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Universidad de Navarra

Working Paper nº 2/08

Fundamentals and the accruals puzzle

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Working Paper No. 2/08
May 2008

ABSTRACT

We investigate whether there is an economic relationship between accruals and fundamentals. Our study is the first one to evaluate the **profitability** and **persistence** of an accrual factor, to analyze whether **changes in fundamentals** are explained by changes in accruals, and whether an **accrual factor in fundamentals** is the source of the accrual factor in returns, that is, if the accrual factor in fundamentals is driving stock returns. Our results show evidence of a relationship between fundamentals and accruals, a relationship that is persistent over time. Furthermore, we find that a Size, BTM and an accrual factor in sales seem to be driving stock returns: returns are driven by changes in sales and not by other fundamentals. Also, we show that future sales growth is correlated with stock returns and that accruals and cash flows contain valuable information for predicting future changes in sales. Finally, our results indicate that the accrual factor behaves similarly to the Size and BTM factors in terms of sensitivities and risk premiums. A natural corollary of the study reconciles some conflicting results obtained by the accruals literature: our results imply that the performance of an accruals-based strategy is not comparable directly to an OCF-based strategy because the former is adjusted by accounting quality risk whereas the latter is not.

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June 5, 2008

* Corresponding author. The authors gratefully acknowledge the preliminary and original Compustat quarterly data provided by Charter Oak Investment Systems Inc. and the SEC filing dates provided by Standard & Poors' Compustat. All errors remain the authors' responsibility.

Fundamentals and the accruals puzzle

Abstract

We investigate whether there is an economic relationship between accruals and fundamentals. Our study is the first one to evaluate the **profitability** and **persistence** of an accrual factor, to analyze whether **changes in fundamentals** are explained by changes in accruals, and whether an **accrual factor in fundamentals** is the source of the accrual factor in returns, that is, if the accrual factor in fundamentals is driving stock returns. Our results show evidence of a relationship between fundamentals and accruals, a relationship that is persistent over time. Furthermore, we find that a Size, BTM and an accrual factor in sales seem to be driving stock returns: returns are driven by changes in sales and not by other fundamentals. Also, we show that future sales growth is correlated with stock returns and that accruals and cash flows contain valuable information for predicting future changes in sales. Finally, our results indicate that the accrual factor behaves similarly to the Size and BTM factors in terms of sensitivities and risk premiums. A natural corollary of the study reconciles some conflicting results obtained by the accruals literature: our results imply that the performance of an accruals-based strategy is not comparable directly to an OCF-based strategy because the former is adjusted by accounting quality risk whereas the latter is not.

1. INTRODUCTION

The accrual anomaly has attracted increased attention ever since Sloan (1996) offered the *Earnings Fixation Hypotheses* as an explanation.[1] Numerous studies since then have tried to provide a rationale for why accruals may be related to expected abnormal returns. Just as with other anomalies such as the Size or Book-to-Market effects, two alternative lines of research have developed that try to explain the accrual anomaly, one based on firms' characteristics and one that looks for a common risk factor that accruals may be proxying for.

On the one hand, the anomaly might be explained as a consequence of some type of investor mispricing.[2] Several sources for this mispricing have been pointed out. First, Xie (2001) and DeFond and Park (2001) suggest that the accrual anomaly is driven by the mispricing of abnormal accruals, i.e., those that are subject to managerial discretion and related in some sense to the degree of smoothing of earnings. Beneish and Vargus (2002) qualify this view, since they find that the accrual anomaly can mainly be attributed to mispricing of income-increasing accruals, regardless of whether total or discretionary accruals are used. Second, some researchers have suggested that investors misinterpret or do not evaluate correctly the behavior of the different components of accruals. Thomas and Zhang (2002) attribute the accruals anomaly to investors' failure to understand the role of inventory changes, while the results in Collins and Hribar (2000) suggest that the anomaly may be due to the accounts receivable components of accruals. Fairfield, et al. (2003) suggest that the accrual anomaly is partially driven by mispricing the implications of growth in net operating assets for future profits and returns. Richardson et al. (2004) provide evidence that the accruals anomaly can be attributed to those accounts that have low earnings quality and, therefore, potentially high managerial discretion. Third, misinformation about a firm may lead to more intense

[1] The *Earnings Fixation Hypothesis* relies on the different level of persistence of the cash flow and accrual components of earnings. Investors who fixate globally on earnings when forecasting this variable overestimate their persistence since they do not account correctly for the different persistence of the two components.

[2] This set of explanations would be in the "firm's characteristics" spirit (e.g. Daniel and Titman, 1997), in that it is some variable specific to the firm that generates the anomaly.

mispricing, and there may be a relationship between misinformation and the extent of accruals. Barth and Hutton (2004) or Lehavy and Sloan (2008) show that there is a relationship between analyst following and accruals: investor recognition and analyst following are lower for low accrual firms -extreme accruals are more recognisable-. These firms are therefore less "known" and their mispricing by investors is more acute. Fourth, Collins et al. (2003) and Liu and Qi (2006) suggest that the investor and ownership structure of the company may be associated with the accrual anomaly. Firms with a high level of institutional -and sophisticated- ownership are less subject to the anomaly (Collins et al., 2003) or more informed traders may have costly information about accrual quality that average investors do not have (Liu and Qi, 2006). Fifth, the differing accounting treatment of accruals across accounting systems, and therefore an accounting measurement argument, has been suggested as the reason for the appearance of the anomaly (Ashbaugh, 2001; Hung, 2001).

All the reasons outlined above are somehow in line with the *Earnings Fixation Hypotheses*. There is also, however, a stream of literature that interprets the anomaly as a risk-based anomaly. In other words, accruals would be proxying for some yet unidentified risk factor that is priced in the market.[3] Francis et al. (2005) find that poorer accruals quality is associated with larger costs of debt and equity, and that therefore it seems that there exists some kind of information risk associated with earnings. In this line, the results of Aboody et al. (2005) support the preference of investors for high earnings quality -low abnormal accruals- since it is associated to a lower informational risk. Liu and Wysocki (2006), however, suggest that the risk factor is not informational risk but operating volatility risk. These risk explanations of the anomaly have been challenged by Hirshleifer et al. (2006), who find that it is an accrual characteristic that drives stock returns rather than an accrual factor, thus favoring a behavioral

[3] The Fama and French (F-F, 1993) Size and Book-to-market factors have also been subject to the 'characteristics' versus 'risk factor' debate and researchers have identified risk factors for which these two variables may be proxying for (see, e.g. Vassalou, 2003, or Petkova, 2006).

explanation for the accrual anomaly. Also, Core et al. (2007) find no evidence of a priced risk factor based on accruals.

