# Accruals and Conditional Equity Premium[1]

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**Abstract**

Accruals correlate closely with the determinants of conditional equity premium at both the firm and the aggregate levels. The common component of firm-level accruals, which cannot be diversified away by aggregation, explains the positive relation between aggregate accruals and future market returns (Hirshleifer, Hou, and Teoh, 2007). The residual component, which accounts for most variation in firm-level accruals, is responsible for the negative cross-sectional relation between firm-level accruals and future stock returns (Sloan, 1996). We also document a similar co-movement of earnings with conditional equity premium at both the firm and the aggregate levels, which helps explain the negative relation between changes in aggregate earnings and contemporaneous market returns (Kothari, Lewellen, and Warner, 2006).

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## 1. Introduction

Hirshleifer, Hou, and Teoh (2009; HHT thereafter) document a strong positive relation between value-weighted aggregate accruals and future stock market returns. The finding is intriguing because it contradicts the well-documented negative cross-sectional relation between firm-level accruals and future returns since Sloan (1996). At the aggregate level, HHT's results are consistent with the negative correlation of aggregate earnings growth with contemporaneous market returns, as first documented by Kothari, Lewellen, and Warner (2006; KLW thereafter). HHT and KLW argue for a close relation between fundamentals and expected discount rates. In this paper, we establish a direct link between conditional equity premium and accruals at both the aggregate and the firm levels.

Aggregate accruals forecast market returns due to their co-movement with expected market returns, whereas firm-level accruals have a strong commonality that is closely related to the determinants of conditional equity premium. The common component of firm-level accruals, which cannot be diversified away by aggregation, explains the positive relation between aggregate accruals and future market returns. The residual component, which accounts for most variation in firm-level accruals that is diversified away in the aggregation process, is responsible for the negative cross-sectional relation between firm-level accruals and future stock returns. Thus, statistical relations between accruals and expected returns at the aggregate and firm levels are different because they reflect two distinct phenomena.

Conditional equity premium is not directly observable. While commonly used proxies of the discount rate in earlier studies (e.g. Fama and French, 1989) do not fully explain the relations between aggregate fundamentals and market returns in HHT and KLW, such results may merely reflect the limited forecasting power of these proxies (Goyal and Welch, 2008). To address this issue, we use realized market variance (MV) and CAPM-based average idiosyncratic variance (IV), proposed by Guo and Savickas (2008a), as predictors of conditional equity premium.

The variables IV and MV are motivated by economic theory and have superior forecasting power relative to commonly used proxies. In Merton's (1973) ICAPM, conditional equity premium is a linear function of conditional market variance (the risk component, commonly measured by MV) and conditional covariance of market returns with investment opportunities. The second component arises from investors' desire to hedge against changes in investment opportunities. Scruggs (1998) and Guo and Whitelaw (2006) suggest that omission of the hedge component is responsible for earlier contradictory findings regarding the relation between conditional market variance and returns.[3] These authors show that empirical models based on both the risk and the hedge components help restore the positive risk-return relation stipulated in Merton's (1973) ICAPM. Guo and Savickas (2008a) argue that average idiosyncratic variance provides a proxy for the hedge component. Specifically, while growth options tend to increase a firm's stock price, they also increase the stock price volatility due to the uncertainty as to whether the firm will benefit from such options (Cao, Simin, and Zhao, 2008). Guo and Savickas (2008a) further note that the relation between IV and discount rates should be negative, as a reduction in discount rates allows firms to adopt a larger number of risky projects, which in turn leads to a higher level of average idiosyncratic variance. Using modern G7 countries data and long U.S. data, Guo and Savickas (2008a; 2008b) show that IV and MV jointly forecast market returns in sample and out of sample. Moreover, as we confirm in this paper, the two variables drive out the proxies used in HHT and KLW from regressions of forecasting market returns.

We document a strong positive relation between aggregate accruals and conditional equity premium. First, contemporaneously, aggregate accruals correlate positively with MV and correlate negatively with IV, consistent with the ICAPM prediction of a positive (negative) relation between MV (IV) and conditional equity premium. In addition, IV and MV jointly account for about 60% of variation in aggregate accruals. Second, aggregate accruals have negligible predictive power for market returns after we control for IV and MV in the forecast regression.[4] Lastly, consistent with the ICAPM implication that changes in conditional equity premium is a priced risk factor, we find a close relation between changes in aggregate accruals and the value premium. More importantly, the two variables have similar explanatory power for the cross section of

[3] Examples of empirical findings of a weak or negative relation between conditional market returns and variance include French, Schwert, and Stambaugh (1987), Campbell (1987), and Glosten, Jagannathan, and Runkle (1993).

[4] This result is in contrast with that of HHT, who find that aggregate accruals remain a significant predictor of market returns even after controlling for commonly used predictive variables. The difference reflects the substantially stronger forecasting power of IV and MV for market returns than that of the control variables used by HHT.

stock returns on the portfolios sorted by size and book-to-market equity ratio.[5]

Firm-level accruals also tend to correlate positively with MV and negatively with IV. Because conditional equity premium has a pervasive effect on firm-level accruals, we cannot simply attribute the predictive power of aggregate accruals to data snooping. To illustrate the point formally, we decompose firm-level accruals into (1) a common component that co-moves with IV and MV and (2) a residual component.[6] We find that the aggregate common component correlates positively with future excess market returns, while the aggregate residual component has negligible predictive power. Moreover, aggregate accruals lose the predictive power after we control for the common component in the forecast regression, indicating that aggregate accruals forecast market returns mainly because of the systematic component in firm-level accruals that co-moves with conditional equity premium. The residual component, which accounts for most variation in firm-level accruals, is responsible for the negative cross-sectional relation between firm-level accruals and future stock returns. By contrast, the common component has negligible cross-sectional explanatory power. Our results thus help reconcile the seemingly conflicting time-series versus cross-sectional empirical findings in HHT and Sloan (1996), respectively.

Results are qualitatively similar for earnings, of which accruals are an important component. Consistent with KLW' conjecture of a positive relation between aggregate earnings and discount rates, we find that earnings co-move positively with MV and negatively with IV at both the firm and the aggregate levels. Moreover, after we control for changes in IV and in MV, the negative correlation of changes in aggregate earnings with contemporaneous market returns attenuates substantially and becomes statistically insignificant. The findings are also consistent with those by Ball, Sadka, and Sadka (2009), who document a strong commonality in firm-level earnings that is closely related to common return factors—both are priced in the cross-section of stock returns. By establishing a link between the commonality in earnings and conditional equity premium, we offer an economic interpretation for the common variation in earnings and

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[5] Brennan, Wang, and Xia (2004), Campbell and Vuolteenaho (2004), Petkova (2006), and Hahn and Lee (2006) also document a close relation between the value premium and discount rate shocks.

[6] In a concurrent paper, Kang, Liu, and Qi (2008) show that firm-level accruals co-move closely with aggregate accruals. Unlike this paper, however, their paper does not show that conditional equity premium is a main driver of the commonality in firm-level accruals.

returns documented in Ball, Sadka, and Sadka (2009), who use the principle component analysis.

Campbell and Shiller (1988) and many subsequent studies find that variation in aggregate stock prices reflects predominantly discount-rate shocks. In contrast, Sadka (2007) shows that earnings—arguably a better measure of cash flows than dividends—are also an important determinant of stock prices at the aggregate level. Recognizing a strong negative correlation of earnings growth with market returns, Sadka (2007) acknowledges that interpretation of his empirical evidence depends crucially on the economic forces underlying the relation between fundamentals and discount rates. For example, Sadka and Sadka (2009) suggest that KLW's finding might reflect partially a negative relation between conditional equity premium and expected earnings growth. We shed light on this alternative hypothesis by showing that KLW's finding reflects mainly the positive correlation of aggregate earnings with conditional equity premium. Moreover, while we confirm the negative relation between the dividend yield and expected earnings growth, we document a *positive* relation between expected equity premium and expected earnings growth.[7] Because HHT find that aggregate accruals correlate positively with future earnings, the latter result is consistent with our main hypothesis of a close relation between aggregate accruals and conditional equity premium.

Our results do not preclude the alternative earnings management hypothesis proposed by HHT. In particular, as we find a pervasive correlation of firm-level accruals with conditional equity premium, it is plausible that managers manipulate earnings in response to market-wide changes in firm valuation resulting from aggregate discount-rate shocks. Employing Jones' (1991) model to explore the earnings management hypothesis, Kang, Liu, and Qi (2008) find that aggregate discretionary accruals forecast market returns, whereas aggregate normal accruals do not. Nevertheless, while we find that the predictive power of discretionary accruals comes mainly from the systematic component of firm-level discretionary accruals that are positively related to conditional equity premium, firm-level normal accruals contain a similar systematic

[7] Similarly to our findings, Lettau and Ludvigson (2005) document a positive relation between expected equity premium and expected dividend growth. Because the dividend yield equals expected future discount rates *minus* expected future dividend growth, the negative relation between the dividend yield and expected earnings growth does not contradict the positive relation between expected equity premium and expected earnings growth. In fact, Lettau and Ludvigson (2005) emphasize that the positive relation between expected equity premium and expected cash flows growth helps explain the weak relation between the dividend yield and future cash flows documented in existent studies.

component that forecasts excess market returns. The fact that conditional equity premium has a pervasively positive correlation with both discretionary and normal accruals suggests that Jones' (1991) model provides a rather poor measure of earnings management in this particular context. Specifically, in Jones' (1991) model, discretionary accruals are defined as the idiosyncratic component of total accruals; yet our finding suggests that it contains a systematic component that co-moves with conditional equity premium. In addition, if normal accruals capture accruals associated with normal business conditions, we expect a negative relation between normal accruals and conditional equity premium because firms tend to increase production capacity and inventories during expansions, when the discount rate is low, and vice versa (Zhang, 2007). Our analysis thus casts doubt on the interpretation that aggregate accruals forecast market returns mainly because of earnings management as captured by Jones' (1991) model.

Our further analysis consistently corroborates the "risky" nature of aggregate accruals. Specifically, Guo (2009) argues that the average minus IPO (initial public offerings) first-day return is a direct measure of ex ante equity premium. A close relation between aggregate accruals and the IPO first-day return is plausible because managers use both accruals and equity offerings to time the market (e.g., Teoh, Welch, and Wong, 1998). We find that the two variables indeed correlate closely with each other. More importantly, they have similar forecasting power for market returns. Cochrane (1991) emphasizes that rational managers should time the market through adjustment in productive factors. Liew and Vassalou (2000) find that the value premium—arguably a proxy of discount-rate shocks (e.g., Campbell and Vuolteenaho, 2004)—forecasts GDP growth. Recent studies confirm that time-varying equity premium forecasts aggregate economic activity because of its influence on investment (Lettau and Ludvigson, 2002) and employment (Chen and Zhang, 2009). In this paper, we show that aggregate accruals also forecast aggregate output, investment, and employment mainly because of their strong co-movement with conditional equity premium.

The remainder of the paper proceeds as follows. We discuss data in Section 2 and investigate the relation between aggregate accruals and conditional equity premium in Section 3. We analyze commonality in firm-level accruals in Section 4 and explore the relation between conditional equity premium and earnings at both the aggregate and the firm levels in Section 5. We offer concluding remarks in Section 6.

## 2. Data

Unless otherwise indicated, we follow HHT closely in the construction of aggregate accruals, using accounting data from Compustat over the 1965 to 2005 period. We measure firm-level accruals in year $t$ as the change in non-cash current assets (Compustat #4 – Compustat #1) minus the change in current liabilities (#5), excluding the change in short-term debts (#34) and the change in taxes payables (#71), minus depreciation and amortization expense (#14). We scale the accruals measure by the beginning-of-period total assets (#6). We confine our sample to non-financial firms with the fiscal year ending in December. To be included in the sample, a firm must have common equity issues listed on NYSE/AMEX/Nasdaq, with twelve months of return data (May of year $t+1$ to April of year $t+2$) available from CRSP (the Center for Research in Security Prices).[8] The sample used to calculate aggregate accruals consists of 65,123 firm-years. Following HHT, we use the market value of equity at the end of year $t$ as the weight in the construction of value-weighted aggregate accruals.

