Do Analysts Correct the Market's Mispricing of Accruals?

Yong Keun Yoo

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ABSTRACT

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Elgers, Lo and Pfeiffer (2003) argue that the bias of analysts' earnings forecasts is significantly less than the bias of market's earnings expectations in interpreting accruals. Their argument implies that analysts' earnings forecasts could potentially mitigate the market's mispricing of accruals by guiding investors to reduce their earnings prediction errors arising from the misinterpretation of accruals. However, their results call for further investigation owing to the following two questionable research design choices: 1) estimating the magnitude of the market's bias by using the framework of the Mishkin test based on the earnings response coefficient model, which is vulnerable to the well-known omitted-variable problem; 2) comparing only the bias of one-year-ahead earnings expectations, while ignoring the bias of earnings expectations for longer periods. By taking an alternative approach to address these issues, I find that analysts' earnings forecasts are more biased than stock prices in interpreting accruals. Thus, contrary to Elgers et al. (2003), I conclude that analysts' earnings forecasts do not mitigate the market's mispricing of accruals.

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To My Parents and Family

1. Introduction

This study examines whether analysts' earnings forecasts mitigate the market's mispricing of accruals. Since Sloan (1996), accounting research has concluded that investors fail to fully consider the lower persistence of accruals when they are predicting future earnings. The resulting earnings prediction errors lead to predictable stock returns. This empirical regularity is named the "accrual anomaly". The accrual anomaly is considered one of the most prominent pieces of evidence of market inefficiency documented in accounting literature. Given the market's mispricing of accruals, it is of fundamental importance to evaluate which factors mitigate or exacerbate the market's mispricing. This is the case because the stock price's deviation from the intrinsic value is a direct challenge to the economically efficient allocation of funds among competing stocks.

This study's main motivation for evaluating sell-side analysts is that they are the most prominent information intermediaries in the capital market. They receive and process information from diverse sources, communicating it to investors in such concise forms as earnings forecasts and stock recommendations. In particular, analysts' earnings forecasts can have a large influence upon the market's earnings expectations by serving as a publicly available and easily accessible benchmark. Thus, it is worthwhile to examine whether analysts' earnings forecasts either facilitate or impede more accurate pricing of accruals, doing so by influencing the formation of the market's earnings expectations.[1]

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[1] For example, Beneish and Vargus (2002), Chen and Cheng (2002), and Pincus, Rajgopal and Venkatachalam (2003) suggest that the underlying reason for the accrual anomaly is the information asymmetry between firm managers and investors. If analysts incorporated the private signals about future earnings into their earnings forecasts, analysts' earnings forecasts would be able to mitigate the accrual

Elgers, Lo and Pfeiffer (2003) conclude that the bias of market's earnings expectations in interpreting accruals significantly exceeds the bias of analysts' earnings forecasts. They suggest that investors forego the opportunity to mitigate their mispricing of accruals by fixating on analysts' earnings forecasts, which are relatively less biased in interpreting accruals. Such an argument implies that analysts' earnings forecasts have a potential to mitigate the market's mispricing of accruals by guiding investors to reduce their earnings prediction errors arising out of the misinterpretation of accruals.

However, the study of Elgers et al. (2003) suffers from some misspecification problems. First, Elgers et al. (2003) compare the proxy of the unobservable market's earnings expectations with analysts' earnings forecasts. They estimate the market's weightings of current accruals for the prediction of one-year-ahead earnings by regressing one-year-ahead stock returns on one-year-ahead unexpected earnings within the framework of the Mishkin test (Mishkin, 1983), which is based on the earnings response coefficient model (hereafter, the ERC model). They, then, show that the market's over-weightings of accruals significantly exceed the analysts' over-weightings. However, the well-known omitted-variable problem of the ERC model causes them to overestimate the market's weightings of accruals.[2] When the accrual anomaly holds, accruals are negatively correlated with the market's revisions of earnings expectations beyond one year ahead. Since the ERC model excludes the market's revisions of earnings

anomaly by reducing the information asymmetry between firm managers and investors. On the contrary, if analysts simply repackaged and re-transmitted the information already contained in stock prices, they would be unable to mitigate the information asymmetry between firm managers and investors, and thus not the accrual anomaly either.

[2] Liu and Thomas (2000) suggest that the inferences drawn from the magnitudes of the coefficient estimates in the ERC model need to be reconsidered.

expectations beyond one year ahead, the estimated weightings of accruals are inevitably inflated.[3]

Second, Elgers et al. (2003) show only that the market's one-year-ahead earnings expectations are more biased than analysts' one-year-ahead earnings forecasts. However, such a result does not necessarily mean that the market's earnings expectations beyond one year ahead are more biased than analysts' corresponding earnings forecasts. Since firm valuations are significantly affected by both one-year-ahead and longer-term earnings expectations, the relative bias of the market's earnings expectations beyond one year ahead to the analysts' corresponding earnings forecasts should have been examined.

Accordingly, the results of Elgers et al. (2003) call for further investigation. As an alternative approach to address these issues, I compare the bias of stock prices with the bias of intrinsic value estimates based on analysts' earnings forecasts in valuing accruals. If the market's earnings expectations are more (less) biased than the analysts' earnings forecasts, the stock prices should be more (less) biased than the intrinsic value estimates based on the analysts' earnings forecasts. Since this approach does not require me to estimate the magnitude of the market's bias by using the problematic ERC model, I can detour around the omitted-variable problem within the specification of Elgers et al. (2003). Another strength of this approach is that it allows me to incorporate analysts' earnings forecasts beyond one year ahead into the estimation of the intrinsic values. By comparing the bias of stock prices with the bias of intrinsic value estimates, I can

[3] The reason for this is that Elgers et al. (2003) define the unexpected earnings within the ERC model as the one-year-ahead actual earnings minus the corresponding expected earnings in the form of the weighted average of current accruals and cashflows.

examine the relative bias of the market's earnings expectations beyond one year ahead to the bias of the analysts' corresponding earnings forecasts.

By taking this alternative approach, I find that the intrinsic value estimates based on the analysts' earnings forecasts are more biased than the stock prices are in valuing accruals. Further analysis shows that analysts' adjustments of their bias are more sluggish than market's adjustments by about three months. Contrary to Elgers et al. (2003), this result indicates that analysts overreact to current accruals to a greater degree than the market does. Thus, if investors were to fixate naively on analysts' earnings forecasts as their earnings expectations, the market's mispricing of accruals would be exacerbated rather than mitigated. This result implies that analysts' earnings forecasts do not function as a parsimonious signal for the market's mispricing of accruals.

This result seems to be more reasonable when the following factors are considered. First, while investors invest their own money in the stocks, analysts are affected only indirectly by the extent to which they reflect the information content of accruals through a complex compensation structure (Liu, 2003). Furthermore, it may not be in analysts' best interests to mitigate their bias when they are interpreting accruals. Sell-side analysts are generally employed by brokerage and investment banking firms. Thus, they have an economic incentive to promote the purchase of stocks, rather than to produce optimal earnings forecasts (Schipper, 1991; Easterwood and Nutt, 1999). Second, the timeliness of analysts' earnings forecasts determines their usefulness as a parsimonious signal for the market's mispricing of accruals. However, analysts tend not to revise their earnings forecasts so quickly (Trueman, 1990).[4]

[4] Trueman (1990) suggests that analysts may be reluctant to fully revise their earnings forecasts upon the receipt of new information, because such revision sends a negative signal as to the accuracy of their prior

This study adds to the growing body of evidence as to the inefficiency of analysts' earnings forecasts by showing that analysts' earnings forecasts cannot indicate even the marginal traders' mispricing of accruals. Although Bradshaw, Richardson and Sloan (2001) already show that analysts fail to fully incorporate into their earnings forecasts the lower persistence of accruals, they do not assess the relative bias of analysts' earnings forecasts to the bias of stock prices in interpreting accruals. Thus, their study doesn't make it clear whether investors mitigate or exacerbate their mispricing of accruals when fixating on analysts' earnings forecasts.[5] In addition, this study contributes to prior research regarding the source of the accrual anomaly by implying that the bias of analysts' earnings forecasts can fully explain the extent of the market's mispricing of accruals. In other words, the accrual anomaly is not due to the investors' failure to impound the value relevant information already contained in the analysts' earnings forecasts, which is contradictory to Elgers et al. (2003). Furthermore, this study suggests that researchers should control for the differing extents to which analysts or investors reflect the lower persistence of accruals when using analysts' earnings forecasts to approximate the market's earnings expectations. Lastly, this study cautions researchers as to the use of the Mishkin test based on the traditional ERC model: It should be used only for the "directional" test of market efficiency, not to draw any inferences as to the "magnitude" of market inefficiency. In addition, this study enriches the research

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information and thus adversely influences the investors' perceptions of their ability to collect accurate information in a timely manner.

[5] For example, if analysts' earnings forecasts were at least less biased than the market's earnings expectations in interpreting accruals, investors would be able to further mitigate their mispricing of accruals by fixating on analysts' earnings forecasts.

methodology by introducing a new approach that allows researchers to directly compare the biases of various market participants' valuations.

This study informs practitioners as well as academics. First, it enhances investors' understanding of the usefulness or limitation of analysts' earnings forecasts as they make their investment decisions. Second, it helps sell-side analysts to make better earnings forecasts by mitigating their misinterpretation of accruals.[6] Third, it suggests that accounting policy makers should improve the quality of the financial statements themselves,[7] since the information intermediaries do not sufficiently supplement the imperfect role played by the financial statements.

The remainder of this paper is organized as follows. Section 2 presents a brief review of the related literature. Section 3 discusses the potential methodological problem of Elgers et al. (2003), and then develops an alternative research methodology with the testable hypothesis. Section 4 describes the measurement of the variables and the selection of the sample. The results are presented in Sections 5 and 6. Section 7 summarizes, and elaborates on the directions for future research.

2. Literature Review

This study relates to the intersection between the accrual anomaly and analysts' earnings forecasts. Thus, this section briefly outlines the literature dealing with both of

[6] This statement assumes that sell-side analysts are interested in improving the precision of their earnings forecasts.

[7] For instance, it may be necessary to limit the amount of accounting discretion that firm managers exert on accruals measurement, since information intermediaries do not sufficiently guide investors in a timely manner to unravel the valuation effect of the accruals being reported under the current accounting standard.

those areas and reviews the basic academic viewpoints as to the hypothesis of market efficiency.

2.1 The Hypothesis of Market Efficiency

"Is the capital market efficient?" This question lies at the heart of much of the accounting and finance literature. This is hardly surprising, given that an efficient capital market is the necessary condition for the economically efficient allocation of funds among competing stocks. In an efficient capital market, the reactions of stock prices to new information are expected to be immediate and thus the stock prices are assumed to be invariably equal to the intrinsic values. In an inefficient capital market, by contrast, the investors overreact or underreact to new information, and hence it will take a long time for investors to correct their misvaluation.

Evidences against the hypothesis of market efficiency are mounting. A large volume of accounting and finance literature reports significant abnormal stock returns over some periods following the public release of new information. For example, Bernard and Thomas (1990) conclude that stock prices respond to earnings news for a few months after they are announced. Jegadeesh and Titman (1993) suggest that the stocks showing high returns over the past year tend to continue to show high returns over the following three to six months. Some studies also reveal significant abnormal stock returns following such well-publicized events as the initial public offerings (Ritter, 1991; Teoh, Welch and Wong, 1998a) or the seasoned equity offerings (Loughran and Ritter, 1995; Teoh, Welch and Wong, 1998b). Such studies, not constituting an exhaustive list, do seem to pose a formidable challenge to the hypothesis of market efficiency.

However, it is important to note that many of the studies arguing against the hypothesis of market efficiency are sensitive to their methodology using the long-horizon event studies. For instance, Kothari (2001) points to such potential methodological problems as risk mismeasurement, survivorship bias or the absence of a theory of market inefficiency to serve as the null hypothesis. In particular, Fama (1998) suggests that most of the long-term stock return anomalies become marginal or disappear when different models for the expected stock returns or different statistical approaches are used to measure the abnormal stock returns.

Although the disputes about the hypothesis of market efficiency have by no means died away,[8] it is a general belief that the hypothesis is so overly simplified that it fails to capture the richness of market pricing dynamics and to take fully into account the process of price discovery. It seems to be the case that stock price convergence toward the intrinsic value is brought about via the continuous interactions among noise traders and information arbitrageurs. This is a process that requires large amounts of time and effort, and that is achieved only with substantial costs to the society (Lee, 2001).

Therefore, given that stock price deviates from the intrinsic value at a particular point in time owing to noisy valuation or costly arbitrage, the issue of interest here will be how the price convergence toward the intrinsic value can be accelerated in more cost-effective ways.

[8] For example, academic opinions differ as to whether the abnormal stock returns from the trading strategy based on the book-to-market ratio represent contrarian profits or a fair reward for risk. Fama and French (1993) suggest that the book-to-market ratio is associated with stock returns as a risk factor. However, Lakonishok, Shleifer and Vishny (1994) suggest that the book-to-market ratio is an indicator of the market's mispricing rather than a risk factor.

2.2 Prior Literature on the Accrual Anomaly

Accrual accounting is at the heart of earnings measurement and financial reporting (Barth, Beaver, Hand and Landsman, 1999). However, Sloan (1996) finds that investors make systematic errors when assessing the implications of current accruals on future earnings. He suggests that the market's earnings expectations are upward (downward) biased for firms having relatively high (low) levels of accruals. As a result, investors over(under)-price firms whose earnings contain high (low) levels of accruals components. This so-called accrual anomaly is considered one of the most prominent pieces of evidence of market inefficiency documented in accounting literature.

Following Sloan (1996), a series of studies examine the robustness of the accrual anomaly. All of them generally confirm the findings of Sloan (1996). Several studies investigate which components of accruals mislead investors (e.g., Chan, Chan, Jegadeesh and Lakonishok, 2001; Xie, 2001; Thomas and Zhang, 2002). However, Richardson, Sloan, Soliman and Tuna (2001) suggest that the information in accruals about earnings quality is not concentrated in any particular component of accruals and that thus it is total accruals that provide the best parsimonious measure of earnings quality. While some studies conclude that the accrual anomaly is independent of other market inefficiencies, such as post-earnings-announcement drift (e.g., Collins and Hribar, 2000; Zach, 2002), others suggest that the information asymmetry between firm managers and investors is the underlying reason for the accrual anomaly (e.g., Beneish and Vargus, 2002; Chen and Cheng, 2002; Pincus et al., 2003). While DeFond and Park (2001) conclude that investors anticipate at least a portion of the reversing implications of abnormal accruals, Lev and

Nissim (2002) and Richardson (2003) find mixed results as to whether more sophisticated investors exploit the accrual anomaly.

While the above studies demonstrate that investors largely ignore the differential persistence of earnings components, subsequent studies focus on the analysts' interpretations of accruals. Bradshaw et al. (2001), and also Ahmed, Nainar and Zhou (2001) find that analysts do not incorporate into their earnings forecasts the predictable subsequent earnings declines (increases) associated with high (low) levels of accruals. However, these studies do not assess the relative bias of analysts' earnings forecasts to stock prices in interpreting accruals. Thus, these studies are not clear as to whether investors can mitigate their mispricing of accruals by fixating on analysts' earnings forecasts. If analysts' earnings forecasts are at least less biased than the market's earnings expectations in interpreting accruals, they still can guide investors into less biased valuation of accruals.

On the other hand, Barth and Hutton (2003) suggest that analysts' earnings forecasts revisions can be used to refine the information in accruals about earnings persistence. However, as they point out, analysts' earnings forecasts revisions may contain new information about earnings persistence, beyond that implied by current accruals. Thus, their findings do not necessarily mean that analysts' earnings forecasts are less biased than stock prices in interpreting accruals.

Unlike these studies, the one done by Elgers et al. (2003) directly examines the relative biases of analysts' earnings forecasts and stock prices in interpreting accruals. They argue that market's earnings expectations are more biased than analysts' earnings forecasts. Their result demonstrates that a significant portion of the accrual anomaly arises out of the failure of investors to incorporate the information contained in publicly available analysts' earnings forecasts. However, as discussed in Section 3.1, their empirical results may be biased owing to some methodological problems. It is these potential problems that have set the stage for this study.

2.3 Prior Literature on Analysts' Earnings Forecasts

Accounting researchers are interested in understanding how the activities of sell-side analysts affect the capital market, given the important role played by analysts as information intermediaries. Thus, a large literature is devoted to analysts' earnings forecasts, one summary measure provided by analysts.

Early studies find that analysts' earnings forecasts predict future earnings more accurately than do time-series statistical models (e.g., Brown, Hagerman, Griffin and Zmijewski, 1987). Furthermore, several studies find that analysts' earnings forecasts revisions (e.g., Stickel, 1991; Gleason and Lee, 2003) and the levels of analysts' earnings forecasts (e.g., Elgers, Lo and Pfeiffer, 2001) predict future stock returns. In particular, Abarbanell and Bernard (1992) suggest that analysts' earnings forecasts are more efficient than stock prices with respect to the post-earnings-announcement drift. Consistent with these studies, both Frankel and Lee (1998) and Lee, Myers and Swaminathan (1999) find that the ratio of the intrinsic value estimates calculated from analysts' earnings forecasts to stock prices (hereafter, the V/P ratio) is a good predictor of future stock returns. Both studies suggest that investors do not efficiently incorporate into stock prices the value-relevant information contained in analysts' earnings forecasts. In a subsequent study, Ali, Hwang and Trombley (2003) conclude that the V/P ratio is a reliable indicator of the market's mispricing.

Collectively, these studies suggest that analysts' earnings forecasts have the potential to provide investors with new value-relevant information about future earnings. Thus, investors may be able to enhance their efficiency simply by fixating on analysts' earnings forecasts.

However, while a number of studies report the evidence suggesting that analysts' earnings forecasts are systematically optimistic (O'Brien, 1988; Ali, Klein and Rosenfeld, 1992; Easterwood and Nutt, 1999), others find that analysts do not fully incorporate all relevant accounting information into their earnings forecasts (Abarbanell and Bushee, 1997). Several studies find that analysts' earnings forecasts are inefficient with respect to prior stock returns (Lys and Sohn, 1990; Abarbanell, 1991).[9] Furthermore, Liu (2003) suggests that analysts react less rapidly to earnings announcements than the market. His result is contradictory to Abarbanell and Bernard (1992). All of these studies suggest that analysts' earnings forecasts are more sluggish than stock prices in incorporating value-relevant information, calling into question the ability of analysts' earnings forecasts to aid investors in enhancing efficiency.

In sum, prior research with respect to analysts' earnings forecasts shows mixed results on whether analysts' earnings forecasts are more efficient than stock prices. Thus, the following remains an open question: Can analysts' earnings forecasts guide investors to mitigate the accrual anomaly?

[9] Investors also underreact to the firm-specific information contained in prior stock returns, which is known as the price momentum effects. Thus, although analysts' earnings forecast errors can be predicted by prior stock returns, this does not necessarily mean that analysts' earnings forecasts are less efficient than stock prices in terms of reflecting the price momentum effects.

3. Research Design

3.1 Discussion of the Research Design of Elgers et al. (2003)

Elgers et al. (2003) argue that investors' over-weightings of accruals in future earnings predictions significantly exceed those of analysts. Such an argument implies that market's earnings expectations are more biased than analysts' earnings forecasts in interpreting accruals. However, the empirical methodology used by them has the following potential problems.

By using the following ERC model, Elgers et al. (2003) estimate the market's expectations of one-year-ahead earnings as the weighted average of current accruals and current cashflows:

$$\text{Abnormal stock returns}_{t+1} = \alpha_0 + \alpha_1(\text{Earnings}_{t+1} - \beta_1\text{Accruals}_t - \beta_2\text{Cashflows}_t) + \varepsilon_{t+1} \quad (1)$$

Then, they compare the market's weightings (β_1) of current accruals with the analysts' weightings (γ_1), which are derived from equation (2):

$$\text{Analysts' one-year-ahead earnings forecasts}_t = \gamma_0 + \gamma_1\text{Accruals}_t + \gamma_2\text{Cashflows}_t + \nu_t \quad (2)$$

By showing that β_1 is greater than γ_1, they argue that investors over-weight the current accruals in future earnings predictions more than analysts do.