Several studies attempt to determine whether the accrual anomaly is unique, supplemented, or subsumed by other known anomalies. Dechow et al. (1998) report that there is a significant relationship between accruals and sales growth. McNichols (2000) shows that accruals are higher for firms with high estimated earnings growth. Desai, et al. (2004) provide evidence that Net Operating Cash Flow (hereafter, OCF) scaled by price is a powerful measure that subsumes the mispricing attributed to accruals and to all the other value-glamour proxies used in the literature. This study shows that OCF subsumes the discretionary accruals' mispricing detected by Xie (2001) too. These authors, therefore, highlight the importance of measuring OCF correctly, that is, earnings plus depreciation minus working capital accruals. In contrast, Houge and Loughran (2000) affirm that accruals mispricing is partly independent of cash flows mispricing -these authors use OCF scaled by total assets. Also, Cheng and Thomas (2006) suggest that abnormal accruals are not subsumed by OCF. In line with Bernard et al. (1997), they show that abnormal returns related to the accrual anomaly tend to concentrate around future earnings announcement dates whereas returns of the OCF strategy occur throughout the year and not around earnings announcements. This seems to suggest that the mispricing is an earnings-based anomaly, and so the nature of both anomalies could be different: a risk-based anomaly for OCF and an earnings-based anomaly for accruals.

Given the conflicting results obtained in the "accruals as a risk factor" literature and the abundance of characteristics-based explanations, we believe that the relationship between accruals and fundamental variables deserves further analysis. This would shed light on the conflicting results and, possibly, help clarify whether it is indeed a firm characteristic or a risk factor that is behind the anomaly. We attempt to give a step in that direction, and also to solve some of the drawbacks or limitations of prior empirical studies. In particular, some of those

studies have used measures of accruals that are related to the other factors included in the pricing model. That is, colinearity of the factors would be an issue in the pricing regressions, unless one were to compute an accrual factor that is orthogonal to the other factors such as the F-F factors.[4] A second problem in these studies is that they do not place emphasis on the analysis of the relationship between the computed accrual factor -however it is measured- and differences in profitability, a question that is of paramount importance for a correct discernment of the origin of the anomaly and of whether it is a risk-based anomaly or not. This is, for example, the way Fama and French (1995) justify the explanatory power of their Size and Book-to-market (BTM) factors. F-F observe that differences in size and BTM imply differences in fundamentals, and then relate the Size and BTM risk factors to firm profits.

Consequently, we attempt to relate the accrual factor, measured in such a way that it captures independent information, to fundamentals. To our knowledge, this paper is the first that goes deep into the analysis of the relationship between profitability and accruals.

Specifically, we attempt to answer the following questions:

- Could an accrual factor capture changes in OCF?

- Could an accrual factor in fundamentals drive stock returns?

Our study investigates whether **quarterly** accruals are strongly associated with fundamentals of firms.[5] The focus on quarterly accruals and fundamentals makes sense when the object is the examination of the relationship between accounting information and risk. Investment professionals need to consider timely information, instead of the annual accruals used by most prior studies. We compute an accrual factor orthogonal to the Size and BTM F-F factors and, following F-F (1995), we analyze the relationship between this factor and fundamentals. We

[4] Only in Hirshleifer et al. (2006) the accrual factor is computed controlling for size but not for BTM.

[5] Livnat and Santicchia (2006) show that, similar to annual accruals which have been the subject of most research, quarterly accruals have lower persistence than quarterly OCF. They also show that firms with lowest accruals in the current quarter have positive abnormal returns over the period from two days after the SEC filing through the day after the subsequent quarterly earnings announcement, whereas firms with extremely high accruals in the current quarter have negative future abnormal returns.

evaluate the **profitability** and **persistence** of this relationship, and analyze whether **changes in fundamentals** are explained by changes in accruals, and whether an **accrual factor in fundamentals** may be found that is the source of the accrual factor in returns. That is, we investigate whether an accrual factor in fundamentals is the driver of stock returns. Finally, we estimate sensitivities and risk premiums to the accrual factor, following the procedure of Fama and MacBeth (1973).

Our results show that there is a strong relationship between fundamentals and accruals and that this relationship is persistent over time. Furthermore, we find that changes in OCF are captured by the F-F and accrual factors. One of the main results is that we can compute a Size, BTM and accrual factors in *sales* that are shown to be related to future stock returns, that is, future returns are driven by changes in sales and not by changes in Return On Assets (hereafter, ROA) or changes in OCF. This result that factors in returns are driven by changes in sales could explain the conflicting results in the literature. If the value driver is the change in sales, this change could affect OCF, accruals or both; the results show that investors consider changes in sales and see whether this change is derived from a positive change in the level of accruals.[6] Thus, the information about earnings quality could be priced on the market and OCF therefore would not subsume accruals. In this line, another interesting result is related to the explanatory power of accruals and OCF. We find that both variables are good predictors for the value driver, changes in sales, in the next quarter. This result is in line with Houge and Loughran (2000), that show that accruals mispricing is partly independent of cash flows mispricing and Penman and Nehuda (2007), who show that the stock market prices GAAP earnings.

[6] The result is in line with Dechow et al. (1998), that found a significant relation between accruals and changes in sales, and with Xie (2001), Park (2001), Beneish and Vargus (2002), Thomas and Zhang (2002) and Richardson et al. (2004), that found that the accrual anomaly is driven by accounts with high managerial discretion, in our case, changes in sales.

Finally, our results also show that the accrual factor sensitivities are consistently significant but that the risk premiums associated to the F-F and accrual factors are not significant. Hence, an accrual factor computed orthogonally to the Size and BTM factor has a similar behavior to the F-F factors.

Our study could reconcile the conflicting results obtained by the accruals literature about whether accruals are subsumed or not by OCF. These studies use adjusted-returns for comparing the performance of an accruals-based strategy and an OCF-based strategy, but the returns are not adjusted by earnings quality. The accruals strategy is adjusted by accounting quality risk whereas the OCF strategy is not.

