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Siming Diane Liu and Len Skerratt

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Siming Diane Liu [1] *

and

Len Skerratt [2]

[1]Department of Economics and Finance, Brunel University, Uxbridge, UB8 3PH

[2] Brunel Business School, Brunel University, Uxbridge, UB8 3PH

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*corresponding author, Siming.Liu@brunel.ac.uk

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Abstract

The accruals based loss recognition test is the leading test to measure conditional conservatism in unlisted companies. It posits that conservatism is reflected in the anticipation of future losses which in turn lessens the negative relation between accruals and cash flow. Prior work using the model consistently finds that private companies act less conservatively than public companies. We argue that the test captures two aspects of accruals which are in fact unrelated to loss recognition: first, an increase in accruals due to the lengthening of the operating cycle; and secondly, a reduction in accruals due to a decline in sales. The former is particularly likely to affect private companies, which may explain why they appear to behave less conservatively than public companies.

We propose a variation of the accruals test, the profit margin test, which removes these two unwanted features. We compare the two tests using a sample of over 1.2 million observations on UK companies between 2001 and 2018. The prior findings of the accruals test are replicated; public companies appear to be more conservative than private companies. In contrast, the profit margin test reverses these findings, and shows that in fact private companies act more conservatively than public companies on an average level.

The findings contribute to understanding the differences between public and private companies. In particular, our findings relate to the debate concerning the quality of private company reporting under regimes less stringent than IFRS. During the sample period, public companies reported under IFRS whereas private companies reported under UK GAAP with substantial exemptions for smaller companies. This has caused some to argue that private company reporting may no longer serve its purpose. Our evidence suggests that, so far as conservatism is concerned, this fear is unwarranted.

1. Introduction

Prospects of future cash flow to the entity is a key quality of accounting information, IASB (2018). When a company has current information suggesting a reduction in the present value of its expected future cash flows, then it is important that this economic loss is reflected in the measurement of accounting income on a timely basis. This objective is reflected in the conditional conservatism principle, whereby the recognition of bad news requires a lower degree of verification than good news [1]. The general procedure for measuring conditional conservatism is to identify a proxy for economic loss and then to assess the timing of its recognition in accounting income. In the case of public companies the proxy for economic loss is commonly negative stock returns in a model developed in Basu (1997). However, the model cannot be used in the case of private companies, since their shares are not traded on an open market.

The leading test for private companies is the accruals model developed in Ball and Shivakumar (2005). It is based on the negative relation between accruals and cash flow which arises because accruals compensates for situations in which cash flow is an underestimate of current performance. In the accruals test, the information which indicates economic loss is negative cash flow. Under conditional conservatism when there is information concerning an economic loss, accounting income reflects this through a provision which decreases accruals. In this situation, there is less of a negative relation between accruals and cash flow since accruals is not compensating for the negative cash flow. Thus the level of conservatism may be measured by the change in the accruals-cash flow relation. This accruals approach to conditional conservatism test has been used in many subsequent studies (Ball and Shivakumar, 2006, 2008; Peek, Cuijpers, and Buijink, 2010; Givoly, Hayn and Katz, 2010; Hope, Thomas and Vyas, 2013; Byzalov and Basu, 2016).

We review this accruals test of conditional conservatism based on the relation between cash flow and accruals. Our contribution is twofold. First, we identify a number of shortcomings of the test. We show that it captures aspects of accruals which are in fact unrelated to loss recognition: (i) changes in accruals due to changes in the length of the operating cycle; and (ii) a reduction in accruals due to a decline in sales. Consequently when cash flow is negative, these factors which are unrelated to conditional conservatism may also change and therefore change the relation between accruals and cash flow.

The second contribution is to propose a revised test of loss recognition, the profit margin test, which removes both the operating cycle effect and the sales effect. We follow the original application in Ball and

[1] This conditional conservatism is to be distinguished from unconditional conservatism, when a cautious approach is taken to valuing assets, not because of any information which reflects greater uncertainty about their value, but because of other aspects such as their intangibility. The differences between conditional conservatism and the unconditional conservatism is discussed in Ball and Shivakumar (2005, p.89).

Shivakumar (2005) and compare the conservatism between public and private companies in the UK. We compare the profit margin test with the accruals test, based on a sample of over 1.2 million observations of UK companies between 2001 and 2018. Using the accruals test, we replicate the findings in prior research that public companies act more conservatively than private companies. However, the profit margin test reverses this result, indicating that, on an average level, private companies act more conservatively than public companies. The same results are found for each of the individual years over the sample period.

The structure of the paper is as follows. Sections two and three outline accruals model of conditional conservatism and present a review and critique. Section four develops the new model, the profit margin approach which addresses the weaknesses of the accruals model. Section five compares the accruals and profit margin approaches by analysing public and private companies in the UK. The final section summarises our findings and concludes.

2. The accruals based loss recognition model

2.1 The key features

One of functions of accruals in income measurement is to compensate for situations in which cash flow is an underestimate of current performance. For example: inventory which is not purchased on credit will reduce cash flow; and credit sales will not be reflected in cash flow but should be included in current revenue. These adjustments give rise to a typically negative relation between accruals and operating cash flow. The test of loss recognition, advanced in Ball and Shivakumar (2005), takes advantage of this feature and considers a situation in which cash flow and accruals will have a less negative relation. The example given is when a company is performing poorly such that cash flow is negative. In order to signal potential future poor performance, the company may reduce current accruals by writing down items such as receivables and inventory. Such reporting allows accounting income to reflect changes in the present value of expected future cash flows (economic income) more accurately. In this situation, there will be less of a negative relation between accruals and cash flow since both have components which are moving in the same direction.