As in HHT, we consider both CRSP value-weighted market returns and sample value-weighted market returns, and find qualitatively similar results. For brevity, we report only the results using CRSP value-weighted market returns. Accounting data are reported with a delay. To address this issue, HHT use aggregate accruals of year $t$ to forecast market returns over the period May of year $t+1$ to April of year $t+2$. Because some predictive variables forecast returns at quarterly frequency, such a substantial time lag may introduce a downward bias in the predictive power of these variables. As in Kang, Liu, and Qi (2008), we also use market returns over the period January to December of year $t+1$ in the forecasting regression for robustness. Our main hypothesis is that aggregate accruals forecast market returns due to their close correlation with conditional equity premium. To be consistent with this hypothesis, we use holding period excess market returns—the difference between CRSP market returns and the risk-free rate obtained from CRSP—instead of the continuously compounded nominal returns used in HHT. However, the difference between the two return measures is qualitatively unimportant, since they are closely correlated with each

[8] This restriction, which is not imposed in HHT, is needed for the cross-sectional regression. It does not affect our results in any qualitative manner, however.

other, with a correlation coefficient of 98%.

We follow Guo and Savickas (2008a) in the construction of IV and MV. IV is value-weighted average variance of CAPM-based idiosyncratic shocks across five hundred largest stocks. MV is the sum of squared daily excess market returns within a given period. We obtain other forecasting variables—the earning-to-price ratio, the dividend yield, the aggregate book-to-market ratio, the default premium, the term premium, and the equity share of total equity and debt issues—from Amit Goyal at Emory University. We obtain the IPO first-day return data from Jay Ritter at the University of Florida. We obtain the three Fama and French (1996) risk factors and the returns on the twenty-five Fama and French portfolios sorted by size and book-to-market equity ratio from Ken French at Dartmouth College.

Table 1 provides summary statistics of main variables used in the paper. ERET is the holding period excess market return over the period January to December of year *t*; ERET54 is the holding period excess market return over the period May of year *t* to April of year *t+1*; ACCRUAL is value-weighted aggregate accruals; IV is value-weighted average idiosyncratic variance; MV is realized market variance; and IPOFDR is the average minus IPO first-day return. ACCRUAL, IV, MV, and IPOFDR are all measures of year *t*. Because all the forecasting variables correlate negatively with market returns, the ordinary least squares (OLS) estimator is susceptible to a small sample bias (Mankiw and Shapiro, 1986; Stambaugh, 1999). However, because the forecasting variables are not persistent, especially at the annual frequency, such a bias is likely to be small. In particular, using a boot strapping method, HHT show that the effect of the small sample bias on the statistical inference is negligible when using aggregate accruals as a forecasting variable. Guo and Savickas (2008a) and Guo (2009) find a similar result for (1) IV and MV and (2) IPOFDR, respectively. For brevity, unless otherwise indicated, we report only the estimation results obtained using the heteroskedasticity-consistent OLS estimator.

Table 1 shows that aggregate accruals correlate positively with MV and correlate negatively with IV. The preliminary evidence is consistent with the hypothesis that aggregate accruals are a proxy of conditional equity premium, which we investigate formally in the next section. It is worth noting that aggregate accruals correlate closely with IPOFDR, with a correlation coefficient of over 60%. We consider IPOFDR as an alternative proxy to MV and IV because Guo (2009) argues that IPOFDR is a direct measure of *ex ante* equity premium. Using Campbell and Shiller's (1988) log-linear present-value relation, Guo (2009) shows that the IPO first-day return reflects the difference between IPO issuers' and investors' expectations about (1) future cash flows and (2) future discount rates. The average difference about expected cash flows is likely to be random and thus can be diversified away, because issuers must disclose projected cash flows in the prospectus and investors can take legal actions if they subsequently verify a substantial discrepancy between the projected and actual numbers (e.g., Lowry and Shu, 2002). Moreover, it is well documented that IPO issuers adjust only partially IPO offer prices to information collected during the road show (e.g., Hanley, 1993). Together, Guo (2009) shows that the average IPO first-day return is related mechanically to investors' expectations about future aggregate discount rates. The close correlation of aggregate accruals with IPOFDR is also consistent with Teoh, Welch, and Wong's (1998) empirical finding that managers use both accruals and equity offerings to time the market. In the next section, we confirm that aggregate accruals and IPOFDR have qualitatively similar predictive power for market returns.

## 3. Aggregate Accruals and Conditional Equity Premium

In this section, we show that aggregate accruals forecast market returns mainly due to their close correlation with measures of conditional equity premium. Consistent with the hypothesis that aggregate accruals are a proxy of conditional equity premium, we find that they also help explain the cross-section of stock returns, as stipulated by Merton's (1973) ICAPM.

### *3.1 Proxies of Conditional Equity Premium*

We assume that conditional equity premium is a linear function of IV and MV. We evaluate this assumption through comparisons of the joint predictive power of IV and MV with that of commonly used proxies in earlier studies. Because Campbell, Lettau, Malkiel, and Xu (2001) document a significant upward trend in average idiosyncratic variance in the post-1962 sample, we include a linear time trend when using

IV as an explanatory variable.[9] In panel A of Table 2, we present the OLS estimation results of forecasting one-year-ahead (January to December of year *t+1*) excess market returns. By itself, MV does not forecast future excess market returns (row 1). After we also include IV in the forecast regression, however, both IV and MV show significant predictive power for market returns, with an adjusted $R^2$ of 23% (row 2). Consistent with ICAPM, MV correlates positively with future market returns, while the relation between IV and future market return is negative.[10] The different results in rows 1 and 2 reflect a classic omitted variables problem—IV and MV have opposite effects on conditional equity premium, although they correlate positively with each other (refer to Table 1).

Using the earning-to-price ratio (EP), the dividend yield (DP), the book-to-market equity ratio (BM), the default premium (DEF), the term premium (TERM), and the equity share of total equity and debt issues (EQIS) as proxies for conditional equity premium, HHT find that aggregate accruals remain a significant predictor after controlling for the effect of these variables on expected market returns. This result leads HHT to conclude that aggregate accruals forecast market returns above and beyond cyclical variation in conditional equity premium.

An alternative explanation for HHT's finding is that the control variables considered in HHT are likely to be poor proxies of conditional equity premium. In particular, Goyal and Welch (2008) find that none of these variables forecasts market returns either in long sample or out of sample. To illustrate the point, we use these variables to forecast excess market returns and report the results in row 3 of Table 2. Only EQIS is statistically significant; together, the variables jointly account for about 17% of variation in excess market returns. By contrast, IV and MV have far superior predictive power. When we use IV and

[9] Campbell, Lettau, Malkiel, and Xu (2001) use a sample ending in 1997. In an extended sample ending in 2005, Guo and Savickas (2008a) and Bekaert, Hodrick, and Zhang (2008) find that the linear time trend in value-weighted average idiosyncratic variance is no longer statistically significant at the conventional level using the test proposed by Vogelsang (1996). In our sample, if we regression IV on a constant and a linear time trend, the OLS estimation indicates that the positive trend is statistically significant at the 5% level with an adjusted $R^2$ about 12%. While a formal investigation of the trend in IV is clearly beyond the scope of this study, as a robustness check, we also consider two alternative specifications and find qualitatively similar results. First, we use the detrended IV—the residual from the regression of IV on a constant and a linear time trend. Second, we do not explicitly control for the linear time trend in IV. For brevity, these results are not reported here but are available on request.

[10] The linear trend is significantly positive because IV has an upward trend. It becomes statistically insignificant if we use detrended IV.

MV together with HHT's control variables in the forecasting regression, we find that only IV and MV are statistically significant at the 5% level (row 4). The adjusted $R^2$ is 26%, which is only slightly higher than 23% in row 2, where we use only IV and MV as forecasting variables. Thus, IV and MV jointly have significant predictive power for market returns and subsume the information content of other commonly used predictive variables. The robust predictive power of IV and MV likely reflects the fact that IV and MV are theoretically motivated forecasting variables and thus are less susceptible to the criticism of data mining.

In panel B of Table 2, we compare the variables in their explanatory power for time-series variation in aggregate accruals. If aggregate accruals are a proxy of conditional equity premium, IV and MV should explain time-series variation in aggregate accruals. In particular, we expect that aggregate accruals correlate positively with contemporaneous MV and correlate negatively with contemporaneous IV. In row 5, when we use only MV as the explanatory variable, the relation between aggregate accruals and MV is positive but statistically insignificant. If we also add IV to the regression, both IV and MV are highly significant and jointly account for about 60% of variation in aggregate accruals (row 6). As expected, while aggregate accruals correlate positively with MV, they have a negative correlation with IV. Overall, the relation between MV/IV and aggregate accrual (Panel B) bears notable similarities to that between MV/IV and future excess market returns (Panel A).

By contrast, Row 7 of Table 2 shows that none of the commonly used forecasting variables of market returns is statistically significant at conventional levels, and that they jointly account for only 28% of variation in aggregate accruals. When including all the forecasting variables in the regression, we find that the effect of IV and MV remains highly significant whereas all the other variables have negligible explanatory power for aggregate accruals with the exception of EP, which contains a mechanic relation with aggregate accruals by construction (row 8).[11] The adjusted $R^2$ of 63% in row 8 is only slightly higher than the adjusted $R^2$ of 56% in row 7, where we use only IV and MV as the explanatory variables. Because IV and MV subsume information content of other commonly used predictive variables (row 4), the results in panel B of Table 2 should be expected if aggregate accruals are a proxy of conditional equity premium.

[11] Accruals are an important component of earnings.

The OLS inference in panel B of Table 2 is potentially susceptible to a small sample bias because aggregate accruals are serially correlated (Table 1). To address the concern, we run the OLS regression using first differences instead of levels. Row 9 of Table 2 shows that changes in aggregate accruals correlate positively with changes in MV and correlate negatively with changes in IV. Both explanatory variables are highly significant, with an adjusted $R^2$ of 32%. Thus, the strong correlations of aggregate accruals with IV and MV are unlikely to be the result of spurious regressions.[12]

To summarize, the variables IV and MV, which are motivated by ICAPM, have superior explanatory power for both future excess market returns and contemporaneous aggregate accruals. In the remainder of the paper, unless otherwise indicated, we proceed with the assumption that conditional equity premium is a linear function of IV and MV.

### *3.2 Forecasting One-Year-Ahead Excess Market Returns*

In Table 3, we evaluate whether the predictive power of aggregate accruals for excess market returns is similar to that of the determinants of conditional equity premium, i.e., IV and MV. We consider two different measures of annual returns. First, as in HHT, we use variables of year $t$ to forecast holding period excess market returns over the period May of year $t+1$ to April of year $t+2$ in panels A to C. Second, as a robustness check, in panels D to F, we use variables of year $t$ to forecast holding period excess market returns over the period January to December of year $t+1$.

Consistent with HHT, aggregate accruals correlate positively and significantly with one-year-ahead excess market returns, with an adjusted $R^2$ of 17% (row 1 of Table 3).[13] Row 2 shows that IV and MV of year $t$ have comparable predictive power for excess market returns over the period May of year $t+1$ to April of year $t+2$. Interestingly, aggregate accruals have negligible predictive power for excess market returns that

[12] Again, except for EP, other commonly used predictive variables are statistically insignificant in the first-difference regression after we control for IV and MV (untabulated).

[13] We obtain comparable adjusted $R^2$ of 24% using continuously compounded nominal market returns as in HHT. In this study, we use excess market returns to be consistent with our argument that aggregate accruals forecast stock returns because of their co-movement with conditional equity premium. Nevertheless, using nominal returns (as in HHT) does not change our results in any qualitatively manner.

are unexplained by IV and MV (row 3). Similarly, IV and MV lose their predictive power after we control for the effect of aggregate accruals on expected market returns (row 4). Our results are in contrast with those of HHT, who find that aggregate accruals remain a significant predictor of market returns even after controlling for commonly used forecasting variables. The difference reflects the stronger forecasting power of IV and MV, which are motivated by the theoretical model of ICAPM. To summarize, aggregate accruals forecast market returns mainly due to their close correlation with the determinants of conditional equity premium, i.e., IV and MV.

Panels D to F of Table 3 show that results are qualitatively similar if we use returns over the calendar year as the dependent variable, with one exception. The predictive power of aggregate accruals becomes noticeably weaker and the predictive power of IV and MV becomes noticeably stronger when forecasting market returns over calendar year. The former is due to the lag in the financial reporting system and the latter reflects the fact that IV and MV are strong predictors of quarterly market returns. By skipping the first four months of market returns, IV and MV are likely to have somewhat weaker predictive power in panel A than in panel D.