Although the ERC model, the basis of equation (1), is popular in the accounting literature, Liu and Thomas (2000) suggest that it suffers from the omitted-variable problem. By using the residual income valuation model (Ohlson, 1995), they express the abnormal stock returns as equation (3):

$$AR_{t+1} = UE_{t+1} + \sum_{s=t+2}^{\infty} PVREF_{t+1,S} \qquad (3)$$

where AR_{t+1} is the abnormal stock returns during year t+1; UE_{t+1} is the unexpected earnings during year t+1; and $PVREF_{t+1,s}$ is the present value of the revisions, during year t+1, of the earnings forecasts for year s.[10]

Expressing the market's one-year-ahead earnings expectations as the weighted average of current accruals and current cashflows leads to equation (4):

$$AR_{t+1} = \alpha(E_{t+1} - \beta_1 Accruals_t - \beta_2 Cashflows_t) + \sum_{s=t+2}^{\infty} PVREF_{t+1,S} \qquad (4)$$

where E_{t+1} is the earnings during year t+1; and α is the unit.

Like the traditional ERC model, equation (1) does not include the second term in equation (4), the sum of the present values of the revisions, during year t+1, of the earnings forecasts for year t+2 and after (hereafter, SPVREF). Thus, the estimators of α_1, β_1, and β_2 in equation (1) will be biased depending upon the correlations of one-year-ahead earnings, current accruals, and current cashflows with the SPVREF.

Since the unexpected earnings during year t+1 generally have a positive correlation with the SPVREF, the α_1 estimator from equation (1) is positively biased. If investors take fully into account the lower persistence of accruals at year t during the contemporaneous year, the accruals at year t will have no additional correlation with the SPVREF. If so, the β_1 estimator in equation (1) will not be biased. However, if the accrual anomaly holds, this will not be the case. If, during year t+1, investors incorporate the lower persistence of accruals at year t, which is not reflected in year t+1's unexpected earnings,[11] the accruals at year t will have an additional negative correlation with the

[10] To avoid complicated notations, I here present only the conceptual equation. See Liu and Thomas (2000) for the fully detailed equation.

[11] The facts that it takes more than two years for investors to fully incorporate the lower persistence of accruals (Sloan, 1996), but that they do incorporate the lower persistence of accruals at least partially (DeFond and Park, 2001), support this possibility.

SPVREF, beyond the correlation with the SPVREF as the components of earnings surprises during year t+1. In this case, the absolute magnitude of the accruals' coefficient in equation (1) will be inflated.[12] This bias may render the result obtained by Elgers et al. (2003) more consistent with the hypothesis that the market over-weights the accruals more than analysts do.

However, this potential problem does not necessarily mean that the Mishkin test based on the ERC model cannot be used to test for the hypothesis of market efficiency. If the market efficiency holds, the accruals will have no additional correlation with the SPVREF beyond the correlation with the SPVREF as the component of earnings surprises. The resulting unbiased estimator of the weightings of accruals will still be consistent with the objective weightings of accruals. If, to the contrary, the accrual anomaly holds, the accruals will have an additional negative correlation with the SPVREF. This additional correlation will inflate the estimated market's weightings of accruals. Even in this case, though, this bias will strengthen the power of the Mishkin test based on the ERC model. This is because the biased estimator of the market's weightings of accruals will deviate more from the objective weightings of accruals. Thus, when researchers test only for whether the market's weightings of accruals are consistent with the objective weightings, the omitted-variable problem of the ERC model will not distort the test based on the Mishkin's approach. However, when researchers use the estimated magnitude of the weightings of accruals to draw some inferences, this problem distorts those inferences in the case where market efficiency does not hold.

[12] According to Elgers et al. (2003), the market's weightings of accruals for the higher analysts' coverage firms are 1.14, while the objective weightings of accruals in one-year-ahead earnings prediction is 0.57. However, it is hard to believe that the market's weightings of accruals is greater than 1.

Liu and Thomas (2000) suggest that this problem can be solved by including the analysts' revisions of earnings forecasts as a proxy of the market's revisions of earnings expectations. However, such an approach cannot be used here since this study explores the relative bias of analysts' earnings forecasts to market's earnings expectations. Thus, as an alternative approach, I compare the bias of intrinsic value estimates based on analysts' earnings forecasts with the bias of stock prices in interpreting accruals. Since there is no need to use the ERC model in this approach, I can detour around the econometrical problem encountered by Elgers et al. (2003).

Elgers et al. (2003) compare the market's weightings of accruals with the analysts' weightings only in the prediction of one-year-ahead earnings. However, as implied in Sloan (1996), the investors' (analysts') over-weightings of accruals will affect their predictions of future earnings even beyond one year ahead. Thus, the analysis done by Elgers et al. (2003) is incomplete. If analysts' earnings forecasts beyond one year ahead are more biased than market's corresponding earnings expectations, the results obtained by Elgers et al. (2003) are biased toward suggesting that there is a lesser bias in analysts' earnings forecasts relative to that in market's earnings expectations.[13] In this study, I compare the bias of the intrinsic value estimates reflecting analysts' longer-term earnings forecasts with the bias of stock prices. Since my approach can consider the bias of longer-

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[13] To encompass the earnings expectations beyond one year ahead in its analysis is important to this study. Since analysts' five-year earnings-growth forecasts significantly affect stock prices (Bauman and Dowen, 1988; La Porta, 1996; Dechow, Hutton and Sloan, 2000), they should be at least less biased than market's earnings expectations for corresponding periods in order to mitigate the market's mispricing of accruals. Bandyopadhyay, Brown and Richardson (1995) suggest that analysts as well as investors attach greater valuation weights to long-term earnings forecasts than short-term. This statement is supported by the survey of analysts done by Block (1999), which indicates that the long-term outlook for a firm is more important than the next quarter's earnings forecasts as a determinant of analysts' stock recommendations. Bradshaw (2002) also suggests that analysts' stock recommendations are frequently justified by their long-term earnings forecasts.

term earnings expectations beyond one year ahead, my analysis is more complete than that done by Elgers et al. (2003).

In sum, the results of Elgers et al. (2003) are likely to bias due to both the omitted-variable problem in their specification based on the ERC model and their ignoring of the earnings expectations beyond one year ahead.[14] It is for this reason that I develop the alternative empirical specification described next.

3.2 An alternative Research Design

In order to examine the relative biases of analysts' earnings forecasts and stock prices in interpreting accruals, it is necessary to reconcile the earnings forecasts with the stock valuations. Prior research into the accrual anomaly compares the proxy of unobservable market's earnings expectations with the efficient earnings expectations (Sloan, 1996) or with analysts' earnings forecasts (Elgers et al., 2003). Unlike this approach, I convert analysts' earnings forecasts into the intrinsic value estimates by using accounting valuation models.[15] Then, I compare the bias of the intrinsic value estimates

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[14] As a supplementary test, Elgers et al. (2003) examine whether the abnormal stock returns from the accruals still exist even after the analysts' errors with respect to one-year-ahead earnings forecasts are controlled for. They argue that analysts' earnings forecasts errors cannot fully subsume the abnormal returns from the accruals, and conclude that the bias of analysts' earnings forecasts does not fully account for the accrual anomaly. However, they do not consider the errors in analysts' earnings forecasts for the periods beyond one year ahead, which may be another source of the accrual anomaly through their influences upon investors' long-term earnings expectations. Furthermore, the analysis done by Elgers et al. (2003) implicitly assumes that all of the abnormal returns from the accruals indicate the market's mispricing of accruals. But, if a portion of the abnormal returns from the accruals reflects a miscontrol of risk factors, such abnormal returns will seem to exist even when the analysts' earnings forecasts errors can fully explain the extent of the market's mispricing of accruals.

[15] Analysts' target prices can be considered to be their intrinsic value estimates. However, as Bradshaw (2002) has shown, analysts do not disclose their target prices for most of the overvalued firms. Thus, the use of analysts' target prices as their intrinsic value estimates will lead to the selection bias problem. In addition, Bandyopadhyay et al. (1995) find that analysts' earnings forecasts are significantly associated with their target prices, supporting the use of analysts' earnings forecasts to calculate their intrinsic value estimates. On the other hand, Jegadeesh, Kim, Krische and Lee (2002) show that analysts recommend more favorably the firms having higher accruals. However, this result does not necessarily mean that analysts'

with the bias of stock prices in valuing accruals. If the market's earnings expectations are more (less) biased than the analysts' earnings forecasts, the stock prices should be more (less) biased than the intrinsic value estimates based on analysts' earnings forecasts. The notable benefit of this approach is that it allows me to detour around the omitted-variable problem within the ERC model used in prior research and to take into account the bias of both short-term and longer-term earnings expectations.

Following Lee et al. (1999), I consider both stock prices and the intrinsic value estimates based on analysts' earnings forecasts to be noisy measures of the true intrinsic values. Based on the conclusion arrived at by Richardson et al. (2001), I assume that total accruals are the parsimonious indicator of the systematic deviation of stock prices and intrinsic value estimates from the true intrinsic values. Under this assumption, I express the stock prices and the intrinsic value estimates based on analysts' earnings forecasts as the following two equations. Following Lee et al. (1999), I use the log transformation to simplify the exposition when dealing with ratios, and omit the firm-specific subscripts.

$$Log(V_t) = \alpha_1 + Log(IV_t) + \beta_1 Accruals_t + \varepsilon_1 \quad (5)$$

$$Log(P_t) = \alpha_2 + Log(IV_t) + \beta_2 Accruals_t + \varepsilon_2 \quad (6)$$

where IV_t is the true intrinsic value based on the information available at time t; V_t is the intrinsic value estimate based on analysts' earnings forecasts at time t; P_t is the stock price at time t; $Accruals_t$ is the most recent year's level of accruals scaled by average total assets at time t; α_1 and α_2 are constants and ε_1 and ε_2 are error terms.

According to Sloan (1996), the stock prices of the firms having relatively high (low) levels of accruals will be relatively higher (lower) than their intrinsic values. Sloan

earnings forecasts are more biased than stock prices, since analysts' stock recommendations appear to be unrelated to their earnings forecasts (Bradshaw, 2004).

(1996) suggests that the relationship between level of accruals and magnitude of market's mispricing is monotonic. A similar implication for analysts' earnings forecasts can be drawn from Bradshaw et al. (2001). These results imply that β_1 and β_2 in equations (5) and (6) are positive.

In equations (5) and (6), the magnitudes of the accruals' coefficients can be interpreted as the magnitudes of the valuation biases. For example, if investors fully incorporated the information content of accruals into their valuations, the accruals would not cause the stock price to diverge from the true intrinsic value. In other words, the coefficient of accruals in equation (6) should be zero. As the magnitude of the accruals' coefficient increases, the divergence between stock price and true intrinsic value becomes greater under the same level of accruals[16]. Thus, by comparing the magnitudes of the accruals' coefficients in equations (5) and (6), I can determine whether the intrinsic value estimates based on analysts' earnings forecasts are less (or more) biased than the stock prices in valuing accruals. Since the true intrinsic value is unobservable, this determination is achieved by taking the difference of equations (5) and (6) so as to cancel out the true intrinsic value:

$$Log(\frac{V_t}{P_t}) = (\alpha_1 - \alpha_2) + (\beta_1 - \beta_2)Accruals_t + (\varepsilon_1 - \varepsilon_2) \quad (7)$$

From equation (7), I draw the main empirical specification as follows:[17]

[16] In equations (5) and (6), the positive (negative) accruals do not necessarily mean that the stock prices deviate positively (negatively) from the true intrinsic values. Constant terms can shift the linear relationships between the accruals and the bias of valuations. Thus, any level of accruals can be the critical point, over (under) which firms are overvalued (undervalued).

[17] The regression test uses as a dependent variable the raw ratio of intrinsic value estimates based on analysts' earnings forecasts to stock prices. This is consistent with Lee et al. (1999). As shown in Section 6.9.1, the main result is robust, even when the variables are transformed to their logarithmic values.

$$(\frac{V_t}{P_t}) = \alpha + \beta \times Accruals_t + \varepsilon \qquad (8)$$

In equation (8), β indicates the relative biases of the intrinsic value estimates based on analysts' earnings forecasts and stock prices in valuing accruals.[18]

The main null hypothesis can be presented as follows:

Analysts' earnings forecasts are as biased as stock prices in interpreting accruals.

Under this null hypothesis, the intrinsic value estimates based on analysts' earnings forecasts are expected to be as biased as stock prices in valuing accruals. If the null hypothesis is true, β in equation (8) should be zero. A negative (positive) β indicates that the intrinsic value estimates based on analysts' earnings forecasts are less (more) biased than stock prices in valuing accruals.

This empirical hypothesis can also be explained by taking the viewpoint of those prior studies that have considered the V/P ratio to be an indicator of the market' mispricing (Frankel and Lee, 1998; Ali et al., 2003). If analysts' earnings forecasts are less biased than stock prices in interpreting accruals, the V/P ratio should successfully indicate the market's mispricing of accruals. If this is the case, a lower level of V/P ratio will indicate the market's overpricing of accruals. Since a higher level of accruals indicates the market's overpricing of accruals, the V/P ratio should be negatively correlated with accruals. But, if analysts' earnings forecasts are more biased than stock

[18] The bottom line of this specification is consistent with the return test widely used in accounting and finance research. Researchers assume that future stock prices are more efficient than current stock prices in terms of reflecting current information. If future stock returns (the ratio of future stock prices to current stock prices) have a significant relation to current information after the reward for risks is controlled for, researchers interpret this as the evidence that current stock prices deviate from the true intrinsic values. In this study, I simply replace the future stock prices by the intrinsic value estimates based on analysts' earnings forecasts. Then, I test for whether the V/P ratio stand in the same relation to current information as do future stock returns. If so (if not), the intrinsic value estimates can be considered to be more (less) efficient than the current stock prices in terms of reflecting current information.

prices in interpreting accruals, the V/P ratio will send out a signal contrary to the accruals' signal about the market's mispricing of accruals. In such a case, the V/P ratio will be positively correlated with accruals.

4. Variable Measurement and Sample Selection

4.1 Variable Measurement

V/P ratio: When it comes to the measurement of the V/P ratio, the intrinsic value estimates should be computed from analysts' earnings forecasts.[19] Since the actual valuation process used by market participants is unobservable, researchers must select a specific valuation model. In this study, I simultaneously consider three representative valuation models so as to address the potential problem that main results vary greatly depending upon the choice of a valuation model to compute the V/P ratio. I consider three earnings-based valuation approaches, all of which are broadly used in accounting research: the residual income valuation model (hereafter, the RIV model; Ohlson, 1995), the Ohlson-Juettner-Nauroth model (hereafter, the OJ model; Ohlson and Juettner-Nauroth, 2000) and the multiple valuation approach (Liu, Nissim and Thomas, 2002).

In order to examine whether the main results are sensitive to the assumption as to the terminal value calculations, I consider three different implementations of the RIV

[19] I use consensus analysts' forecasts of annual earnings as the representative analysts' earnings forecasts. Although consensus analysts' earnings forecasts include stale as well as recent forecasts, it is reasonable to use consensus forecasts when making a comparison with stock prices. This is because stock prices also reflect the earnings expectations of unsophisticated traders, who may reflect the information contents of accruals more sluggishly. Furthermore, the timeliness of analysts' earnings forecasts determines their usefulness as a signal for the market's mispricing of accruals. Lys and Sohn (1990) show that investors perceive analysts as acting individually, and that analysts' earnings forecasts are informative independent of the time that has elapsed since the preceding forecasts were revised. This result implies that not just recent revisions of analysts' earnings forecasts but also analysts' stale earnings forecasts contain value relevant information.

model done by prior research. Following Lee et al. (1999), Gebhardt, Lee and Swaminathan (2001), and Liu et al. (2002), the first RIV model (hereafter, RIV1) assumes that the ROE trends linearly toward the industry median ROE[20] by 12th year and thereafter the residual incomes are constant in perpetuity:

$$RIV1_t = bv_t + \sum_{s=1}^{5} \frac{E_t[eps_{t+s} - r_t \times bv_{t+s-1}]}{(1+r_t)^s} + \sum_{s=6}^{11} \frac{E_t[(ROE_{t+s} - r_t) \times bv_{t+s-1}]}{(1+r_t)^s} + \frac{E_t[(ROE_{t+12} - r_t) \times bv_{t+11}]}{r_t \times (1+r_t)^{11}} \quad (9)$$

where bv_t is the book value of equity per share at time t; eps_t is the earnings per share during time t; r_t is the cost of equity at time t; and ROE_t is the return on equity during time t.

Following Frankel and Lee (1998), Lee et al. (1999), Liu et al. (2002), Ali et al. (2003), and Dong, Hirshleifer, Richardson and Teoh (2003), the second RIV model (hereafter, RIV2) assumes that the residual income is constant beyond five years ahead:

$$RIV2_t = bv_t + \sum_{s=1}^{5} \frac{E_t[eps_{t+s} - r_t \times bv_{t+s-1}]}{(1+r_t)^s} + \frac{E_t[eps_{t+5} - r_t \times bv_{t+4}]}{r_t \times (1+r_t)^5} \quad (10)$$

Following Claus and Thomas (2001), the third RIV model (hereafter, RIV3) assumes that the residual income beyond five years ahead increases eternally by the annual rate of risk-free rate minus 3 percent, which is the long-term inflation rate (g_t):

$$RIV3_t = bv_t + \sum_{s=1}^{5} \frac{E_t[eps_{t+s} - r_t \times bv_{t+s-1}]}{(1+r_t)^s} + \frac{E_t[eps_{t+5} - r_t \times bv_{t+4}] \times (1+g_t)}{(r_t - g_t) \times (1+r_t)^5} \quad (11)$$

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[20] The industry-median ROE is calculated by the moving median of the previous 10 years' ROE of the firms within the same industry. I use the middle industry category, "Industry", among the three levels of I/B/E/S industry classification as the criterion to calculate the industry-median ROE. Following Liu et al. (2002), I winsorize the industry-median ROE at the risk-free rate and 20 percent so as to mitigate the effect of outlier.

These three RIV models differ only with respect to how the terminal values are calculated and the growth rate after reaching the terminal period, while the same assumptions are made in each as to the dividend-payout ratio and the cost of equity.

When implementing the OJ model, I use analysts' earnings forecasts to calculate the abnormal earnings up to five years ahead.[21] Following Gode and Mohanram (2003), I set (γ-1) to be equal to the risk-free rate minus 3 percent:

$$OJ_t = \frac{eps_{t+1}}{r_t} + \sum_{s=2}^{4} \frac{E_t[eps_{t+s} + r_t \times dps_{t+s-1} - (1+r_t) \times eps_{t+s-1}]}{r_t \times (1+r_t)^{s-1}}$$

$$+ \frac{E_t[eps_{t+5} + r_t \times dps_{t+4} - (1+r_t) \times eps_{t+4}]}{r_t \times (1+r_t)^3 (r_t - \gamma_t + 1)} \qquad (12)$$

where dps_t is the dividend per share during time t; and (γ-1) is the risk-free rate minus 3 percent.

For all of the valuation models, I estimate the future dividend-payout ratio by dividing actual dividends by earnings for the most recent year. In the case of the firms having negative earnings, I divide dividends for the most recent year by analysts' one- or two-year-ahead earnings forecast to derive the future dividend-payout ratio. If both earnings forecasts are still negative, I assume the future dividend-payout ratio to be zero.