The results of this study can be used by both academics and investment professionals. The results indicate that an accrual factor has similarities to the traditional Size and BTM F-F factors and it offers additional explanatory power. Thus, academics and practitioners should focus not only on the F-F three-factor model when estimating the cost of capital, but should add a factor that relates to the quality of accounting information, i.e., an accrual factor (Francis et al., 2005, and Aboody et al., 2005).

The remainder of the paper is organized as follows. In section 2, we describe the data and the methodology. In section 3 we show and comment on our empirical results. We conclude in section 4 with a summary of the results and some comments on the conflicting results in the literature in the context of our analysis.

2. DATA AND METHODOLOGY

2.1 Preliminary and un-restated Compustat Quarterly Data

Data entry into the Compustat databases has been performed in a fairly structured manner over the years. When a firm releases its preliminary earnings announcement, Compustat takes as many line items as possible from this announcement and enters them into the quarterly

database within 2-3 days. These preliminary data are denoted by an update code of "2", until the firm files its 10-Q/K Form with the SEC or releases it to the public, at which point Compustat updates all available information and uses an update code of "3". Unlike the Compustat Annual database, which is maintained as originally reported by the firm (except for restated items), the Compustat Quarterly database is further updated when a firm restates its previously reported quarterly results. For example, if a firm engages in mergers, acquisitions, or divestitures at a particular quarter and restates previously reported quarterly data to reflect these events, Compustat inserts the restated data into the database instead of the previously reported numbers. Similarly, when the annual audit is performed and the firm is required to restate its previously reported quarterly results by its auditor as part of the disclosure contained in Form 10-K, Compustat updates the quarterly database to reflect these restated data.

Charter Oak Investment Systems, Inc. (Charter Oak) has collected the original CD-Rom that Compustat sent to its clients every week, which contained updated data as of that week. From these weekly updates, Charter Oak has constructed a database that contains three numbers for each firm for each Compustat line item in each quarter. The first number is the preliminary earnings announcement that Compustat inserted into the database when it bore the update code of "2". The second number is the "As First Reported" (AFR) figure when Compustat first changed the update code to "3" for that firm-quarter. The third number is the number that exists in the current version of Compustat, which is what most investors use. The Charter Oak database allows us to use the first-reported information in the SEC filing, so that our quarterly earnings, cash flows and accruals correspond to those reported originally by the firms, which are available to market participants at the time of the SEC filing. Using the restated Compustat Quarterly database may induce a hindsight bias into our back-tests, since we may

be using restated earnings, cash flows or accruals that were not known to market participants on the SEC filing dates.

2.2 Sample Selection

The initial population for our study consists of all firm-quarters in the Compustat database between the first quarter of 1988 (the first quarter after the adoption of SFAS No. 95, which mandated the disclosure of net operating cash flow) and the second quarter of 2004. The only limitation on the initial selection of firm-quarters is that market value at quarter end must be in excess of $50 million. This yields an initial "population" of 368,378 firm-quarters. From this initial population, we delete observations if:

- the originally reported income before extraordinary items and discontinued operations (Compustat Quarterly item No. 8) is missing
- the originally reported quarterly net operating cash flow (Compustat Quarterly item No. 108) is missing
- market value at the end of the prior quarter is unavailable
- total assets (Compustat Quarterly item No. 44) at the end of the prior quarter or at the end of the current quarter are missing.

After these deletions, we are left with a reduced population of 242,292 firm-quarters.

For each firm-quarter in this reduced population we obtain the SEC filing date of the 10-Q/K Forms, which is supplied to us by Compustat for the calendar years 1991-2004. This reduces the sample to 176,864 observations with SEC filing dates. We then use the GVKEY from Compustat to match the observation to the CRSP database. We compute Buy and Hold Returns (BHR) from two days after the SEC filing date through the next four subsequent preliminary earnings announcements. We assume that investors get access to the SEC filings on the day after the filing date, and that after estimating accruals, they take portfolio positions

on the following day. It is necessary to do this, first, because we do not know whether firms file with the SEC during or after trading hours. Second, the SEC filings may not become available to investors immediately. In order to be sure that accruals information is available to the investors without a look-ahead bias, we perform the analysis two days after the SEC filing.

To reduce the survival bias, we use holding periods of 90 days after the SEC filing date if subsequent quarterly earnings announcements are missing. If a security is delisted from an exchange before the end of the holding period, we use the delisting return from CRSP if available, and -100% if the stock is forced to delist by the exchange or if the delisting is due to financial difficulties. After delisting, we assume the proceeds are invested in the benchmark Size and BTM portfolio. This is the procedure used by Kraft, et al. (2004). We first calculate the buy and hold return on the security during the holding period; we then subtract the buy and hold return on a similar Size and BTM benchmark portfolio for the same holding period. The benchmark returns are from Professor Kenneth French's data library, based on classification of the population into six (two size and three BTM) portfolios.[7] In order to make sure that our results are not driven by observations with extreme returns, we delete all observations with buy and hold returns at the top or bottom 0.5% of the distribution. Observations with missing values in sales, total assets, market value or negative book value are also deleted. This reduces the sample to 152,234 firm-quarters.

Consistent with the accruals literature, we estimate accruals as earnings minus net operating cash flows, and scale by average assets during the quarter. To eliminate the undue influence of extreme observations, earnings, net operating cash flows and accruals are winsorized to fall in the range [-1,+1]. This procedure keeps all observations, even when some earnings and cash flows are extreme.

[7] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html .

2.3 Methodology

We first evaluate the relationship between accruals and fundamentals. For that purpose, fundamentals (ROA, ROE and OCF) of portfolios based on accruals are compared to fundamentals of portfolios based on Size and BTM independently.

After this, we compute an accrual measure that controls for Size and BTM using the following regression:

$$ACC_{it} = \beta_0 + \beta_1 MV_{it} + \beta_2 BTM_{it} + v_{it} \quad [1]$$

where ACC_{it} are the accruals for firm *i* in quarter *t*, MV_{it} is the market value for firm *i* in quarter *t* and BTM_{it} is the BTM for firm *i* in quarter *t*. We take the residual of this regression, v_{it}, as the accruals measure orthogonal to Size and BTM. We use this measure in the construction of the accrual factor in a manner similar to the traditional F-F factors: accruals-based portfolios are computed using v_{it}. We use the 30% and 70% percentile for the sorting of firms as Best, Medium and Worst, respectively. We then compute the accrual factor, *WMB*, as the difference in profitability between the simple average of the portfolio containing the highest accrual residuals (Worst) and the portfolio with lowest accrual residuals (Best).