### *3.3 Aggregate Accruals and Conditional Equity Premium*

In this subsection, we conduct formal tests of the hypothesis that aggregate accruals are a proxy for conditional equity premium. In particular, we estimate the following equation system using Hansen's (1982) generalized method of moments (GMM):

$$(1)\quad \begin{aligned} ACCRUAL_t &= a + b_1 IV_t + b_2 MV_t + b_3 Trend_t + z_t \\ ERET_t &= m + g[a + b_1 IV_{t-1} + b_2 MV_{t-1} + b_3 Trend_{t-1}] + x_t \end{aligned}.$$

In equation system (1), we assume that aggregate accruals are a linear function of a constant, IV, MV, and a linear time trend. Under the null hypothesis, the fitted value of aggregate accruals is a measure of conditional equity premium. We test this hypothesis using the return equation, in which the expected excess market return is a linear function of the lagged fitted aggregate accruals. We use a constant, IV, MV, and a linear time trend as instrumental variables for the accrual equation; therefore, the accrual equation is just identified. We use a constant and the lagged values of IV, MV, and the linear time trend as instrumental variables for the return equation. Because it has only two free parameters, the return equation is over-identified with two degrees of freedom. Hansen's (1982) J-test can be used to test the restrictions imposed on the return equation with the null hypothesis that aggregate accruals forecast market returns because of their co-movement with the determinants of conditional equity premium, i.e., IV and MV. As a robustness check, we also experiment with adding other commonly used forecasting variables as instrumental variables for the return equation and find qualitatively similar results (untabulated). This result should not be a surprise, as the information content of the other forecasting variables about future market returns is subsumed by IV and MV (row 4, Table 2).

We report the estimation results in Table 4. In panel A, we use the excess return over the period May of year *t+1* to April of year *t+2*. We find that the fitted aggregate accruals correlate positively and significantly with future excess market returns, with an $R^2$ about 16%. Moreover, Hansen's J-test suggests that, at conventional significance levels, we cannot reject the null hypothesis that aggregate accruals forecast market returns because of their co-movement with IV and MV. We also find qualitatively similar results using excess market returns over the period January to December of year *t+1*, as shown in panel B.

Alternatively, we can test whether IV and MV correlate with aggregate accruals due to their close correlations with conditional equity premium:

$$\begin{aligned} &ERET_t = a + b_1 IV_{t-1} + b_2 MV_{t-1} + b_3 Trend_{t-1} + z_t \\ &ACCRUAL_t = m + g[a + b_1 IV_t + b_2 MV_t + b_3 Trend_t] + x_t \end{aligned} \quad (2)$$

In equation system (2), we assume that excess market returns are a linear function of a constant and the lagged values of IV, MV, and a linear time trend. The fitted value with a lead, which is a measure of conditional equity premium at time *t*, should explain a significant portion of variation in aggregate accruals under the null hypothesis. We use a constant and the lagged values of IV, MV, and the time trend as instrumental variables for the return equation. Therefore, the return equation is just identified. We use a constant, IV, MV, and a time trend as instrumental variables for the accrual equation. Because it has two free parameters, the accrual equation is over-identified with two degrees of freedom.

The GMM estimation results are reported in Table 4. Again, we consider two measures of excess market returns: May of year *t+1* to April of year *t+2* in panel C and January to December of year *t+1* in panel D. For both specifications, we find that the fitted equity premium explains substantial variation in aggregate accruals, with an $R^2$ about 55% in panel C and an $R^2$ about 58% in panel D. Moreover, the model restriction is not rejected at conventional significance levels.

HHT find that changes in aggregate accruals correlate negatively with contemporaneous market returns. Because changes in aggregate accruals correlate closely with changes in IV and with changes in MV (row 9 of Table 2), the evidence is consistent with the hypothesis of a positive relation between aggregate accruals and conditional equity premium. To investigate this issue formally, we decompose aggregate accruals into a systematic component and a residual component by regressing aggregate accruals on IV and MV. As conjectured, the negative relation between changes in aggregate accruals and contemporaneous market returns comes from only the systematic component, but not the residual component, of aggregate accruals. These results are omitted for brevity but are available on request.

To summarize, we find that aggregate accruals are a proxy of conditional equity premium.

### *3.4 Aggregate Accruals and Average IPO First-Day Return*

In this subsection, we investigate whether the predictive power of aggregate accruals for market returns is related to that of IPOFDR—the average minus IPO first-day return, which is arguably a direct measure of ex ante equity premium (Guo, 2009). IPOFDR has several desirable properties relative to other commonly used predictive variables of market returns. First, unlike the variables considered in HHT and KLW, IPOFDR has significant predictive power for market returns in sample and out of sample. Second, unlike IV and MV, IPOFDR is a forward-looking variable that incorporates investors' expectation about future market returns. Nevertheless, Guo (2009) shows that IPOFDR correlates positively with MV and correlates negatively with IV and that the predictive power of IPOFDR for market returns is qualitatively similar to that of IV and MV. Note that the strong correlation of IPOFDR with IV and MV is at odds with the hypothesis that IPOFDR is a measure of investor sentiment (Baker and Wurgler, 2006). Third, unlike the consumption-wealth ratio proposed by Lettau and Ludvigson (2001), IPOFDR is never revised and is available to investors in real time. Lastly, IPOFDR contains information about only future market returns; by contrast, the dividend yield correlates negatively with future cash flows (Sadka, 2007).[14] As we show in Section 5, this feature of IPOFDR allows us to distinguish expected market returns from expected changes in cash flows.

In Table 5, we again consider two measures of excess market returns: May of year *t+1* to April of year *t+2* (in panel A) and January to December of year *t+1* (in panel B). For both specifications, we confirm that IPOFDR has significant predictive for market returns (rows 1 and 3); and the associated adjusted $R^2$ is similar to that of aggregate accruals (as reported in rows 1 and 6 of Table 3). After we include both aggregate accruals and IPOFDR in the forecast regression, neither variable is statistically significant, although they jointly account for a sizeable portion of variation in excess market returns (rows 2 and 4). This result clearly reflects a multicollinearity problem because aggregate accruals and IPOFDR have a correlation coefficient of over 60% (as reported in Table 1) and both variables have a positive correlation with future market returns. Overall, the results in Table 5 provide additional support for the hypothesis that aggregate accruals forecast market returns because of their close correlation with conditional equity premium.

### *3.5 Aggregate Accruals and the Cross-Section of Stock Returns*

Because conditional equity premium is a measure of investment opportunities, its (unexpected) changes are a priced risk factor in ICAPM. In particular, Campbell and Vuolteenaho (2004) find that the value premium of Fama and French's (1996) three-factor model helps explain the cross-section of stock returns mainly due to its close correlation with discount-rate shocks. Because we argue that aggregate accruals are a proxy of conditional equity premium, we explore in this subsection whether changes in

[14] Changes in the payout policy have a confounding effect on the time-series properties of the dividend yield (e.g., Lettau and Van Nieuwerburgh, 2008); however, there is no compelling reason why these changes affect IPOFDR.

aggregate accruals (ΔACCRUAL) help explain the cross-section of stock returns.[15] The investigation is also motivated by Fama's (1991) conjecture that a sensible link between time-series and cross-sectional stock return predictability should help differentiate alternative hypotheses. Specifically, the evidence that aggregate accruals are priced in the cross-section of stock returns is consistent with ICAPM and thus helps refute alternative explanations such as data mining and irrational pricing.

Over the period 1966 to 2005, there is a significantly positive relation between ΔACCRUAL and the value premium. Campbell and Vuolteenaho (2004) argue that HML explains the cross-section of stock returns because it is a proxy of discount-rate shocks. To investigate this possibility, we use ΔACCRUAL, excess market returns (MKT), the size premium (SMB), and the value premium (HML) as risk factors to explain the cross-section of returns on the twenty-five Fama and French (1996) portfolios sorted by size and book-to-market equity ratio. We use the Fama and MacBeth (1973) cross-sectional regression approach for this analysis. Because accounting data are released with substantial delays, accruals of time *t* contain information unavailable to investors at time *t*. To mitigate the effect of this issue, we estimate factor loadings using the two-stage least-squares (2SLS) method with changes in IV and changes in MV as instrumental variables for ΔACCRUAL (see row 9 of Table 2 for the correlations among these variables).

We present the cross-sectional regression results in Table 6. For robustness, we report both Fama and MacBeth (1973) t-statistics (in parentheses) and Shanken (1992) corrected t-statistics (in squared brackets). As conjectured, ΔACCRUAL is positively and significantly priced (row 1). Row 2 replicates the well-known result that the value premium (HML) is a significantly priced risk factor. To investigate whether the cross-sectional explanatory power of ΔACCRUAL is related to that of the value premium, we orthogonalize ΔACCRUAL by HML and use the residual, $\Delta ACCRUAL^{+}$, in the cross-sectional regression along with HML. We find that $\Delta ACCRUAL^{+}$ is statistically insignificant at the 5% level (row 3), suggesting that ΔACCRUAL explains the cross-section of stock returns due to its correlation with the value premium.

To summarize, consistent with the hypothesis that aggregate accruals are a proxy of conditional

[15] We use actual changes instead of unexpected changes because changes in aggregate accruals are unpredictable. As a robustness check, we find qualitatively similar results using the residual from an AR (1) model of changes in aggregate accruals.

equity premium, we find that changes in aggregate accruals are priced in the cross-section of stock returns.

### *3.6 Aggregate Accruals and Future Aggregate Economic Activity*

Using a production-based asset pricing model, Cochrane (1991) emphasizes that rational managers should adjust the amount of factors—e.g., labor and capital—used in production process with changes in discount rates. The idea is quite intuitive; for example, market-value-maximizing managers should increase (decrease) investment when costs of capital become cheaper (more expensive). Consistent with this prediction, several recent authors find that proxies of conditional equity premium forecast fixed nonresidential investment growth (Lettau and Ludvigson, 2002) and changes in unemployment rates (Chen and Zhang, 2009). Similarly, Liew and Vassalou (2000) document a strong relation between the value premium—arguably a proxy of discount-rate shocks—and future GDP growth in major industrial countries, including U.S. Liew and Vassalou (2000) also find that the predictive power of the value premium is independent of that of market returns, which equal cash-flow shocks minus discount-rate shocks. Consistent with the theory and the empirical findings, we show that IV and MV jointly forecast changes in GDP, unemployment rates, and investment. Interestingly, the predictive power of IV and MV is closely related to that of the value premium and market returns. Similarly, we find IPOFDR has significant predictive power for aggregate economic activity as well.[16]

Because we argue that aggregate accruals are a proxy of conditional equity premium, we expect that aggregate accruals correlate with future aggregate economic activity as well. There is an important caveat, however. Although they correlate closely with the determinants of conditional equity premium, i.e., IV and MV (Table 2) and IPOFDR (Table 1), aggregate accruals have substantial measure errors as a proxy of conditional equity premium. Specifically, as we show in the next section, we decompose firm-level accruals into (1) a systematic component that co-moves with IV and MV and (2) a residual component, and find that the aggregate residual component does not forecast market returns. The attenuation effect of measurement errors is likely to be stronger in the forecast of aggregate economic activity than that in the forecast of market

[16] Tabulated results are available on request.

returns because the former relation is indirect. Indeed, we find that aggregate accruals have negligible predictive power for aggregate economic activity in the OLS regression (untabulated). We address the issue of measurement errors using 2SLS with IPOFDR as an instrument variable. The instrumental variable approach imposes a restriction that is consistent with our main hypothesis—aggregate accruals forecast aggregate economic activity mainly because of their close correlation with conditional equity premium. Note that IPOFDR is a better instrumental variable than are IV and MV in this particular context because it is a direct measure of ex ante equity premium; by contrast, IV and MV may affect future economic activity through channels other than their correlations with costs of capital (Campbell, Lettau, Malkiel, and Xu, 2000). Nevertheless, we find qualitatively similar results using IV and MV as additional instrumental variables (untabulated).

Table 7 reports the 2SLS estimation results over the period 1965 to 2006. Aggregate accruals have negligible predictive power at the one-year horizon; however, their predictive power becomes statistically significant at longer, e.g., two- to four-year, horizons. We find a weaker predictive power at one-year horizon for IPOFDR as well (untabulated). The pattern is consistent with that reported in Lettau and Ludvigson (2002), who suggest that it reflects partially lags between investment decisions and investment expenditures (Lamont, 2000). While aggregate accruals correlate positively with future investment growth, they correlate negatively with changes in future unemployment rates. Similarly, the relation between aggregate accruals and future GDP growth is positive. These findings, which are qualitatively similar to those reported in Lettau and Ludvigson (2002) and Chen and Zhang (2009), are quite intuitive. Many authors, e.g., Fama and French (1989), find that expected market returns tend to be high during economic recessions—the trough of business cycles defined by the National Bureau of Economic Research (NBER).

To summarize, aggregate accruals correlate significantly with future aggregate economic activity mainly because of their close correlation with conditional equity premium.