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[21] Whereas Gode and Mohanram (2003) implement the OJ model by calculating the future abnormal earnings up to only two years ahead, I calculate the future abnormal earnings up to five years ahead, so as to fully impound analysts' five-year earnings-growth forecasts. This implementation is more reasonable for the purpose of this study. Since stock prices reflect investors' earnings prediction errors for all of the future years' earnings, analysts' earnings prediction errors for at least up to five years ahead need to be reflected into the V/P ratio to make a more reasonable comparison. If analysts' five-year earnings-growth forecasts are more biased than their one- or two-year-ahead earnings forecasts in interpreting accruals, the exclusion of analysts' five-year earnings-growth forecasts from the analysis will lead to a downward estimation of the bias of analysts' earnings forecasts in interpreting accruals. Since analysts' five-year earnings-growth forecasts significantly affect stock prices (La Porta, 1996; Dechow et al., 2000), whether analysts' five-year earnings-growth forecasts are less biased than the market's earnings expectations for corresponding periods in interpreting accruals must be asked to determine whether analysts' earnings forecasts mitigate the market's mispricing of accruals. For instance, although analysts' one- or two-year-ahead earnings forecasts may mitigate the market's mispricing of accruals, their five-year earnings-growth forecasts can cancel out this potential effect if their five-year earnings-growth forecasts are more biased than the market's corresponding earnings expectations in interpreting accruals. Ohlson and Juettner-Nauroth (2000) also support the idea of extending the terminal periods to beyond two years ahead.

If the estimated dividend-payout ratio is larger than 0.5, I assume the payout ratio to be 0.5. Following Liu et al. (2002), I estimate the cost of equity based on CAPM.[22] I use at least 30 prior monthly stock returns to estimate beta.[23] The resulting beta estimate is used in conjunction with realized 10-year treasury-bill rates as risk-free rates and 5 percent as the market risk premium. To mitigate the effect of extreme beta estimate, I use the median decile beta when calculating the cost of equity.

As the third valuation method, I consider the multiple valuation approach. Under this approach, one measure of the value driver is converted into a value through the application of the corresponding multiple of the comparable firms. This approach has the following features that distinguish it from the RIV and the OJ model.

First, both investors and analysts do seem to broadly use the multiple valuation approach in practice.[24] Therefore, if investors are guided to fixate on analysts' earnings forecasts, their resulting valuations will be similar to the intrinsic value estimates based on the multiple valuation approach.

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[22] Since there is little consensus as to how the cost of equity should be determined, prior studies have used a variety of ways to estimate the cost of equity, such as the Fama-French three factors model. However, Frankel and Lee (1998) and Lee et al. (1999) suggest that the choice of an alternative cost of equity has little effect on their cross-sectional analyses using the RIV model.

[23] When prior monthly stock returns are available for more than 30 months, I use all of those monthly returns up to 60 months.

[24] Block (1999) indicates that half of the analysts in his survey do not use the present-value analysis. He says that, to the contrary, almost half of them consider the P/E ratio to be the indicator of the market's mispricing. The survey done by Carter and Auken (1990) also indicates that P/E analysis is the most valued technique of a fundamental analysis utilized by investment managers. In addition, Bradshaw (2004) shows that analysts' stock recommendations are more closely associated with the intrinsic values estimated by means of the multiple valuation approach than those by means of more comprehensive models, such as the RIV model. This result indicates that analysts may forecast earnings, implicitly keeping the multiple valuation approach in their minds. Bradshaw (2002) also suggests that the most favorable recommendations (and target prices) are more likely to be justified by the valued firm's P/E ratio and by the analysts' long-term earnings forecasts.

Second, the multiple valuation approach is easy to implement, since there is no need to make arbitrary assumptions as to the growths and the risks of the valued firms. This approach, while replacing a number of assumptions with only the single assumption that comparable firms have the multiples similar to the valued firms' for a specific value driver, nonetheless is based on the precisely same principle underlying the more comprehensive valuation approach; value is an increasing function of future payoffs and a decreasing function of risk (Liu et al., 2002).[25]

Specifically, I use the sum of the analysts' earnings forecasts for the next five years (hereafter, ES[26]) as the value driver for the main analysis. Although not theoretically driven, ES gives a simple way of combining analysts' earnings forecasts for a number of different periods into one summary number without making any further assumption. In addition, I consider the intrinsic value estimates based on each of the one- to five-year-ahead earnings forecasts so as to compare the relative biases of analysts' earnings forecasts for different future periods.

Following Liu et al. (2002), I use the membership within the middle industry category ("Industry") among the three levels of I/B/E/S industry classification as my criterion for identifying comparable firms that have risks and growths similar to those of the valued firms.[27] After selecting comparable firms from the same "Industry"[28] as the

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[25] Although Liu et al. (2002) use the market price as their benchmark under the assumption of market efficiency, they suggest that the multiple valuation approach performs better than the more comprehensive valuation model, such as the RIV model, on the criteria of pricing errors.

[26] This value driver is introduced by Liu et al. (2002). It shows the best performance in the criteria of pricing errors under the assumption of market efficiency.

[27] For example, Gebhardt et al. (2001) suggest that the market consistently ascribes a higher discount rate to certain industries.

valued firms, I estimate the comparable multiple by taking the out-of-sample harmonic mean of the comparable firms' multiples. Then, I calculate the intrinsic value estimate by multiplying this comparable multiple by the valued firms' corresponding value driver.

Lastly, the V/P ratio is calculated simply by dividing the intrinsic value estimate based on analysts' earnings forecasts by the stock price as of the reporting date of analysts' earnings forecasts to I/B/E/S, which is the source of the analysts' earnings forecasts in this study.

Accruals: Following Sloan (1996), I measure the accruals on the basis of the differences between successive balance sheet accounts, according to the following equation. Also, following Sloan (1996), I scale the accruals by average total assets.

$$\text{Accruals} = (\Delta CA - \Delta Cash) - (\Delta CL - \Delta STD - \Delta TP) - Dep \qquad (13)$$

where ΔCA is the annual change in current assets; $\Delta Cash$ is the annual change in cash and cash equivalents; ΔCL is the annual change in current liabilities; ΔSTD is the annual change in debt included in current liabilities; ΔTP is the annual change in income taxes payable; and Dep is the depreciation and amortization expense.

4.2 Sample Selection

I collect data from three sources. I extract accounting numbers from Compustat; stock price, analysts' earnings forecasts, and industry identification codes from I/B/E/S[29]; and stock returns from CRSP.

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[28] The I/B/E/S industry classification has three levels in increasing fineness: sector, industry, and group. This industry classification is based loosely on SIC codes, but it is also subject to detailed adjustments.

[29] Another source of analysts' earnings forecasts may be the Value Line Investment Survey. However, Philbrick and Ricks (1991) suggest that Value Line and I/B/E/S are comparable in terms of their forecasts data. Furthermore, Value Line does not provide the consensus earnings forecasts, since they include the earnings forecasts of only one or two analysts for each firm.

As of April of each year,[30] I select firm-years that satisfy following criteria: (1) financial statement data, needed to compute main variables, such as accruals, are available from Compustat; (2) stock price, mean of analysts' earnings forecasts,[31] industry identification code, and number of shares are available from I/B/E/S; (3) stock return data are available from CRSP; (4) fiscal year-end is December; (5) stock price is greater than or equal to $2; (6) accruals scaled by average total assets and all price-to-earnings (forecasts) ratios lie within the 1st and the 99th percentiles of the pooled distribution. The fourth criterion is chosen so as to facilitate both the return test and the comparison between the earnings-fixated valuations and the stock prices. The fifth and sixth criteria mitigate the effects of outliers. The resulting sample includes 13,737 observations of 2,409 firms between 1983 and 2001. Then, I build up two different datasets, based on which valuation approach is used for the calculation of the V/P ratio.

First, when calculating the V/P ratio from the RIV or the OJ model, I impose two additional requirements on the initial sample: (1) the V/P ratio is positive; (2) all V/P ratios lie within the 1st and the 99th percentiles of the pooled distribution. The first requirement avoids negative predicted prices, and the second mitigates the effects of outliers. This process yields the first final sample of 12,745 firm-year observations, consisting of 2,245 firms between 1984 and 2001. It is this final sample that is used for the descriptive statistics seen in Table 1.

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[30] I measure the stock prices and analysts' earnings forecasts at the end of April. Given that most December fiscal-year-end firms have released annual results at least until late March, this measurement allows investors and analysts at least one month, in which they reflect the value-relevant information contained in the annual results.

[31] Using median rather than mean earnings forecasts has no effect on the main result of this study.

Second, when calculating the V/P ratio by means of the multiple valuation approach, I impose three additional requirements on the initial sample: (1) all multiples are positive; (2) each industry-year combination has at least five observations; (3) all V/P ratios lie within the 1st and the 99th percentiles of the pooled distribution. The first requirement avoids negative predicted prices, and the second ensures that the comparable groups are not unreasonably small. The third mitigates the effects of outliers. This process yields the second final sample of 10,716 firm-year observations, consisting of 2,007 firms between 1984 and 2001.

Following Liu et al. (2002), I compute analysts' three-year-ahead earnings forecasts by multiplying their two-year-ahead earnings forecasts by their five-year earnings-growth forecasts. I compute four- and five-year-ahead forecasts in a similar manner. Note that although both final samples meet all of the above conditions, the number of sample may vary across analyses, in particular when an analysis requires time-series of specific variables.

5. Main Results

5.1 Data Description and Correlation Analysis

I begin by presenting the univariate statistics and the pair-wise correlations of the key variables. Panel A of Table 1 presents the descriptive statistics of the key variables. As documented in prior studies (e.g., Sloan, 1996), mean accruals are negative (-0.04), suggesting that the accruals, on average, decrease income. The reason is that the negative effects of depreciation and amortization expenses outweigh the positive growth in working capital. The distribution of the ratio of analysts' earnings forecasts to stock price is consistent with prior research (e.g., Liu et al., 2002; Yoo, 2003). The mean of analysts' five-year earnings-growth forecasts is 15 percent. On average, 12 analysts follow the firms in my sample. The distributions of the other variables, such as the various risk proxies, which are used as additional control variables in Section 6.4, also are consistent with prior research.

Panel B of Table 1 describes the distributions of the V/P ratios. When the V/P ratios are calculated from the RIV or the OJ model, their means are far from the unit. However, it is important to note that my analysis does not require the V/P ratios greater (smaller) than the unit to indicate the market's underpricing (overpricing). My analysis is conducted in a "relative" sense by examining the cross-sectional association between the V/P ratios and the accruals.[32] On the other hand, when the V/P ratios are calculated from the multiple valuation approach, their means are almost the unit. This is consistent with the findings of Liu et al. (2002) that the harmonic mean of the comparable firms' multiple is an unbiased estimator of the valued firm's multiple.

Table 2 presents the Pearson correlation coefficients below the diagonal and the Spearman correlation coefficients above. First, there are high correlations among the V/P ratios. However, the fact that the correlation coefficients are less than the unit supports the needs to examine various V/P ratios to check whether the main results are sensitive to the choice of a valuation model to calculate the V/P ratios. Second, note the significantly positive correlation (Pearson) between the accruals and the V/P ratios. This is consistent with the alternative hypothesis that analysts' earnings forecasts are more biased than

[32] In other words, I consider only the relative magnitudes of the V/P ratios as the signal from analysts' earnings forecasts about the market's mispricing. The cross-sectional distribution of the V/P ratios, at any specific time, orders stocks by their relative attractiveness, regardless of the absolute values of the V/P ratios.

stock prices in interpreting accruals. Lastly, Table 2 reveals that the accruals as well as the V/P ratios are significantly correlated with some control variables (see Section 6.4), such as the Fama-French three factors.

5.2 Descriptive Return Test

Table 3 presents the results of the descriptive return test confirming the market's mispricing of accruals in my sample. Specifically, I regress each of the one-, two- and three-year-ahead stock returns[33] on the accruals. In these regressions, I include various risk proxies as control variables.[34] I also control for the price momentum factor[35] and for the standardized unexpected quarterly earnings (hereafter, SUE[36]) as the other indicators of the market's mispricing. The choice of these two control variables is based on the suggestion of Fama (1998) that only these two effects cannot be explained by the representative risk factors.[37]

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[33] I measure the annual stock returns by compounding monthly returns, inclusive of dividends and other distributions, from the end of April of each year.

[34] These variables are suggested to be associated with stock returns in prior research. The list of these variables is consistent with Gode and Mohanram (2003) or Feng, Jorgensen and Yoo (2004). See the Appendix for the measurement of these variables.

[35] Jegadeesh and Titman (1993) observe that the most successful trading strategy from the price momentum effects selects stocks based upon their stock returns over the prior twelve months and then holds the portfolio for three months. Therefore, I measure the indicator of the market's mispricing of price momentum effects by the stock returns of the previous twelve months.

[36] Following Bernard and Thomas (1989, 1990), I measure the SUE by taking the current fourth-quarter's actual earnings minus the previous fourth-quarter's actual earnings divided by the standard deviation of the unexpected quarterly earnings over the previous seven quarters.

[37] In his study, Fama (1998) does not analyze the accrual anomaly.

I replace all independent variables by their scaled decile values in order to interpret the coefficients as the estimated abnormal return from a zero-investment hedge strategy.[38] To remove the effects of the cross-sectional correlation in error terms inherent to panel data, I adopt the "Fama-MacBeth" approach (Fama and MacBeth, 1973). This approach is applied to all subsequent regression analyses. However, note that the "Fama-MacBeth" approach assumes that there is no serial correlation in the coefficients of year-by-year regressions across time. Therefore, I calculate the alternative t-statistics (hereafter, adjusted t-statistics) by using an adjustment for serial correlation provided by Kemsley and Nissim (2002)[39] as well as the "Fama-MacBeth" t-statistics (hereafter, F/M t-statistics) calculated from the time-series standard errors of the annually estimated coefficients.

Table 3 presents following results. First, consistent with Sloan (1996), the abnormal returns to the hedge portfolio based on the accruals are 6.9 percent in year t+1, 3.0 percent in year t+2, and 2.9 percent in year t+3, respectively, when only the Fama-French three factors are controlled for. This result is robust when other potential risk proxies, such as earnings volatility, price momentum factor and SUE are controlled for. Second,

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[38] The regression approach is analogous to the hedge portfolio test. However, the regression approach can employ all observations rather than only the observations taken at the extremes of the cross-sectional distribution of the accruals. Furthermore, the regression approach allows one to control for the various risk factors.

[39] Specifically, adjusted t-statistics is calculated as follows: $\dfrac{Mean(coefficient)}{\sqrt{\dfrac{1}{year^2}\sum_{i=1984}^{2001}\sum_{j=1984}^{2001}\rho^{|i-j|}Var(coefficient)}}$

where ρ is the correlation between the coefficients at year t and t-1. Fama and French (2000) suggest that this adjustment is not without problem since the serial correlation coefficient estimated by using the short time series of coefficient estimates may not be reliable.

note that neither the Fama-French three factors[40] nor the other risk proxies can explain the cross-sectional distribution of the stock returns in my sample. Consistent with Jegadeesh and Titman (1993), the abnormal returns to the hedge portfolio based on the price momentum factor are 8.9 percent in year t+1. However, SUE does not predict future abnormal returns.[41]

In sum, the descriptive return tests confirm that the market does appear to misprice the accruals in my sample.

5.3 Descriptive Evidence of the Misspecification in Elgers et al. (2003)

In this section, I replicate the analysis done by Elgers et al. (2003). Then, I present the descriptive evidence of their misspecification on the basis of the methodology suggested by Liu and Thomas (2000).

Panel A of Table 4 presents the results of the regressions conducted to calculate the weightings of current accruals and cashflows for the prediction of one-year-ahead earnings in historical relations and done by analysts or investors.[42] For the calculation of the weightings in historical relations (done by analysts), I regress one-year-ahead actual

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[40] This result is consistent with Jegadeesh et al. (2002), who use a sample similar to this study's. Their sample consists of firm-years with analysts' stock recommendations for the period 1985 through 1998.

[41] This result is consistent with Bernard and Thomas (1989) suggesting that most of the market's mispricing of earnings announcements is adjusted by the 60 trading days following the earnings announcement dates. Since most December fiscal-year-end firms announce their fourth-quarter earnings around the middle of February, this date comes at around the end of April, which is the point in time from which future abnormal stock returns are measured in this study.

[42] In their regressions, Elgers et al. (2003) decompose total accruals into working capital accruals and non-working capital accruals. Based on the suggestion put forward by Richardson et al. (2001) that the information contained in accruals about earnings quality is not concentrated in any particular component of the accruals, I use total accruals as the measure of earnings quality in the regressions.

earnings[43] (analysts' one-year-ahead earnings forecasts) on current accruals and cashflows as seen in equations (14) and (15):

$$\text{Earnings}_{t+1} = \alpha_0 + \alpha_1\text{Accruals}_t + \alpha_2\text{Cashflows}_t + \varepsilon_t \qquad (14)$$

$$\text{Analysts' one-year-ahead earnings forecasts}_t = \beta_0 + \beta_1\text{Accruals}_t + \beta_2\text{Cashflows}_t + \mu_t \quad (15)$$

In order to calculate the weightings done by investors, I regress one-year-ahead size-adjusted stock returns on one-year-ahead actual earnings, current accruals and cashflows:[44]

$$\text{Size-adjusted stock returns}_{t+1} = \gamma_0 + \gamma_1\text{Earnings}_{t+1} + \gamma_2\text{Accruals}_t + \gamma_3\text{Cashflows}_t + \nu_t \quad (16)$$

Following Elgers et al. (2003), I compute the investors' weightings of current accruals (cashflows) by dividing the absolute value of γ_2 (γ_3) by γ_1.[45] These weightings are named by "unadjusted" investors' weightings of accruals (cashflows).

As suggested in previous section, the unadjusted investors' weightings will be biased depending on the correlation with the omitted variables, the sum of the present values of the market's revisions, during year t+1, of the earnings expectations for year t+2 and after. To address this problem, I control for the analysts' revisions of earnings forecasts as a proxy for the market's revisions of earnings expectations for corresponding

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[43] Following Elgers et al. (2003), I measure the actual earnings by the earnings before extraordinary items.

[44] Elgers et al. (2003) include same control variables in equations (14), (15) and (16). These control variables, such as Fama-French three factors, are frequently cited as being associated with stock returns. However, Ahmed et al. (2001) suggest that these control variables are ad-hoc and that the effects of interest may be dissipated through the inclusion of too many control variables. This explains my decision not to include these control variables in the regressions.

[45] γ_1 in equation (16) is equivalent to α_1 in equation (1). - γ_2 (- γ_3) in equation (16) is equivalent to $\alpha_1\beta_1$ ($\alpha_1\beta_2$) in equation (1). Therefore, by dividing - γ_2 (- γ_3) by γ_1 in equation (16), I can get the estimator of β_1 (β_2) in equation (1). Although Sloan (1996) applies iterative weighted non-linear least squares methods directly to equation (1), Elgers et al. (2003) use this indirect estimation in order to remove the effects of the cross-sectional correlation in error terms inherent in panel data by conducting annual linear regressions.

periods. However, this approach may suffer from considerable measurement errors associated with the analysts' revisions of earnings forecasts. The reason for this is that analysts' earnings forecasts are assumed to differ from the market's earnings expectations in this study. Therefore, I consider the results gained through this approach to be merely one piece of descriptive evidence pointing to a potential bias in the unadjusted investors' weightings.

Following Liu and Thomas (2000), I control for the sum of the present values of the revisions of future residual incomes for the periods two through five years ahead (hereafter, SPVRRI).[46] I derive the revisions of future residual incomes from one-year-ahead analysts' revisions of earnings forecasts for the periods two through five years ahead, scaled by average total assets:[47]

$$SAR_{t+1} = \lambda_0 + \lambda_1 E_{t+1} + \lambda_2 Accruals_t + \lambda_3 Cashflows_t + \lambda_4 \sum_{s=t+2}^{5} PVRRI_{t+1,S} + \omega_t \quad (17)$$

where SAR_{t+1} is the size-adjusted stock return during year t+1; E_{t+1} is the actual earnings before extraordinary items during year t+1; and $PVRRI_{t+1,s}$ is the present value of the year t+1's revisions of the future residual incomes for year s.

