 4 which decreases dramatically to portfolio 5 and after that follows an increasing trend. The mean (median) beta for the lowest accruals portfolio is 0.88 (0.85), and for the largest accruals portfolio is 1.12

(1.71). The overall trend of beta is increasing and indicates that portfolios with lowest (highest) accruals have lowest (highest) beta.

Panel C, Table 1, reports descriptive statistics on the change in non-cash current assets, (minus)⁴ the change in current liabilities and (minus) depreciation. The pattern of the change in current assets is similar to that of accruals indicating that firms with smaller accruals have smaller current assets. The mean (median) of the change in current assets is -0.16 (-0.14) for portfolio 1 and is 0.25 (0.22) for portfolio 10. The pattern of the change in current liabilities is also increasing with the mean (median) of -0.10 (-0.06) for portfolio 1 and 0.04 (0.01) for portfolio 10. The pattern of depreciation is random with a mean (median) of -0.03 (-0.00) in portfolio 1 and -0.00 (-0.00) in portfolio 10.

Table 2 reports the results from ordinary least square (OLS) regression of future earnings on current earnings for 3922 firm-years during 1989 to 2003.

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Panel A reports the results for the pooled sample as well as the results for 17 industry sectors. The significant earnings persistence (t -statistic = 35.43) rejects the null hypothesis, at the 1% level, that earnings performance for Chinese-listed firms is transitory. The results suggest that in China, the regulatory changes in financial reporting standards and the efforts to make the reports more transparent have, indeed, led to the improved quality of earnings/financial statements. Since earnings are defined as operating income scaled by total assets, α_1 measures the persistence of

⁴ These signs are consistent with the presentation style in prior research, and they correspond to the signs in equation 2.1. However, the conclusion from the analysis would not change in the absence of references to the signs.

accounting rate of return. It is well established (Beaver 1970, and Freeman, Ohlson, and Penman, 1982) that accounting rate of return is mean reverting, implying that α_1 is less than unity. The results for the pooled sample ($\alpha_1 = 0.5107$) confirm the results from prior research that earnings performance is mean reverting.

Lev (1983) documents that the time-series properties of earnings differ according to industry characteristics, which in turn may bias the results from pooled regressions. It is suggested that the use of the industry-level regressions can mitigate the potential bias which may arise from using pooled data. The results from the industry-level regressions are also reported in the right-hand-side of Panel A, Table 2. The industry-level regressions produce a mean value (α_1) of 0.4967, compared to the mean value of 0.5107 from the pooled regression, indicating that the mean reverting property of the accounting rate of return still holds after controlling for the potential industry effects. The inter-quartile range is 0.3855 to 0.6247 with a median value of 0.4607. The t -statistic (35.43) shows that α_1 is still significant at the 1% level, indicating support for the high persistence of earnings for the sample firms.

To investigate the robustness of the results and to ensure that the results do not suffer from the effects of outlying observations, the regressions are also estimated using the decile rankings of the variables instead of their actual values. The decile ranks are assigned annually for all the years available for each firm in the sample and these range from 1 (lowest values) to 10 (highest values).

The results from estimating pooled and decile rankings regressions are reported in Panel B, Table 2. The pooled regression results are consistent with the results reported in Panel A. They indicate that there is a significant relation between current and one-year-ahead earnings performance. The coefficient (α_1) is 0.7385 which is still less than unity and indicates significant (t -statistic = 69.04) earnings

persistence at the 1% level. The results from decile rankings regressions at the industry level also imply significant earnings persistence. The mean value of α_1 is 0.7304 and the t -statistic of 38.18 is significant at the 1% level, with the inter-quartile range of 0.6747 to 0.7872, and a median value of 0.7319. On the whole, the results reported in Table 2 are consistent with the evidence from developed markets and support the notion that earnings figure reported by firms in China are of high quality.

A problem with the regression of future earnings on current earnings is that it constrains the coefficients on the components of earnings (accrual and cash flow) to be equal. To relax this assumption, we investigate whether the persistence of earnings performance is attributed more to accrual or to cash flow component of earnings.

Table 3 reports the results from regressions of future earnings performance on accrual and cash flow components of current earnings performance for 3222 firm-years from 1989 to 2003.