We add the accrual factor to the traditional F-F three-factor model. After this, and following F-F (1995), we analyze if changes in fundamentals are explained by changes in accruals, thus looking for evidence of an accrual factor in fundamentals parallel to the one in returns. This would allow us to relate the accrual factor in fundamentals to the accrual factor in returns, that is, to see if the accrual factor in fundamentals is driving stock returns.

Finally, we estimate the risk premiums following the traditional two-step procedure (Fama and MacBeth, 1973).[8] First, the factor sensitivities are estimated using the following regression for each firm with an initial sample of 30 quarters and different rolling windows:

$$R_{it} - R_{ft} = \alpha_i + \beta_{iMKT} MKT_t + \beta_{iSMB} SMB_t + \beta_{iHML} HML_t + \beta_{iWMB} WMB_t + \varepsilon_{it} \quad [2]$$

where *MKT*, *SMB* and *HML* are the three F-F factors and *WMB* is the accrual-based risk factor constructed as mentioned above. R_{it} is the return of firm *i* in quarter *t*. R_{ft} is the return of the risk-free asset in quarter *t*.

Second, risk premiums are estimated using the factor sensitivities estimated in the previous step. The risk premium estimates will be the average of the coefficient estimates of the twenty six quarterly cross-sectional regressions

$$R_{it} = \gamma_{0t} + \gamma_{MKT_t} \hat{\beta}_{MKT_{it}} + \gamma_{SMB_t} \hat{\beta}_{SMB_{it}} + \gamma_{HML_t} \hat{\beta}_{HML_{it}} + \gamma_{WMB_t} \hat{\beta}_{WMB_{it}} + u_{it} \quad [3]$$

where the explanatory variables are the betas of the different factors estimated with the time-series regression [2] for firm *i* in quarter *t*.

3. RESULTS

3.1. Main Results

Francis et al. (2005) evaluate the relationship between accruals quality and the cost of debt and equity capital over the period 1970-2001. They show that firms with poor accruals quality have higher costs of capital than firms with a high level of accruals quality. Thus, they conclude that accruals quality is a priced risk factor. In this line, Aboody et al. (2005) find evidence consistent with the pricing of earnings quality. In contrast, Hirshleifer et al. (2006) offer a behavioral explanation for the accrual anomaly and Core et al. (2007) find no evidence that earnings quality, as measured by accruals, is a priced risk factor. These latter papers

[8] We use an initial window of 30 quarters and estimate rolling regressions with different windows (30, 35, 40, 45, 50 and 55 quarters).

criticize the results in Francis et al. (2005) as stemming from misspecification of the empirical tests.

As said before, none of these studies computed an accrual factor orthogonal to the F-F factors and they were all based on annual data rather than on quarterly data. We believe that the focus on quarterly accruals and fundamentals makes more sense when the study is examining the connection between accounting information and risk.

Table 1 reports the profitability of the Size, BTM and accrual-based portfolios, and it shows clearly that there are significant differences among accrual-based portfolios in terms of profitability. We show that accrual portfolios are related to economic fundamentals, that is, to ROA, ROE and Net Operating Cash Flow to Assets (hereafter, OCF/A). In fact, only the hedge portfolio in accruals captures differences in ROE.

In order to evaluate whether this result is persistent over time, we use our accrual factor orthogonal to the F-F factors. It can be seen in Table 2 that for quarters before (-5,-3,-1), the current quarter and for subsequent quarters (+1,+3,+5), there exist significant differences in ROA and OCF/A captured by the accrual factor[9]. The behavior of this factor is similar to the other F-F factors and it captures differences in fundamentals in several different time periods. Curiously, the difference in OCF/A for the accrual-based portfolios is negative for the current quarter, indicating that there could be a reversal of cash flows for firms with lowest (Best) accruals during the current quarter.

Panel A of Table 3 reports statistics on the quarterly excess returns of the six Size-BTM portfolios. Panel B of the table reports the regressions of quarterly excess returns of those portfolios on the F-F and accrual factors. It can be seen that the coefficients associated to the F-F factors are significant for all portfolios, whereas coefficients associated to the accrual

[9] The results with ROE do not appear in this table. These results show that the accrual factor is the only one that captures differences in ROE over time. This result is in line with those in Table 1 and it shows clearly the link between accruals and profitability.

factor are significant for 4 of the 6 portfolios. This suggests that accruals contain price information for big firms and for small firms with low BTM.

We now study whether there exists a pattern in fundamentals similar to that in returns. In other words, we repeat the analysis in Panel B of Table 3 using changes in fundamentals as the dependent variable and for the construction of the factor portfolios.

Table 4 shows the regression of changes in fundamentals for the six Size-BTM portfolios on the F-F and accrual factors computed for fundamentals. The regressions produce evidence of the existence of a Size, BTM and accrual "factors" in OCF/A and a Size and BTM factors in ROA. In other words, we can predict OCF/A by constructing accrual-based portfolios.

The evidence in Table 4 shows that there are Size, BTM and accrual factors in OCF/A that are similar to those in stock returns. In view of this, the question arises of whether these factors in fundamentals could be related to stock returns. Table 5 reports the results of regressions of portfolio returns on the F-F and accrual factors *in fundamentals*. It can be seen that the Size, BTM and accrual factors in fundamentals are significantly related to stock returns. More specifically, it seems that changes in sales are drivers of the returns. This is an important result, in that it suggests that the economic fundamental driving financial returns is sales growth, so that computing Size, BTM and accrual factors based on sales growth should help capture variation in returns. This result could partly explain the conflicting results obtained by the accrual literature about the importance of OCF and accruals.

We dwell more on this issue in Table 6. Panel A shows the results of regressing returns of a quarter on changes in sales, OCF, accruals and interaction terms. The results of these regressions demonstrate that returns are driven by changes in sales but that investors not only take into account sales growth but also accruals. If a firm has an important positive change in sales, investors will look at accruals in order to evaluate whether this change is caused by an increment of accruals or not.

On the other hand, the results in Panel B show that OCF and accruals explain *future* sales growth, and therefore they are both good predictors of changes in sales, which in turn drive future returns. Lower levels of accruals and cash flows will produce a significant increase in sales during next quarter. Investors seem to take this effect into account when they are pricing cash flows and accruals in the capital market. It can be seen that lower levels of OCF are related to higher increases in future sales than the same level in accruals. This could come from the fact that a firm with low levels of OCF is forced to generate sales in the next quarters, thus obtaining in the future a higher return. Lower levels of accruals may be required to produce this positive effect on sales growth and returns.