## 4. Firm-Level Accruals and Conditional Equity Premium

In this section, we show that firm-level accruals also tend to co-move closely with IV and MV. Therefore, the close correlation of aggregate accruals with conditional equity premium may reflect mainly the commonality in firm-level accruals. To illustrate this point, we decompose firm-level accruals into (1) a common component that co-moves with IV and MV and (2) a residual component. We find that aggregate accruals forecast market returns mainly because of the common component. The residual component, which accounts for most variation in firm-level accruals that is diversified away by aggregation, is responsible for the negative cross-sectional relation between a firm's accruals and its expected stock returns, as documented by Sloan (1996).

### *4.1 Commonality in Firm-Level Accruals and Time-Series Return Predictability*

We have shown that aggregate accruals correlate closely with IV and MV. In lieu of the negative cross-sectional relation between firm-level accruals and future stock returns documented in Sloan (1996), the information regarding future excess market returns contained in aggregate accruals must reflect a systematic component in firm-level accruals that cannot be diversified away by aggregation. To explore this conjecture, we run the OLS regression of firm-level accruals (FACC) on IV and MV for each firm, and report the summary statistics of the firm-specific estimates in Table 8. To ensure that we obtain reliable point estimates, we require that a firm should have at least fifteen annual observations to be included in this analysis. After imposing this restriction, our sample contains 33,336 firm-years for 1,373 firms.

Table 8 reveals that IV has a pervasively negative effect on firm-level accruals. The coefficient on IV is negative for about 70% of all firms, with a mean of –1.39 and a median of –0.77. The Fama-MacBeth standard error of the cross-sectional mean of the coefficient on IV is 0.19, suggesting an overall significantly negative effect of IV on firm-level accruals. Similarly, MV has a significantly positive effect on firm-level accruals. The average adjusted $R^2$ of 3% for the firm-specific regressions suggests that, on average, IV and MV jointly account for a rather moderate fraction of variation in firm-level accruals. Thus, the systematic movement is relatively unimportant for firm-level accruals. As we show next, the systematic movement of firm-level accruals, however, has important effects on time-series properties of aggregate accruals because the idiosyncratic component of firm-level accruals is likely to be diversified away in the aggregation process.

The firm-specific regression results in Table 8 suggest that aggregate accruals forecast market returns possibly because conditional equity premium has a pervasive effect on firm-level accruals. To further explore this conjecture, we decompose firm-level accruals into a common component and a residual component. The common component is the fitted value from the firm-specific regressions of accruals on IV and MV, while the residual component is the residual from the firm-specific regressions. We then take the value-weighted average of each component across all firms. Interestingly, untabulated results show that the average common component is serially correlated and has significant predictive power for aggregate accruals, while the average residual component is serially uncorrelated and has negligible predictive power for aggregate accruals. These findings suggest that systematic variation in firm-level accruals comes mainly from their correlation with IV and MV. They also corroborate the evidence that IV and MV jointly account for about 60% of variation in aggregate accruals (row 6 of Table 2). Thus, we predict that forecasting power of aggregate accruals for excess market returns comes mainly from the common component of firm-level accruals. On the other hand, because IV and MV account for only a small fraction of variation in firm-level accruals, most of the shocks to firm-level accruals are likely to be idiosyncratic and thus can be diversified away by aggregation.

On the contrary, if IV and MV do not explain firm-level accruals (i.e., the coefficients on IV and MV in Table 8 were statistically indifferent from zero), the common component would be approximately constant and exhibit no systematic movement. In this case, the common component would have negligible predictive power for market returns whereas the residual component would co-move strongly with aggregate accruals; consequently, aggregate accruals and the residual component would have similar predictive power. As we show next, these alternative implications are overwhelmingly rejected by data.

In panel A of Table 9, we report forecast regression results, using excess market returns over the period May of year *t+1* to April of year *t+2*. ACCRUAL-S is the aggregate accruals in year *t*, constructed using the subsample of firms that have a minimum of fifteen annual observations. Although ACCRUAL-S was constructed using substantially less observations than was ACCRUAL in Tables 1 though 5, row 1 of Table 9 confirms that the relation between ACCRUAL-S and future excess market returns remains significantly positive at the 5% level, with an adjusted $R^2$ about 8%. We find that the value-weighted aggregate common component of firm-level accruals, FACC-Fv, also has significant predictive power (row 2). By contrast, the value-weighted aggregate residual component, FACC-Rv, does not forecast excess market returns (row 3). The results hold for the multivariate regression, in which we include both the common and the residual components of firm-level accruals (row 4). Results are qualitatively similar if we use returns over the period January to December of year $t+1$ (panel B). Thus, aggregate accruals forecast excess market returns mainly because of the common component in firm-level accruals.

HHT document a significantly negative relation between changes in aggregate accruals and market returns. They infer that the result is consistent with the interpretation that aggregate accruals forecast returns due to their close correlation with aggregate discount rates. If aggregate accruals forecast market returns mainly because of the common component that co-moves with conditional equity premium, a negative relation between changes in aggregate accruals and market returns should primarily come from the common component, not the residual component, of firm-level accruals. Consistent with the conjecture, untabulated results suggest that changes in the common component correlate negatively with market returns, whereas the correlation of changes in the residual component with market returns is statistically insignificant.

### *4.2 Equal-Weighted Aggregate Accruals*

HHT find that the statistical relation between aggregate accruals and future market returns is stronger and more robust when using value-weighted accruals than when using equal-weighted accruals.[17] We suspect that this difference is mainly due to a much higher volatility of the equal-weighted residual component of firm-level accruals than the volatility of its value-weighted counterpart. We find that the standard deviation of the former is about 60% higher than that of the latter. Because only the common

[17] Kang, Liu, and Qi (2008) fail to find a statistically significant relation between equal-weighted accruals and future market returns.

component of firm-level accruals predicts market returns, a higher volatility of the residual component reduces the signal-to-noise ratio and hence attenuates the forecasting power of equal-weighted aggregate accruals.

Table 10 shows that equal-weighted aggregate accruals constructed using either the full sample (row 1) or the subsample with the restriction of at least fifteen observations (row 2) has negligible forecasting power for excess market returns over the period January to December of year *t+1*.[18] However, row 3 of Table 10 shows that the coefficient on the equal-weighted common component of firm-level accruals, FACC-Fe, is significantly positive in the forecast regression for excess market returns, with an adjusted $R^2$ similar to that of the value-weighted common component (reported in row 6 of Table 9). By contrast, the relation between equal-weighted residual component of firm-level accruals, FACC-Re, and future excess market returns is negative and marginally significant (row 4). When we include both components of firm-level accruals in the forecast regression, FACC-Fe remains positively significant, whereas FACCRUAL-Re becomes insignificant (row 5).

Given the high correlation between the equal-weighted and the value-weighted common components of firm-level accruals (74%, untabulated) and the aforementioned higher volatility of the equal-weighted residual component of firm-level accruals, the results in Table 10 should not be too surprising. Nevertheless, the analysis shown in Table 10 provides further support that conditional equity premium has a pervasive effect on firm-level accruals and that aggregate accruals forecast excess market return mainly due to the commonality in firm-level accruals. It is also worth noting that the negative albeit insignificant coefficients on the equal-weighted residual component of firm-level accruals in the forecast regressions for excess market returns are consistent with the negative cross-sectional relation between accruals and future stock returns documented in Sloan (1996).

[18] We find qualitatively similar results using the return over the period May of year *t+1* to April of year *t+2* with one exception. Equal-weighted aggregate accruals constructed using the full sample has statistically significant predictive power for excess market returns over the period May of year t+1 to April of year t+2. Nevertheless, the predictive power is substantially weaker than that of value-weighted aggregate accruals. For example, equal-weighted aggregate accruals account for less than 4% of variation in excess market returns, compared with 17% for value-weighted aggregate accruals (as reported in row 1 of Table 3).

### 4.3 *Accruals and Cross-Sectional Stock Return Predictability*

The positive relation between aggregate accruals and future excess market returns is at odds with the well-documented cross-sectional evidence of a negative relation between accruals and future stock returns (Sloan, 1996). Results from previous subsections suggest that the decomposition of firm-level accruals into (1) a common component that co-moves with conditional equity premium and (2) a residual component may help reconcile the conflicting time-series and cross-sectional relations between accruals and expected stock returns. With an average adjusted $R^2$ about 3%, the common component explains only a small portion of variation in firm-level accruals and is thus relatively unimportant at the firm level. The common component forecasts market returns because it cannot be diversified away at the aggregate level. By contrast, the residual component does not forecast market returns because it is mostly diversified away in aggregation. Nevertheless, we show next that the cross-sectional accruals effect can be attributed mainly to the residual component, as the residual component accounts for most variation in firm-level accruals.

As in subsection 4.1, we decompose firm-level accruals into common and residual components (FACC-F and FACC-R, respectively). We then run the Fama and MacBeth (1973) cross-sectional regressions of one-year-ahead returns (May of year *t+1* to April of year *t+2*) on these two components. We report the results in Table 11. Row 1 shows that the common component has a positive albeit statistically insignificant relation with expected returns. By contrast, we document a significantly negative relation between the residual component and expected returns (row 2). Row 3 shows that the results are qualitatively similar if we include both components in the cross-sectional regression.

The evidence that the firm-level accruals effect (as reported in Table 11) does not carry over to the aggregate level (as reported in Table 10) suggests that most variation in a firm's accruals is idiosyncratic and can be diversified away by aggregation. Our decomposition thus provides support for Vuolteenaho's (2002) conjecture that fundamentals are the most important determinant of individual stock prices, while discount rates account for most variation in aggregate stock prices. While the common component of firm-level accruals explains the time-series predictability, the residual component is responsible for the cross-sectional predictability. Thus, the results documented by HHT and Sloan (1996) do not contradict each other; rather, they reflect two distinct phenomena.

### 4.4 *Discretionary versus Normal Accruals*

While our analysis establishes a direct link between aggregate accruals and conditional equity premium, our results do not preclude the alternative earnings management hypothesis proposed by HHT. In particular, the finding that conditional equity premium has a pervasive effect on firm-level accruals is consistent with the hypothesis that managers manipulate earnings in response to market-wide changes in firm valuation due to discount rate shocks. Moreover, a close relation between aggregate accruals and the average IPO first-day return is potentially consistent with the earnings management story because there is a close relation between earnings management and equity offerings (e.g., Teoh, Welch, and Wong, 1998).

Employing Jones' (1991) model, Kang, Liu, and Qi (2008) decompose accruals into discretionary and normal components to explore the earnings management hypothesis. These authors find that aggregate discretionary accruals forecast one-year-ahead market returns but aggregate normal accruals do not. Noting that aggregate discretionary accruals are not correlated with business conditions proxied by GDP growth and that the forecasting power of aggregate discretionary accruals remains after controlling for proxies of discount rates, Kang, Liu, and Qi (2008) conclude that their evidence supports the earnings management hypothesis, but not the hypothesis that accruals contain information about discount rates.

We replicate the main findings of Kang, Liu, and Qi (2008) in Table 12. Row 1 shows that value-weighted aggregate discretionary accruals, DACC, correlate positively and significantly with one-year-ahead market returns, with an adjusted $R^2$ of 17%. By contrast, the predictive power of value-weighted aggregate normal accruals, NACC, is statistically insignificant at conventional levels (row 2). The results hold when we use both DACC and NACC in the forecast regression (row 3). Results shown in row 4 suggest that the predictive power of value-weighted aggregate discretionary accruals remains statistically significant even after we control for the effect of IV and MV, although the point estimate becomes noticeably smaller than that reported in row 1.

Further analysis, however, reveals evidence that is at odds with inferences in Kang, Liu, and Qi

(2008). Specifically, we document a strong and positive relation between our proxies for conditional equity premium and aggregate discretionary accruals. Panel B of Table 12 shows that discretionary accruals correlate negatively with IV and correlate positively with MV; and IV and MV jointly explain a sizeable portion of time-series variation in aggregate discretionary accruals, with an adjusted $R^2$ of 23%. By contrast, IV and MV have much weaker explanatory power for aggregate normal accruals (panel C).