INSERT TABLE 3 ABOUT HERE

Panel A, Table 3, reports the results from estimation of pooled regression and industry level regressions. The pooled results indicate that the coefficient on the accruals component of current earnings performance (γ_1) is 0.4888 (t -statistic = 29.64) and the coefficient on the cash flow component of current earnings performance (γ_2) is 0.5002 (t -statistic = 29.98). Both coefficients, which are significant at the 1% level, suggest that the future earnings performance is equally attributed to both components of current earnings performance. The results from the industry level regressions indicate a mean value of 0.4701 for the coefficient on accrual (γ_1) which is significant at the 1% level (t -statistic = 5.9300). The mean

value of 0.4761 on the coefficient for the cash flow component of earnings (γ_2) is also significant at the 1% level (t -statistic = 6.3800), confirming the results from the pooled regression model. The results indicate that the future earnings performance is attributed equally to both components of current earnings performance. Under the pooled results the coefficient on cash flows is approximately 2% higher than the coefficient on the accrual. For the industry-level regression results, the coefficient on cash flow is the same as the coefficient on accruals. The result from the two-sample test of the accruals and cash flow coefficients indicates that the coefficients are not significantly different from each other. These results, which are in contrast to prior research, indicate that the cash flow component of current earnings is not necessarily a better indicator of the future earnings performance. Although this result is inconsistent with that reported from the developed markets, a more consistent result emerges after controlling for outlying observations using regression of decile rankings.

In Panel B, Table 3, the results of regressions using decile rankings are reported. The pooled results imply that both the accruals ($\gamma_1 = 0.7388$) and the cash flows ($\gamma_2 = 0.8373$) are significant at the 1% level indicating that future earnings performance is significantly attributed to both components. Using the pooled sample the coefficient on cash flow is approximately 14% higher than the coefficient on accrual. Similar results are reported for the decile rankings after controlling for the potential variation due to industry effects. Again, both components of current earnings performance ($\gamma_1 = 0.7388$ and $\gamma_2 = 0.8373$) are significant at the 1% level, with cash flow coefficient being approximately 11.3% higher than the coefficient on accrual. The result from the two-sample test of accrual and cash flow coefficients indicates that the earnings persistence is significantly more attributed to the cash flow

component (t -statistic = 32.53, p -value = 0.001). On the whole, the evidence that we find on earnings persistence and the fact that persistence is more attributed to cash flow is similar to the evidence reported in developed markets.

Table 4, reports the results of the non-linear generalized least squares regression of future abnormal returns on the current abnormal earnings for 3687 firm-years from 1989 to 2003.

INSERT TABLE 4 ABOUT HERE

Panel A, Table 4, reports the results using actual values of financial statement variables while Panel B shows the results using decile rankings of variables to control for outlying observations. The coefficient in forecasting equation (a_1) is 0.5107 which is the same as the coefficient reported in Table 2, and coefficient α_1^* is 0.1857 which is approximately one-third of its counterpart in the forecasting equation. In the absence of controlling for outlying observations the likelihood ratio statistic of 7.38, which is significant at the 1% level, indicates that investors in China fail to anticipate fully the relevance of earnings persistence for stock prices. This result, which indicates an opportunity for earning abnormal stock return, rejects the null hypothesis of market efficiency in China. Similar results are reported in Panel B, Table 4, after using regressions of decile rankings of financial statement variables to control for outlying observations (likelihood ratio statistic = 49.74).

Table 5 reports the results of the non-linear generalized least squares regression of future abnormal returns on the accrual and cash flow components of current earnings performance for 3170 firm-years from 1989 to 2003.

INSERT TABLE 5 ABOUT HERE

In Panel A, a comparison of the coefficient of 0.4888 for γ_1 (see also Table 3) and the coefficient of 0.1942 for γ_1^* indicates that investors in China significantly under-price the information in accrual components of earnings. Furthermore, a comparison of the coefficient of 0.5002 for γ_2 (see also Table 3) and the coefficient of 0.2544 for γ_2^* provides evidence that investors do not fully anticipate the information in cash flows either. Although both components appear to be underpriced, the under-pricing of cash flow is larger than that of accrual.

In Panel B, we use the decile rankings regressions and find similar results of under-pricing for both components of earnings, with cash flow being more underpriced. It appears that although the results from this part of study are in contrast to those reported from the developed markets, the aspect of the larger under-pricing of cash flow is, to some extent, consistent with the results from prior research. On the whole, given earnings persistence information is not fully digested by investors, one can expect that the components of earnings are also not priced correctly.

VI. Conclusion

This study examines (1) persistence of earnings performance, (2) the role of earnings components in the persistence of earnings, and (3) the sophistication of investors in using the earnings persistence information in equity pricing. Consistent with the results reported from the developed markets, our results indicate that there is a high level of earnings persistence in our sample firms, and furthermore, the earnings persistence is more attributed to cash flow, than accrual, component of earnings. This result implies that firms in China, on average, report high quality earnings figures.

However, our examination of whether this price relevant information is fully anticipated and utilized by the Chinese investors produces results which are in sharp contrast to those reported from developed markets. We find that the investors in China fail to fully utilize the information in earnings persistence, and furthermore, they under-price both cash flow and accrual components of earnings. Although both components are underpriced, it appears that cash flow has more underpricing than accruals.