I compute the "adjusted" investors' weightings of current accruals (cashflows) by dividing the absolute value of λ_2 (λ_3) by λ_1. Lastly, I calculate the ratio of the weightings

[46] Liu and Thomas (2000) consider the revisions of the terminal values derived from the assumption of the constant five-year-out price-to-book ratio as well as the revisions of future residual incomes for the periods two through five years ahead. Since it requires an arbitrary assumption about the terminal values, I do not include the revisions of the terminal values as the control variables. However, if the revisions of the terminal values are positively correlated with the revisions of future residual incomes for the periods two through five years ahead, the omission of this term will have no significant effect on this descriptive analysis.

[47] Liu and Thomas (2000) scale the revisions of future residual incomes by stock prices on the basis of their formula. In order to achieve the comparability with other regressors, such as accruals, however, I choose to use the average total assets as the scaler.

of accruals to the weightings of cashflows in historical relations and done by analysts or investors as the indicator of the relative weightings of accruals to cashflows.

Panel B of Table 4 presents the resulting weightings of accruals and cashflows. Panel C of Table 4 presents the t-statistics[48] for the differences of these weightings across historical relations', analysts' and investors'. Consistent with Sloan (1996), the historical weightings of accruals (0.74) are significantly smaller than the historical weightings of cashflows (0.81). Consistent with the implication of Bradshaw et al. (2001), the analysts' weightings of accruals (0.80) are significantly greater than the historical weightings, while the analysts' weightings of cashflows (0.77) are significantly smaller than the historical weightings. More importantly, the unadjusted investors' weightings of accruals (0.96) are significantly greater than the analysts' weightings, while there is no significant difference between the investors' and analysts' weightings of cashflows. This result is consistent with Elgers et al. (2003), who argue that market's earnings expectations are more biased than the analysts' earnings forecasts in interpreting accruals.

When I control for SPVRRI, the estimated investors' weightings of accruals significantly decrease from 0.96 to 0.62, as expected.[49] What is unexpected, however, is a significant decrease in the investors' weightings of cashflows: from 0.75 to 0.57. I

[48] In Panel B of Table 4, the investors' weightings of accruals (cashflows) are calculated by dividing the mean of the annual coefficients of the accruals (cashflows) by the mean of the annual coefficients of the one-year-ahead actual earnings. Therefore, the distribution of the investors' weightings of accruals (cashflows), derived from each of the annual regressions, will be different from the distribution of the investors' weightings of accruals (cashflows) reported in Panel B of Table 4. For this reason, I choose to use the boostrap-type analysis so as to calculate the t-statistics for the differences in the weightings. The bootstrap-type analysis results in 11,701 firm-years by drawing observations randomly from the constructed sample with replacement. For each trial, the weightings in historical relations and done by analysts or investors are computed. This process is repeated one hundred times, and the distributions for the differences in the weightings across historical relations', analysts' and investors' are obtained. The t-statistics are computed as the means divided by the standard deviations of these distributions.

[49] As expected in Section 3.1, the correlation between accruals (cashflows) and SPVRRI is –0.12 (0.03), which is significant at one percent level.

surmise that this unexpected result arises out of the measurement errors in SPVRRI. Despite this unexpected result with respect to the investors' weightings of cashflows, the ratio of investors' weightings of accruals to their weightings of cashflows decreases significantly, from 1.29 to 1.09. This fact suggests that the omitted-variable problem in the ERC model may be inflating the investors' weightings of accruals more severely than their weightings of cashflows. In particular, the ratio of adjusted investors' weightings of accruals to their adjusted weightings of cashflows is not significantly different from the ratio of analysts'. In other words, when I control for the proxy of the omitted variable in the ERC model, the result obtained by Elgers et al. (2003) that investors impose higher weightings on accruals than on cashflows, in comparison with analysts' weightings, disappears.

In sum, the omitted-variable problem within the specification of Elgers et al. (2003) based on the ERC model significantly affects their estimations of the investors' weightings. In particular, the omitted-variable problem may be pushing up the investors' weightings of accruals more than of cashflows. Thus, it seems that the result of Elgers et al. (2003) is very likely being driven by this omitted-variable problem. However, the alternative approach based on the suggestion of Liu and Thomas (2000) also suffers from the measurements errors associated with the noisy proxy of the unobservable market's earnings expectations. It is for this reason that, in following sections, I report the empirical results based on my alternative specification, which detour around this potential problem.

5.4 Results of the Regression Test

This section reports the results of the regression test. When conducting the regression test, I replace the accruals by their scaled decile values; accruals are sorted into deciles in each year, and then accruals are replaced by their decile numbers, scaled to vary from zero to one. This scaled decile transformation facilitates the interpretation of the coefficients. The half of the coefficient of accruals means the average relative bias of the intrinsic value estimates based on analysts' earnings forecasts to stock prices, when firms are included within the extreme deciles of accruals. This approach is applied to all subsequent regression tests.

Panels A and B of Table 5 present that the coefficients of accruals are significantly positive for all of the V/P ratios.[50] This result indicates that analysts' earnings forecasts are more biased than stock prices in interpreting accruals.[51] Panels A and B of Table 5 also report that the magnitudes of accruals coefficients are distributed from 0.035 (the RIV2 model) to 0.132 (the OJ model). This result implies that for firms within extreme accruals deciles, the intrinsic value estimates based on analysts' earnings forecasts are more biased than stock prices at least by 1.7 percent of the stock prices. This figure can be interpreted as being economically significant.

This result has following three major implications. First, investors cannot mitigate their mispricing of accruals by fixating on analysts' earnings forecasts. If investors were

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[50] In many cases, adjusted t-statistics are greater than F/M t-statistics. This is due to the negative correlation (ρ) between the coefficients at year t and t-1. For example, ρ of the annual regressions for the V/P ratio based on the RIV1 model is −0.29. However, negative ρ does not necessarily mean that many of the annual coefficients have the signs contradictory to the mean of the annual coefficients. In the case of the V/P ratio based on the RIV1 model, only one out of eighteen annual coefficients of accruals are negative.

[51] My analysis is based on the cross-sectional relationships between the V/P ratios and the accruals, excluding the average effects of the analysts' well-known optimistic bias. Therefore, the overall optimistic bias of analysts' earnings forecasts does not have any effect on this result.

to fixate on analysts' earnings forecasts, their mispricing of accruals would only be exacerbated. Second, the extent of the accrual anomaly can be completely explained by the bias of analysts' earnings forecasts. In particular, the accrual anomaly does not arise out of the investors' failure to impound the value relevant information contained in analysts' earnings forecasts, which opposes to Elgers et al. (2003). Investors seem to adjust analysts' earnings forecasts in some way, taking into account analysts' greater bias.[52] Third, when approximating the market's earnings expectations by analysts' earnings forecasts, researchers should control for the differing extents to which investors and analysts reflect the lower persistence of accruals.[53]

Panel B of Table 5 indicates that analysts' five-year earnings-growth forecasts are more biased than their one- and two-year-ahead earnings forecasts. While the coefficient of accruals for the V/P ratio based only on analysts' one-year-ahead earnings forecasts is 0.026, that for the V/P ratio based only on analysts' five-year-ahead earnings forecasts is 0.082. Since Elgers et al. (2003) do not consider the greater bias of analysts' long-term earnings forecasts, their result may be biased toward showing a lesser bias of analysts' earnings forecasts relative to the market's earnings expectations. This result suggests that investors should utilize analysts' earnings forecasts selectively. If investors were to reflect analysts' five-year earnings-growth forecasts more than one- or two-year-ahead

[52] For example, institutional investors may not use analysts' earnings forecasts as received, because to do so would imply that they possess no special analytical expertise. It seems more likely that institutional investors examine the information contents of analysts' earnings forecasts with their own information and then form their own judgments.

[53] A good example is the prior research estimating the ex-ante cost of equity (e.g., Gebhardt et al., 2001; Gode and Mohanram, 2003; Guay, Kothari and Shu, 2003; Feng et al., 2004). They estimate the ex-ante cost of equity by equating the intrinsic value estimates based on analysts' earnings forecasts with the stock prices. Since such estimations are based on the assumption that analysts' earnings forecasts are the proxy for the market's earnings expectations, it may necessary to control for the information contents of the accruals so as to get a more reliable estimator of the ex-ante cost of equity.

earnings forecasts into their valuations (e.g., La Porta, 1996; Dechow et al., 2000), the market's mispricing of accruals would only be exacerbated. In addition, when examining the bias of analysts' earnings forecasts, researchers should take into account analysts' five-year earnings-growth forecasts explicitly as well as their one- or two-year-ahead earnings forecasts in order to prevent any underestimation of their bias.

Panel B of Table 5 also indicates that stock prices are at least less biased than the valuations fixated on actual earnings. I interpret the earnings-fixated valuation as the valuation based on reported actual earnings without any adjustment.[54] Thus, I calculate the intrinsic value estimate by considering actual earnings reported in I/B/E/S as the value driver for the multiple valuation approach. The coefficient of accruals in the regression with the V/P ratio based on the actual earnings is 0.024, which is marginally significant at ten percent. This result is consistent with DeFond and Park (2001), who suggest that investors at least partially anticipate the reversing implications of the abnormal accruals. However, this result is inconsistent with Elgers et al. (2003), who indicate that market's earnings expectations are far more biased than even a naïve fixation on actual earnings.[55]

Taken together, these results imply that analysts' earnings forecasts do not function as an indicator of the market's mispricing of accruals, which is contrary to the conclusion of Elgers et al. (2003).

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[54] The term of 'earnings fixation' means that investors do not consider the differential valuation implications of the components of reported earnings. Under the earnings fixation, investors construct their trading behaviors based on only the levels of total earnings. This possibility is consistent with Hand (1990).

[55] It is my conjecture that the result obtained by Elgers et al. (2003) arises out of their misspecification of the empirical analysis based on the ERC model. DeFond and Park (2001) do not use the problematic ERC model, comparing the magnitude of the market reaction to earnings surprises that include high abnormal accruals with that to earnings surprises that include low abnormal accruals.

6. Supplementary Tests

In this section, I report the results of various additional analyses carried out to check the robustness of the main results. As shown in following sub-sections, the results of this study are robust to various sensitivity checks.

6.1 Regression Test of the Perfect-Foresight V/P ratios

One concern as to the main results of this study is that the results are derived from the biased estimations of the intrinsic values rather than from the bias of analysts' earnings forecasts. To address this concern, I run a regression test of the V/P ratios calculated from the intrinsic value estimates reflecting future realized earnings, instead of analysts' earnings forecasts (hereafter, the perfect-foresight V/P ratio). If the estimations of the intrinsic values are not biased, the intrinsic value estimates reflecting future realized earnings should indicate the market's mispricing of accruals; that is, the perfect-foresight V/P ratio should have a negative correlation with the accruals. I implement the perfect-foresight V/P ratios by replacing analysts' earnings forecasts, estimated dividends, and book values of equity used for the intrinsic value estimations with the future realized earnings, dividends, and book values of equity.[56]

Table 6 reports that the coefficients of accruals are significantly negative for the perfect-foresight V/P ratios. This result implies that if analysts' earnings forecasts were closer to the future realized earnings, the V/P ratio could successfully indicate the market's mispricing of accruals. In other words, the regression test using the V/P ratio

[56] Since this implementation calls for the continuous time-series of the actual earnings, dividends, and book values of equity, the number of sample decreases in the perfect foresight period.

seems to be a reasonable way of comparing the biases of analysts' earnings forecasts and of stock prices in valuing accruals.

6.2 Comparisons Between Stock Prices at the End of April and Analysts' Earnings Forecasts at Ensuing Points in Time

The result given by Table 6 indicates that the regression test using the V/P ratio is reasonable. However, the requirement of continuous time-series data may make the analysis sensitive to a survivorship bias. To address this concern, I compare the bias of current stock prices with the bias of future analysts' earnings forecasts in interpreting current accruals. If the estimations of the intrinsic values are not biased, the intrinsic value estimates reflecting future analysts' earnings forecasts should indicate the current market's mispricing of accruals, given that analysts may further revise their biases in interpreting accruals as the year progresses.[57] This approach allows for an analysis based on a larger sample, which is comparable to the sample used for the main regression test.

For this analysis, I reconstruct the V/P ratios by dividing the intrinsic value estimates reflecting analysts' earnings forecasts outstanding at the end of July, October, and April of the following years by the stock prices at the end of April. Then, I repeat the regression test on these V/P ratios, allowing only the analysts some extra months to adjust their biases in interpreting accruals.

Panel A of Table 7 presents the result of the regression test for the V/P ratios reflecting analysts' earnings forecasts at the end of July and stock prices at the end of

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[57] Prior studies of analysts' earnings forecasts (e.g., O'Brian, 1988) conclude that the accuracy of analysts' earnings forecasts increases as the earnings announcement dates approach. Bradshaw et al. (2001) also find that analysts gradually revise their earnings forecasts in response to the earnings reversals due to the lower persistence of accruals through subsequent quarterly earnings announcements.

April. The coefficients of accruals are still significantly positive in all of the regressions, while the magnitudes of the accruals' coefficients decrease.

Panel B of Table 7 reports the result of the regression test for the V/P ratios reflecting analysts' earnings forecasts at the end of October and stock prices at the end of April. The coefficients of accruals for the V/P ratios calculated from the RIV2 and RIV3 model become insignificant. This result implies that it takes at least somewhere around three extra months for analysts to adjust their biases in interpreting accruals to an extent comparable with the market's bias at the current point in time. Furthermore, Panel C of Table 7 reports that the coefficients of accruals for the V/P ratios reflecting analysts' earnings forecasts at one year later than stock prices become significantly negative (the RIV2 and RIV3 models).

In sum, the result of Table 7 is another evidence that the V/P ratio is a reliable measure of the relative bias of analysts' earnings forecasts to stock prices in interpreting accruals. It implies that if analysts were to adjust their earnings forecasts errors more rapidly, the V/P ratio would successfully indicate the market's mispricing of accruals. If the main result of this study were derived from the biased estimations of the intrinsic values rather than from the bias of analysts' earnings forecasts, the V/P ratios reflecting more recent analysts' earnings forecasts would not indicate the market's mispricing of accruals.

6.3 Regression Test at Different Points in Time

One of the possible reasons that analysts' earnings forecasts are more biased than stock prices in interpreting accruals is their tendency not to revise their forecasts quickly

(Trueman, 1990). Thus, it is possible that analysts' earnings forecasts become less biased than stock prices after analysts revise their forecasts as the year progresses. If so, investors could mitigate their mispricing of accruals by fixating on analysts' earnings forecasts as the year progresses. In particular, the result of Table 7 indicates that analysts gradually revise their bias in interpreting accruals as the year progresses.

To test this hypothesis, I reconstruct the sample by using the analysts' earnings forecasts and stock prices outstanding at the end of July, October, and April of the following years. Then, I repeat the regression tests at each point in time, allowing both investors and analysts extra months in which to revise their biases in interpreting accruals.

Panels A, B, and C of Table 8 present the results of the regression tests as of the end of July, October, and April of the following years, respectively. The coefficients of accruals are still significantly positive in all of the regressions. This result indicates that, at least by one year later, analysts' earnings forecasts still do not function as an indicator of the market's mispricing of accruals. This result also implies that the greater bias of analysts' earnings forecasts relative to stock prices is due not just to the stale earnings forecasts, since it is hard to believe that analysts do not revise their earnings forecasts until one year later.

In sum, the greater bias of analysts' earnings forecasts relative to stock prices in interpreting accruals is maintained until at least one year later. This result implies that analysts adjust their misinterpretations of accruals more sluggishly than do investors, who also adjust their misinterpretations of accruals as the year progresses (Sloan, 1996).

6.4 Regression Test Controlling for Additional Variables

In this sub-section, I examine whether the main results are robust even after additional variables are controlled for. First, note that when I estimate the intrinsic values via the RIV or the OJ model, I calculate the discount rates on the basis of the CAPM. Furthermore, when I estimate the intrinsic values by using the multiple valuation approach, I assume that the industry memberships determine the discount rates of the valued firms. However, these approaches cannot fully take into account the potential risk factors of the valued firms.[58] In the case of the V/P ratios calculated via the RIV or the OJ model, some potential risk proxies, such as size or book-to-market ratio, are not reflected in the calculation of the discount rates. For the V/P ratios calculated via the multiple valuation approach, the intra-industry variances of the risks are not reflected in the estimation of the intrinsic values. If the omitted risk factors of the valued firms or the intra-industry variances of the valued firms' risks have correlations with the accruals,[59] the estimated coefficients of accruals will be biased. For example, if the assumed discount rates have negative (positive) errors, the intrinsic value estimates and thus the V/P ratios will be overstated (understated). If these errors are correlated with the accruals, the estimated coefficients of accruals will be biased. Thus, I repeat the regression test,

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[58] I still assume that the variances in growths of the valued firms can be approximately reflected by impounding analysts' five-year earnings-growth forecasts into the valuations and by making various assumptions as to the terminal value calculations.

[59] The correlation analysis presented in Table 2 shows that there are significant correlations between the accruals and risk proxies, such as Fama-French three factors.

taking potential risk proxies included in the descriptive return test presented in Table 3[60] as additional control variables.[61]

Second, Fama (1998) suggests that the price momentum effects as well as the post-earnings-announcement drift cannot be explained by representative risk factors (Fama and French, 1993). Therefore, I examine whether these two additional indicators of the market's mispricing have any effect on the main results.[62, 63]

Panel A of Table 9 shows that even when various risk proxies are controlled for,[64] the coefficients of accruals are still significantly positive for all of the V/P ratios.

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[60] Table 3 indicates that all of the considered risk proxies are not associated with future stock returns. Given that the realized stock returns are too noisy (Gebhardt et al., 2001), this result does not necessarily mean that those risk proxies are not correlated with the discount rates of the valued firms.

[61] Since the multiple valuation approach already reflects the inter-industry variances of risks, I control for the industry-adjusted risk proxies calculated by subtracting the industry means of the risk proxies from the individual firms' risk proxies when regressing the V/P ratio calculated from the multiple valuation approach on the risk proxies as well as the accruals.

[62] Since stock returns are positively correlated with earnings (Kothari, 2001) and earnings are positively correlated with accruals (Sloan, 1996), the price momentum factor and accruals may be positively correlated. Thus, the omission of the price momentum factor from the regression may lead to the biased estimations of the accruals coefficients. However, as shown by Table 2, the correlation between the accruals and the price momentum factor is not significantly different from zero. This runs counter to my initial expectation that there would be a positive correlation between the accruals and the price momentum factor. One possible explanation is as follows. If the market begins its adjustment of accruals mispricing several months before April, when the price momentum factor is measured, the positive correlation between the accruals and the stock returns before the market's adjustment of accruals mispricing may be canceled out by the negative correlation between the accruals and the stock returns after the adjustment. This conjecture is supported by the facts that stock prices lead earnings (Kothari, 2001) and that the market reflects at least partially the lower persistence of accruals (DeFond and Park, 2001).

[63] Collins and Hribar (2000) reveal that the accrual anomaly is independent of the post-earnings-announcement drift. Thus, it is expected that the coefficient estimates of the accruals will not be biased, even though SUE is omitted from the regression test. Furthermore, the descriptive return test given in Table 3 already shows that SUE does not indicate the market's mispricing at the end of April.