The results in Table 12 suggest that aggregate discretionary accruals forecast market returns at least partly due to their co-movement with the determinants of conditional equity premium. Prima facie, managers may have manipulated earnings in response to changes in discount rates. However, the validity of such inferences depends crucially on the assumption that Jones' (1991) model provides a reasonable measure of discretionary and normal accruals. To explore this issue further, we investigate some of its more stringent implications. In particular, if managers manipulate earnings in response to market-wide under-valuation due to increases in discount rates, we would expect a positive relation between firm-level discretionary accruals and conditional equity premium. By contrast, we expect the relation between firm-level normal accruals and conditional equity premium to be mostly negative as firms tend to increase production capacity and inventories during expansions, when the discount rate is low, and vice versa (Zhang, 2007).[19]

We run firm-specific regressions of discretionary accruals (FDACC) and normal accruals (FNACC), respectively, on IV and MV using the subsample of firms with a minimum of fifteen annual observations over the period 1965 to 2005. Our analysis on the time-series of firm-level discretionary and normal accruals reveals mixed results. Both discretionary accruals (panel A of Table 13) and normal accruals (panel B of Table 13) correlate positively with MV and correlate negatively with IV, suggesting that conditional equity premium correlates positively with both discretionary and normal accruals. The positive association is even stronger for normal accruals (average adjusted $R^2$ of 8%) than for discretionary accruals (average adjusted $R^2$ of 1%). In untabulated analysis, we aggregate the fitted values from the firm-specific regressions reported in Table 13. We find that the systematic components in both discretionary and normal accruals correlate

[19] Fairfield, Whisenant, and Yohn (2003) also note that accruals are a component of growth in net operating assets. Thus, increases in production capacity and inventories tend to increase accruals.

positively with future market returns, regardless of whether the aggregation is value-weighted or equal-weighted. We also find higher idiosyncratic variation in firm-level normal accruals that makes aggregate normal accruals a noisy, and thus insignificant, predictor of market returns.

Our results cast doubt on Kang, Liu, and Qi's (2008) interpretation that aggregate accruals forecast market returns mainly due to earnings management as captured by Jones' (1991) discretionary accruals. In particular, the fact that conditional equity premium has a pervasively positive effect on both discretionary and normal components of firm-level accruals suggests that Jones' (1991) model provides a rather poor measure of earnings management in this particular context. Specifically, in Jones' (1991) model, discretionary accruals are defined as the idiosyncratic component of total accruals. Yet, our finding suggests that it contains a systematic component that co-moves with the determinants of conditional equity premium. In addition, the orthogonality between discretionary and normal accruals imposed by Jones' (1991) model is likely a misspecification for capturing the "lean against the wind" aspect of earnings management suggested by HHT.[20] Lastly, since our results hold for both value-weighted and equal-weighted aggregation schemes, the size effect (as emphasized by Kang, Liu, and Qi (2008)) does not provide a satisfactory explanation. Due to the lack of a well-defined measure of earnings management, we are unable to further explore the earnings management hypothesis and we leave it for future research.

## 5 Earnings and Conditional Equity Premium

KLW document a strong negative correlation of changes in aggregate earnings with contemporaneous market returns. They interpret the finding as indirect but strong evidence that earnings and discount rates move together. HHT show that the negative aggregate earnings-returns relation can be completely explained by the negative correlation of changes in aggregate accruals with market returns. Because aggregate accruals forecast market returns, HHT provide strong support for KLW's conjecture that aggregate earnings co-move with discount rates. There is, however, an important alternative explanation.

[20] McNichols (2000) note that the orthogonality between discretionary and normal accruals imposed by Jones' (1991) model is likely to be misspecified as income-smoothing literature suggests that normal accruals are negatively correlated with discretionary accruals.

Sadka and Sadka (2009) point out that KLW's finding may also reflect a negative relation between expected earnings growth and conditional equity premium.

In particular, Campbell and Shiller (1988) formalize a log-linear present-value relation, in which the log dividend yield equals expected future log discount rates minus expected future log dividend growth. Somewhat surprisingly, most existent empirical studies find that dividends shocks have negligible explanatory power for variation in stock prices at the aggregate level, although Ball and Brown (1968) and many subsequent studies document a robust positive earnings-returns relation at the firm level. In contrast with the conventional wisdom, Sadka (2007) documents a strong negative relation between the dividend yield and future changes in aggregate earnings—arguably a better measure of cash flows than dividends. Because the dividend yield correlates positively with future market returns, Sadka (2007) hypothesizes that his finding may reflect a negative relation between expected returns and expected earnings growth. Recognizing that the dividend yield is related to both expected returns and expected cash flows growth, Sadka (2007) notes that we need a "clean" measure of conditional equity premium other than the dividend yield to address his conjecture formally.

In this section, we show that, similar to accruals, earnings co-move strongly with the determinants of conditional equity premium at both the firm-level and the aggregate level. In particular, after controlling for such correlations, the negative relation between changes in aggregate earnings and contemporaneous market returns attenuates substantially and becomes statistically insignificant. More importantly, we document a positive relation between aggregate earnings and future market returns in three ways. First, the aggregate common component of firm-level earnings forecasts market returns, while the residual component has negligible predictive power. Second, we find a significant relation between aggregate earnings and future market returns after controlling for measurement errors in aggregate earnings (e.g., the aggregate residual component of firm-level earnings does not forecast returns) with IV and MV as instrument variables. Third, Cready and Gurun (2008) find that aggregate earnings forecast market returns over the period 1986 to 2005. We show that the predictive power reflects mainly the strong relation between aggregate earnings and proxies of conditional equity premium—e.g., aggregate accruals, IV and IV, and IPOFDR. To summarize, consistent with KLW's conjecture, we find a positive correlation of aggregate earnings with conditional equity premium.

IPOFDR is a direct measure of ex ante equity premium. Unlike the dividend yield, it contains no direct information about future cash flows. Therefore, it allows us to isolate the relation between expected earnings growth and conditional equity premium. Interestingly, while we confirm Sadka's (2007) main finding of a negative relation between the dividend yield and future earnings growth, the relation between IPOFDR and future earnings growth is *positive*. The latter result is consistent with Lettau and Ludvigson's (2005) finding of a positive relation between expected dividend growth and conditional equity premium.[21] The result should not be too surprising because HHT show that aggregate accruals—a proxy of conditional equity premium—correlate positively with future earnings.

*5.1 Commonality in Firm-Level Earnings*

We decompose firm-level earnings into a common component and a residual component, using the procedures similar to the accruals decomposition. Our motivation for the earnings decomposition is in line with KLW's conjecture that aggregate earnings co-move with discount rates, while firm-level earnings reflect primarily diversifiable idiosyncratic cash-flow news. To ensure that our results are comparable with those in KLW, we follow their procedures and use earnings per share scaled by the beginning-of-period stock price. A total of 1,405 firms with the fiscal year ending in December and with a minimum of fifteen annual observations over the period 1965 to 2005 are included in the analysis.

Table 14 shows that firm-level earnings (E/P) correlate positively with MV and correlate negatively with IV, and the relations are statistically significant at conventional levels. On average, IV and MV jointly account for about 4% of variation in firm-level earnings. Thus, firm-level earnings also contain commonality that co-moves with conditional equity premium. Meanwhile, most of the variation in firm-level earnings is idiosyncratic and thus is likely to account for the cross-sectionally positive earnings-returns relation long

[21] Koijen and Van Binsbergen (2009) also document a positive relation between shocks to expected returns and shocks to expected cash flows growth.

observed since Ball and Brown (1968).

We then investigate the predictive power of aggregate earnings for market returns in Table 15. We use the holding period excess market return of May of year *t+1* to April of year *t+2* in panel A. Row 1 shows that value-weighted aggregate earnings (EP) correlate positively with future market returns, although the relation is statistically insignificant. By contrast, the value-weighted aggregate common component of firm-level earnings (EP-F) has a significantly positive correlation with future market returns (row 2). The value-weighted aggregate residual component (EP-R), which accounts for a significant portion of variation in aggregate earnings, has negligible predictive power for market returns (row 3). The results on the common and residual components of firm-level earnings remain when we use both components as predictors in the forecast regression for future market returns (row 4). In rows 5 and 6, we show that the predictive power of aggregate earnings comes mainly from the common component in firm-level earnings. Moreover, row 7 shows that the predictive power of the common component reflects mainly its correlation with the determinants of conditional equity premium, i.e., IV and MV. The results are qualitatively similar when using the holding period return of January to December of year *t+1* (panel B of Table 15). We also find qualitatively similar results using equal-weight in aggregation (untabulated). To summarize, aggregate earnings contain information about expected market returns because of the commonality in firm-level earnings that moves in synchrony with conditional equity premium.

### *5.2 Aggregate Earnings and Conditional Equity Premium*

HHT show that the negative aggregate earnings-returns relation reflects mainly the negative aggregate accruals-returns relation. To ensure that our results are comparable with those reported in HHT, we follow their specifications and scale earnings by total assets.[22] Nevertheless, the decomposition results

[22] Ball, Sadka, and Sadka (2009) argue in a similar context that this measure is more appropriate than the alternatives of scaling earnings by the book value of equity or by market prices. Consistent with findings reported in Sadka and Sadka (2009), we find a much weaker, e.g., insignificant, relation between value-weighted changes in earnings (scaled by lagged stock prices) and market returns using post-2000 data. Jorgensen, Li, and Sadka (2008) suggest that the change in the aggregate earnings-returns relation is likely due to SFAS 142, which changed the treatment of goodwill. SFAS 142 has a relatively small effect on the alternative measure of earnings scaled by total assets, as used in HHT and Ball,

(untabulated) are qualitatively similar to those obtained using earnings scaled by lagged market prices, as discussed in the proceeding subsection. In this subsection, we provide additional evidence that aggregate earnings co-move strongly with conditional equity premium.

In panel A of Table 16, we show that aggregate earnings correlate positively with MV and correlate negatively with IV. We find a similar result using first differences in panel B. In panel C, we first replicate the strong negative relation between changes in aggregate earnings and contemporaneous market returns, as documented by KLW and HHT (row "ERET54"). To investigate whether the relation reflects the positive relation between aggregate earnings and conditional equity premium, we orthogonalize changes in aggregate earnings by changes in MV and changes in IV, as reported in panel B. We find that the orthogonalized change is uncorrelated with market returns at conventional significance levels (row "Residual"). We find a similar result for aggregate accruals (untabulated), consistent with HHT's finding that the negative aggregate earnings-returns relation is closely related to the negative aggregate accruals-returns relation.

If aggregate earnings co-move strongly with conditional equity premium, we should expect a positive relation between aggregate earnings and future stock market returns. We investigate the issue in panel D of Table 16. Similar to that reported in HHT, the OLS regression of future market returns on aggregate earnings reveals a positive albeit insignificant relation (first row, panel D). We suspect that the insignificant relation is due to the attenuation effect of measurement errors. For example, the residual component of aggregate earnings has negligible predictive power for market returns (row 3, Table 15). We address this possibility using the 2SLS estimation method with IV and MV as instrumental variables. As expected, the slope coefficient increases substantially and becomes statistically significant at the 5% level after we explicitly control for the effect of measurement errors in 2SLS estimation (second row, panel D). Similarly, we find that the slope coefficient is noticeably higher in 2SLS estimations than in OLS estimations for aggregate accruals as well (untabulated). Nevertheless, we find that, in both OLS and 2SLS estimations, aggregate earnings lose the predictive power for stock market returns after we control for aggregate accruals,

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Sadka, and Sadka (2009) in this particular context. As in HHT, we document a strong negative relation between changes in aggregate earnings (scaled by total assets) and market returns using the data ending in 2005. Unless otherwise indicated, we use HHT's earnings measure throughout the remainder of the paper.

indicating that the predictive power of aggregate earnings reflects mainly their close correlation with aggregate accruals (third and fourth rows, panel D). This result corroborate HHT's finding that aggregate accruals are more closely related to discount rates than are aggregate earnings.

Lastly, in a recent paper, Cready and Gurun (2008) find that aggregate earnings do have statistically significant predictive power for market returns over the period 1986 to 2005. We confirm their finding in panel E of Table 16 (first row, panel E). The result is in contrast with that obtained from the full sample, as reported in panel D of Table 16. Cready and Gurun (2008) suggest that the difference reflects possibly the fact that high inflation rates in the 1970s distort the information content of aggregate earnings for future market returns. While a full-fledged explanation of the finding is clearly beyond the scope of this paper, in panel E of Table 16, we show that the forecasting power of aggregate earnings over the period 1986 to 2005 again reflects their close correlation with aggregate accruals (second row, panel E). The predictive power of aggregate earnings relates closely to that of IV and MV and that of IPOFDR as well (untabulated).

To summarize, we find that aggregate earnings co-move strongly with conditional equity premium.