The accruals based loss recognition test is captured in equation 1, below.

$$ACC_i = \beta_0 + \beta_1.DCFO_i + \beta_2.CFO_i + \beta_3.DCFO_i.CFO_i + u_i \quad (1)$$

where for company i: ACC_i is accruals; CFO_i is cash flow from operations; $DCFO_i$ is a dummy variable which takes a value of 1 if CFO_i is negative, and zero otherwise; and u_i is a residual term. The variables are scaled by beginning total assets. This is an attractive approach to measuring conditional conservatism, since the identification of bad news (negative cash flow) is independent of the variable which measures the impact of

timely loss recognition (accruals). The coefficient β_2 captures the normal negative relation between CFO and ACC; the coefficient β_3 captures the change in the relation when CFO is negative. Under conditional conservatism we expect $\beta_2<0$ and $\beta_3>0$, that is, a kink in the relation between ACC and CFO when CFO is negative.

2.2 Extensions of the accruals model

Since the development of equation 1, various enhancements have been suggested. However, they do not challenge equation 1 in any serious way. Ball and Shivakumar (2006) show that other variables which may influence accruals may also be included; the change in revenue and the cost of plant property and equipment following Jones (1991) or the cash flows from the previous and subsequent periods, following Dechow and Dichev (2002). Adding these variables increases the R^2 of the model. However, the measure of conservatism remains the same as in the original model (β_3 in equation 1, the shift in the coefficient on current cash flow).

A further extension of equation 1 is suggested in Byzalov and Basu (2016) based on Allen, Larson, and Sloan (2013). In this model the additional variables are used not only to increase the R^2, but also to capture information about future performance. It is shown in equations 2 and 2a,

$$ACC_t = \alpha_0 + \alpha_1.SGR_t + \alpha_2.EGR_t + \alpha_3.CF_{t-1} + \alpha_4.CF_t + \alpha_5.CF_{t+1} + \beta_1.DX_t + \beta_2.DX_t.X_t + \varepsilon_t \quad (2)$$

$$X_t = \alpha_1.SGR_t + \alpha_2.EGR_t + \alpha_3.CF_{t-1} + \alpha_4.CF_t + \alpha_5.CF_{t+1} \quad (2a)$$

where SGR_t is sales growth, EGR_t is employment growth , X_t is an early warning signs composite variable, being a linear combination of indicators which may convey bad news about the future, and DX is a dummy variable which equals 1 if the linear combination indicates bad news (and zero otherwise). This is a variation of equation 1, with the linear combination X_t replacing CF_t. The coefficient β2 captures conservative accounting. There is also a disaggregated version (not given here) in which each variable, SGR, EGR, CF_{t-1}, CF_t, CF_{t+1} has its own shift coefficient when the variable suggests poor future performance, for example when SGR is negative. Each variable is hypothesized to reflect independent information about the future.

It is problematic whether these additional variables do, in fact, convey early warning signs of future poor performance. Most obviously, past and future cash flows, CF_{t-1} and CF_{t+1}, cannot be early warning signs which is reflected by accruals in period t. Cash flow in period t+1 occurs in the period following its supposed effect (period t); and with respect to cash flow in period t-1, the year's delay before the information is reflected in accruals for period t is too long to be called conservative behavior. Furthermore, neither SGR nor EGR can really be considered early warning signs of economic loss. Decreases in sales may not be a sign of future economic loss

since it takes no account of the underlying sales volatility. With respect to employment growth (EGR), a reduction in the workforce of a company is likely to be a last resort response due to its large effect on the organization.

These reservations are reflected in the results (Byzalov and Basu, 2016, Table 3). There is very little difference between their results from equations 2/2a and the equation 1 specification where only current cash flow contains information about future performance. Even in the disaggregated variant, in which each variable containing information about the future has its own shift coefficient, the R^2 rises very little. It thus appears that the added complexity has a very marginal effect.

3. Review of the accruals model

3.1 The accruals model in accruals-cash flow space

In order to assess the ability of the accruals test to capture loss recognition, we outline next the relation between accruals, earnings, cash flow and conditional conservatism for an individual company. Accruals is defined as earnings minus cash flow, shown in equation 3.

$$ACC_i \equiv E_i - CFO_i \quad (3)$$

For a given level of earnings, there is a one-for-one negative relation between accruals and cash flow. This is represented in the accruals-cash flow space by a company having a position on a 45^0 constant earnings line in Figure 1, which shows two earnings lines, E1 and E2. The level of earnings is measured where the line intersects the horizontal axis, when accruals is zero and earnings is equal to cash flow. Earnings is also measured where the line intersects the vertical axis, when cash flow is zero and earnings is equal to accruals. All locations on a given earnings line show the different combinations of accruals and cash flow that give the same earnings; the different combinations are the result of differing operating cycles. Thus, movements up (down) the line are the result of an increase (decrease) in the operating cycle.

Figure 1 here

The effect of conditional conservatism is to reduce earnings and accruals by the same amount. In the absence of other changes, conditional conservatism for a company making a profit is shown in Figure 1 by a movement from location Xa on E1 to location Xb on a lower rate of return line, E2. However, the situation envisaged in the accruals test is that conditional conservatism takes place when cash flow becomes negative; in

this case, the company moves from Xa to a location in the top left hand side quadrant (where cash flow is negative) indicated as Xc, which is also on the E2 line. The movement from Xa to Xc is likely to involve a change in the operating cycle, since the company is now further along an earnings line; this makes sense since conservatism may involve the writing down of inventory or accounts receivable balances. However, note that this does not mean that all changes in the operating cycle are associated with conservatism.