[64] Fama and French (1993) suggest that size and book-to-market ratio are associated with stock returns as risk factors. Other studies, however, suggest that these variables (especially the book-to-market ratio) are the indicators of the market's mispricing rather than risk factors (e.g., Lakonishok et al., 1994; Dechow, Hutton, Meulbroek and Sloan, 2001). Thus, I include these two variables as control variables in the regression test, rather than incorporating directly them into the estimation of the cost of equity. This approach is neutral with respect to the interpretation of the return predictability of size and of book-to-market ratio, while still excluding the possibility of the biased coefficients of accruals. Note also that, for the regression test of the V/P ratios calculated from the RIV or the OJ model, I do not control for beta since

Furthermore, as shown by Panel B of Table 9, this result remains robust even after two additional market's mispricing indicators are controlled for. In addition, the coefficients of the risk proxies are mostly consistent with the expected relations between the V/P ratios and risk proxies,[65] with respect to size, book-to-market ratio, earnings volatility, and debt-to-market ratio. Furthermore, the coefficients of the price momentum factor are not significantly different from zero. This result indicates that analysts' earnings forecasts cannot indicate the market's underreaction to prior stock returns, which is shown as significant in the descriptive return test reported by Table 3.

Overall, the main message of Table 9 is that controlling for such additional variables as the various risk proxies and additional market's mispricing indicators does not alter the main results of this study.

6.5 Regression Test of the V/P ratios based on the Two-Period Valuation Models

In Section 5.4, I find that the analysts' five-year earnings-growth forecasts are more biased than their one- and two-year-ahead earnings forecasts by conducting an analysis using the V/P ratios calculated via the multiple valuation approach. In this sub-section, I examine whether this result holds when the V/P ratios are calculated via the RIV or the OJ models.

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the systematic risks are already reflected in the estimation of the discount rates for the calculation of the V/P ratios.

[65] It is to be expected that the omitted risk factors will be positively correlated with the V/P ratios. If a specific risk of the valued firms is higher (lower), the omission of that specific risk from the estimation of the discount rates will overestimate (underestimate) the intrinsic values and thus the V/P ratios. Therefore, if a greater risk proxy indicates higher (lower) risks, that risk proxy is expected to have a positive (negative) correlation with the V/P ratio.

For this analysis, I calculate the intrinsic value estimates by using only analysts' one- and two-year-ahead earnings forecasts as follows. Then, I conduct the regression test of the V/P ratios based on the resulting intrinsic value estimates:

$$2RIV1_t = bv_t + \sum_{s=1}^{2} \frac{E_t[eps_{t+s} - r_t \times bv_{t+s-1}]}{(1+r_t)^s}$$

$$+ \sum_{s=2}^{11} \frac{E_t[(ROE_{t+s} - r_t) \times bv_{t+s-1}]}{(1+r_t)^s} + \frac{E_t[(ROE_{t+12} - r_t) \times bv_{t+11}]}{r_t \times (1+r_t)^{11}} \qquad (18)$$

where bv_t is the book value of equity per share at time t; eps_t is the earnings per share during time t; r_t is the cost of equity at time t; and ROE_t is the return on equity during time t.

$$2RIV2_t = bv_t + \sum_{s=1}^{2} \frac{E_t[eps_{t+s} - r_t \times bv_{t+s-1}]}{(1+r_t)^s} + \frac{E_t[eps_{t+2} - r_t \times bv_{t+1}]}{r_t \times (1+r_t)^2} \qquad (19)$$

$$2RIV3_t = bv_t + \sum_{s=1}^{2} \frac{E_t[eps_{t+s} - r_t \times bv_{t+s-1}]}{(1+r_t)^s} + \frac{E_t[eps_{t+2} - r_t \times bv_{t+1}] \times (1+g_t)}{(r_t - g_t) \times (1+r_t)^2} \qquad (20)$$

where g_t is the risk-free rate minus 3 percent.

$$2OJ_t = \frac{eps_{t+1}}{r_t} + \frac{E_t[eps_{t+2} + r_t \times dps_{t+1} - (1+r_t) \times eps_{t+1}]}{r_t \times (r_t - \gamma_t + 1)} \qquad (21)$$

where dps_t is the dividend per share during time t; and (γ-1) is the risk-free rate minus 3 percent.

Panel A of Table 10 reports that the coefficients of accruals are significantly positive for only the V/P ratios calculated via the two-period RIV1 and two-period RIV3 models, while the magnitudes of the accruals coefficients are smaller than those reported in Table 5. In particular, the coefficient of accruals is significantly negative when the V/P ratio is calculated via the two-period OJ model. Such result of the V/P ratio calculated via the two-period OJ model is robust even when the risk proxies are controlled for, while the coefficient of accruals in the regression of the V/P ratio based on the two-period RIV2 model become significantly positive when the risk proxies are controlled for (Panel B of

Table 10). This result highlights that the greater bias of the whole information set provided by analyst' earnings forecasts in interpreting accruals may be owing to the greater bias of analysts' long-term earnings-growth forecasts.

The result of the V/P ratio calculated via the two-period OJ model may arise out of that the model attaches large valuation weightings on the growth of earnings in short-term between one and two years ahead. If short-term earnings growths drawn from the analysts' one- and two-year-ahead earnings forecasts partially incorporate the faster reversion of the accruals, the intrinsic value estimates based on the two-period OJ model will be less biased than stock prices in interpreting accruals.

However, this result can be biased toward a downward estimation of the bias of analysts' earnings forecasts in interpreting accruals. The reason is that the V/P ratio based on the two-period OJ model does not incorporate the greater bias of analysts' long-term earnings-growth forecasts in interpreting accruals. Since stock prices incorporate investors' earnings prediction errors for all of the future years' earnings,[66] analysts' earnings prediction errors for at least up to five years ahead need to be incorporated into the V/P ratios to make more reasonable comparisons in this study. Furthermore, since analysts' five-year earnings-growth forecasts significantly affect stock prices (La Porta, 1996; Dechow et al., 2000), whether analysts' five-year earnings-growth forecasts are less biased in interpreting accruals than the market's earnings expectations for corresponding periods must be asked to determine whether analysts' earnings forecasts mitigate the market's mispricing of accruals. For instance, although analysts' one- or

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[66] Sloan (1996) shows that the differences between the earnings' mean reversions of the firms in the highest earnings decile and those of the firms in the highest accruals decile persist until at least five years ahead. Thus, investors' earnings prediction errors will exist for at least up to five-years-ahead earnings, if they fixate on the mean reversion patterns of current total earnings when forecasting future earnings.

two-year-ahead earnings forecasts may mitigate the market's mispricing of accruals, the greater bias of analysts' five-year earnings-growth forecasts can cancel out this potential effect if investors incorporate analysts' five-year earnings-growth forecasts into their earnings expectations.

In sum, the results of Table 10 indicate that the greater bias of analysts' earnings forecasts in interpreting accruals may arise out of the greater bias of their long-term earnings-growth forecasts. This result is consistent with the analysis based on the V/P ratios calculated via the multiple valuation approach. Since analysts' five-year earnings-growth forecasts significantly affect stock prices, it is more reasonable for the purpose of this study to fully impound the bias of analysts' five-year earnings-growth forecasts[67] into the comparison between analysts' earnings forecasts and stock prices with regard to the bias in interpreting accruals.

6.6 Regression Test of the V/P ratios Adjusting the Negative Terminal Values

When I estimate the intrinsic values by using the RIV1 and RIV2 models, I simply assume that the residual incomes at terminal periods are constant in perpetuity beyond terminal periods. In addition, when I implement the RIV3 model (the OJ model), I assume that the residual incomes (abnormal earnings) at terminal periods increase eternally by the long-term inflation rate beyond terminal periods. Even though these implementations are consistent with prior research, one will have a concern in these

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[67] Most of prior research also reflects analysts' long-term earnings-growth forecasts so as to calculate the intrinsic value estimates via earnings-based valuation models. Even though Gode and Mohanram (2003) use the two-period OJ model, they also incorporate analysts' long-term earnings-growth forecasts by taking the average of those forecasts and the growth between analysts' one- and two-year-ahead earnings forecasts as the short-term earnings growths. One of the exceptions is the international valuation research (e.g., Frankel and Lee, 1999; Feng et al., 2004). However, they do not incorporate analysts' long-term earnings-growth forecasts into their valuations since such forecasts are not available for most of foreign firms.

assumptions on the terminal values when the residual incomes (abnormal earnings) at terminal periods are negative. Although the restriction of the positive V/P ratios on the sample mitigates this concern, such issue can still affect the main results. In order to address this concern, I recalculate the intrinsic values by assuming the negative residual incomes (abnormal earnings) beyond terminal periods to be zero for all of the valuation models, and then rerun the regression test of the V/P ratios based on the resulting intrinsic value estimates. Table 11 indicates that the coefficients of accruals in the regressions of such V/P ratios are still significantly positive, which is consistent with the main results reported in Table 5.

6.7 Return Test

As a supplementary test, I examine whether the V/P ratio can subsume the abnormal returns predictable from the accruals. This test is more intuitive than the regression test when examining whether analysts' earnings forecasts mitigate the market's mispricing of accruals. If analysts' earnings forecasts are less biased than stock prices, the V/P ratio will indicate at least a part of the market's mispricing of accruals, subsuming a portion of the abnormal returns predictable from the accruals. On the contrary, if analysts' earnings forecasts are more biased than stock prices, the accruals will rectify the wrong signal sent by the V/P ratio about the market's mispricing of accruals, thereby refining the abnormal returns predictable from the V/P ratio.

Specifically, I regress each of the one-, two-, and three-year-ahead stock returns on different combinations of the accruals and the V/P ratio with Fama-French three factors as the control variables.[68] Then, I examine whether the addition of the V/P ratio decreases the magnitude of the accruals coefficient or whether the addition of the accruals increases the magnitude of the V/P ratio coefficient. Panels A, B and C of Table 12 present the results of the return test, when the V/P ratio is calculated from the RIV2 model.[69]

First, consistent with Sloan (1996), the accruals predict future abnormal stock returns (Model 1). The coefficient of the V/P ratio is marginally significant only in year t+2 (Model 2; annual abnormal returns are 6.3 percent). This long-term feature of the abnormal returns from the V/P ratio is consistent with Frankel and Lee (1998). Although the magnitudes of the abnormal returns from the V/P ratios are smaller than those reported in prior studies, such as Frankel and Lee (1998), this result is still consistent with that the V/P ratio appears to function as an indicator of the market's mispricing, as suggested by Ali et al. (2003).

Second, note that the V/P ratio does not subsume the abnormal returns from the accruals, instead being refined by the accruals. Panel A of Table 12 reports that the absolute value of the accruals coefficient in year t+1 does not decrease significantly, even after the V/P ratio is added (Model 3).[70] Instead, the coefficient of the V/P ratio in year t+1 increases significantly (untabulated t-statistics is 3.73), from - 0.1 percent to 0.8 percent. Panel B (Panel C) of Table 12 indicates that the accruals still marginally refine

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[68] I replace all independent variables by their scaled decile values in order to interpret the coefficients as the estimated abnormal returns from a zero-investment hedge strategy.

[69] The results are qualitatively similar when the V/P ratios are calculated via the RIV1, RIV3, or OJ models as well as via the multiple valuation approach.

[70] Although the abnormal returns from the accruals decrease slightly from 6.9 percent to 6.6 percent, this decrease is not statistically significant (untabulated t-statistics is 0.56).

the V/P ratio in year t+2 (t+3) (untabulated t-statistics is 1.97 and 1.69, respectively) from 6.3 percent to 6.7 percent (from 3.6 percent to 4.1 percent).

Consistent with the regression test, this result indicates that analysts' earnings forecasts are more biased than stock prices in interpreting accruals since the opposite signals sent by the V/P ratios as to the market's mispricing of accruals appear to be rectified by the accruals. Overall, the return test confirms the results of the regression test.

6.8 Extension to the Alternative Indicators of the Accrual Anomaly

In this section, I extend my analysis to the alternative indicators of the accrual anomaly so as to check the robustness of the main results.

6.8.1 Accruals From the Statements of Cash Flows

In the main analysis, I follow Sloan (1996) in measuring accruals as the changes in successive balance sheet accounts. However, Hribar and Collins (2002) suggest that the accruals measured from the statements of cash flows, which are required by Statements of Financial Accounting Standards No.95 (SFAS No.95), are more accurate, since the accruals measured from the balance sheet changes are contaminated by the measurement errors arising out of mergers, acquisitions, and divestitures. As a robustness check, I rerun the regression test after measuring the accruals directly from the statements of cash flows.[71] I calculate the accruals by taking the earnings before extraordinary items and discontinued operations (Compustat data #123) less the net cash flows from operating activities (Compustat data #308). Then, I scale total accruals by average total assets.

[71] Since the statements of cash flows data for accrual measurement are available only from 1987, a year before SFAS No.95 took effect, the number of sample decreases a bit.

As shown by Table 13, the results of the regression test using the accruals measured from the statements of cash flows are qualitatively similar to the main results gained by using the accruals measured from the balance sheet accounts. Thus, I conclude that my findings are robust even when this alternative measure of accruals is used.

6.8.2 Working Capital Accruals and Non-Working Capital Accruals

Bradshaw et al. (2001) demonstrate that the cross-sectional variation in the working capital accruals underlies the association of total accruals and abnormal stock returns. Bradshaw et al. (2001) argue that non-working capital accruals are less likely to lead to the market's mispricing, since non-working capital accruals, consisting of such long-term accruals as depreciation and asset write-offs, are less likely to reverse.[72] Thus, I rerun the regression test after decomposing the total accruals into working capital and non-working capital accruals so as to determine the component of total accruals about which analysts' earnings forecasts are more biased than stock prices.

Following Lev and Nissim (2002), I measure the working capital accruals as equation (22). Then I measure the non-working capital accruals by taking total accruals less working capital accruals.[73] I scale both of these accruals components by average total asset.

$$\text{Working Capital Accruals} = \Delta AR + \Delta Inventory - \Delta AP - \Delta ITP + \Delta Others \quad (22)$$

where ΔAR is the annual change in accounts receivable (- Compustat data #302); $\Delta Inventory$ is

[72] Untabulated return test indicates that the abnormal returns from the non-working capital accruals are around 6 percent over the ensuing three years, while the abnormal returns from the working capital accruals are around 10 percent.

[73] Since this measurement also requires the data reported in the statements of cash flows, the number of sample decreases.

the annual change in inventories (- Compustat data #303); ΔAP is the annual change in accounts payable and accrued liabilities (Compustat data #304); ΔITP is the annual change in income tax payable (Compustat data #305); and ΔOthers is the annual change in other working capital items (- Compustat data #307).

Table 14 shows mixed results, depending upon which valuation model is used for the calculation of V/P ratios. In the case of the V/P ratios calculated via the RIV model, analysts' earnings forecasts appear to be more biased than stock prices only in interpreting the non-working capital accruals. This result may be deemed strange, since it is hard to believe that analysts have an ability inferior to that of investors to correctly interpret such transparent persistence of the non-working capital accruals. However, this result may look reasonable, when we consider the case in which analysts intentionally misinterpret the accruals for a reason, such as the promotion of stock transactions, regardless of their ability to fully incorporate the persistence of the earnings components. But, as for the case in which the V/P ratios are calculated through the OJ model or the multiple valuation approach, analysts' earnings forecasts appear to be more biased than stock prices only in interpreting the working capital accruals.

Although the results of Table 14 are mixed, it is clear that analysts' earnings forecasts are more biased than stock prices in interpreting at least one component of total accruals, either working capital or non-working capital accruals, while analysts' earnings forecasts are not less biased than stock prices in interpreting the remaining component of total accruals.

6.8.3 Discretionary Accruals and Non-Discretionary Accruals

Xie (2001) suggests that the market's mispricing of accruals is largely due to the abnormal accruals, which potentially arise out of earnings management. Since the issue of how to counteract earnings management is of fundamental interest, I examine whether analysts' earnings forecasts can guide investors to undo the potential earnings management.

So as to obtain a proxy of the managed earnings, I differentiate the discretionary accruals from total accruals by using the cross-sectional Jones model as follows:[74]

$$TAcc_t = \gamma_1 + \gamma_2 GPPE_t + \gamma_3 \Delta \mathrm{Rev}_t + \varepsilon_t \qquad (23)$$

where $TAcc_t$ is the total accruals during year t; $GPPE_t$ is the gross property, plant, and equipment at the end of year t; ΔRev_t is the change of revenue during year t; all of those, including the constant term, are scaled by average total assets during year t. ε is the error term.

I estimate the cross-sectional Jones model year by year separately within each "Industry" reported in I/B/E/S. The residuals from the regressions are used as a proxy for the discretionary accruals. Then, the non-discretionary accruals are measured as the difference between the total accruals and the discretionary accruals. In particular, I measure the discretionary and the non-discretionary accruals through two different measurements of total accruals: one through the balance sheet approach, and the other through the statements of cash flows. Then, I run the regression test on both the discretionary and the non-discretionary accruals so as to examine whether analysts' earnings forecasts are less biased than stock prices especially in interpreting the

[74] The benefit of taking this approach is that using a cross-sectional model, rather than its time-series counterpart, will result in a larger sample size that is less subject to a survivorship bias arising from the needs for long time-series data. Bartov, Gul and Tsui (2001) suggest that the cross-sectional Jones model performs relatively better than its time-series counterparts in detecting earnings management, at least among the firms characterized by extreme earnings management.

discretionary accruals. If analysts' earnings forecasts are less biased than stock prices in interpreting the discretionary accruals, investors will be able to further undo the earnings management by fixating on analysts' earnings forecasts.

Panel A of Table 15 indicates that when the discretionary and the non-discretionary accruals are derived through the balance sheet approach, analysts' earnings forecasts appear to be more biased than stock prices in interpreting the discretionary accruals. However, Panel B of Table 15 reports that when the discretionary and the non-discretionary accruals are derived from the statements of cash flows, analysts' earnings forecasts appear to be more biased than stock prices in interpreting the non-discretionary accruals.[75]

Although the results are mixed, one thing is clear that investors cannot further mitigate the illusionary effects of managed earnings simply by fixating on analysts' earnings forecasts.

6.8.4 Growth in Long-Term Net Operating Assets

Fairfield, Whisenant and Yohn (2003) suggest that the accrual anomaly is a subset of a broader anomaly related to the investors' difficulty in valuing the growth in net operating assets. They find the abnormal stock returns from the trading strategy based on the growth in long-term net operating assets (hereafter, GrLTNOA) as well as on

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[75] Untabulated return test indicates that the abnormal returns from both the discretionary and the non-discretionary accruals are significant. When total accruals are measured from the balance sheet (the statements of cash flows), the abnormal returns from the discretionary accruals are around 7 percent (5 percent), while the abnormal returns from the non-discretionary accruals are around 10 percent (10 percent) over the ensuing three years. This result is inconsistent with Xie (2001), who suggests that the accrual anomaly is largely due to the market's misinterpretation of discretionary accruals, not non-discretionary accruals.

accruals.[76] I examine whether analysts' earnings forecasts can indicate the market's mispricing of GrLTNOA as well as of accruals. Following Fairfield et al. (2003), I measure the GrLTNOA as the change in net operating assets less accruals, scaled by average total assets.[77]

Table 16 presents mixed results as to whether analysts' earnings forecasts are less biased than stock prices in interpreting GrLTNOA. When the V/P ratios are measured through the RIV1 or RIV2 models, and the multiple valuation approach, the coefficients of GrLTNOA are significantly negative. This result indicates that analysts' earnings forecasts are less biased than stock prices in interpreting GrLTNOA. This result implies that there is an asymmetry in the relative bias of analysts' earnings forecasts to stock prices in interpreting the growth in long-term net operating assets vs. the growth in short-term net operating assets, that is, accruals.

However, when the V/P ratio is measured through the OJ model, the coefficient of GrLTNOA is significantly positive. This result indicates that analysts' earnings forecasts are more biased than stock prices in interpreting GrLTNOA. The reason for these mixed results remains an open question.

In sum, no concrete conclusion seems possible, as to whether analysts' earnings forecasts are less biased than stock prices in interpreting the growth in long-term net operating assets. However, the coefficients of accruals are still significantly positive for all of the V/P ratios, even when GrLTNOA is controlled for.