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TABLE 1
Mean (median) Values of Selected Characteristics for ten Portfolios of Firms Formed Annually
by Assigning 4370 Firm-years to Deciles Based on the Magnitude of Accruals from 1989 to 2003
Portfolio Accrual Ranking

	Lowest	2	3	4	5	6	7	8	9	Highest
<i>Panel A: Components of Earnings</i>										
Accruals:										
Mean	-0.26	-0.10	-0.05	-0.02	0.00	0.02	0.04	0.07	0.12	0.29
Median	-0.20	-0.10	-0.05	-0.02	0.00	0.02	0.04	0.07	0.11	0.22
Cash Flows:										
Mean	0.19	0.11	.07	0.05	0.03	0.01	-0.01	-0.03	-0.08	-0.25
Median	0.20	0.12	0.08	0.06	0.03	0.02	0.00	-0.03	-0.08	-0.19
Earnings:										
Mean	-0.07	0.01	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.04
Median	-0.01	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04
<i>Panel B: Risk Proxy</i>										
Portfolio Beta:										
Mean	0.88	0.90	1.01	1.30	0.65	0.76	0.65	0.78	0.96	1.12
Median	0.85	1.04	1.20	1.66	0.88	1.13	0.47	1.18	1.22	1.71
<i>Panel C: Components of Accruals</i>										
Current Assets:										
Mean	-0.16	-0.06	-0.02	0.01	0.02	0.03	0.05	0.08	0.13	0.25
Median	-0.14	-0.06	-0.02	0.00	0.02	0.03	0.05	0.07	0.12	0.22
Current Liabilities:										
Mean	-0.10	-0.04	-0.03	-0.03	-0.01	-0.01	-0.01	0.00	-0.01	0.04
Median	-0.06	-0.03	-0.03	-0.02	-0.01	0.00	0.00	0.00	0.00	0.01
Depreciation Expense:										
Mean	-0.03	-0.00	-0.03	-0.03	-0.00	-0.06	-0.01	-0.03	-0.00	-0.00
Median	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.01	-0.00	-0.00	-0.00

The firm characteristics are computed as follows:

Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets.

Earnings = income from continuing operations divided by average total assets.

Cash flows = the difference between earnings and accruals (as defined above).

Portfolio beta = the beta coefficient of a time-series regression of the portfolio stock return on the market return.

Size = the natural log of the market value of common equity (in millions of dollars) measured at fiscal year-end.

Current assets = the change in non-cash current assets divided by average total assets.

Current liabilities = (minus) the change in current liabilities (exclusive of short-term debt and taxes payable) divided by average total assets.

Depreciation = (minus) depreciation expense divided by average total assets.

TABLE 2
Results from OLS Regressions of Future Earnings Performance on
Current Earnings Performance for 3922 Firm-years from 1989 to 2003

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + v_{t+1}$$

	<i>Pooled</i>	<i>Industry Level</i>			
	<i>Mean</i> (<i>t</i> -statistic)	<i>Mean</i> (<i>t</i> -statistic)	<i>Q1</i>	<i>Median</i>	<i>Q3</i>
<i>Panel A: Regressions using actual values</i>					
α_0	0.0064 (6.38) ^{***}	0.0076 (3.67) ^{***}	0.0027	0.0041	0.0107
α_1	0.5107 (35.43) ^{***}	0.4967 (12.34) ^{***}	0.3855	0.4607	0.6247
<i>Panel B: Regressions using decile rankings</i>					
α_0	1.3417 (20.22) ^{***}	1.4160 (16.03) ^{***}	1.2339	1.3417	1.6018
α_1	0.7385 (69.04) ^{***}	0.7304 (38.18) ^{***}	0.6747	0.7319	0.7872

*** Significant at the 1% level using a two-tailed test.

Where $Earnings_{t+1}$ is lead earnings performance, $Earnings_t$ is current earnings performance, and α_0 and α_1 are the estimates of coefficients from the OLS regression model, and v is the error term.
Earnings = income from continuing operations divided by average total assets.

TABLE 3
Results from OLS Regressions of Future Earnings Performance on
the Accrual and Cash Flow Components of Current Earnings Performance for
3222 Firm-years from 1989 to 2003