The objective of the regression in equation 1 is to compare the cross sectional differences between companies which have positive cash flow with the cross section differences of companies which have negative cash flow. This situation is illustrated in Figure 2.

Figure 2 here

In the positive cash flow quadrant, we give an example of two companies, one at location A (on line E1) and the other at location B (on line E2); these relative positions are represented by the regression coefficient β2 in equation 1. In the negative cash flow quadrant, there are two other companies at locations C and D respectively; both have made conservative provisions and are on lower earnings lines (E3 and E4 respectively). The relative positions of C and D are represented by the regression coefficients β2 + β3 in equation 1. The coefficient β3 measures the shift in the cash flow coefficient from positive to negative cash flow. In Figure 2, both regression lines have a slope which is less negative than the theoretical value of minus one, which reflects prior findings. This arises because the regression measures cross sectional relations and different companies have different earnings levels. The slopes indicate that companies with a higher ratio of cash flow to accruals tend to have higher earnings.

3.2 The effect of the operating cycle

As we note above, conservatism may involve changes to the operating cycle, as companies adjust the value of inventory and receivables. However, not all changes to the operating cycle are associated with conservatism. For example, if the company at D in Figure 2 were instead located at D*, then the regression line would change and β3 would be more negative; and yet the company would be located on the same earnings line E4, with the same conservatism. Thus, when comparing conservatism between different companies, the accruals test may be affected by the different operating cycle responses to negative cash flow.

Differential responses may well be the case when comparing public and private companies. For example, a small private company may act conservatively in the presence of negative cash flow, thus lying on a lower earnings line. But it may move up the line (thus increasing accruals and the operating cycle) because its limited resources are needed to increase sales rather than to collect debts. The movement up the 45^0 earnings line will offset the decline in accruals arising from conservatism. In contrast, a public company with negative cash flow may have the resources and power to focus more on debt collection and/or cash customers. This will cause the company to move down its earnings line, and the operating cycle will decrease. The accruals test will interpret these movements up or down the earnings line as part of the company's conservative behavior. Thus the β_3 coefficient may capture responses to negative cash flow which are not part of conservative behaviour.

3.3 The sales effect

Figure 2 shows that conservatism in response to negative cash flow means that the regression line shifts downwards. This is the result of the decline in earnings arising from a reduction in accruals. The shift is captured by the coefficient β1 in equation 1, shown in Figure 2. However, not all of the observed decline in earnings may be attributable to conservatism. The decline may be attributable to reductions in the level of activity which occur contemporaneous with the negative cash flow. This reduction in activity may be the result of market forces, for example when the negative cash flow is the result of a decline in current demand; it may also be the result of management decisions, when the scale of activity is reduced in anticipation of weaker demand in the future [2]. This is important because *differential* changes in the scale of activity amongst negative cash flow companies will affect β3, the measure of conservatism. Thus, although conservatism (by definition) results in a decline in earnings, a decline which is due to a change in the scale of activity contemporaneous with negative cash flow needs to be eliminated from the estimate of conservatism.

In order to exclude changes in the level of activity from the measure of conservatism, we use a model developed by Dechow, Kothari and Watts (1998) in which they propose sales as a suitable measure of activity; earnings is then related to two components, sales (S) and the profit margin (π). It is only the profit margin which is affected by conservatism; thus, a decline in earnings, which is the result of a decline in sales, should be excluded from the measure of conservatism. This is discussed next.

4. The profit margin approach to conservatism

[2] In fact, many studies which use equation 1 find that β1 is positive. Apart from reflecting the economic differences between positive and negative cash flow companies, it reflects the fact that the constant and the slope in regression have a negative relation. But our comment remains that changes in the level of activity between positive and negative cash flow do not reflect conservatism.

4.1 Overview of the approach

It is clear that accruals will be affected by conservatism. However, as argued above, modelling conservatism through the shifting relation between accruals and cash flow gives rise to two issues. First, accruals may be influenced by other factors which change contemporaneously with negative cash flow, such as an increase in the operating cycle. Secondly, the relation between accruals and cash flow is also affected by declining earnings, as the whole relation shifts downwards. However, not all of the decline in earnings can be attributed to conservatism; some of it may be due to a decline in activity. This activity effect interferes with the estimate of conservatism. For these two reasons it is difficult to capture conservatism by examining the relation between accruals and cash flow.

In this section, we go back to basics and try to identify another approach. We start with the definition in equation 3 that accruals are defined as earnings less cash flow. If equation 3 were estimated by regression, the coefficient on CFO should be -1. Our approach is to safeguard this characteristic of the relation between accruals and cash flow; we transfer cash flow to the other side of the equation to give equation 4, below. In order to make this definition operational and to capture conservatism, we follow the Dechow, Kothari, and Watts (1998) model of earnings, accruals and cash flows and specify earnings as the product of the profit margin and sales, shown in equation 4a,

$$ACC_i + CFO_i \equiv E_i \quad (4)$$

$$E_i = \pi_i . S_i \quad (4a)$$

where π_i is the profit margin, and S_i is sales for company i. Conservatism is then captured by changes in π_i when cash flow is negative [3]. This measure is unaffected by changes in the operating cycle unrelated to conservatism, and by changes in the level of activity.