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[76] Consistent with Fairfield et al. (2003), untabulated return test reports the significant abnormal returns (6.5 percent only in year t+1) from the trading strategy based on GrLTNOA.

[77] For detail definition, see Fairfield et al. (2003) pp. 357-359.

6.9 Other Sensitivity Analyses

In addition to checking the robustness of the main results by means of the above supplementary tests, I conduct the following additional sensitivity analyses.

6.9.1 Non-Linearity

In the regression test, I implicitly assume that the relationships between V/P ratios and accruals are linear. In fact, this may not be the case. To address this concern, I conduct the following two sensitivity analyses.

First, I conduct the rank regression by converting the V/P ratios and accruals into their cross-sectional ranks, scaled by the number of cross-sectional observations. As shown by Panel A of Table 17, the coefficients of accruals for all the V/P ratios are still significantly positive, which is consistent with the main results.

Second, I conduct the regression test after converting the V/P ratios into their logarithmic values to mitigate the effects of the extreme variables within the tail of the distribution. Panel B of Table 17 makes it clear that the main results are robust in this sensitivity analysis.

6.9.2 Scaling Accruals by Previous Year's Total Assets

Following Sloan (1996), I scale the accruals by using the average of the previous and the current year's total assets. However, the accruals will be correlated with the scaling factor, since the accruals is a part of the increased total assets during current year. This potentially imperfect scaling of accruals may lead to a bias in the accruals coefficient.

To address this potential problem, I scale the accruals by using previous year's total assets, instead of the average total assets. Then, I conduct the regression test. As shown by Table 18, this different way of scaling accruals has no effect on the main results of this study.

7. Conclusion

Elgers et al. (2003) conclude that the bias of analysts' earnings forecasts is significantly less than the bias of market's earnings expectations in interpreting accruals. Their argument implies that analysts' earnings forecasts can potentially mitigate the market's mispricing of accruals by guiding investors to reduce their earnings prediction errors arising out of their misinterpretations of accruals. However, contrary to their argument, I document that analysts' earnings forecasts are more biased than stock prices in interpreting accruals. Further analysis also reveals that the greater bias of analysts' earnings forecasts, relative to stock prices, is maintained until at least one year after. It also suggests that analysts' adjustments of their accruals misinterpretations appear to be more sluggish than investors' adjustments by about three months. Overall, these results indicate that analysts' earnings forecasts do not function as a parsimonious signal for the market's mispricings of accruals.

However, a note of caution is necessary in the interpretation of these results. First, since I compare analysts' earnings forecasts and stock prices only after analysts and investors have interacted with each other in order to adjust their earnings expectations, my results cannot be taken as denying the usefulness of analysts' earnings forecasts at all in mitigating the market's mispricing of accruals. Rather, this study examines whether analysts' earnings forecasts can guide investors to mitigate the extent of "currently given" mispricing of accruals. Its results indicate that if investors were to fixate naively on analysts' earnings forecasts, their mispricing of accruals would only be exacerbated, since analysts' earnings forecasts are more biased than stock prices. Second, since analysts' long-term earnings forecasts, beyond five years ahead, are unobservable, the calculation of the V/P ratios requires arbitrary assumptions about their expectations about long-term growth of earnings. Although I consider various assumptions about the long-term growth of earnings to address this problem, and find qualitatively similar results for each of assumptions, I cannot completely rule out this under-identification problem.

Although I conclude that analysts' earnings forecasts are more biased than stock prices in interpreting accruals, a vital question remains unresolved: why do professional analysts misinterpret accruals more than marginal traders? One possibility is that analysts simply repackage and retransmit the information already contained in stock prices. Thus, analysts are unable to provide information beyond that impounded in stock prices. Another possibility is that analysts intentionally misinterpret accruals to promote stock transactions. But, this issue remains an open question deserving further investigation.

The underlying reason for the abnormal stock returns gained via the V/P ratio also remains to be explored further. Although Frankel and Lee (1998) and Ali et al. (2003) suggest that the abnormal returns gained via the V/P ratio may reflect the superior ability of analysts' earnings forecasts in finding mispriced stocks, they are silent about what types of mispricings are captured by the V/P ratio. The results of this study imply that frequently cited market anomalies, such as the accrual anomaly and the price momentum effects, are not indicated by the V/P ratio. Thus, further investigation is still needed to confirm the V/P ratio as an indicator of the market's mispricing.[78]

[78] Ali et al. (2003) rule out the risk explanation of the abnormal stock returns from the V/P ratio by showing that the abnormal returns from the V/P ratio are concentrated around the subsequent earning announcements, and that potential risk proxies cannot explain the abnormal returns. However, there are still some concerns about such mispricing explanations of the abnormal returns from the V/P ratio. For example, Kothari (2001) expresses his concern about the long-term feature of the abnormal returns from the V/P ratio by saying that it is hard for him to believe that the market tends to postpone its adjustment of mispricing until one year has passed, even though it has already observed the signals coming from analysts' earnings forecasts about its mispricing.

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Appendix: Variable Definitions

In this Appendix, I define the variables used in the following tables in alphabetical order.

ACCRUALS: the change in non-cash current assets less the change in current liability (exclusive of short-term debt and taxes payable) less depreciation expense, scaled by average total assets.

ACCRUALSSCF: the earnings before extraordinary items and discontinued operations less the net cash flow from operating activities, scaled by average total assets.

ACCRUALSSPA: the change in non-cash current assets less the change in current liability (exclusive of short-term debt and taxes payable) less depreciation expense, scaled by the previous year's total assets.

AEF1: Analysts' one-year-ahead earnings forecasts, scaled by average total assets.

BETA: the systematic risks estimated by regressing at least 30 up to 60 prior monthly stock returns against the corresponding market returns.

B/M: the book value of equity divided by its market value of equity.

CASHFLOWS: Income before extraordinary items scaled by average total assets minus ACCRUALS.

DA: the discretionary accruals measured by the residuals of the cross-sectional year-by-year regression of ACCRUALS on the gross property, plant, and equipment, and the change of revenue. All of these variables are scaled by average total assets.

DASCF: the discretionary accruals measured by the residuals of the cross-sectional year-by-year regression of ACCRUALSSCF on the gross property, plant, and equipment, and the change of revenue. All of these variables are scaled by average total assets.

D/M: the debt divided by the market value of equity.

EARN1: One-year-ahead income before extraordinary items, scaled by average total assets.

EFDEV: the standard deviation of the analysts' one-year-ahead earnings forecasts scaled by the absolute mean of those forecasts.

GrLTNOA: the growth in long-term net operating assets, scaled by average total assets. See Fairfield et al. (2003) pp. 357-359 for detailed definitions.

IDRISK: the variance of residuals from the regressions of beta estimation.

MOMENTUM: the stock returns during the prior twelve months.

NDA: the non-discretionary accruals measured by ACCRUALS less DA.

NDASCF: the non-discretionary accruals measured by ACCRUALSSCF less DASCF.

NONWC: ACCRUALSSCF less WC, scaled by average total assets.

OIVOL: the standard deviation of operating income before depreciation in at least past two up to five years, scaled by average total assets.

PFV/P (ES): the intrinsic value estimate, which is derived through the multiple valuation approach by using the sum of future realized earnings up to five years ahead as the value driver, scaled by stock price.

PFV/P (OJ): the intrinsic value estimate, which is derived through the Ohlson-Juettner-Nauroth model by using the next five years' realized earnings under the assumption that the abnormal earnings beyond five years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price.

PFV/P (RIV1): the intrinsic value estimate, which is derived through the residual income valuation model by using the next five years' realized earnings under the assumption that ROE beyond five years ahead trends linearly toward the industry median ROE by 12^{th} year and thereafter the residual incomes are constant in perpetuity, scaled by stock price.

PFV/P (RIV2): the intrinsic value estimate, which is derived through the residual income valuation model by using the next five years' realized earnings under the assumption that the residual incomes are constant beyond five years ahead, scaled by stock price.

PFV/P (RIV3): the intrinsic value estimate, which is derived through the residual income valuation model by using the next five years' realized earnings under the assumption that the residual incomes beyond five years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price.

SAR1: One-year-ahead size-adjusted annual stock returns.

SIZE or MV: the market value of equity.

SPVRRI: the sum of the present values of the revisions of expected future residual incomes calculated from analysts' one-year-ahead revisions of earnings forecasts for the periods from two to five years ahead, scaled by average total assets.

SR: the annual stock returns.

SUE: the standardized unexpected quarterly earnings, which is equal to the current fourth-quarter's actual earnings minus the previous fourth-quarter's actual earnings divided by the standard deviation of the unexpected quarterly earnings over the previous seven quarters.

V/P (EPS0): the intrinsic value estimate, which is derived through the multiple valuation approach by using the actual earnings reported in I/B/E/S as the value driver, scaled by stock price.

V/P (EPS1): the intrinsic value estimate, which is derived through the multiple valuation approach by using analysts' one-year-ahead earnings forecasts as the value driver, scaled by stock price.

V/P (EPS2): the intrinsic value estimate, which is derived through the multiple valuation approach by using analysts' two-year-ahead earnings forecasts as the value driver, scaled by stock price.

V/P (EPS3): the intrinsic value estimate, which is derived through the multiple valuation approach by using analysts' three-year-ahead earnings forecasts as the value driver, scaled by stock price. Analysts' three-year-ahead earnings forecasts are calculated by multiplying their two-year-ahead earnings forecasts by their five-year earnings-growth forecasts.

V/P (EPS4): the intrinsic value estimate, which is derived through the multiple valuation approach by using analysts' four-year-ahead earnings forecasts as the value driver, scaled by stock price. Analysts' four-year-ahead earnings forecasts are calculated by multiplying their three-year-ahead earnings forecasts by their five-year earnings-growth forecasts.

V/P (EPS5): the intrinsic value estimate, which is derived through the multiple valuation approach by using analysts' five-year-ahead earnings forecasts as the value driver, scaled by stock price. Analysts' five-year-ahead earnings forecasts are calculated by multiplying their four-year-ahead earnings forecasts by their five-year earnings-growth forecasts.

V/P (ES): the intrinsic value estimate, which is derived through the multiple valuation approach by using the sum of analysts' earnings forecasts up to five years ahead as the value driver, scaled by stock price.

V/P (OJ): the intrinsic value estimate, which is derived through the Ohlson-Juettner-Nauroth model by assuming that the abnormal earnings beyond five years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price.

V/P (OJAT): the intrinsic value estimate, which is derived through the Ohlson-Juettner-Nauroth model by assuming that the abnormal earnings beyond five years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price. When the abnormal earnings beyond five years ahead are negative, I assume them to be zero.

V/P (RIV1): the intrinsic value estimate, which is derived through the residual income valuation model by assuming that ROE beyond five years ahead trends linearly to the industry median ROE by 12th year and thereafter the residual incomes are constant in perpetuity, scaled by stock price.

V/P (RIV1AT): the intrinsic value estimate, which is derived through the residual income valuation model by assuming that ROE beyond five years ahead trends linearly to the industry median ROE by 12th year and thereafter the residual incomes are constant in perpetuity, scaled by stock price. When the residual incomes beyond twelve years ahead are negative, I assume them to be zero.

V/P (RIV2): the intrinsic value estimate, which is derived through the residual income valuation model by assuming that the residual incomes are constant beyond five years ahead, scaled by stock price.

V/P (RIV2AT): the intrinsic value estimate, which is derived through the residual income valuation model by assuming that the residual incomes are constant beyond five years ahead, scaled by stock price. When the residual incomes beyond five years ahead are negative, I assume them to be zero.

V/P (RIV3): the intrinsic value estimate, which is derived through the residual income valuation model by assuming that the residual incomes beyond five years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price.

V/P (RIV3AT): the intrinsic value estimate, which is derived through the residual income valuation model by assuming that the residual incomes beyond five years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price. When the residual incomes beyond five years ahead are negative, I assume them to be zero.

V/P (2OJ): the intrinsic value estimate, which is derived through the two-period Ohlson-Juettner-Nauroth model by assuming that the abnormal earnings beyond two years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price.

V/P (2RIV1): the intrinsic value estimate, which is derived through the two-period residual income valuation model by assuming that ROE beyond two years ahead trends linearly to the industry median ROE by 12th year and thereafter the residual incomes are constant in perpetuity, scaled by stock price.

V/P (2RIV2): the intrinsic value estimate, which is derived through the two-period residual income valuation model by assuming that the residual incomes are constant beyond two years ahead, scaled by stock price.

V/P (2RIV3): the intrinsic value estimate, which is derived through the two-period residual income valuation model by assuming that the residual incomes beyond two years ahead increase eternally by the annual rate of risk-free rate minus 3 percent, scaled by stock price.

WC: the change in accounts receivable plus the change in inventories less the change in accounts payable and accrued liabilities less the change in income tax payable plus the change in other working capital items, scaled by average total assets.

Table 1. Descriptive Statistics

This table presents the distributions of the variables used in this study. See the Appendix for the definitions of all variables except those explained next. EPS0/P is the actual earnings reported in I/B/E/S, scaled by stock price. EPS1/P is the analysts' one-year-ahead earnings forecasts scaled by stock price. In a similar manner, EPS2/P, EPS3/P, EPS4/P, and EPS5/P are respectively analysts' two-, three-, four-, and five-year-ahead earnings forecasts scaled by stock price. Analysts' three-year-ahead earnings forecasts are calculated by multiplying their two-year-ahead earnings forecasts by their five-year earnings-growth forecasts. Analysts' four- and five-year-ahead earnings forecasts are calculated in a similar manner. 5YEGF is the analysts' forecasts of five-year earnings-growths. ROE is the return on the book value of equity. RF is the risk-free rate, proxied by the ten-year long-term government bond rates. NUMEST is the number of individual analysts' earnings forecasts consisting of the consensus.

Panel A. Distribution of the main variables and the ratio of earnings forecasts to stock price

Variable	Mean	Std. Dev.	1%	5%	10%	25%	50%	75%	90%	95%	99%
ACCRUALS	-0.04	0.06	-0.20	-0.14	-0.11	-0.07	-0.04	-0.01	0.04	0.08	0.16
CASHFLOWS	0.10	0.09	-0.13	-0.03	0.01	0.06	0.10	0.14	0.19	0.23	0.32
WC	0.02	0.06	-0.12	-0.06	-0.03	-0.01	0.01	0.04	0.09	0.12	0.20
GrLTNOA	0.12	0.14	-0.14	-0.02	0.01	0.04	0.08	0.15	0.27	0.38	0.67
EPS0/P	0.05	0.04	-0.10	0.00	0.02	0.04	0.05	0.07	0.10	0.11	0.14
EPS1/P	0.07	0.03	-0.01	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.14
EPS2/P	0.08	0.03	0.03	0.04	0.05	0.06	0.08	0.10	0.12	0.13	0.16
EPS3/P	0.09	0.03	0.03	0.05	0.06	0.07	0.09	0.11	0.14	0.15	0.19
EPS4/P	0.11	0.04	0.04	0.05	0.07	0.08	0.10	0.13	0.15	0.18	0.22
EPS5/P	0.12	0.04	0.05	0.06	0.08	0.09	0.12	0.14	0.18	0.21	0.26
5YEGF	0.15	0.07	0.03	0.04	0.06	0.10	0.14	0.19	0.25	0.30	0.39
ROE	0.15	0.26	-0.33	-0.09	0.00	0.08	0.14	0.20	0.29	0.37	0.71
RF (%)	6.92	1.50	5.14	5.14	5.18	5.64	6.89	8.02	8.79	9.18	11.43
NUMEST	11.63	8.62	1	2	3	5	9	17	24	29	37
MOMENTUM	0.17	0.41	-0.60	-0.40	-0.27	-0.08	0.12	0.35	0.65	0.92	1.66
SUE	0.03	6.75	-17.77	-4.54	-2.36	-0.61	0.34	1.66	3.17	4.55	8.82
BETA	1.04	0.56	-0.04	0.26	0.39	0.65	1.00	1.34	1.72	2.01	2.69
MV (Million$)	3910	13645	29	65	102	252	806	2621	7340	15481	59045
B/M	0.51	0.32	0.06	0.13	0.18	0.29	0.46	0.67	0.89	1.09	1.56
D/M	0.41	0.52	0.00	0.00	0.00	0.07	0.24	0.56	0.99	1.35	2.42
IDRISK	0.012	0.014	0.001	0.002	0.002	0.004	0.007	0.014	0.026	0.035	0.062
OIVOL	0.022	0.017	0.002	0.004	0.006	0.011	0.018	0.028	0.042	0.054	0.080
EFDEV	0.141	0.660	0.000	0.008	0.013	0.024	0.046	0.103	0.233	0.406	1.451

Panel B. Distribution of the V/P ratios

Variable	Mean	Std. Dev.	1%	5%	10%	25%	50%	75%	90%	95%	99%
V/P (RIV1)	0.83	0.51	0.17	0.26	0.33	0.49	0.70	1.04	1.47	1.86	2.66
V/P (RIV2)	0.75	0.32	0.23	0.33	0.40	0.52	0.69	0.91	1.17	1.38	1.78
V/P (RIV3)	0.85	0.44	0.18	0.30	0.39	0.55	0.76	1.05	1.41	1.71	2.37
V/P (OJ)	1.26	0.97	0.24	0.39	0.49	0.67	0.96	1.49	2.45	3.27	5.22
V/P (ES)	0.99	0.27	0.46	0.58	0.67	0.82	0.97	1.13	1.35	1.51	1.77
V/P (EPS1)	1.00	0.31	0.36	0.51	0.62	0.81	0.98	1.17	1.39	1.56	1.88
V/P (EPS2)	1.00	0.28	0.43	0.57	0.66	0.82	0.97	1.14	1.35	1.51	1.78
V/P (EPS3)	0.99	0.27	0.45	0.58	0.67	0.82	0.97	1.13	1.35	1.51	1.76
V/P (EPS4)	0.99	0.27	0.47	0.59	0.67	0.82	0.97	1.13	1.36	1.51	1.80
V/P (EPS5)	0.99	0.28	0.46	0.59	0.67	0.81	0.96	1.13	1.36	1.54	1.89
V/P (EPS0)	1.00	0.39	0.20	0.39	0.52	0.76	0.98	1.22	1.50	1.72	2.09

Table 2. Correlations Between Key Variables

This table presents the Pearson (lower triangle) and the Spearman (upper triangle) correlations between the key variables. See the Appendix for the definitions of all variables. ***, **, and * indicate, respectively, the significance level at the 1, 5 and 10 percent levels or better.

	V/P (RIV1)	V/P (RIV2)	V/P (RIV3)	V/P (OJ)	V/P (ES)	ACCRUALS	MOMENTUM	SUE	BETA	Log (MV)	Log (B/M)
V/P (RIV1)		0.98***	0.96***	0.76***	-0.09	0.14	-0.21	-0.13	-0.23	0.17	0.58***
V/P (RIV2)	0.82***		0.98***	0.75***	0.09	0.12	-0.23	-0.12	-0.31	0.19	0.60***
V/P (RIV3)	0.75***	0.96***		0.75***	-0.06	0.06	-0.12	-0.06	-0.32	0.26	0.50***
V/P (OJ)	0.63***	0.77***	0.82***		-0.13	0.36*	0.08	0.06	0.11	0.02	0.28
V/P (ES)	0.35***	0.50***	0.40***	0.23***		0.40**	-0.42**	-0.30	0.02	-0.37**	0.67***
ACCRUALS	0.02**	0.03***	0.04***	0.04***	0.08***		0.07	0.43**	0.50***	-0.23	0.22
MOMENTUM	-0.16***	-0.17***	-0.09***	-0.03***	-0.21***	0.00		0.81***	0.51***	0.61***	-0.52***
SUE	-0.04***	-0.03***	-0.01	-0.01	-0.05***	0.06***	0.10***		0.48**	0.47**	-0.25
BETA	-0.55***	-0.57***	-0.60***	-0.47***	-0.01	0.09***	-0.02***	0.01		0.06	-0.19
Log (MV)	-0.15***	-0.12***	-0.04***	-0.12***	-0.31***	-0.11***	0.09***	0.01	-0.17***		-0.17
Log (B/M)	0.35***	0.31***	0.11***	0.00	0.38***	-0.05***	-0.35***	-0.08***	-0.11***	-0.35***	

Table 3. Descriptive Return Test

This table presents the cross-sectional year-by-year regressions of the stock returns as of the end of April. The regression equations are as follows.