*5.3 Conditional Equity Premium and Expected Earnings Growth*

Sadka (2007) finds that the dividend yield has strong predictive power for aggregate earnings growth over longer horizons, suggesting that fundamentals do matter for stock prices at the aggregate level. Consistent with existent studies, e.g., Fama and French (1989), Sadka (2007) also document a strong positive relation between the dividend yield and future market returns at long horizons. Together, these findings appear to suggest a negative relation between expected earnings growth and conditional equity premium, which offers a potentially alternative explanation for KLW's finding of a negative aggregate earnings-returns relation (Sadka and Sadka, 2009). However, Sadka (2007) notes that because, by construction, the dividend yield is related to both expected discount rates and expected cash flows growth, we need a "clean" proxy of conditional equity premium separately identifiable from cash flow news to address directly the relation between expected earnings growth and conditional equity premium. In this subsection, we take the task using (1) IV and MV and (2) IPOFDR as proxies of conditional equity premium.

To ensure that our results are comparable with those reported by Sadka (2007), we follow his procedures in the construction of market returns, aggregate dividends, aggregate earnings, and aggregate dividend yield using merged CRSP-Compustat data.[23] We confirm that the dividend yield correlates negatively with future earnings growth and correlates positively with future market returns. We also find that IV and MV have strong predictive power for market returns; for example, the two variables jointly account for about 30% of variation in 10-year-ahead market returns.[24] The strong predictive power of IV and MV for market returns does not extend to aggregate earnings growth over long horizons, however. Using realized values as a proxy of their expected values, Sadka (2007) show that the dividend yield correlates negatively with expected earnings growth and correlates positively with expected market returns in multivariate regressions. Consistent with the argument that IV and MV are determinants of conditional equity premium, we find that the dividend yield correlates positively with MV and correlates negatively with IV. Moreover, these relations attenuate substantially and become statistically insignificant after we control for realized market returns over the next ten years as a proxy of expected long-run market returns. By contrast, the relations remain or become even stronger after we control for expected long-run earnings growth. Thus, while we confirm that both discount-rate news and cash-flow news matter for stock prices at the aggregate level, the evidence of a negative relation between conditional equity premium and expected earnings growth is rather elusive.[25]

As a robustness check, we also investigate the relation between expected stock market returns and expected earnings growth using real earnings per share of S&P 500 index, as in Lamont (1998). We construct the aggregate dividend yield as the ratio of real dividends per share of S&P 500 to the real S&P 500 index. We use IPOFDR as a measure of conditional equity premium and use IV and MV as its instrumental variables—Hansen's (1980) J-test shows whether IV and MV provide additional information

[23] We thank Gil Sadka for providing detailed clarifications through emails.

[24] We find that log transformations of IV and MV have stronger predictive power for market returns than levels of IV and MV in long-horizon forecast regressions. This is possibly because log volatilities are more persistent and have a distribution closer to normal distributions. Levels and logs of IV and MV, however, have similar predictive power for market returns over short forecasting horizons.

[25] For brevity, these results are not reported but are available on request.

about future earnings growth beyond IPOFDR. Because IPOFDR is available from 1960, our sample spans the period 1960 to 2006.[26] In panel A of Table 17, we report the OLS regression results of forecasting one-year-ahead aggregate earnings growth. The relation between the dividend yield and one-year-ahead earnings growth is negative but statistically insignificant (row 1). In contrast, we find a significantly positive relation between IPOFDR and future earnings growth (row 2). This result is consistent with Lettau and Ludvigson (2005), who find a positive relation between expected stock market returns and expected dividend growth. Interestingly, the negative relation between the dividend yield and future aggregate earnings growth becomes statistically significant at the 5% level after we control for IPOFDR in the forecast regression (row 3), while IPOFDR remains significantly positive at the 5% level. Similarly, if we orthogonalize the dividend yield by IPOFDR, MV, and IV, we find a significantly negative relation between the residual and future aggregate earnings growth. These results confirm Lettau and Ludvigson's (2005) insight on the weak relation between the dividend yield and expected cash flows growth in data—the positive relation between expected returns and expected cash flows growth weakens the predictive power of the dividend yield for cash flows due to an omitted variable problem. The J-test indicates that we cannot reject the null that IV and MV do not provide information about earnings growth beyond IPOFDR. We find similar results for the forecasting horizons of two to four years (panels B to D).

To summarize, we confirm Sadka's (2007) finding of a strong negative relation between the dividend yield and expected earnings growth. Consistent with the finding reported in Lettau and Ludvigson (2005), our study reveals a positive relation between expected stock returns and expected cash flows growth in one- to four-year forecasting horizons.

## 6. Conclusion

We show that aggregate accruals forecast market returns mainly due to a strong commonality in firm-level accruals that co-moves with the determinants of conditional equity premium. A decomposition of

[26] Sadka (2007) uses Compustat data to calculate real earnings growth for the period 1957 to 2001.

firm-level accruals into (1) a common component that co-moves with the determinants of conditional equity premium and (2) a residual component helps reconcile the seemingly conflicting relations between accruals and expected stock returns at the aggregate and the firm levels. While the common component explains the positive relation between aggregate accruals and future market returns, the residual component is responsible for the negative relation between firm-level accruals and future stock returns in Sloan (1996).

The positive relation between firm-level accruals and conditional equity premium also extends to firm-level earnings. The results from our decomposition of firm-level earnings provide strong support for KLW's conjecture that aggregate earnings co-move with discount rates, while firm-level earnings primarily reflect diversifiable idiosyncratic cash-flow news.

Consistent with KLW's conjecture, we also provide compelling evidence of a positive relation between aggregate earnings and conditional equity premium. For example, we show that there is a positive relation between aggregate earnings and future market returns if using appropriate econometric specifications. We also shed light on the alternative explanation advanced by Sadka and Sadka (2009) that KLW's finding may partially reflect a negative relation between expected earnings growth and conditional equity premium. While we confirm Sadka' (2007) finding of a strong negative relation between the dividend yield and future earnings growth, we document a strong *positive* relation between conditional equity premium and expected earnings growth. Our results confirm Lettau and Ludvigson's (2005) conjecture that the positive relation between conditional equity premium and expected cash flows growth attenuates substantially the predictive power of the dividend yield for future cash flows and thus is partially responsible for the failure to uncover such an important relation in the earlier studies. Together, consistent with findings in Sadka (2007), our results indicate both cash-flow news and discount-rate news matter for stock prices at the aggregate level.

The puzzle of why accruals and earnings are informative about conditional equity premium remains. One possible explanation is that managers may use accruals to manipulate earnings in response to market-wide changes in firm valuation resulting from discount-rate shocks. The conjecture is potentially consistent with our finding of a close relation between aggregate accruals and the average IPO first-day return because there is a close relation between earnings management and equity offerings (e.g., Teoh, Welch, and Wong, 1998). Unfortunately, our exploration in this regard only highlights the ineptness of Jones' (1991) model to capture the "lean against the wind" aspect of earnings management. Because of the lack of a well-defined measure of earnings management, we are unable to further explore the earnings management hypothesis and we leave this important issue for future research.

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**TABLE 1**
**Summary Statistics**

| | ERET | ERET54 | ACCRUAL | IV | MV | IPOFDR |
|---|---|---|---|---|---|---|
| Panel A: Univariate statistics | | | | | | |
| Mean | 0.058 | 0.056 | -0.049 | 0.016 | 0.007 | -0.179 |
| Standard Deviation | 0.174 | 0.160 | 0.016 | 0.013 | 0.006 | 0.153 |
| Autocorrelation | -0.051 | -0.151 | 0.490 | 0.577 | 0.152 | 0.447 |
| Panel B: Cross correlation | | | | | | |
| ERET | 1.000 | | | | | |
| ERET54 | 0.616 | 1.000 | | | | |
| ACCRUAL | -0.233 | 0.068 | 1.000 | | | |
| IV | -0.289 | -0.303 | -0.461 | 1.000 | | |
| MV | -0.463 | -0.248 | 0.095 | 0.703 | 1.000 | |
| IPOFDR | -0.189 | -0.002 | 0.616 | -0.465 | -0.063 | 1.000 |

The table reports summary statistics of main variables used in the paper. ERET is the holding period excess market return over the period January to December of year *t*. ERET54 is the holding period excess market return over the period May of year *t* to April of year *t+1*. ACCRUAL is value-weighted aggregate accruals. IV is value-weighted average idiosyncratic variance. MV is realized market variance. IPOFDR is the average minus IPO first-day return. ACCRUAL, IV, MV, and IPOFDR are all measures of year *t*. The sample spans the period 1965 to 2005.

**TABLE 2**
**Predictive Power of MV, IV, and Commonly Used Proxies for Business Conditions**

| | MV | IV | EP | DP | BM | DEF | TERM | EQIS | Trend | Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|---|---|---|
| Panel A: Forecasting one-year-ahead excess market returns | | | | | | | | | | |
| 1 | 1.590 | | | | | | | | 0.233 | -0.021 |
| | (5.213) | | | | | | | | (0.237) | |
| 2 | 17.115*** | -10.586*** | | | | | | | 0.595*** | 0.233 |
| | (4.836) | (2.150) | | | | | | | (0.216) | |
| 3 | | | 0.313 | 8.581 | -0.091 | 4.715 | 0.135 | -0.995*** | 0.257 | 0.172 |
| | | | (2.506) | (5.658) | (0.374) | (7.294) | (0.215) | (0.311) | (0.298) | |
| 4 | 13.479** | -8.431*** | 2.034 | 5.06 | -0.399 | 9.279 | 0.119 | -0.677* | 0.175 | 0.260 |
| | (5.549) | (2.613) | (2.265) | (5.341) | (0.354) | (6.865) | (0.181) | (0.358) | (0.289) | |
| Panel B: Explaining aggregate accruals | | | | | | | | | | |
| 5 | 0.288 | | | | | | | | -0.021 | -0.017 |
| | (0.684) | | | | | | | | (0.022) | |
| 6 | 2.336*** | -1.396*** | | | | | | | 0.027** | 0.559 |
| | (0.480) | (0.161) | | | | | | | (0.013) | |
| 7 | | | 0.231 | 0.328 | 0.012 | -0.479 | 0.004 | -0.045 | 0.026 | 0.280 |
| | | | (0.234) | (0.625) | (0.027) | (0.601) | (0.020) | (0.032) | (0.027) | |
| 8 | 2.043*** | -1.264*** | 0.488*** | -0.191 | -0.035 | 0.195 | 0.002 | 0.003 | 0.013 | 0.625 |
| | (0.428) | (0.163) | (0.148) | (0.362) | (0.019) | (0.508) | (0.014) | (0.023) | (0.021) | |
| Panel C: Explaining aggregate accruals in first differences | | | | | | | | | | |
| 9 | 1.851*** | -1.107*** | | | | | | | | 0.318 |
| | (0.424) | (0.274) | | | | | | | | |

Panel A reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. Panel B reports the OLS estimation results of explaining contemporaneous variation in aggregate accruals over the period 1965 to 2005. Panel C reports the OLS estimation results of regressing concurrent changes in aggregate accruals on changes in IV and change in MV. MV is realized stock market variance. IV is average idiosyncratic variance. EP is aggregate earning-to-price ratio. DP is the dividend-to-price ratio for the CRSP value-weighted index. BP is aggregate book-to-market ratio. DEF is the default premium. TERM is the term premium. QUIS is the equity share of total equity and debt issues. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 3**
**Forecasting One-Year-Ahead Excess Market Returns 1966-2006**

| | ACCRUAL | MV | IV | Trend | Adjusted $R^2$ |
|---|---|---|---|---|---|
| Panel A: May-Apr excess market returns as dependent variable | | | | | |
| 1 | 4.457***<br>(1.307) | | | | 0.172 |
| 2 | | 8.462**<br>(4.066) | -7.462***<br>(1.998) | 0.511***<br>(0.193) | 0.131 |
| Panel B: May-Apr residuals from Row 2 as dependent variable | | | | | |
| 3 | 1.889<br>(1.423) | | | 0.036<br>(0.178) | -0.008 |
| Panel C: May-Apr residuals from Row 1 as dependent variable | | | | | |
| 4 | | -2.834<br>(3.714) | -0.711<br>(1.753) | 0.044<br>(0.190) | -0.048 |
| Panel D: Jan-Dec market returns as dependent variable | | | | | |
| 6 | 3.959***<br>(1.494) | | | | 0.105 |
| 7 | | 17.115***<br>(4.836) | -10.586***<br>(2.150) | 0.595***<br>(0.216) | 0.233 |
| Panel E: Jan-Dec residuals from Row 7 as dependent variable | | | | | |
| 8 | -0.074<br>(1.438) | | | -0.001<br>(0.195) | -0.053 |
| Panel F: Jan-Dec residuals from Row 6 as dependent variable | | | | | |
| 9 | | 7.013<br>(4.804) | -4.548**<br>(2.089) | 0.154<br>(0.226) | -0.018 |