4.2 The profit margin measure of conservatism

In order to estimate the changes in the profit margin, we regress earnings on sales for positive cash flow as in equation 5,

$$E_i^{POS\_CFO} = \gamma_0 + \gamma_1 . S_i^{POS\_CFO} + u_i \quad (5)$$

where $E_i^{POS\_CFO}$ is earnings when cash flow is positive and $S_i^{POS\_CFO}$ is sales when cash flow is positive. This gives the relation between earnings and sales when conservatism is absent [4]. The residuals from this

[3] There are numerous factors which reduce the profit margin in addition to conservatism. The assumption here is that in a large sample of observations with negative cash flow, these other influences will not systematically influence the change in the profit margin.

regression give the difference between actual and expected earnings for a given level of sales; in a regression, the average of the residuals is defined to be zero.

We then calculate the deviations from the equation 5 regression line when cash flow is negative. The average of these deviations captures the estimate of the shift in the profit margin ($\Delta\pi$) when cash flow is negative, shown in equation 6.

$$\Delta\pi = \sum_i \{Dev_i\}/n \qquad (6)$$

where $Dev_i = E_i^{NEG\_CFO} - \widehat{\gamma_0} - \widehat{\gamma_1}.S_i^{NEG\_CFO}$ is the deviation from the positive cash flow regression line, $E_i^{NEG\_CFO}$, $S_i^{NEG\_CFO}$ are earnings and sales for negative cash flow respectively, and n is the number of observations with negative cash flow. The average of the residuals in the equation 5 regression, based on observations with positive cash flows, are defined to be zero. Therefore, when cash flow is negative, the test for conditional conservatism is whether the average of the deviations from equation 5 ($\Delta\pi$) is significantly different from zero in the negative direction. This approach is similar to that of Jones (1991) in which coefficients are estimated under the null hypothesis of no earnings management and then are used to assess deviations to test the alternate hypothesis.

5. Conditional conservatism in UK public and private companies

Using a UK sample of public and private companies between 2001 and 2018, we explore the differences between the accruals based loss recognition test in equation 1 and our profit margin tests in equation 6. The data are obtained from the "Financial Analysis Made Easy" (FAME) database supplied by Bureau Van Dijk. The database provides financial statement information of public and private British companies and is updated monthly. The main advantage of the FAME database is that it includes privately held corporations and is a common source of data for work in this area (Ball and Shivakumar, 2005; Dedman et al. 2014).

We select both public and private companies based on their listing status in the FAME classification. We exclude companies that are subsidiaries and also private firms whose legal form is not the status of a corporation. We exclude banks, and other financial institutions (SIC codes 6000-6799). We also exclude companies with qualified accounts during the sample period, because they are likely to be different in terms of financial measures and reporting incentives. The resulting sample is 1,255,155 firm-year observations,

[4] The regression in equation 5 contains a constant, whereas the relation in equation 4a does not. The reason for this is that equation 4a is at the individual company level, containing a profit margin (π_i) for each company, whereas the coefficient $\gamma 1$ in equation 5 is an estimate of the average profit margin for the sample of companies; the coefficient $\gamma 0$ reflects the variation in the profit margin across the companies.

comprising of 22,559 for public companies, and 1,232,596 for private companies. During the period, public companies reported initially under UK GAAP and from 2005 under International Financial Reporting Standards; private companies reported under UK GAAP with substantial exemptions for smaller companies under the Financial Reporting Standard for Smaller companies and FRS 102 and FRS 105. The descriptive statistics are given in Table 1; all variable are scaled by opening total assets.

Table 1 here

Overall, we note that accruals (ACC_t) for public and private companies are similar. However, when cash flow is negative, private companies tend to have higher level of accruals than public companies, suggesting that private companies are indeed less conservative. Turning to cash flow (CFO_t) and earnings (E_t), we observe that private companies have a higher level of cash flow and earnings than public companies. For public companies, when cash flow turns negative the standard deviation of cash flow and earnings increases; that is, their performance is more varied when performance is poor. This contrasts with the situation of private companies where the standard deviations decrease, reflecting the constraints faced by the companies. However, for all variables, for both positive and negative cash flow, the standard deviations for private companies are larger than those for public companies reflecting the volatile nature of small business.

5.1 The accruals based test

As a benchmark, we estimate the loss recognition test of equation 1 for UK public and private companies, for the entire 2001-2018 period. Despite the scaling of assets, heteroscedasticity is still present in the ordinary least squares standard errors (not reported) which were used by Ball and Shivakumar (2005). Therefore we use robust [5] standard errors to calculate the t statistics. The results, together with those for each year, are given in Table 2.

Table 2 here

Table 2 shows that the results are consistent with Ball and Shivakumar (2005). For public companies, the relation between accruals and cash flow becomes less negative when cash flow is negative. For example, over

[5] Robust standard errors are used throughout the subsequent tests.

the entire sample period, the slope coefficient when cash flow is positive (β_2) is -0.559 which increases by 0.308 when cash flow is negative. In contrast, for private companies over the same period, the β_2 coefficient is -0.173, which becomes more negative by -0.271 when cash flow is negative. Thus it would seem that public companies are more conservative than private companies. This result is very similar [6] to that in Ball and Shivakumar (2005, Table 5, REGN I). As illustrated in Figure 2 and in common with other studies, Table 2 finds a β_2 coefficient greater than minus one (the theoretical value for an individual company) indicating that companies with higher cash flow relative to accruals tend to have higher earnings. The results for the sample period taken as a whole are replicated in each of the individual years, 2001-2018.