Finally, Table 7 shows estimates of the factor sensitivities (Panel A) and risk premiums (Panel B). We have used different rolling windows to estimate the factor sensitivities and an initial period of 30 quarters. Panel A shows that the coefficients associated to the accrual factor are always highly significant. Panel B reports the risk premiums associated to these factors. The risk premium associated to the accrual factor is not significant, although marginally so (p-values of risk premiums associated to the accrual factor are close to being significant at the 10% level). The accrual factor seems to behave very similarly to the F-F factors, and therefore further analyses are much warranted.

To sum up, we have obtained an accrual factor that captures differences in profitability between firms in a manner similar to the F-F factors. Our results support the findings of Francis et al. (2005) and Aboody et al. (2005), that show that investors price earnings quality, that is, accruals. A natural corollary of the study could reconcile the conflicting results in the accruals literature. Our results imply that an accruals-based strategy is not comparable directly to an OCF-based strategy because the first one is adjusted by accounting quality risk whereas the second is not.

3.2. Sensitivity Analysis:

1. We replicated the results analyzing separately financial and non-financial firms. The main tenor of our results remains the same, except that accruals in financial firms play a more prominent role for predicting future sales growth and returns.
2. We analyzed OCF scaled by price instead of OCF scaled by total assets. The results did not change significantly.
3. We have used eighteen portfolios, based on combining Size (2), BTM (3) and accruals (3) based portfolios, for evaluating the robustness of the results based on the six Size-BTM portfolios reported in Tables 3, 4 and 5. The main results of the study hold for most of the three-factor-based portfolios.
4. We examined whether sales growth is associated with future returns. The results suggest that changes in sales and accruals in the current quarter play a more minor role than cash flows for predicting higher abnormal returns in the next quarter. Note that our results show that sales growth in the next quarter is driving stock returns in that quarter *and that accruals and cash flows contain valuable information for predicting future changes in sales*.

4. SUMMARY AND CONCLUSIONS

Given the conflicting results obtained by the accruals literature -see our discussion in the Introduction-, we have analyzed accruals from the point of view of a priced risk factor.

Our study is, to our knowledge, the first to analyze the relationship between an accrual factor and fundamentals, to evaluate the **profitability** and **persistence** of that relationship and to analyze whether **changes in fundamentals** can be explained by changes in accruals, and whether an **accrual factor in fundamentals** may be the source of the accrual factor in returns (that is, whether the accrual factor in fundamentals is driving stock returns).

Our results show that there is a strong relationship between fundamentals and accruals and that this relationship is persistent over time. Also, we show an important result regarding the fundamental that drives stock returns: changes in sales drive stock returns and there exist Size, BTM and accrual factors in sales growth.

Finally, we compute factor sensitivities and risk premiums. Accrual factor sensitivities are always significant but the risk premiums associated to the accrual factors are not significant, a result that warrants further attention.

Our global results could reconcile the conflicting evidence obtained on whether accruals are subsumed or not by OCF: an accruals-based strategy is not comparable directly to an OCF-based strategy because the former is adjusted by accounting quality risk whereas the latter is not.

The results of our study can be used by academics and investment professionals. The results indicate that an accrual factor has additional explanatory power and that, therefore, investors take into account accruals quality when they receive accounting data and make investment decisions based on that information. Consequently, academics and practitioners should focus not only on OCF when they make investment decisions: information about earnings quality is important for determining more correctly the risk-return relationship.

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Table 1
Profitability of Portfolios based on one characteristic

Profitability	Size Portfolio	Mean	BTM Portfolio	Mean	Accrual Portfolio	Mean
ROA	SMALL	-0.0073***	LOW	-0.0032	BEST	-0.0035***
	BIG	0.0103***	HIGH	-0.0004	WORST	0.0140***
	SMALL-BIG	-0.0177***	LOW-HIGH	-0.0028	BEST-WORST	-0.0175***
ROE	SMALL	-0.1072*	LOW	-0.1730	BEST	-0.0371**
	BIG	0.0169*	HIGH	0.0017	WORST	0.0468***
	SMALL-BIG	-0.1242*	LOW-HIGH	-0.1746	BEST-WORST	-0.0839***
OCF/A	SMALL	0.0053***	LOW	0.0103***	BEST	0.0446***
	BIG	0.0236***	HIGH	0.0140***	WORST	-0.0219***
	SMALL-BIG	-0.0183***	LOW-HIGH	-0.0037**	BEST-WORST	0.0665***

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted.
2. Portfolios are based on size, taking into account median size for classifying as Small or Big. For BTM and Accrual portfolios, taking into account 30% and 70% percentile for classifying as Low and High and Best and Worst respectively. Profitability is in quarterly terms.
3. ROA is the Return on Assets computed as earnings of the current quarter divided by total assets of last quarter. ROE is the Return on Equity computed as earnings of the current quarter divided by book value of last quarter. OCF/A is Net Operating Cash Flows (quarterly) of the current quarter divided by total assets of the last quarter.
4. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 2
Profitability of Portfolios based on Size, BTM and Accruals

Profitability		Mean		Mean		Mean
ROA	SMB(-5)	-0.0111***	HML(-5)	0.0048***	WMB(-5)	0.0029***
	SMB(-3)	-0.0143***	HML(-3)	0.0066***	WMB(-3)	0.0077***
	SMB(-1)	-0.0178***	HML(-1)	0.0080***	WMB(-1)	0.0095***
	SMB(0)	-0.0197***	HML(0)	0.0082***	WMB(0)	0.0259***
	SMB(+1)	-0.0157***	HML(+1)	0.0058**	WMB(+1)	0.0100***
	SMB(+3)	-0.0133***	HML(+3)	0.0067***	WMB(+3)	0.0061***
	SMB(+5)	-0.0121***	HML(+5)	0.0082***	WMB(+5)	0.0075***
OCF/A	SMB(-5)	-0.0112***	HML(-5)	0.0003	WMB(-5)	0.0015*
	SMB(-3)	-0.0137***	HML(-3)	0.0023**	WMB(-3)	0.0047***
	SMB(-1)	-0.0178***	HML(-1)	0.0059***	WMB(-1)	0.0076***
	SMB(0)	-0.0204***	HML(0)	0.0090***	WMB(0)	-0.0449***
	SMB(+1)	-0.0179***	HML(+1)	0.0060***	WMB(+1)	0.0094***
	SMB(+3)	-0.0155***	HML(+3)	0.0046***	WMB(+3)	0.0043***
	SMB(+5)	-0.0143***	HML(+5)	0.0034**	WMB(+5)	0.0062***