The table reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. ACCRUAL is value-weighted aggregate accruals. MV is realized stock market variance. IV is average idiosyncratic variance. Trend is a linear time trend. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 4**
**Aggregate Accruals and Expected Excess Stock Market Returns**

| | *a* | $b_1$ | $b_2$ | $b_3$ | *m* | *g* | $R^2$ |
|---|---|---|---|---|---|---|---|
| Panel A: Equation (1) with May-Apr excess stock market returns | | | | | | | |
| ACCRUAL | -0.050 | 1.637*** | -1.240*** | 0.414*** | | | 0.544 |
| | (0.004) | (0.463) | (0.168) | (0.015) | | | |
| ERET | | | | | 0.350*** | 5.627*** | 0.156 |
| | | | | | (0.090) | (1.717) | |
| Over-identifying restriction: | | | $C^2(2)$ = 3.692 | | p-value = 0.158 | | |
| Panel B: Equation (1) with Jan-Dec excess stock market returns | | | | | | | |
| ACCRUAL | -0.051*** | 2.193*** | -1.378*** | 0.043*** | | | 0.582 |
| | (0.003) | (0.352) | (0.148) | (0.012) | | | |
| ERET | | | | | 0.431*** | 7.219*** | 0.245 |
| | | | | | (0.099) | (1.898) | |
| Over-identifying restriction: | | | $C^2(2)$ = 1.643 | | p-value = 0.440 | | |
| Panel C: Equation (2) with May-Apr excess stock market returns | | | | | | | |
| ERET | 0.070** | -6.905*** | 9.160*** | 0.217** | | | 0.152 |
| | (0.032) | (1.778) | (2.950) | (0.091) | | | |
| ACCRUAL | | | | | -0.062*** | 0.179*** | 0.546 |
| | | | | | (0.099) | (0.054) | |
| Over-identifying restriction: | | | $C^2(2)$ = 3.884 | | p-value = 0.143 | | |
| Panel D: Equation (2) with Jan-Dec excess stock market returns | | | | | | | |
| ERET | 0.055** | -10.174*** | 16.236*** | 0.317*** | | | 0.255 |
| | (0.027) | (2.226) | (3.397) | (0.087) | | | |
| ACCRUAL | | | | | -0.059*** | 0.135*** | 0.578 |
| | | | | | (0.004) | (0.036) | |
| Over-identifying restriction: | | | $C^2(2)$ = 2.313 | | p-value = 0.315 | | |

Panels A and B report the GMM estimation results of the equation system:

$$(1)\quad \begin{aligned} ACCRUAL_t &= a + b_1 IV_t + b_2 MV_t + b_3 Trend_t + z_t \\ ERET_t &= m + g[a + b_1 IV_{t-1} + b_2 MV_{t-1} + b_3 Trend_{t-1}] + x_t \end{aligned} .$$

ACCRUAL is value-weighted aggregate accruals. ERET is excess market returns over the period January to December of year *t*. IV is average idiosyncratic variance. MV is realized market variance. Trend is a linear time trend. We use a constant, IV, MV, and a linear time trend as instrumental variables for the accrual equation and use a constant and the lagged values of IV, MV, and a linear time trend as instrumental variables for the return equation. The equation system is over identified with two degrees of freedom. Panels C and D report the GMM estimation results of equation system:

$$(2)\quad \begin{aligned} ERET_t &= a + b_1 IV_{t-1} + b_2 MV_{t-1} + b_3 Trend_{t-1} + z_t \\ ACCRUAL_t &= m + g[a + b_1 IV_t + b_2 MV_t + b_3 Trend_t] + x_t \end{aligned} .$$

We use a constant and the lagged values of IV, MV, and a linear time trend as instrumental variables for the return equation. We use a constant, IV, MV, and a linear time trend as instrumental variables for the accrual equation. The equation system is over identified with two degrees of freedom. Heteroskedasticity-consistent standard errors are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**Table 5**
**Aggregate Accruals and the Average IPO First-Day Return**

| | ACCRUAL | IPOFDR | Adjusted $R^2$ |
|---|---|---|---|
| Panel A: May-Apr excess market returns | | | |
| 1 | | 0.451*** | 0.169 |
| | | (0.111) | |
| 2 | 2.702 | 0.291 | 0.199 |
| | (2.004) | (0.213) | |
| Panel B: Jan-Dec excess market returns | | | |
| 3 | | 0.379*** | 0.090 |
| | | (0.134) | |
| 4 | 2.688 | 0.209 | 0.101 |
| | (2.117) | (0.214) | |

The table reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. ACCRUAL is value-weighted aggregate accruals. IPOFDR is the average minus IPO first-day return. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 6**
**Aggregate Accruals and the Cross-Section of Stock Returns**

| | Constant | ΔACCRUAL | ERET | SMB | HML | $\Delta ACCRUAL^+$ | $R^2$ |
|---|---|---|---|---|---|---|---|
| 1 | 0.231** | 0.009** | -0.173* | 0.034 | | | 0.754 |
| | (3.749) | (2.830) | (2.521) | (1.578) | | | |
| | [2.457] | [2.267] | [1.735] | [1.549] | | | |
| 2 | 0.125** | | -0.069 | 0.032 | 0.058** | | 0.806 |
| | (2.528) | | (-1.223) | (1.491) | (2.660) | | |
| | [2.148] | | [1.076] | [1.480] | [2.615] | | |
| 3 | 0.138*** | | -0.077* | 0.034 | 0.057** | 0.004* | 0.834 |
| | (3.917) | | (-2.026) | (1.547) | (2.493) | (1.750) | |
| | [3.246] | | [1.840] | [1.533] | [2.407] | [1.737] | |

The table reports the Fama and MacBeth (1973) cross-sectional regression results using twenty-five Fama and French (1996) portfolios sorted by size and book-to-market equity ratio. Risk factors include the change in value-weighted aggregate accruals (ΔACCRUAL) and the excess stock market return (ERET), the value premium (HML) and the size premium (SML) of the Fama and French (1996) three-factor model. $\Delta ACCRUAL^+$ is the residual from the regression of ΔACCRUAL on HML. The annual data span the 1966 to 2005 period. Fama and MacBeth standard errors are reported in squared brackets and Shanken (1992) corrected standard errors are reported in angled brackets. We use 2SLS in the estimation of factor loadings when ΔACCRUAL is used as a risk factor. We use changes in realized stock market variance and changes in average idiosyncratic variance as instrumental variables for ΔACCRUAL. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 7**
**Forecasting Aggregate Economic Activity Using Aggregate Accruals 1965-2006**

| | GDP | UNEM | INVEST | Adjusted $R^2$ |
|---|---|---|---|---|
| Panel A: One-year-ahead | | | | |
| 1 | -0.086 | | | 0.052 |
| | (0.238) | | | |
| 2 | | -13.804 | | -0.010 |
| | | (16.944) | | |
| 3 | | | -0.941 | -0.014 |
| | | | (0.846) | |
| Panel B: Two-year-ahead | | | | |
| 4 | 0.773 | | | -0.005 |
| | (0.611) | | | |
| 5 | | -69.631* | | -0.026 |
| | | (39.886) | | |
| 6 | | | 1.160 | -0.026 |
| | | | (1.554) | |
| Panel B: Three-year-ahead | | | | |
| 7 | 1.325* | | | -0.021 |
| | (0.726) | | | |
| 8 | | -78.671** | | -0.020 |
| | | (35.082) | | |
| 9 | | | 4.734** | -0.010 |
| | | | (2.246) | |
| Panel B: Four-year-ahead | | | | |
| 10 | 1.176*** | | | -0.026 |
| | (0.022) | | | |
| 11 | | -56.403** | | -0.022 |
| | | (23.884) | | |
| 12 | | | 5.279** | 0.016 |
| | | | (2.118) | |

The table reports the 2SLS estimation results of forecasting growth rates of real gross domestic product (GDP), unemployment rates (UNEM), and fixed nonresidential investment (INVEST) using aggregate accruals. We use IPOFDR as the instrumental variable for aggregate accruals to control for the effect of measure errors in aggregate accruals. We report Newey-West corrected standard errors in parentheses with the number of lags equal to the forecasting horizons. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 8**
**Firm-Level Accruals and Conditional Equity Premium**

$$FACC_{i,t} = \alpha_i + \beta_{1,i} IV_t + \beta_{2,i} MV_t + \varepsilon_{i,t}$$

| Estimates | Total | Mean | Median | Positive | Negative | SE |
|---|---|---|---|---|---|---|
| $\beta_{1,i}$ | 1373 | -1.386*** | -0.772 | 412 | 961 | 0.191 |
| $\beta_{2,i}$ | 1373 | 2.066*** | 1.422 | 943 | 430 | 0.519 |
| Average Adjusted $R^2$=0.030 | | | | | | |

The table reports the OLS estimation results of explaining time-series variation in firm-level accruals (FACC) using realized stock market variance (MV) and average idiosyncratic variance (MV). FACC is firm-level total accruals scaled by beginning-of-period total assets. We run the OLS regression of FACC on IV and MV for each firm and report the summary statistics of firm-specific estimates in the table. We require that a firm must have at least fifteen annual observations over the period 1965 to 2005 to be included in the sample. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 9**
**Forecasting Excess Market Returns Using Aggregate Components of Firm-Level Accruals**

| | ACCRUAL-S | FACC-Fv | FACC-Rv | Adjusted $R^2$ |
|---|---|---|---|---|
| Panel A: May-Apr excess market returns | | | | |
| 1 | 3.986** | | | 0.081 |
| | (1.834) | | | |
| 2 | | 4.058** | | 0.054 |
| | | (1.998) | | |
| 3 | | | 1.501 | -0.015 |
| | | | (2.128) | |
| 4 | | 4.988** | 3.012 | 0.070 |
| | | (2.168) | (2.165) | |
| Panel B: Jan-Dec excess market returns | | | | |
| 5 | 3.484* | | | 0.043 |
| | (2.035) | | | |
| 6 | | 7.068*** | | 0.175 |
| | | (2.188) | | |
| 7 | | | -2.142 | -0.007 |
| | | | (2.616) | |
| 8 | | 7.067*** | -0.001 | 0.154 |
| | | (2.305) | (2.426) | |

The table reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. ACCRUAL-S is value-weighted aggregate accruals constructed using the subsample of firms with a minimum of fifteen annual observations. FACC-Fv is the value-weighted average fitted value and FACC-Rv is the value-weighted average residual, respectively, from the firm-specific regressions of firm-level accruals (FACC) on average idiosyncratic variance (IV) and realized stock market variance (MV), as reported in Table 8. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 10**
**Forecasting Excess Market Returns Using Equal-Weighted Aggregate Accruals**

| | ACCRUALe | ACCRUAL-Se | FACC-Fe | FACC-Re | Adjusted $R^2$ |
|---|---|---|---|---|---|
| 1 | 0.809 | | | | -0.006 |
| | (0.925) | | | | |
| 2 | | -0.749 | | | -0.020 |
| | | (1.923) | | | |
| 3 | | | 7.714*** | | 0.140 |
| | | | (1.967) | | |
| 4 | | | | -2.972* | 0.064 |
| | | | | (1.755) | |
| 5 | | | 7.194*** | -2.576 | 0.186 |
| | | | (2.282) | (1.687) | |

The table reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. ACCRUALe is equal-weighted aggregate accruals constructed using the full sample. ACCRUAL-Se is equal-weighted aggregate accruals constructed using the using the subsample of firms with a minimum of fifteen annual observations. FACC-Fe is the equal-weighted average fitted value and FACC-Re is the equal-weighted average residual, respectively, from the firm-specific regressions of firm-level accruals (FACC) on average idiosyncratic variance (IV) and realized stock market variance (MV), as reported in Table 8. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 11**
**Cross-Sectional Relation between stock Returns and Components of Accruals**

| | FACC-F | FACC-R | Adjusted $R^2$ |
|---|---|---|---|
| 1 | 0.039 | | 0.01 |
| | (0.139) | | |
| 2 | | -0.173*** | 0.006 |
| | | (0.045) | |
| 3 | 0.038 | -0.193*** | 0.015 |
| | (0.141) | (0.045) | |

The table reports the Fama and MacBeth (1973) cross-sectional regression of one-year-ahead (May of year *t+1* to April of year *t+2*) stock returns on the components of a firm's accruals over the period 1966 to 2006. FACC-F and FACC-R are the fitted value and the residual, respectively, from the firm-specific regressions of firm-level accruals (FACC) on average idiosyncratic variance (IV) and realized stock market variance (MV), as reported in Table 8. ***, **, and * denote significant at the 1%, 5%, and 10% levels, respectively.