5.2 The profit margin measure of conservatism ($\Delta\pi$)

The results of the profit margin test in equation 6 are given in Table 3. We calculate $\Delta\pi$ for each of the individual years as well as for the whole sample period. Although firm specific factors, other than conservatism, will affect the profit margin (π), they are likely to average out in a large sample. However, it is possible that macroeconomic aspects may remain; for example, if the benchmark regression of equation 5 is estimated over the whole period, then $\Delta\pi$ for an individual year may be the result of a decline in economy-wide activity and the accompanying profit margins as well as conservatism. In order to avoid this problem, Panel A estimates equation 5 for the individual year to which $\Delta\pi$ relates. However, the macroeconomic effects may be small relative to conservatism; for comparison, Panel B shows values of $\Delta\pi$ based on equation 5 estimated over the whole sample period and then applied to each of the individual years. In both Panel A and Panel B, there is a clear difference between public and private companies.

Table 3 here

In Table 3 Panel A, over all the years, 2001-2018, the change in the profit margin for public companies is -0.166 which is less negative than the -0.383 for private companies; the difference is highly significant with a t-statistic of 30.093. Thus when cash flow is negative, the reduction in the profit margin of private companies is larger than for public companies, consistent with private companies behaving more conservatively than public companies. This pattern is also mirrored for each year in both Panel A and Panel B. This result contrasts with the

[6] This result is not really surprising since both studies use the FAME data set, although the period covered by Ball and Shivakumar (2005) is earlier, 1989-1999.

accruals based results of the Ball and Shivakumar (2005) equation in Table 2, which indicates greater loss recognition by public companies.

5.3 A comparison of positive and negative deviations (Δπ)

We find in Table 3 above that when cash flow is negative, the change in the profit margin (Δπ) is more negative for private companies. If this reflects differences in conservatism, then it should be driven largely by negative values of the deviation. The reason why negative cash flow is hypothesized to be associated with conservatism is that the former acts as a signal of economic loss, that smaller than expected cash flows are likely in the future. Thus it would be surprising if the differences between public and private companies were driven by positive deviations, by companies performing better than average. We examine this next in Table 4, where we partition the average deviation (Δπ) in to its positive and negative components. A positive (negative) deviation is where earnings is above (below) the level indicated by sales volume.

Table 4 here

Table 4 is divided in to two panels. In Panel A, the benchmark equation 5 is estimated based on observations for each particular year; in Panel B the equation is estimated over the whole period and is used to test all the individual years. In Panel A for the sample period as a whole, the average of the positive deviations for private companies (0.212) is significantly larger than that for public companies (0.076); however, the average of the negative deviations for private companies is significantly more negative (-0.434) than that for public companies (-0.203). This means that the differences in Δπ identified in Table 3, are driven by negative deviations, consistent with conditional conservatism. Furthermore, the difference between public and private companies over the whole period is replicated in each individual year for negative deviations, but not for positive deviations, again consistent with conservatism. This consistency over the years indicates that the negative deviations are driven by a common feature across companies; since all the companies have negative cash flow, this common feature is consistent with conditional conservatism. The results in Panel B, in which the benchmark equation 5 is estimated over the whole period, are similar to those in Panel A.

6. Summary and conclusion

The Ball and Shivakumar (2005) accruals based test of loss recognition is based on the negative relation between accruals and cash flow. This relation arises from the function of accruals, which is to adjust cash for

movements which are unrelated to performance. However, when cash flow becomes negative, conservative accounting may anticipate further poor performance by a provision, a reduction of accruals, in the current period. In this circumstance, since cash flow and accruals are moving more in the same direction, there will be less of a negative relation. Specifically, in a regression of accruals on cash flow, the slope coefficient will increase (become less negative) when cash flow is negative. Prior empirical evidence supports these expectations.

It is also found that in this respect public companies act more conservatively than private companies on an average level. This difference is explained firstly by the need of managers to inform shareholders of public companies in order to reduce agency costs, and secondly by the ability of private companies to provide soft information outside of the accounts to lenders, reducing the need for conditional conservatism in the accounts. However, this explanation is questioned in prior research; theoretical models suggest that there may be more efficient ways of dealing with contracting issues in public companies, and also the provision of soft information by private companies may result in higher interest rates relative to information being reported in the financial statements. More importantly, this finding is not just of theoretical interest; there may be regulatory implications. The concern is that the lack of conservatism in private companies may reflect the less demanding options available resulting from the attempt to reduce the costs of financial reporting for smaller businesses.

We make two key contributions to this literature. The first contribution is to show that a change in the relation between accruals and cash flow when cash flow is negative captures two aspects of performance which are unrelated to conservatism. First, the operating cycle (and therefore accruals) may change in response to negative cash flow. Accruals may increase as companies switch resources to marketing rather than debt collection; alternatively, accruals may decrease as companies focus on cash sales. A second change in accruals which is unrelated to loss recognition is that any decrease in sales accompanying the negative cash flow will also reduce accruals.

Our second contribution is to derive the profit margin test from the accruals model developed by Dechow et al. (1998). This new test is unaffected by changes either in the operating cycle or in the volume of sales. We compare the profit margin test with the accruals based test on a large sample of UK companies between 2001 and 2018. The accruals model gives the same result as in the prior literature that public companies act more conservatively. In contrast however, the profit margin test shows that, on an average level, conservatism is greater in private companies; and this result is found in all of the individual years. An important implication of our findings relates to the debate concerning the quality of private company reporting under regimes less stringent than IFRS. During the sample period, public companies reported initially under UK GAAP and from 2005 under International Financial Reporting Standards whereas private companies reported under UK GAAP with substantial exemptions for smaller companies. This has caused some to argue that private company reporting

may no longer serve its purpose. Our evidence suggests that, so far as conservatism is concerned, this fear is unwarranted.