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 CashFlow_t + v_{t+1}$$

	<i>Pooled</i>	<i>Industry Level</i>			
	<i>Mean</i> (<i>t</i> -statistic)	<i>Mean</i> (<i>t</i> -statistic)	<i>Q1</i>	<i>Median</i>	<i>Q3</i>
<i>Panel A: Regressions using actual values</i>					
γ_0	0.0055 (4.95) ^{***}	0.0067 (2.79) ^{***}	0.0011	0.0031	0.0086
γ_1	0.4888 (29.64) ^{***}	0.4701 (10.77) ^{***}	0.3620	0.4223	0.6071
γ_2	0.5002 (29.98) ^{***}	0.4761 (11.55) ^{***}	0.3436	0.4333	0.5529
<i>t</i> -statistic of $\gamma_1 = \gamma_2$: 1.82					
<i>Panel B: Regressions using decile rankings</i>					
		<i>Mean</i>	<i>Q1</i>	<i>Median</i>	<i>Q3</i>
γ_0	-1.7190 (-6.54) ^{***}	-3.2053 (-4.76) ^{***}	-5.2010	-2.9120	-1.2471
γ_1	0.7388 (28.11) ^{***}	0.7189 (11.82) ^{***}	0.5327	0.6629	0.9009
γ_2	0.8373 (31.85) ^{***}	0.8227 (12.26) ^{***}	0.6085	0.7685	1.0682
<i>t</i> -statistic of $\gamma_1 = \gamma_2$: 32.53 ^{***}					

*** Significant at the 1% level using a two-tailed test.

Where *Accruals_t* is current accruals, *CashFlows_t* is current cash flows, and α_0 , α_1 and α_2 are the estimates of coefficients from the OLS regression model.

Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets.

Earnings = income from continuing operations divided by average total assets.

Cash flows = the difference between earnings and accruals (as defined above).

TABLE 4

Results from Nonlinear Generalized Least Squares Estimation of the Stock Price Reaction to Information in Current Earnings about Future Earnings for 3687 Firm-years from 1989 to 2003

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + v_{t+1}$$

$$r_{t+1} - r_{t+1} / \phi_t = \beta(Earnings_{t+1} - \alpha_0 - \alpha_1^* Earnings_t) + \varepsilon_{t+1}$$

<i>Parameter</i>	<i>Estimate</i>	<i>Standard Error</i>
<i>Panel A: Regressions using actual values</i>		
α_1	0.5107	0.0144
α_1^*	0.1857	0.0650
β	0.1565	0.1081
Test of market efficiency:	$\alpha_1 = \alpha_1^*$	
Likelihood ratio statistic:	7.38***	
<i>Panel B: Regressions using decile rankings</i>		
α_1	0.7385	0.0107
α_1^*	0.0687	0.0166
β	0.1130	0.0398
Test of market efficiency:	$\alpha_1 = \alpha_1^*$	
Likelihood ratio statistic:	49.74***	

*** Significant at the 1% level using a two-tailed test.

Where $AbnormalReturn_{t+1}$ is the lead abnormal stock return, and β is earnings response coefficient, and ε is the error term from the non-linear generalized least square.

Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense, all divided by average total assets.

Earnings = income from continuing operations divided by average total assets.

Cash flows = the difference between earnings and accruals (as defined above).

TABLE 5
Results from Non-linear Generalized Least Squares Estimation of the Stock Price Reaction to Information in the Accruals and Cash Flow Components of Current Earnings about Future Earnings for 3170 Firm-years from 1989 to 2003

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 CashFlow_t + v_{t+1}$$

$$r_{t+1} - r_{t+1} / \phi_t = \beta(Earnings_{t+1} - \gamma_0 - \gamma_1^* Accruals_t - \gamma_2^* CashFlow_t) + \varepsilon_{t+1}$$

<i>Parameter</i>	<i>Estimate</i>	<i>Standard Error</i>
<i>Panel A: Regressions using actual values</i>		
γ_1	0.4888	0.0165
γ_1^*	0.1942	0.0654
γ_2	0.5002	0.0167
γ_2^*	0.2544	0.0667
β	0.0952	0.0154
Test of market efficiency:	$\gamma_1 = \gamma_1^*$	$\gamma_2 = \gamma_2^*$
Likelihood ratio statistic:	1.14	7.44 ^{***}
<i>Panel B: Regressions using decile rankings</i>		
<i>Parameter</i>	<i>Estimate</i>	<i>Standard Error</i>
γ_1	0.7388	0.0263
γ_1^*	0.0779	0.0307
γ_2	0.8373	0.0263
γ_2^*	0.1042	0.0306
β	0.1108	0.0674
Test of market efficiency:	$\gamma_1 = \gamma_1^*$	$\gamma_2 = \gamma_2^*$
Likelihood ratio statistic:	46.55 ^{***}	52.91 ^{***}

*** Significant at the 1% level using a two-tailed test.

The variables are defined as:

Accruals = the change in non-cash current assets, less the change in current liabilities (exclusive of short-term debt and taxes payable), less depreciation expense. All scaled by average total assets.

Earnings = income from continuing operations divided by average total assets.

Cash flows = earnings – accruals (as defined above).

Abnormal returns are estimated by taking the raw buy-hold return, inclusive of dividends and any liquidating distributions and subtracting the market adjusted returns.