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted.
2. Portfolios are based on size, taking into account median size for classifying as Small or Big, and on BTM, taking into account 30% and 70% percentile for classifying as Low, Medium and High respectively.
3. Accruals are defined as quarterly earnings minus quarterly net operating cash flows. For Accrual portfolios the residual of the following regression is the accrual measure used:

$$ACC_{it} = \beta_0 + \beta_1 MV_{it} + \beta_2 BTM_{it} + \varepsilon_{it}$$

where ACC_{it} are the accruals for firm i in quarter t, MV_{it} is the market value for firm i in quarter t and BTM_{it} is the BTM for firm i in quarter t. ε_{it} is the accrual measure independent of size and BTM.

4. The accruals portfolios are based on the residual of the last regression, taking into account 30% and 70% percentile for classifying as Best, Medium and Worst respectively.
5. SMB is the difference in terms of profitability between the simple average of the three portfolios containing the smallest cap stocks (S/L, S/M and S/H) and the three portfolios containing the highest cap stocks (B/L, B/M and B/H), and the HML is the difference between the simple average of the two stock portfolios with a high BTM ratio (S/H and B/H) and the average performance of the stock portfolios with a low BTM ratio (S/L and B/L). WMB is the difference in terms of profitability between the simple average of the portfolio containing the highest accrual residuals (Worst) and the portfolio with lowest accrual residuals (Best).
6. Between parenthesis appears the quarter the profitability is computed using the classification of size, BTM and accrual residuals of the current quarter. SMB(-i) represents the profitability of SMB portfolio i quarters before and HML(+i) the profitability of this portfolio after i quarters.
7. ROA is the Return on Assets computed as earnings of the current quarter divided by total assets of last quarter. OCF/A is Net Operating Cash Flows (quarterly) of the current quarter divided by total assets of the last quarter.
8. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 3
Quarterly Excess Returns on the Six Size-BTM Portfolios Regressed on Market, Size, BTM and Accrual Factors

Panel A. Summary Statistics				
	Mean	**Median**	**Minimun**	**Maximun**
RM-RF	0.0122	0.0188	-0.1797	0.1963
SMB	0.0025	-0.0042	-0.1066	0.2535
HML	0.0121	0.0181	-0.2766	0.2102
WMB	-0.0086	-0.0075	-0.0742	0.0437
S/L-RF	0.0012	-0.0012	-0.2879	0.4799
S/M-RF	0.0104	0.0091	-0.2425	0.2651
S/H-RF	0.0192	0.0203	-0.1752	0.1988
B/L-RF	0.0050	0.0023	-0.1945	0.1176
B/M-RF	0.0073	0.0082	-0.1986	0.1247
B/H-RF	0.0111	0.0144	-0.2710	0.2506

Panel B. Excess Returns Regressed on Market, Size, BTM and Accrual Factors

$$R_t - RF_t = \alpha + \beta_{MKT} MKT_t + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \beta_{WMB} WMB_t + e_t$$

	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
S/L	-0.0097**	1.2179***	1.2655***	-0.3557***	-0.4591***	0.96
S/M	-0.0023	1.0081***	1.0208***	0.3198***	0.0485	0.98
S/H	0.0020	0.9583***	0.9136***	0.7703***	0.0793	0.98
B/L	0.0032**	0.9652***	-0.1661***	-0.2175***	0.1937***	0.97
B/M	-0.0048**	0.9943***	0.1803***	0.2955***	-0.1802**	0.93
B/H	-0.0084**	1.2248***	0.1858**	0.6564***	-0.3448**	0.89

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted.
2. Portfolios are based on size, taking into account median size for classifying as Small or Big, and on BTM, taking into account 30% and 70% percentile for classifying as Low, Medium and High respectively.
3. SMB is the difference between the average returns, value-weighted, on the three portfolios containing the smallest cap stocks (S/L, S/M and S/H) and the three portfolios containing the highest cap stocks (B/L, B/M and B/H), and the HML is the difference between the average returns, value-weighted, on the two stock portfolios with a high BTM ratio (S/H and B/H) and the average performance of the stock portfolios with a low BTM ratio (S/L and B/L). WMB is the difference between the average returns, value-weighted, on the portfolio containing the highest accrual residuals (Worst) and the portfolio with lowest accrual residuals (Best). RF is the return of the risk-free asset.
4. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 4
Changes in Fundamentals for the Six Size-BTM Portfolios Regressed on Proxies for Market, Size, BTM and Accrual Factors in the Changes in Fundamentals

$$\Delta X_{t+1} = \alpha + \beta_{MKT}\Delta MKT_{t+1} + \beta_{SMB}\Delta SMB_{t+1} + \beta_{HML}\Delta HML_{t+1} + \beta_{WMB}\Delta WMB_{t+1} + e_{t+1}$$

Panel A. ΔX_{t+1} = ROA

	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
S/L	-0.3257	0.0096	0.7031***	-0.5431***	-0.1743	0.54
S/M	0.1438	-0.0035	0.1933*	0.1738*	-0.1198	0.12
S/H	-0.5770**	0.0186	0.7250***	0.7776***	0.2204*	0.77
B/L	-0.1194	0.0088	-0.1433*	-0.2428***	0.1885***	0.25
B/M	-0.7715	0.0159	-1.0701***	0.2146	-0.0560	0.30
B/H	0.1319	-0.0001	-0.1652	0.4365***	-0.2062*	0.23

Panel B. ΔX_{t+1} = OCF/A

	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
S/L	0.9795**	0.3005	0.3090***	0.1255*	-0.1193**	0.29
S/M	0.4518	-1.3621**	0.2389	0.3787**	0.3117***	0.19
S/H	0.8961***	-0.1552	0.2461***	0.2683***	0.1594***	0.46
B/L	0.1474	-0.7319**	-1.0655***	-0.5240***	0.2766***	0.78
B/M	1.9494***	-0.2087	-0.1378	-0.0369	0.0773	0.06
B/H	0.2307	-0.2762	-1.0026***	1.3333***	-0.0021	0.99