Model1: $SR = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 BETA + \alpha_3 SIZE + \alpha_4 B/M + \varepsilon$

Model2: $SR = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 BETA + \alpha_3 SIZE + \alpha_4 B/M + \alpha_5 OIVOL + \alpha_6 D/M + \alpha_7 IDRISK + \alpha_8 EFDEV + \varepsilon$

Model3: $SR = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 MOMENTUM + \alpha_3 SUE + \alpha_4 BETA + \alpha_5 SIZE + \alpha_6 B/M + \alpha_7 OIVOL + \alpha_8 D/M + \alpha_9 IDRISK + \alpha_{10} EFDEV + \varepsilon$

See the Appendix for the definitions of all variables. All of the variables except SR are replaced by their scaled decile values. The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R^2 is the average adjusted R^2 of the annual regressions. Each low of the table presents the result of the regression when SR is the one-, two-, and three-year-ahead annual stock returns.

Dependent V.	INTERCEPT	ACCRUALS	MOMENTUM	SUE	BETA	SIZE	B/M	OIVOL	D/M	IDRISK	EFDEV	Adj. R^2	N. of Sample
	0.192	-0.069			-0.014	-0.013	-0.032					0.05	12729
	(4.13)	(-4.36)			(-0.24)	(-0.30)	(-0.86)						
	[7.52]	[-4.51]			[-0.27]	[-0.36]	[-0.94]						
One-Year-Ahead Stock Return	0.214	-0.071			-0.026	-0.006	-0.005	-0.019	-0.034	0.000	-0.021	0.06	11511
	(4.18)	(-5.12)			(-0.93)	(-0.14)	(-0.24)	(-1.25)	(-0.98)	(0.00)	(-0.68)		
	[5.16]	[-5.91]			[-1.11]	[-0.13]	[-0.23]	[-1.21]	[-0.93]	[-0.01]	[-0.64]		
	0.149	-0.066	0.089	-0.002	-0.024	-0.013	0.025	-0.013	-0.038	0.001	-0.010	0.07	11511
	(2.60)	(-4.44)	(4.13)	(-0.12)	(-0.90)	(-0.35)	(1.23)	(-0.84)	(-1.11)	(0.02)	(-0.33)		
	[2.84]	[-5.69]	[4.47]	[-0.18]	[-1.06]	[-0.34]	[0.89]	[-0.79]	[-1.03]	[0.03]	[-0.30]		

Dependent V.	INTERCEPT	ACCRUALS	MOMENTUM	SUE	BETA	SIZE	B/M	OIVOL	D/M	IDRISK	EFDEV	Adj. R^2	N. of Sample
	0.099	-0.030			0.033	-0.005	0.041					0.04	11230
	(2.59)	(-1.82)			(0.61)	(-0.10)	(1.29)						
	[6.19]	[-2.48]			[0.78]	[-0.18]	[1.37]						
Two-Year-Ahead Stock Return	0.076	-0.040			0.006	0.036	0.057	-0.001	-0.004	0.065	-0.034	0.06	10216
	(1.58)	(-2.51)			(0.19)	(0.85)	(2.57)	(-0.08)	(-0.10)	(1.11)	(-1.10)		
	[1.36]	[-2.71]			[0.28]	[0.79]	[2.41]	[-0.09]	[-0.11]	[1.84]	[-1.01]		
	0.127	-0.042	-0.059	-0.001	-0.003	0.033	0.036	-0.007	-0.003	0.072	-0.042	0.06	10216
	(3.20)	(-2.71)	(-2.29)	(-0.07)	(-0.09)	(0.77)	(2.19)	(-0.43)	(-0.09)	(1.20)	(-1.76)		
	[3.08]	[-2.96]	[-1.71]	[-0.05]	[-0.13]	[0.73]	[2.41]	[-0.49]	[-0.11]	[2.07]	[-1.55]		
	0.133	-0.029			0.046	-0.053	0.013					0.03	9935
	(3.16)	(-1.54)			(0.74)	(-0.97)	(0.38)						
	[5.41]	[-1.93]			[0.85]	[-1.76]	[0.39]						
Three-Year-Ahead Stock Return	0.126	-0.042			0.027	-0.024	0.014	-0.009	-0.001	0.047	-0.021	0.04	9079
	(3.32)	(-2.26)			(0.66)	(-0.74)	(0.56)	(-0.42)	(-0.03)	(1.00)	(-0.67)		
	[3.23]	[-2.14]			[0.81]	[-0.73]	[0.46]	[-0.43]	[-0.04]	[1.83]	[-0.74]		
	0.137	-0.045	-0.027	0.014	0.026	-0.022	0.005	-0.013	-0.002	0.049	-0.016	0.04	9079
	(2.74)	(-2.40)	(-0.94)	(0.81)	(0.62)	(-0.67)	(0.26)	(-0.56)	(-0.05)	(1.04)	(-0.50)		
	[3.01]	[-2.33]	[-1.18]	[1.00]	[0.73]	[-0.66]	[0.17]	[-0.55]	[-0.06]	[1.82]	[-0.55]		

Table 4. Comparisons of Weightings of Accruals and Cashflows for the Prediction of One-Year-Ahead Earnings: Historical Relations' vs. Analysts' vs. Investors'

Panel A presents the cross-sectional year-by-year regressions as of the end of April for the calculations of the weightings of accruals and cashflows for the prediction of one-year-ahead earnings in historical relations and done by analysts or investors. The regression equation is as follows. See the Appendix for the definitions of all variables.

Model1: $EARN1 = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 CASHFLOWS + \varepsilon$

Model2: $AEF1 = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 CASHFLOWS + \varepsilon$

Model3: $SAR1 = \alpha_0 + \alpha_1 EARN1 + \alpha_2 ACCRUALS + \alpha_3 CASHFLOWS + \varepsilon$

Model4: $SAR1 = \alpha_0 + \alpha_1 EARN1 + \alpha_2 ACCRUALS + \alpha_3 CASHFLOWS + \alpha_4 SPVRRI + \varepsilon$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R^2 is the average adjusted R^2 of the annual regressions.

Panel A. Regressions for the calculation of weightings of accruals and cashflows

Dependent V.	INTERCEPT	EARN1	ACCRUALS	CASHFLOWS	SPVRRI	Adj. R^2	N. of Years	N. of Sample
	0.01		0.74	0.81		0.39	18	11701
EARN1	(3.75)		(21.33)	(22.62)				
	[3.11]		[10.56]	[14.58]				
	0.04		0.80	0.77		0.65	18	11701
AEF1	(10.05)		(25.04)	(20.97)				
	[5.29]		[13.53]	[11.25]				
	-0.03	1.49	-1.43	-1.11		0.07	18	11701
SAR1	(-1.69)	(6.69)	(-7.37)	(-6.03)				
	[-1.28]	[7.15]	[-6.88]	[-5.57]				
	-0.01	0.98	-0.61	-0.56	1.14	0.21	18	11701
SAR1	(-0.32)	(5.90)	(-4.27)	(-4.17)	(12.23)			
	[-0.23]	[5.87]	[-5.09]	[-4.22]	[12.29]			

Panel B presents the weightings of accruals and cashflows for the prediction of one-year-ahead earnings done by analysts or investors as well as the weightings in historical relations. The historical weightings of accruals (cashflows) are the coefficients of ACCRUALS (CASHFLOWS) in the Model 1 of Panel A. The analysts' weightings of accruals (cashflows) are the coefficients of ACCRUALS (CASHFLOWS) in the Model 2 of Panel A. The unadjusted investors' weightings of accruals (cashflows), as in Elgers et al. (2003), are calculated by dividing the negative coefficient of ACCRUALS (CASHFLOWS) by the coefficient of EARN1 in the Model 3 of Panel A. The adjusted investors' weightings of accruals (cashflows), as in Liu and Thomas (2000), are calculated by dividing the negative coefficient of ACCRUALS (CASHFLOWS) by the coefficient of EARN1 in the Model 4 of Panel A.

Panel B. Weightings of accruals and cashflows for the prediction of one-year-ahead earnings in historical relations and done by analysts or investors

	ACCRUALS	CASHFLOWS	Ratio of Weightings (ACCRUALS/CASHFLOWS)
Historical Weightings	0.74	0.81	0.92
Analysts' Weightings	0.80	0.77	1.04
Investors' Weightings (Unadjusted)	0.96	0.75	1.29
Investors' Weightings (Adjusted)	0.62	0.57	1.09

Panel C presents the differences in the weightings of accruals and cashflows for the prediction of one-year-ahead earnings across historical relations', analysts' and investors'. The number within ( ) below each difference is the bootstrap-type t-statistics for the difference.

Panel C. Comparisons of weightings: historical relations' vs. analysts' vs. investors'

Contrasts of Weightings (Ratio)	ACCRUALS	CASHFLOWS	Ratio of Weightings (ACCRUALS/CASHFLOWS)
Analysts - Historical	0.05 (2.79)	-0.04 (-2.48)	0.12 (6.30)
Investors (Unadjusted) - Historical	0.22 (2.92)	-0.06 (-0.92)	0.37 (5.01)
Investors (Unadjusted) - Analysts	0.16 (2.34)	-0.02 (-0.24)	0.25 (3.57)
Investors (Adjusted) - Investors (Unadjusted)	-0.34 (-6.72)	-0.18 (-3.63)	-0.20 (-2.45)
Investors (Adjusted) - Historical	-0.12 (-1.45)	-0.24 (-2.65)	0.17 (1.31)
Investors (Adjusted) - Analysts	-0.18 (-2.05)	-0.20 (-2.20)	0.05 (0.34)

Table 5. Regression Test of the V/P ratios

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

Panel A. Regression of the V/P ratios based on the RIV or the OJ model

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
	0.776	0.064	0.003	18	12745
V/P (RIV1)	(17.91)	(4.06)			
	[8.44]	[5.37]			
	0.719	0.035	0.002	18	12745
V/P (RIV2)	(31.54)	(2.71)			
	[17.74]	[3.11]			
	0.801	0.061	0.002	18	12745
V/P (RIV3)	(25.12)	(4.11)			
	[12.61]	[5.75]			
	1.136	0.132	0.002	18	12745
V/P (OJ)	(13.31)	(4.05)			
	[5.21]	[3.44]			

Panel B. Regression of the V/P ratios based on the multiple valuation approach

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (ES)	0.971 (240.45) [252.87]	0.050 (6.28) [5.98]	0.004	18	10716
V/P (EPS1)	0.988 (229.75) [325.70]	0.026 (2.58) [2.70]	0.001	18	10716
V/P (EPS2)	0.985 (250.86) [324.30]	0.023 (2.70) [2.89]	0.001	18	10716
V/P (EPS3)	0.975 (244.24) [272.25]	0.042 (5.23) [5.21]	0.003	18	10716
V/P (EPS4)	0.964 (220.41) [210.94]	0.062 (7.57) [6.88]	0.006	18	10716
V/P (EPS5)	0.954 (189.56) [162.11]	0.082 (9.24) [7.78]	0.009	18	10716
V/P (EPS0)	0.995 (131.86) [126.84]	0.024 (1.63) [1.65]	0.001	18	10716

Table 6. Regression Test of the Perfect-Foresight V/P ratios

This table presents the cross-sectional year-by-year regressions of the perfect-foresight V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS are replaced by their scaled decile values.

$$PFV/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
	0.582	-0.042	0.000	13	4394
PFV/P (RIV1)	(49.14)	(-3.04)			
	[35.11]	[-3.89]			
	0.578	-0.105	0.009	13	4324
PFV/P (RIV2)	(40.10)	(-6.54)			
	[33.04]	[-8.13]			
	0.633	-0.123	0.007	13	4162
PFV/P (RIV3)	(27.45)	(-6.05)			
	[21.17]	[-9.32]			
	1.457	-0.487	0.010	13	2639
PFV/P (OJ)	(9.63)	(-2.45)			
	[11.14]	[-3.69]			
	1.062	-0.068	0.002	13	3188
PFV/P (ES)	(57.90)	(-1.97)			
	[31.00]	[-1.19]			

Table 7. Comparisons Between Stock Prices at the End of April and Analysts' Earnings Forecasts at Ensuing Points in Time

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of July, October, and April of the following years. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

For the calculation of the intrinsic value estimates, analysts' earnings forecasts are measured at the same time as the regression is conducted. But, the stock prices are consistently measured at the end of April. Panel A presents the result of the regression done at the end of July. Panel B (Panel C) differs from Panel A only in that the regressions are conducted at the end of October (April of the following years). In all of these Panels, the coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

Panel A. Comparison between the stock prices at the end of April and analysts' earnings forecasts at the end of July

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.792 (18.79) [6.76]	0.064 (4.91) [6.48]	0.002	18	12537
V/P (RIV2)	0.730 (30.22) [16.02]	0.022 (1.86) [2.16]	0.001	18	12537
V/P (RIV3)	0.816 (23.57) [11.41]	0.043 (3.14) [3.92]	0.001	18	12537
V/P (OJ)	1.169 (12.71) [4.51]	0.102 (3.06) [3.11]	0.002	18	12537
V/P (ES)	0.977 (172.72) [210.80]	0.036 (3.45) [3.14]	0.003	18	10431

Panel B. Comparison between the stock prices at the end of April and analysts' earnings forecasts at the end of October

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.826 (15.57) [6.61]	0.046 (2.57) [3.96]	0.002	18	12310
V/P (RIV2)	0.741 (27.27) [15.43]	0.002 (0.21) [0.26]	0.000	18	12310
V/P (RIV3)	0.823 (22.50) [12.16]	0.014 (1.05) [1.25]	0.000	18	12310
V/P (OJ)	1.204 (12.07) [4.65]	0.057 (1.85) [2.75]	0.000	18	12310
V/P (ES)	0.981 (155.84) [152.98]	0.026 (2.12) [1.73]	0.002	18	10141

Panel C. Comparison between the stock prices at the end of April and analysts' earnings forecasts at the end of following year's April

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.866 (15.51) [6.88]	0.026 (1.61) [2.41]	0.000	18	11586
V/P (RIV2)	0.798 (21.59) [14.33]	-0.048 (-2.43) [-2.55]	0.003	18	11586
V/P (RIV3)	0.903 (18.29) [11.17]	-0.051 (-2.08) [-2.08]	0.002	18	11586
V/P (OJ)	1.306 (10.87) [5.06]	-0.060 (-1.25) [-1.17]	0.001	18	11586
V/P (ES)	0.988 (123.72) [172.42]	0.013 (0.80) [0.79]	0.002	18	9558

Table 8. Regression Test of the V/P ratios at Different Points in Time

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of July, October ,and April of the following years. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

For the calculation of the V/P ratio, both analysts' earnings forecasts and stock prices are measured at the same time as the regression is conducted. Panel A presents the result of the regression at the end of July. Panel B (Panel C) differs from Panel A only in that the regression is conducted at the end of October (April of the following years). In all of these Panels, the coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

Panel A. Regression of the V/P ratios at the end of July

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.779 (17.18) [5.80]	0.072 (5.58) [4.70]	0.003	18	12533
V/P (RIV2)	0.714 (28.82) [13.68]	0.032 (2.73) [2.66]	0.002	18	12533
V/P (RIV3)	0.797 (23.16) [9.84]	0.053 (3.92) [4.50]	0.002	18	12533
V/P (OJ)	1.145 (12.36) [4.13]	0.116 (3.28) [3.27]	0.002	18	12533
V/P (ES)	0.965 (227.83) [319.00]	0.058 (7.29) [9.06]	0.005	18	10405

Panel B. Regression of the V/P ratios at the end of October

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.844 (12.40) [5.61]	0.096 (5.60) [6.45]	0.004	18	12301
V/P (RIV2)	0.743 (20.44) [11.76]	0.049 (3.38) [3.56]	0.003	18	12301
V/P (RIV3)	0.820 (18.80) [9.43]	0.065 (4.17) [4.54]	0.003	18	12301
V/P (OJ)	1.211 (10.56) [4.20]	0.139 (3.39) [3.39]	0.002	18	12301
V/P (ES)	0.962 (150.18) [187.58]	0.063 (5.17) [5.61]	0.007	18	10158

Panel C. Regression of the V/P ratios at the end of April of the following years

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.831 (14.13) [6.28]	0.117 (7.51) [9.56]	0.007	18	11555
V/P (RIV2)	0.753 (22.28) [12.56]	0.027 (1.77) [2.09]	0.002	18	11555
V/P (RIV3)	0.843 (19.33) [9.23]	0.032 (1.70) [2.11]	0.002	18	11555
V/P (OJ)	1.223 (10.82) [4.36]	0.074 (1.84) [1.80]	0.002	18	11555
V/P (ES)	0.974 (179.25) [161.29]	0.043 (3.61) [3.24]	0.004	18	9542

Table 9. Regression Test of the V/P ratios Controlling for Additional Variables

Panel A presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. See the Appendix for the definitions of all variables. All of the variables except V/P ratios are replaced by their scaled decile values. The regression equation for the V/P ratios based on the RIV and the OJ model is as follows.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 SIZE + \alpha_3 B/M + \alpha_4 OIVOL + \alpha_5 D/M + \alpha_6 IDRISK + \alpha_7 EFDEV + \varepsilon$$

The regression equation for the V/P ratio based on the multiple valuation approach is as follows. In this equation, BETA, SIZE, B/M, OIVOL, D/M, IDRISK and EFDEV are industry-adjusted by subtracting the industry mean of each variable.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 BETA + \alpha_3 SIZE + \alpha_4 B/M + \alpha_5 OIVOL + \alpha_6 D/M + \alpha_7 IDRISK + \alpha_8 EFDEV + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R^2 is the average adjusted R^2 of the annual regressions.