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Figure 1: Conditional conservatism in the accruals-cash flow space

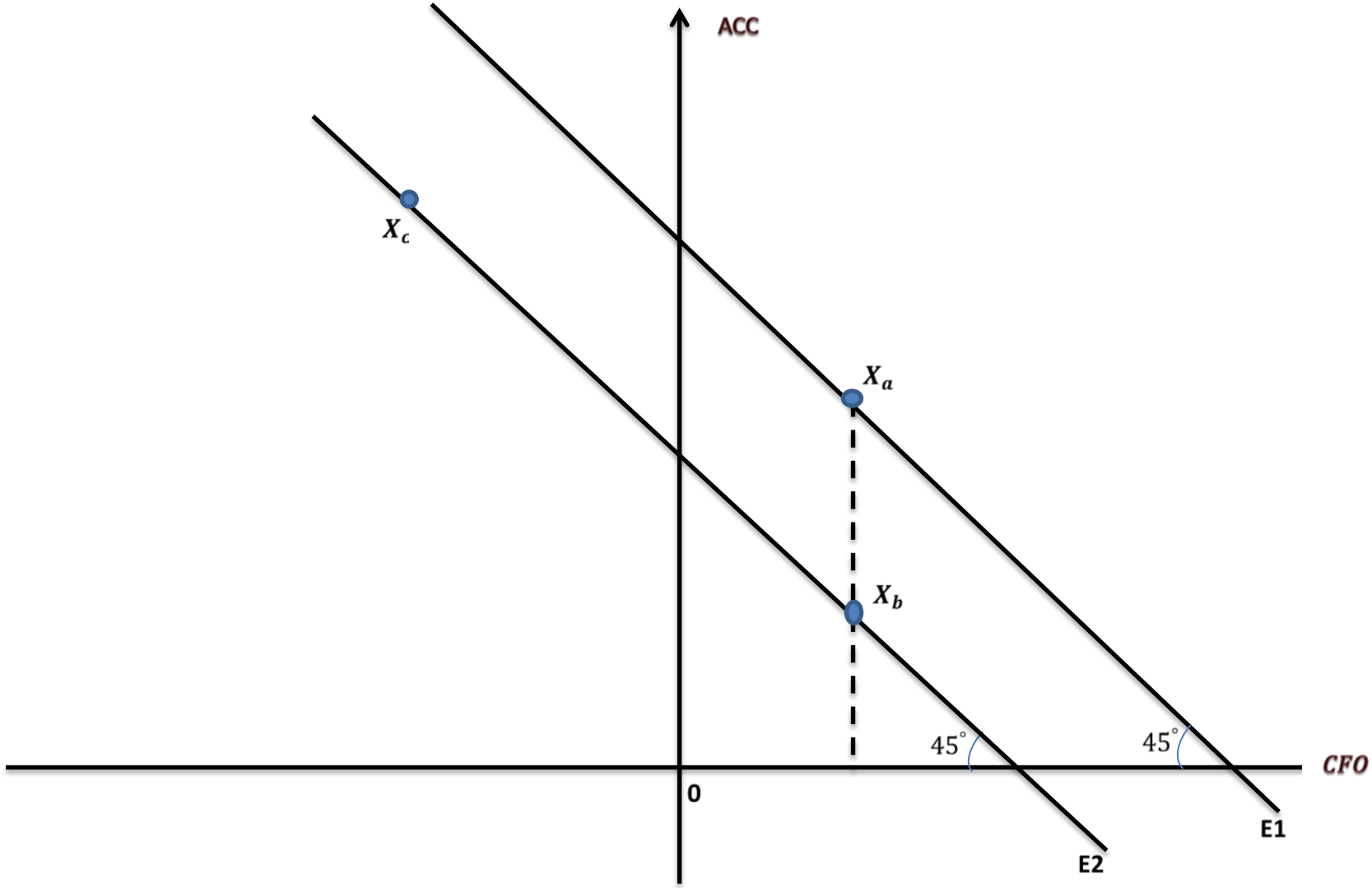

Figure 2: The accruals conditional conservatism test in the accruals-cash flow space