Panel C. ΔX_{t+1} = SALES

	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
S/L	0.1379*	0.0863	0.0425	-1.7404***	0.0482	0.92
S/M	0.1526	0.5101	1.5636***	0.2932	0.5766**	0.72
S/H	0.0683***	0.3130	0.0297	0.0510	-0.0031	0.07
B/L	0.0877***	0.4081*	-0.0201	-0.0481	0.0635**	0.16
B/M	0.1138	0.3200	-1.3367***	-1.5084***	0.4434	0.45
B/H	0.1573**	0.1814	-0.0073	0.1604	0.1148	0.15

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted.
2. Portfolios are based on size, taking into account median size for classifying as Small or Big, and on BTM, taking into account 30% and 70% percentile for classifying as Low, Medium and High respectively.
3. ΔX is the change of a fundamental variable between current quarter and next one divided by the absolute value of this fundamental variable in the last quarter. For the case of sales is the change of sales divided by sales of the last quarter.

4. ΔMKT, the market factor in ΔX, is the simple average of ΔX for all firms. ΔSMB, the size factor in ΔX, is the simple average of ΔX for the three small-stock portfolios (S/L, S/M and S/H) minus the average for the three big-stock portfolios (B/L, B/M and B/H). The BTM factor, ΔHML, is the simple average of ΔX for the two stock portfolios with a high BTM ratio (S/H and B/H) minus the average for the stock portfolios with a low BTM ratio (S/L and B/L). ΔWMB, is the difference of ΔX between the portfolio with highest accrual residuals (Worst) and the portfolio with lowest accrual residuals (Best).
5. ROA is the Return on Assets computed as earnings of the current quarter divided by total assets of last quarter. OCF/A is Net Operating Cash Flows (quarterly) of the current quarter divided by total assets of the last quarter.
6. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 5
Portfolio Returns Regressed on the Market, Size, BTM and Accrual Factors in the Changes in Fundamentals

$$R_{t+1} = \alpha + \beta_{MKT}\Delta MKT_{t+1} + \beta_{SMB}\Delta SMB_{t+1} + \beta_{HML}\Delta HML_{t+1} + \beta_{WMB}\Delta WMB_{t+1} + e_{t+1}$$

	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
Panel A. Fundamental variable is ROA						
S/L	-0.0001	0.0019	0.0078	-0.0151*	-0.0023	0.13
S/M	0.0137	0.0008	-0.0003	-0.0114**	-0.0007	0.15
S/H	0.0247**	0.0011	-0.0100**	-0.0077*	0.0029	0.17
B/L	0.0159*	0.0007	-0.0057	-0.0015	0.0003	0.07
BTM	0.0146*	0.0014	-0.0102***	-0.0047	0.0029	0.21
B/H	0.0191*	0.0013	-0.0172***	-0.0047	0.0068	0.22
Panel B. Fundamental variable is OCF/A						
	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
S/L	-0.0118	-0.0430**	0.0046	0.0072	0.0057*	0.13
S/M	0.0103	-0.0223*	0.0034	0.0044	0.0027	0.12
S/H	0.0263*	-0.0150	0.0047	0.0044	0.0015	0.12
B/L	0.0067	-0.0133*	0.0004	0.0019	0.0022	0.09
BTM	0.0188	-0.0169	0.0023	0.0024	0.0011	0.14
B/H	0.0233	-0.0125	0.0032	0.0028	0.0006	0.08
Panel C. Fundamental variable is the Sales						
	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
S/L	0.0095	0.0724	0.0850**	0.1043**	-0.0968**	0.13
S/M	0.0237	0.0011	0.0616**	0.0744**	-0.0654**	0.14
S/H	0.0446***	-0.1243	0.0570***	0.0769**	-0.0549**	0.17
B/L	0.0167	0.0278	0.0183	0.0184	-0.0144	0.02
BTM	0.0258*	-0.0387	0.0351**	0.0501**	-0.0452**	0.12
B/H	0.0222	-0.0114	0.0463**	0.0513	-0.0614**	0.12

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted.
2. Portfolios are based on size, taking into account median size for classifying as Small or Big, and on BTM, taking into account 30% and 70% percentile for classifying as Low, Medium and High respectively.
3. R_{t+1} is quarterly return of a portfolio generated between quarter *t* and *t+1*. ΔX is the change of a fundamental variable between current quarter *t* and next one *t+1* divided by the absolute value of this fundamental variable in the quarter *t*. For the case of sales is the change of sales divided by sales of the last quarter.
4. ΔMKT, the market factor in ΔX, is the simple average of ΔX for all firms. ΔSMB, the size factor in ΔX, is

the simple average of ΔX for the three small-stock portfolios (S/L, S/M and S/H) minus the average for the three big-stock portfolios (B/L, B/M and B/H). The BTM factor, ΔHML, is the simple average of ΔX for the two stock portfolios with a high BTM ratio (S/H and B/H) minus the average for the stock portfolios with a low BTM ratio (S/L and B/L). ΔWMB, is the difference of ΔX between the portfolio with highest accrual residuals (Worst) and the portfolio with lowest accrual residuals (Best).

5. ROA is the Return on Assets computed as earnings of the current quarter divided by total assets of last quarter. OCF/A is Net Operating Cash Flows (quarterly) of the current quarter divided by total assets of the last quarter.
6. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 6
Fama-MacBeth Regressions

Panel A. Fama-MacBeth Regressions of Returns on Changes in Sales, Accruals and Cash Flows

$$R_{t+1} = \alpha + \beta_{SALES}\Delta SALES_{t+1} + \beta_{OCF}\Delta OCF_{t+1} + \beta_{ACC}\Delta ACC_{t+1} +$$
$$+\beta_{SALESACC}\Delta SALES_{t+1} \times \Delta ACC_{t+1} + \beta_{SALESOCF}\Delta SALES_{t+1} \times \Delta OCF_{t+1} + \beta_{ACCOCF}\Delta ACC_{t+1} \times \Delta OCF_{t+1} + e_{t+1}$$