Panel A. Regression test of the V/P ratios controlling for risk proxies

	INTERCEPT	ACCRUALS	BETA	SIZE	B/M	OIVOL	D/M	IDRISK	EFDEV	Adj. R^2	N. of Years	N. of Sample
	0.955	0.052		-0.335	0.463	-0.011	0.157	-0.330	-0.283	0.36	18	11511
V/P (RIV1)	(13.55)	(4.29)		(-6.86)	(9.79)	(-0.72)	(5.05)	(-13.96)	(-6.20)			
	[4.18]	[3.60]		[-2.10]	[4.22]	[-0.59]	[3.90]	[-5.28]	[-2.34]			
	0.809	0.031		-0.210	0.211	0.049	0.187	-0.251	-0.150	0.31	18	11511
V/P (RIV2)	(18.11)	(4.19)		(-6.40)	(10.75)	(5.83)	(6.46)	(-11.54)	(-5.22)			
	[6.65]	[4.44]		[-2.17]	[10.56]	[5.24]	[3.63]	[-4.01]	[-1.98]			
	1.125	0.034		-0.308	-0.005	0.059	0.252	-0.396	-0.211	0.19	18	11511
V/P (RIV3)	(19.06)	(3.57)		(-6.95)	(-0.15)	(4.35)	(6.37)	(-12.64)	(-5.02)			
	[6.97]	[3.60]		[-2.39]	[-0.12]	[3.63]	[4.35]	[-4.49]	[-1.86]			
	1.692	0.046		-0.658	-0.106	0.138	0.117	-0.324	-0.172	0.08	18	11511
V/P (OJ)	(10.77)	(2.19)		(-6.71)	(-2.58)	(4.47)	(1.68)	(-6.81)	(-1.63)			
	[3.40]	[2.39]		[-2.13]	[-2.71]	[7.05]	[1.04]	[-2.58]	[-0.54]			
	0.773	0.030	0.000	-0.086	0.286	0.098	0.164	0.103	-0.141	0.28	18	9717
V/P (ES)	(77.66)	(5.29)	(-0.05)	(-4.45)	(21.21)	(13.21)	(16.77)	(7.93)	(-15.24)			
	[81.89]	[6.64]	[-0.04]	[-2.00]	[19.13]	[10.22]	[11.68]	[4.69]	[-16.61]			

Panel B presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. All of the variables except V/P ratios are replaced by their scaled decile values. The regression equation for the V/P ratios based on the RIV and the OJ model is as follows.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 MOMENTUM + \alpha_3 SUE + \alpha_4 SIZE + \alpha_5 B/M + \alpha_6 OIVOL + \alpha_7 D/M + \alpha_8 IDRISK + \alpha_9 EFDEV + \varepsilon$$

The regression equation for the V/P ratio based on the multiple valuation approach is as follows. In this equation, BETA, SIZE, B/M, OIVOL, D/M, IDRISK and EFDEV are industry-adjusted by subtracting the industry mean of each variable.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 MOMENTUM + \alpha_3 SUE + \alpha_4 BETA + \alpha_5 SIZE + \alpha_6 B/M + \alpha_7 OIVOL + \alpha_8 D/M + \alpha_9 IDRISK + \alpha_{10} EFDEV + \varepsilon$$

Panel B. Regression test of the V/P ratios controlling for risk proxies and for additional indicators of the market's mispricing

	INTERCEPT	ACCRUALS	MOMENTUM	SUE	BETA	SIZE	B/M	OIVOL	D/M	IDRISK	EFDEV	Adj. R^2	N. of Years	N. of Sample
	1.026	0.051	-0.022	-0.085		-0.327	0.424	-0.013	0.155	-0.324	-0.290	0.37	18	11511
V/P (RIV1)	(13.46)	(4.35)	(-1.17)	(-2.74)		(-6.55)	(9.86)	(-0.78)	(5.08)	(-12.99)	(-7.06)			
	[4.43]	[3.45]	[-1.30]	[-2.33]		[-1.97]	[4.29]	[-0.65]	[3.82]	[-5.91]	[-3.01]			
	0.854	0.030	-0.004	-0.057		-0.206	0.185	0.044	0.184	-0.246	-0.153	0.32	18	11511
V/P (RIV2)	(16.80)	(4.47)	(-0.33)	(-2.08)		(-6.15)	(13.17)	(4.85)	(6.80)	(-10.93)	(-6.04)			
	[7.05]	[4.09]	[-0.32]	[-1.91]		[-2.01]	[13.12]	[4.65]	[3.45]	[-4.16]	[-2.88]			
	1.178	0.035	-0.016	-0.060		-0.301	-0.035	0.056	0.246	-0.390	-0.215	0.21	18	11511
V/P (RIV3)	(18.58)	(3.84)	(-0.99)	(-1.52)		(-6.67)	(-1.58)	(3.81)	(6.66)	(-12.11)	(-5.83)			
	[7.87]	[3.47]	[-0.89]	[-1.52]		[-2.27]	[-1.17]	[3.13]	[4.37]	[-4.42]	[-2.82]			
	1.731	0.044	0.052	-0.104		-0.643	-0.147	0.128	0.111	-0.321	-0.161	0.09	18	11511
V/P (OJ)	(11.60)	(2.13)	(1.22)	(-1.23)		(-6.45)	(-4.77)	(3.95)	(1.78)	(-6.41)	(-1.85)			
	[4.25]	[1.93]	[1.61]	[-1.13]		[-2.07]	[-4.61]	[6.06]	[0.88]	[-2.55]	[-0.67]			
	0.850	0.028	-0.004	-0.099	0.001	-0.089	0.251	0.094	0.161	0.108	-0.150	0.30	18	9717
V/P (ES)	(39.37)	(4.37)	(-0.43)	(-4.44)	(0.19)	(-4.35)	(23.65)	(14.20)	(20.93)	(8.48)	(-14.13)			
	[32.69]	[4.40]	[-0.33]	[-3.24]	[0.16]	[-1.73]	[24.10]	[11.67]	[14.64]	[4.82]	[-15.47]			

Table 10. Regression Test of the V/P ratios based on Two-Period Valuation Models

Panel A presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

Panel A. Regression of the V/P ratios based on the two-period RIV or OJ model

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (2RIV1)	0.770	0.050	0.003	18	12029
	(16.59)	(2.49)			
	[7.96]	[3.12]			
V/P (2RIV2)	0.645	0.008	0.002	18	12029
	(48.01)	(0.67)			
	[37.38]	[0.65]			
V/P (2RIV3)	0.711	0.032	0.001	18	12029
	(36.30)	(2.58)			
	[23.17]	[3.39]			
V/P (2OJ)	1.827	-0.437	0.012	18	12029
	(17.60)	(-8.72)			
	[7.38]	[-6.59]			

Panel B presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. All of the variables except V/P ratios are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 SIZE + \alpha_3 B/M + \alpha_4 OIVOL + \alpha_5 D/M + \alpha_6 IDRISK + \alpha_7 EFDEV + \varepsilon$$

Panel B. Regression of V/P ratios based on two-period models controlling for risk proxies

V/P	INTERCEPT	ACCRUALS	SIZE	B/M	OIVOL	D/M	IDRISK	EFDEV	Adj. R^2	N. of Years	N. of Sample
V/P (2RIV1)	0.978	0.041	-0.354	0.413	-0.012	0.196	-0.352	-0.291	0.33	18	10861
	(12.21)	(2.91)	(-6.62)	(11.28)	(-0.56)	(5.88)	(-11.79)	(-6.23)			
	[3.75]	[2.39]	[-2.11]	[6.20]	[-0.57]	[4.03]	[-4.98]	[-2.46]			
V/P (2RIV2)	0.666	0.023	-0.150	0.274	0.024	0.196	-0.253	-0.140	0.44	18	10861
	(19.45)	(4.79)	(-5.85)	(15.43)	(2.46)	(9.77)	(-11.32)	(-6.72)			
	[7.46]	[4.97]	[-2.05]	[15.09]	[2.18]	[6.90]	[-4.20]	[-3.18]			
V/P (2RIV3)	0.984	0.027	-0.231	0.032	0.028	0.287	-0.427	-0.219	0.27	18	10861
	(22.28)	(4.16)	(-6.66)	(1.05)	(1.59)	(9.97)	(-13.76)	(-7.19)			
	[8.83]	[4.08]	[-2.31]	[0.95]	[1.24]	[9.06]	[-5.70]	[-3.38]			
V/P (2OJ)	0.908	-0.213	-0.675	0.330	0.349	0.604	-0.292	1.328	0.22	18	10861
	(7.42)	(-6.44)	(-7.22)	(4.09)	(4.88)	(5.41)	(-2.82)	(12.63)			
	[3.39]	[-5.28]	[-4.30]	[2.92]	[3.92]	[2.91]	[-2.80]	[9.17]			

Table 11. Regression Test of the V/P ratios Adjusting the Negative Terminal Values

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
	0.795	0.059	0.003	18	13147
V/P (RIV1AT)	(19.30)	(3.59)			
	[9.37]	[4.03]			
	0.754	0.031	0.003	18	13147
V/P (RIV2AT)	(34.20)	(2.21)			
	[21.59]	[2.37]			
	0.855	0.033	0.002	18	13147
V/P (RIV3AT)	(29.36)	(1.96)			
	[16.87]	[2.43]			
	1.138	0.138	0.003	18	13147
V/P (OJAT)	(13.76)	(4.49)			
	[5.45]	[4.42]			

Table 12. Return Test of the V/P ratio

This table presents the cross-sectional year-by-year regressions of the annual stock returns as of the end of April. The regression equations are as follows. See the Appendix for the definitions of all variables.

Model1: $SR = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 BETA + \alpha_3 SIZE + \alpha_4 B/M + \varepsilon$

Model2: $SR = \alpha_0 + \alpha_1 V/P + \alpha_2 BETA + \alpha_3 SIZE + \alpha_4 B/M + \varepsilon$

Model3: $SR = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 V/P + \alpha_3 BETA + \alpha_4 SIZE + \alpha_5 B/M + \varepsilon$

All of the variables except SR are replaced by their scaled decile values. The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R^2 is the average adjusted R^2 of the annual regressions. Panels A, B and C present the results of the regressions when SR is the one-, two-, three-year-ahead annual stock returns, respectively, and when the V/P ratio is V/P (RIV2).

Panel A. Regression of the one-year-ahead stock returns

	INTERCEPT	ACCRUALS	V/P (RIV2)	BETA	SIZE	B/M	Adj. R^2	N. of Years	N. of Sample
Model 1	0.192	-0.069		-0.014	-0.013	-0.032	0.05	18	12729
	(4.13)	(-4.36)		(-0.24)	(-0.30)	(-0.86)			
	[7.52]	[-4.51]		[-0.27]	[-0.36]	[-0.94]			
Model 2	0.158		-0.001	-0.018	-0.011	-0.030	0.05	18	12729
	(3.17)		(-0.02)	(-0.39)	(-0.22)	(-0.95)			
	[5.13]		[-0.02]	[-0.47]	[-0.26]	[-1.00]			
Model 3	0.189	-0.066	0.008	-0.011	-0.016	-0.038	0.05	18	12729
	(3.92)	(-3.92)	(0.20)	(-0.24)	(-0.34)	(-1.27)			
	[6.13]	[-4.48]	[0.19]	[-0.29]	[-0.40]	[-1.33]			

Panel B. Regression of the two-year-ahead stock returns

	INTERCEPT	ACCRUALS	V/P (RIV2)	BETA	SIZE	B/M	Adj. R^2	N. of Years	N. of Sample
	0.099	-0.030		0.033	-0.005	0.041	0.04	17	11230
Model 1	(2.59)	(-1.82)		(0.61)	(-0.10)	(1.29)			
	[6.19]	[-2.48]		[0.78]	[-0.18]	[1.37]			
	0.041		0.063	0.064	0.007	0.022	0.04	17	11230
Model 2	(1.02)		(1.66)	(1.10)	(0.15)	(0.81)			
	[1.94]		[1.79]	[1.63]	[0.28]	[0.92]			
	0.061	-0.036	0.067	0.067	0.002	0.016	0.05	17	11230
Model 3	(1.48)	(-2.34)	(1.80)	(1.16)	(0.04)	(0.60)			
	[2.90]	[-3.17]	[1.96]	[1.73]	[0.07]	[0.70]			

Panel C. Regression of the three-year-ahead stock returns

	INTERCEPT	ACCRUALS	V/P (RIV2)	BETA	SIZE	B/M	Adj. R^2	N. of Years	N. of Sample
	0.133	-0.029		0.046	-0.053	0.013	0.03	16	9935
Model 1	(3.16)	(-1.54)		(0.74)	(-0.97)	(0.38)			
	[5.41]	[-1.93]		[0.85]	[-1.76]	[0.39]			
	0.092		0.036	0.064	-0.045	0.003	0.03	16	9935
Model 2	(1.98)		(0.96)	(0.98)	(-0.82)	(0.10)			
	[3.43]		[1.24]	[1.28]	[-1.47]	[0.10]			
	0.109	-0.033	0.041	0.068	-0.050	-0.001	0.03	16	9935
Model 3	(2.21)	(-2.11)	(1.18)	(1.06)	(-0.93)	(-0.04)			
	[3.59]	[-2.61]	[1.52]	[1.34]	[-1.62]	[-0.04]			

Table 13. Regression Test of V/P ratios on Accruals From Statements of Cash Flows

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALSSCF are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALSSCF + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

V/P	INTERCEPT	ACCRUALSSCF	Adj. R-Square	N. of Years	N. of Sample
	0.779	0.101	0.005	15	10788
V/P (RIV1)	(18.67)	(4.20)			
	[9.64]	[2.90]			
	0.719	0.054	0.004	15	10788
V/P (RIV2)	(29.87)	(2.81)			
	[19.86]	[2.17]			
	0.806	0.081	0.005	15	10788
V/P (RIV3)	(24.11)	(3.19)			
	[14.35]	[2.53]			
	1.180	0.156	0.004	15	10788
V/P (OJ)	(12.61)	(3.12)			
	[5.42]	[2.85]			
	0.974	0.041	0.001	15	9145
V/P (ES)	(210.23)	(6.23)			
	[145.74]	[5.95]			

Table 14. Regression Test of V/P ratios on Working/Non Working Capital Accruals

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The WC and NONWC are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 WC + \alpha_2 NONWC + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

V/P	INTERCEPT	WC	NONWC	Adj. R-Square	N. of Years	N. of Sample
	0.761	-0.030	0.199	0.023	15	5189
V/P (RIV1)	(18.01)	(-1.09)	(5.12)			
	[15.59]	[-1.15]	[1.88]			
	0.713	-0.010	0.085	0.014	15	5189
V/P (RIV2)	(27.01)	(-0.52)	(2.78)			
	[27.65]	[-0.40]	[1.24]			
	0.787	0.010	0.113	0.010	15	5189
V/P (RIV3)	(21.56)	(0.49)	(2.65)			
	[18.93]	[0.50]	[1.12]			
	1.122	0.221	0.070	0.010	15	5189
V/P (OJ)	(12.26)	(4.77)	(0.81)			
	[6.44]	[3.53]	[0.38]			
	0.975	0.039	0.016	0.009	15	4336
V/P (ES)	(55.14)	(1.60)	(1.26)			
	[58.81]	[2.39]	[1.43]			

Table 15. Regression Test of V/P ratios on (Non) Discretionary Accruals

Panel A (Panel B) presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The DA (DASCF) and NDA (NDASCF) are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 DA(DASCF) + \alpha_2 NDA(NDASCF) + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

Panel A. Regression of the V/P ratios on (non) discretionary accruals from B/S

V/P	INTERCEPT	DA	NDA	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.770 (17.19) [8.66]	0.042 (2.82) [4.25]	0.034 (1.90) [2.62]	0.003	18	12745
V/P (RIV2)	0.712 (29.87) [18.43]	0.043 (4.27) [6.30]	0.006 (0.40) [0.63]	0.005	18	12745
V/P (RIV3)	0.790 (23.93) [13.33]	0.052 (3.84) [5.95]	0.031 (1.56) [2.97]	0.004	18	12745
V/P (OJ)	1.114 (13.45) [5.71]	0.079 (3.00) [3.87]	0.098 (2.96) [4.18]	0.003	18	12745
V/P (ES)	0.957 (177.20) [186.90]	0.042 (5.51) [6.72]	0.035 (3.80) [3.74]	0.005	18	10716

Panel B. Regression of the V/P ratios on (non) discretionary accruals from CF/S

V/P	INTERCEPT	DASCF	NDASCF	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.765	0.023	0.107	0.007	15	10788
	17.68	(1.38)	(3.44)			
	10.67	[0.93]	[4.42]			
V/P (RIV2)	0.708	0.028	0.047	0.009	15	10788
	28.09	(2.61)	(1.67)			
	21.76	[2.49]	[2.27]			
V/P (RIV3)	0.791	0.032	0.078	0.009	15	10788
	23.00	(2.07)	(2.03)			
	16.08	[2.04]	[2.90]			
V/P (OJ)	1.154	0.070	0.137	0.006	15	10788
	12.51	(2.17)	(2.02)			
	5.98	[2.61]	[3.11]			
V/P (ES)	0.962	0.027	0.040	0.001	15	9145
	198.97	(3.56)	(4.11)			
	231.82	[3.20]	[3.65]			

Table 16. Regression Test of V/P ratios Controlling For Growth in Long-Term NOA

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALS and GrLTNOA are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \alpha_2 GrLTNOA + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

V/P	INTERCEPT	ACCRUALS	GrLTNOA	Adj. R-Square	N. of Years	N. of Sample
	0.838	0.061	-0.120	0.016	18	12745
V/P (RIV1)	(18.46)	(3.80)	(-6.98)			
	[10.52]	[4.89]	[-7.27]			
	0.741	0.033	-0.042	0.007	18	12745
V/P (RIV2)	(34.60)	(2.52)	(-3.74)			
	[26.36]	[2.84]	[-3.54]			
	0.808	0.060	-0.013	0.003	18	12745
V/P (RIV3)	(26.31)	(3.95)	(-0.97)			
	[16.13]	[5.36]	[-1.08]			
	1.039	0.134	0.192	0.009	18	12745
V/P (OJ)	(13.91)	(4.03)	(4.78)			
	[6.44]	[3.42]	[2.90]			
	0.986	0.048	-0.029	0.006	18	10716
V/P (ES)	(145.19)	(5.95)	(-2.70)			
	[103.73]	[5.69]	[-1.71]			

Table 17. Regression Test Considering the Potential Non-Linearity

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables.

$$V/P = \alpha_0 + \alpha_1 ACCRUALS + \varepsilon$$

In Panel A, all of the variables are converted into their cross-sectional ranks scaled by the number of cross-sectional observations. In Panel B, the V/P ratios are replaced by their logarithmic values, and the ACCRUALS are replaced by their scaled decile values. In all of the Panels, the coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

Panel A. Full-rank regression of the V/P ratios

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
	0.48	0.05	0.003	18	12745
V/P (RIV1)	(88.59)	(4.51)			
	[109.33]	[5.56]			
	0.49	0.03	0.002	18	12745
V/P (RIV2)	(81.26)	(2.44)			
	[92.72]	[2.80]			
	0.48	0.05	0.002	18	12745
V/P (RIV3)	(97.18)	(4.58)			
	[124.13]	[5.84]			
	0.47	0.05	0.003	18	12745
V/P (OJ)	(100.87)	(5.66)			
	[102.43]	[5.75]			
	0.47	0.06	0.003	18	10716
V/P (ES)	(91.50)	(5.72)			
	[90.96]	[5.68]			

Panel B. Regression of the Logarithmic Values of the V/P ratios

V/P	INTERCEPT	ACCRUALS	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	-0.405 (-9.94) [-5.22]	0.069 (3.73) [5.26]	0.002	18	12745
V/P (RIV2)	-0.409 (-16.96) [-11.33]	0.041 (2.54) [3.22]	0.002	18	12745
V/P (RIV3)	-0.352 (-11.02) [-6.18]	0.087 (5.31) [7.67]	0.003	18	12745
V/P (OJ)	-0.077 (-1.28) [-0.51]	0.106 (5.63) [6.21]	0.003	18	12745
V/P (ES)	-0.063 (-11.90) [-9.04]	0.048 [5.85] [5.59]	0.004	18	10716

Table 18. Regression Test on the Accruals Scaled by Previous Year's Total Assets

This table presents the cross-sectional year-by-year regressions of the V/P ratios as of the end of April. The regression equation is as follows. See the Appendix for the definitions of all variables. The ACCRUALSSPA are replaced by their scaled decile values.

$$V/P = \alpha_0 + \alpha_1 ACCRUALSSPA + \varepsilon$$

The coefficients presented are the means of the annual regressions. The number within ( ) below each coefficient is the t-statistic calculated from the time-series standard errors of the annually estimated coefficients. The number within [ ] below each coefficient is the t-statistic adjusted for autocorrelation as in Kemsley and Nissim (2002). Adj. R-Square is the average adjusted R-Square of the annual regressions.

V/P	INTERCEPT	ACCRUALSSPA	Adj. R-Square	N. of Years	N. of Sample
V/P (RIV1)	0.770 (18.06) [8.59]	0.076 (4.85) [6.27]	0.004	18	12745
V/P (RIV2)	0.717 (31.54) [17.60]	0.040 (3.23) [3.71]	0.003	18	12745
V/P (RIV3)	0.799 (25.15) [12.55]	0.065 (4.46) [6.17]	0.003	18	12745
V/P (OJ)	1.141 (13.21) [5.11]	0.122 (4.03) [3.77]	0.002	18	12745
V/P (ES)	0.969 (237.92) [257.78]	0.053 (7.02) [7.12]	0.004	18	10716