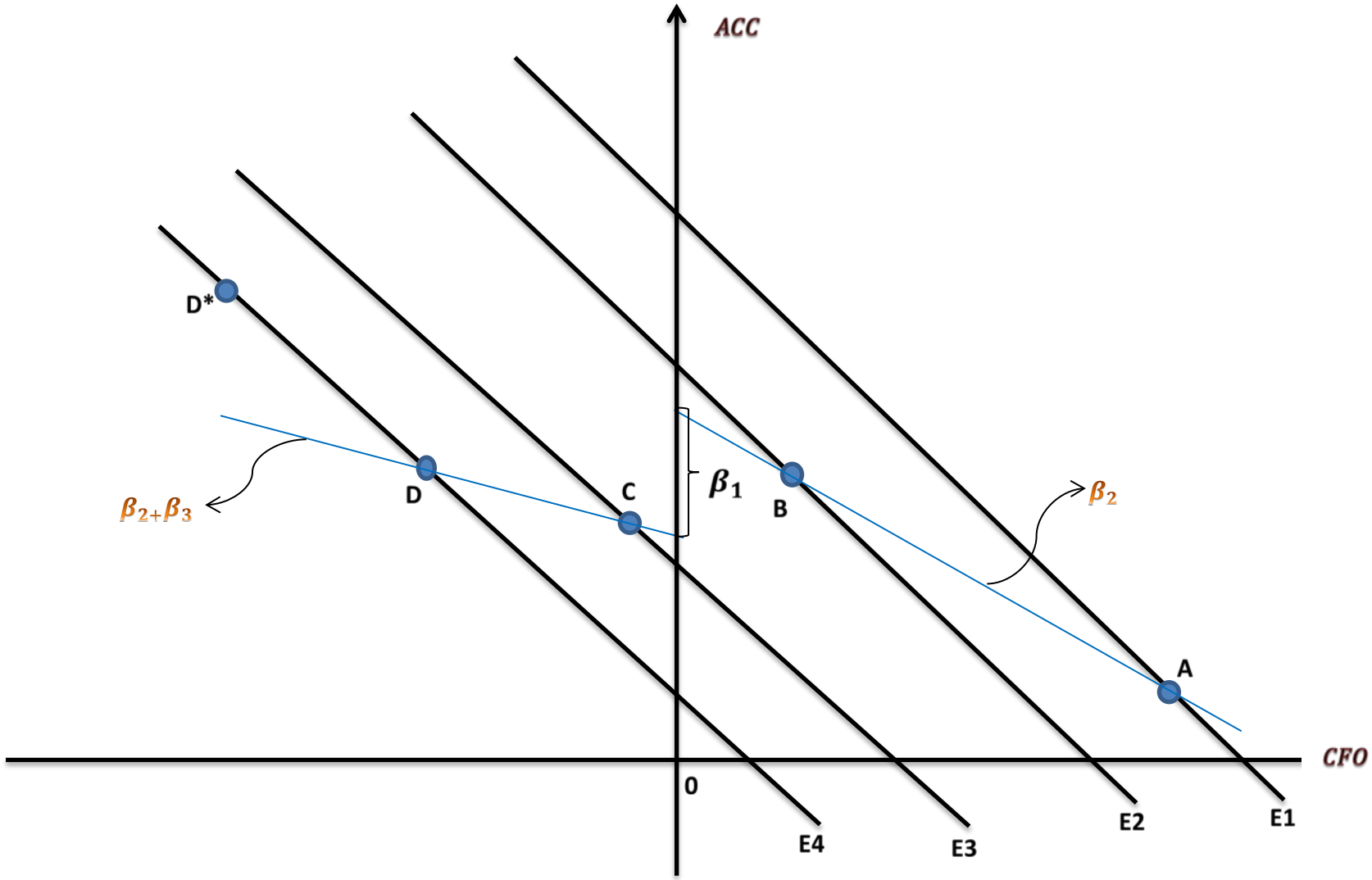

Table 1: Descriptive statistics

	CFO>0				CFO<0				All CFO			
	ACC_i	CFO_i	E_i	$Sales_i$	ACC_i	CFO_i	E_i	$Sales_i$	ACC_i	CFO_i	E_i	$Sales_i$
Public Companies												
N	15,877	15,877	15,877	15,877	6,682	6,682	6,682	6,682	22,559	22,559	22,559	22,559
Mean	-0.062	0.132	0.068	1.511	0.088	-0.183	-0.101	1.353	-0.018	0.038	0.018	1.464
1st decile	-0.184	0.021	-0.009	0.196	-0.081	-0.490	-0.384	0.067	-0.163	-0.160	-0.092	0.134
Median	-0.039	0.095	0.051	1.187	0.057	-0.088	-0.004	0.906	-0.022	0.055	0.036	1.117
9th decile	0.030	0.279	0.168	3.214	0.314	-0.011	0.085	3.224	0.128	0.234	0.148	3.220
Std Deviation	0.116	0.129	0.115	1.336	0.191	0.240	0.310	1.442	0.158	0.223	0.209	1.370
Private Companies												
N	866,469	866,469	866,469	866,469	366,127	366,127	366,127	366,127	1,232,596	1,232,596	1,232,596	1,232,596
Mean	-0.106	0.462	0.360	2.795	0.212	-0.313	-0.081	2.318	-0.012	0.232	0.229	2.653
1st decile	-0.395	0.024	-0.013	0.257	-0.080	-0.808	-0.455	0.125	-0.322	-0.245	-0.115	0.202
Median	-0.051	0.176	0.101	1.899	0.114	-0.133	0.000	1.506	-0.014	0.082	0.063	1.783
9th decile	0.114	1.194	1.028	5.667	0.667	-0.016	0.174	4.767	0.308	0.860	0.750	5.422
Std Deviation	0.350	0.773	0.766	3.517	0.422	0.470	0.478	3.273	0.400	0.782	0.722	3.453

Note:

ACC_i is defined as earnings after extraordinary items minus cash flows from operations, scaled by beginning total assets. CFO_i is defined as earnings after extraordinary items + Depreciation – Changes in Working Capital, scaled by beginning total assets. E_i is defined as net profit after extraordinary items, scaled by beginning total assets. $Sales_i$ is defined as total sales, scaled by beginning total assets. The variables are winsorized at 1% level.

Table 2: The relation between accruals and cash flows for public and private companies