**TABLE 12**
**Aggregate Discretionary/Normal Accruals and Conditional Equity Premium**

| | DACC | NACC | IV | MV | Trend | Adjusted $R^2$ |
|---|---|---|---|---|---|---|
| Panel A: Forecasting Jan-Dec excess market returns 1966 to 2006 | | | | | | |
| 1 | 7.877*** | | | | | 0.167 |
| | (1.731) | | | | | |
| 2 | | -0.373 | | | | -0.025 |
| | | (2.463) | | | | |
| 3 | 8.288*** | -1.523 | | | | 0.158 |
| | (1.658) | (1.886) | | | | |
| 4 | 6.172*** | -1.081 | -8.603*** | 10.793* | 0.004* | 0.275 |
| | (2.052) | (1.988) | (2.183) | (5.549) | (0.002) | |
| Panel B: Explaining time-series variation in discretionary accruals 1965 to 2005 | | | | | | |
| 5 | | | -0.335*** | 1.104*** | 0.027* | 0.227 |
| | | | (0.111) | (0.279) | (0.016) | |
| Panel C: Explaining time-series variation in normal accruals 1965 to 2005 | | | | | | |
| 6 | | | -0.079 | 0.453 | -0.048** | 0.154 |
| | | | (0.168) | (0.522) | (0.022) | |

Panel A of the table reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. DACC is value-weighted aggregate discretionary accruals and NACC is value-weighted aggregate normal accruals, using Jones (1991) model. IV is average idiosyncratic variance. MV is realized stock market variance. Panel B reports the OLS estimation results of explaining time-series variation in aggregate discretionary accruals using IV and MV as explanatory variables over the period 1965 to 2005. Panel C reports the OLS estimation results of explaining time-series variation in aggregate discretionary accruals using IV and MV as explanatory variables over the period 1965 to 2005. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 13**
**Firm-Level Discretionary/Normal Accruals and Conditional Equity Premium**

| Estimates | Total | Mean | Median | Positive | Negative | SE |
|---|---|---|---|---|---|---|
| Panel A: Firm-level discretionary accruals and conditional equity premium | | | | | | |
| $FDACC_{i,t} = \alpha_i + \beta_{1,i} IV_t + \beta_{2,i} MV_t + \varepsilon_{i,t}$ | | | | | | |
| $\beta_{1,i}$ | 758 | -27.351*** | -11.729 | 355 | 403 | -8.574 |
| $\beta_{2,i}$ | 758 | 34.141*** | 18.982 | 416 | 342 | 12.831 |
| Average Adjusted $R^2$=0.011 | | | | | | |
| Panel B: Firm-level normal accruals and conditional equity premium | | | | | | |
| $FNACC_{i,t} = \alpha_i + \beta_{1,i} IV_t + \beta_{2,i} MV_t + \varepsilon_{i,t}$ | | | | | | |
| $\beta_{1,i}$ | 758 | -100.122*** | -60.69 | 132 | 626 | 6.226 |
| $\beta_{2,i}$ | 758 | 157.123*** | 127.816 | 632 | 126 | 9.114 |
| Average Adjusted $R^2$=0.083 | | | | | | |

The table reports the OLS estimation results of explaining time-series variation in firm-level discretionary accruals (FDACC) and normal accruals (FNACC) using realized stock market variance (MV) and average idiosyncratic variance (IV). We run the OLS regression of FDACC on IV and MV for each firm and report summary statistics of firm-specific estimates in Panel A. We run the OLS regression of FNACC on IV and MV for each firm and report summary statistics of firm-specific estimates in Panel B. We require that a firm must have at least fifteen annual observations over the period 1965 to 2005 to be included in the sample. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 14**
**Firm-Level Earnings and Conditional Equity Premium**

$$(E/P)_{i,t} = \alpha_i + \beta_{1,i} IV_t + \beta_{2,i} MV_t + \varepsilon_{i,t}$$

| Estimates | Total | Mean | Median | Positive | Negative | SE |
|---|---|---|---|---|---|---|
| $\beta_{1,i}$ | 1405 | -3.528*** | -1.519 | 336 | 1069 | 0.222 |
| $\beta_{2,i}$ | 1405 | 4.486*** | 2.724 | 1077 | 328 | 0.245 |
| Average Adjusted $R^2$=0.041 | | | | | | |

The table reports the OLS estimation results of explaining time-series variation in firm-level earnings using realized stock market variance (MV) and average idiosyncratic variance (MV). The variable $(E/P)_{i,t}$ is the firm-level per share earnings scaled by the beginning-of-period stock price. We run the OLS regression of the scaled earnings on IV and MV for each firm and report the summary statistics of firm-specific estimates in the table. We require that a firm must have at least fifteen annual observations over the period 1965 to 2005 to be included in the sample. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 15**
**Components of Aggregate Earnings and Expected Excess Market Returns**

| | EP-S | EP-F | EP-R | IV | MV | Trend | Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|
| Panel A: May-Apr excess market returns | | | | | | | |
| 1 | 1.003 | | | | | 0.375 | 0.013 |
| | (1.052) | | | | | (0.234) | |
| 2 | | 4.775*** | | | | 0.564** | 0.119 |
| | | (1.508) | | | | (0.214) | |
| 3 | | | 0.038 | | | 0.244 | -0.018 |
| | | | (1.191) | | | (0.206) | |
| 4 | | 4.804*** | 0.207 | | | 0.574** | 0.096 |
| | | (1.536) | (1.141) | | | (0.232) | |
| 5 | 0.14 | 4.644** | | | | 0.574** | 0.096 |
| | (1.107) | (1.739) | | | | (0.226) | |
| 6 | 0.271 | | | -7.166*** | 7.959* | 0.537** | 0.109 |
| | (1.051) | | | (2.219) | (4.176) | (0.226) | |
| 7 | | -0.512 | | -8.165 | 9.667 | 0.500 | 0.107 |
| | | (8.008) | | (10.640) | (17.840) | (0.309) | |
| Panel B: Jan-Dec excess market returns | | | | | | | |
| 8 | 1.408 | | | | | 0.426 | 0.026 |
| | (0.992) | | | | | (0.256) | |
| 9 | | 7.615*** | | | | 0.753*** | 0.266 |
| | | (1.358) | | | | (0.224) | |
| 10 | | | -0.224 | | | 0.232 | -0.023 |
| | | | (1.128) | | | (0.244) | |
| 11 | | 7.621*** | 0.044 | | | 0.755*** | 0.247 |
| | | (1.366) | (0.938) | | | (0.244) | |
| 12 | -0.008 | 7.622*** | | | | 0.752*** | 0.247 |
| | (0.926) | (1.575) | | | | (0.243) | |
| 13 | 0.296 | | | -10.263*** | 16.567*** | 0.624** | 0.214 |
| | (0.926) | | | (2.345) | (5.355) | (0.253) | |
| 14 | | 7.652 | | -0.074 | -0.914 | 0.763** | 0.227 |
| | | (8.903) | | (12.683) | (23.456) | (0.326) | |

The table reports the OLS estimation results of forecasting one-year-ahead excess market returns over the period 1966 to 2006. EP-S is value-weighted aggregate earnings scaled by the beginning-of-period stock price, constructed using the subsample of firms with a minimum of fifteen annual observations. EP-F and EP_R are the value-weighted average fitted value and the value-weighted average residual, respectively, from the firm-specific regressions of earnings scaled by the beginning-of-period stock price on IV and MV, as reported in Table 14. MV is realized stock market variance. IV is average idiosyncratic variance. Trend is a linear time trend. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 16**
**Aggregate Earnings and Conditional Equity Premium 1970-2005**

| | MV | IV | ΔMV | ΔIV | ΔEARN | Wald Test | EARN | ACCRUAL | Adjusted $R^2$ |
|---|---|---|---|---|---|---|---|---|---|
| Panel A: Explaining variation in aggregate earnings using levels | | | | | | | | | |
| EARN | 1.204* | -0.561*** | | | | 9.102 | | | 0.471 |
| | (0.673) | (0.197) | | | | (0.011) | | | |
| Panel B: Explaining variation in aggregate earnings using first differences | | | | | | | | | |
| ΔEARN | | | 0.719* | -0.370** | | 4.139 | | | 0.028 |
| | | | (0.396) | (0.182) | | (0.126) | | | |
| Panel C: Changes in aggregate earnings and contemporaneous market returns | | | | | | | | | |
| ERET54 | | | | | -3.876*** | | | | 0.073 |
| | | | | | (1.755) | | | | |
| Residual | | | | | -2.855 | | | | 0.014 |
| | | | | | (2.231) | | | | |
| Panel D: Forecasting one-year-ahead May-Apr market returns | | | | | | | | | |
| OLS | | | | | | | 1.287 | | -0.038 |
| | | | | | | | (1.812) | | |
| 2SLS | | | | | | | 23.508** | | -0.051 |
| | | | | | | | (10.750) | | |
| OLS | | | | | | | -1.634 | 6.025*** | 0.111 |
| | | | | | | | (2.263) | (1.613) | |
| 2SLS | | | | | | | 1.827 | 8.809** | 0.070 |
| | | | | | | | (9.657) | (4.271) | |
| Panel E: Forecasting one-year-ahead May-Apr market returns 1986-2005 | | | | | | | | | |
| OLS | | | | | | | 7.395** | | 0.303 |
| | | | | | | | (2.711) | | |
| OLS | | | | | | | 3.802 | 5.476*** | 0.532 |
| | | | | | | | (2.200) | (1.286) | |

MV is realized market variance. IV is average idiosyncratic variance. IPOFDR is the average minus IPO first-day return. EARN is value-weighted earnings scaled by the beginning-of-period total assets. ACCRUAL is value-weighted accruals scaled by the beginning-of-period total assets. ERET54 is the holding period excess market return over the period May of year *t* to April of year *t+1*. The symbol Δ denotes first difference. In panel C, "Residual" is the residual from the regression reported in panel B. We use lagged IV and MV as instrumental variables for the 2SLS regression reported in panel D. Under column "Wald Test" we report the Wald test of joint significance of IV and MV, with the p-value reported in the parenthesis. Heteroskedasticity-consistent standard errors are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

**TABLE 17**
**Forecasting S&P500 Real Earnings Growth**

| | LDP | $LDP^+$ | IPOFDR | J-Test | Adjusted $R^2$ |
|---|---|---|---|---|---|
| Panel A: One-year-ahead | | | | | |
| 1 | -0.069 | | | | 0.022 |
| | (0.064) | | | | |
| 2 | | | 0.041** | 3.832 | 0.050 |
| | | | (0.019) | (0.280) | |
| 3 | -0.106** | | 0.040** | 1.814 | 0.114 |
| | (0.042) | | (0.019) | (0.612) | |
| 4 | | -0.169** | | | 0.092 |
| | | (0.067) | | | |
| Panel B: Two-year-ahead | | | | | |
| 5 | -0.086 | | | | 0.009 |
| | (0.098) | | | | |
| 6 | | | 0.093*** | | 0.216 |
| | | | (0.014) | | |
| 7 | -0.160*** | | 0.126*** | 1.391 | 0.304 |
| | (0.038) | | (0.020) | (0.708) | |
| 8 | | -0.204** | | | 0.053 |
| | | (0.103) | | | |
| Panel C: Three-year-ahead | | | | | |
| 9 | -0.008 | | | | 0.016 |
| | (0.111) | | | | |
| 10 | | | 0.085*** | 1.185 | 0.123 |
| | | | (0.015) | (0.757) | |
| 11 | -0.171** | | 0.115*** | 0.795 | 0.162 |
| | (0.081) | | (0.017) | (0.851) | |
| 12 | | -0.137 | | | -0.000 |
| | | (0.147) | | | |
| Panel D: Four-year-ahead | | | | | |
| 13 | -0.123 | | | | 0.015 |
| | (0.114) | | | | |
| 14 | | | 0.048*** | 2.354 | 0.036 |
| | | | (0.015) | (0.502) | |
| 15 | -0.194* | | 0.078*** | 2.159 | 0.091 |
| | (0.104) | | (0.020) | (0.540) | |
| 16 | | -0.064 | | | -0.019 |
| | | (0.187) | | | |

The table reports the OLS estimation results of forecasting aggregate earnings growth. IPOFDR is the average (minus) IPO first-day return. LDP is the log dividend yield. $LDP^+$ is the residual from the regression of the log dividend yield on stock market variance (MV), average idiosyncratic variance (IV), a linear time trend, and IPOFDR. When IPOFDR is used as a forecasting variable, we use MV, IV, and a linear time trend as instrumental variables. Column "J-Test" reports the over-identifying restriction test. We report Newey-West corrected standard errors in parentheses with the number of lags equal to the forecasting horizons. For example, we use four lags in the four-quarter-ahead forecasting regression. ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.