Quarters	α	β_{SALES}	β_{OCF}	β_{ACC}	$\beta_{SALESACC}$	$\beta_{SALESOCF}$	β_{ACCOCF}	$Adj.\ R^2$ (%)
54	0.0261***	0.0042***	0.0001**	0.0000*	-	-	-	0.26
54	0.0263***	-	0.0001**	0.0000**	-	-	-0.0000	0.20
54	0.0261***	0.0050***	-	0.0000**	-0.0002***	-	-	0.27
54	0.0259***	0.0041***	0.0000	-	-	0.0004*	-	0.30
54	0.0260***	0.0048***	0.0000	0.0000**	-0.0002***	0.0003	-0.0000	0.50

Panel B. Fama-MacBeth Regressions of Future Changes in Sales on Current Levels of Accruals and Cash Flows

$$\Delta SALES_{t+1} = \alpha + \beta_{OCF}OCF_t + \beta_{ACC}ACC_t + \beta_{OCFACC}OCF_t \times ACC_t + e_t$$

Quarters	α	β_{OCF}	β_{ACC}	β_{OCFACC}	$Adj.\ R^2$ (%)
54	0.3967***	-13.6369***	-8.7979***	-9.6433**	2.66

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted.
2. This table reports quarterly mean values of 54 quarterly cross-sectional regressions, similar to Fama-MacBeth (1973).
3. R_{t+1} is quarterly return of a portfolio generated between quarter *t* and *t+1*. $\Delta SALES_{t+1}$ is the change of sales of next quarter, *t+1*, divided by sales of the current quarter *t*. ΔOCF_{t+1} and ΔACC_{t+1} is the change in cash-flows and accruals, respectively, between current quarter *t* and next one *t+1*, divided by the absolute value of accruals and cash-flows respectively in the quarter *t*.
4. OCF_t is Net Operating Cash Flows (quarterly) of the current quarter scaled by average total assets during the quarter and winsorized to fall in the range [-1,+1]. ACC_t is accruals of the current quarter. Accruals are defined as quarterly earnings minus quarterly net operating cash flows, scaled by average total assets and winsorized to fall in the range [-1,+1].
5. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Table 7
Factor Sensitivities and Risk Premiums

Panel A. Factor sensitivities using firm-specific regressions

	Initial	Rolling	α	β_{MKT}	β_{SMB}	β_{HML}	β_{WMB}	R^2
1	30	30	0.0042***	0.8879***	0.5123***	0.5228***	0.1184***	0.27
2	30	35	0.0019*	0.8771***	0.4923***	0.5397***	0.1198***	0.25
3	30	40	0.0001	0.8742***	0.4736***	0.5504***	0.1154***	0.24
4	30	45	-0.0008	0.8742***	0.4590***	0.5566***	0.1057***	0.23
5	30	50	-0.0014**	0.8732***	0.4417***	0.5549***	0.0919***	0.23
6	30	55	-0.0019***	0.8764***	0.4361***	0.5553***	0.0825***	0.23
7	30	55	-0.0022***	0.8776***	0.4387***	0.5387***		0.20
8	30	55	0.0081***		0.5566***	0.4755***	0.1617***	0.13
9	30	55	-0.0029**	0.9455***		0.3984***	0.1121***	0.18
10	30	55	0.0019**	0.8100***	0.2108***		-0.2444***	0.16

Panel B. Risk premiums estimates using 26 quarterly cross-sectional regressions

	γ_0	p-value	γ_{MKT}	p-value	γ_{SMB}	p-value	γ_{HML}	p-value	γ_{WMB}	p-value	R^2
1	0.010*	0.09	-0.007	0.66	0.019	0.16	-0.004	0.81	-0.011	0.21	0.31
2	0.010*	0.07	-0.009	0.53	0.017	0.21	0.001	0.95	-0.013	0.14	0.30
3	0.014**	0.01	-0.014	0.31	0.016	0.23	-0.002	0.92	-0.013	0.16	0.29
4	0.011*	0.05	-0.012	0.41	0.018	0.19	-0.001	0.94	-0.013	0.13	0.29
5	0.010*	0.07	-0.011	0.44	0.017	0.22	-0.001	0.97	-0.015	0.11	0.28
6	0.008	0.15	-0.010	0.49	0.018	0.19	0.000	0.98	-0.015	0.11	0.28
7	0.008	0.22	-0.009	0.57	0.016	0.25	-0.001	0.94			0.23
8	0.001	0.94			0.017	0.21	0.003	0.87	-0.015	0.12	0.21
9	0.015**	0.03	-0.007	0.63			-0.005	0.78	-0.011	0.24	0.22
10	0.011	0.30	-0.011	0.46	0.015	0.30			-0.016*	0.09	0.21

Notes:

1. The table is based on all sample observations (firm-quarters) where earnings (Compustat Quarterly Data Item 8) and net operating cash flows (Compustat Quarterly Data Item 108) are available for the current quarter and the market value of equity at quarter-end is at least $50 million. In addition, total assets (Compustat Quarterly Data Item 44) are available for the current and prior quarter. Extreme returns observations (top and bottom 0.5%) are deleted. The sample contains data on 55 quarters.
2. This table presents the estimates by the two-step cross-sectional Fama-MacBeth (1973) procedure.
3. Panel A presents the average sensitivities on all firms after estimating the following regression for each firm using an initial sample of 30 quarters and different rolling windows:

$$R_{it} - R_{ft} = \alpha_i + \beta_{iMKT} MKT_t + \beta_{iSMB} SMB_t + \beta_{iHML} HML_t + \beta_{iWMB} WMB_t + \varepsilon_{it}$$

where *MKT*, *SMB* and *HML* are the three Fama-French factors and *WMB* is a risk factor constructed as the difference between the return of the highest residual accrual stocks minus the return of the lowest residual accrual ones. R_{it} is the return of firm i in quarter t. R_{ft} is the return of the risk-free asset in quarter t.

4. Panel B shows the risk premium estimates for the situations derived from Panel A. The risk premium estimates are the average of the coefficient estimates from the 26 quarterly cross-sectional regressions:

$$R_{it} = \gamma_{0t} + \gamma_{MKT_t} \hat{\beta}_{MKT_{it}} + \gamma_{SMB_t} \hat{\beta}_{SMB_{it}} + \gamma_{HML_t} \hat{\beta}_{HML_{it}} + \gamma_{WMB_t} \hat{\beta}_{WMB_{it}} + u_{it}$$

The explanatory variables are the betas of the different factors estimated with the previous time-series regression for firm i in quarter t.

5. *Significant at 10%, ** Significant at 5%, *** Significant at 1%.