$$ACC_i = \beta_0 + \beta_1.DCFO + \beta_2.CFO_i + \beta_3.DCFO.CFO_i + u_i$$

Panel A: Public Companies

Year	$DCFO$ (β_1)	CFO_i (β_2)	$DCFO.CFO_i$ (β_3)	$Constant$ (β_0)	*No. of Obs.*	R^2
2001	0.0558***	-0.641***	0.448***	0.0151**	1,014	0.393
	(3.83)	(-13.74)	(4.34)	(2.75)		
2002	0.0196	-0.672***	0.420***	0.0159*	1,078	0.446
	(1.53)	(-10.64)	(4.27)	(2.34)		
2003	0.0181	-0.680***	0.323***	0.0183***	1,120	0.505
	(1.50)	(-16.75)	(3.54)	(3.75)		
2004	0.0450***	-0.609***	0.251*	0.0171**	1,091	0.523
	(3.42)	(-11.36)	(2.50)	(2.79)		
2005	0.0266	-0.621***	0.262*	0.0167*	1,113	0.462
	(1.91)	(-10.99)	(2.46)	(2.52)		
2006	0.0325**	-0.573***	0.207*	0.0145*	1,231	0.467
	(2.76)	(-10.76)	(2.49)	(2.30)		
2007	0.0510***	-0.551***	0.322***	0.0187***	1,308	0.418
	(4.20)	(-13.64)	(4.30)	(3.97)		
2008	0.0340**	-0.574***	0.314***	0.0126**	1,335	0.382
	(2.91)	(-14.81)	(3.95)	(2.58)		
2009	0.0192*	-0.628***	0.390***	0.00218	1,363	0.405
	(2.09)	(-17.79)	(5.56)	(0.52)		
2010	0.0187	-0.600***	0.304**	0.0104*	1,384	0.424
	(1.53)	(-13.76)	(3.10)	(2.28)		
2011	0.0261*	-0.533***	0.256**	0.0125*	1,433	0.371
	(2.55)	(-10.57)	(3.05)	(2.42)		
2012	0.0350**	-0.509***	0.310**	0.00768	1,442	0.297
	(3.01)	(-7.08)	(2.97)	(1.12)		
2013	0.0275*	-0.428***	0.233*	-0.00186	1,458	0.267
	(2.43)	(-6.16)	(2.43)	(-0.28)		
2014	0.0137	-0.550***	0.291***	0.0140**	1,461	0.376
	(1.37)	(-13.05)	(4.21)	(3.15)		
2015	0.0271*	-0.478***	0.263**	0.00417	1,477	0.298
	(2.31)	(-8.60)	(2.86)	(0.72)		
2016	0.0376**	-0.446***	0.270**	0.00231	1,524	0.256
	(3.18)	(-6.47)	(2.99)	(0.33)		
2017	0.0232*	-0.501***	0.298***	0.00796	1,543	0.312
	(2.14)	(-7.99)	(3.60)	(1.25)		
2018	0.0323*	-0.556***	0.366**	0.0146*	667	0.426
	(2.19)	(-10.83)	(3.25)	(2.58)		
All Years	0.0300***	-0.559***	0.308***	0.0107***	23,042	0.378
	(10.64)	(-43.08)	(14.42)	(7.66)		

Panel B: Private Companies

Year	$DCFO$ (β_1)	CFO_i (β_2)	$DCFO.CFO_i$ (β_3)	$Constant$ (β_0)	*No. of Obs.*	R^2
2001	0.112***	-0.200***	-0.201***	-0.0368***	47,069	0.309
	(27.30)	(-26.49)	(-10.91)	(-17.80)		
2002	0.104***	-0.213***	-0.184***	-0.0345***	51,918	0.315
	(26.59)	(-30.81)	(-10.42)	(-18.04)		
2003	0.0956***	-0.200***	-0.239***	-0.0298***	56,208	0.317
	(25.78)	(-31.04)	(-14.45)	(-15.97)		
2004	0.108***	-0.170***	-0.259***	-0.0326***	59,266	0.29
	(28.52)	(-32.07)	(-15.50)	(-18.30)		
2005	0.0933***	-0.174***	-0.291***	-0.0254***	64,563	0.302
	(26.63)	(-37.19)	(-19.60)	(-14.39)		
2006	0.108***	-0.157***	-0.290***	-0.0284***	68,262	0.291
	(31.65)	(-32.97)	(-19.97)	(-16.49)		
2007	0.105***	-0.170***	-0.270***	-0.0266***	80,481	0.305
	(33.19)	(-42.63)	(-20.68)	(-16.64)		
2008	0.0967***	-0.170***	-0.266***	-0.0269***	89,108	0.304
	(32.36)	(-45.07)	(-22.59)	(-17.21)		
2009	0.0868***	-0.163***	-0.292***	-0.0380***	92,540	0.296
	(29.81)	(-41.83)	(-24.55)	(-25.12)		
2010	0.0915***	-0.183***	-0.246***	-0.0325***	87,634	0.294
	(30.59)	(-43.63)	(-19.07)	(-21.32)		
2011	0.0895***	-0.190***	-0.247***	-0.0265***	79,968	0.309
	(30.38)	(-42.29)	(-18.66)	(-17.16)		
2012	0.0868***	-0.166***	-0.296***	-0.0277***	81,952	0.294
	(29.34)	(-35.24)	(-23.12)	(-18.22)		
2013	0.0918***	-0.153***	-0.295***	-0.0292***	81,502	0.277
	(30.86)	(-31.88)	(-22.78)	(-18.93)		
2014	0.0928***	-0.179***	-0.250***	-0.0227***	80,370	0.294
	(30.74)	(-35.89)	(-19.22)	(-14.99)		
2015	0.0971***	-0.193***	-0.243***	-0.0247***	81,209	0.304
	(31.17)	(-36.74)	(-18.79)	(-15.61)		
2016	0.0983***	-0.189***	-0.278***	-0.0217***	84,902	0.302
	(31.36)	(-34.06)	(-23.60)	(-12.52)		
2017	0.107***	-0.148***	-0.336***	-0.0167***	90,130	0.253
	(33.32)	(-27.23)	(-29.25)	(-9.25)		
2018	0.0950***	-0.135***	-0.277***	-0.0354***	25,836	0.202
	(16.92)	(-14.17)	(-11.53)	(-11.24)		
All Years	0.0974***	-0.173***	-0.271***	-0.0283***	1,302,918	0.293
	(125.45)	(-147.90)	(-83.86)	(-70.75)		

Note:

ACC_i is defined as earnings after extraordinary items minus cash flows from operations, scaled by beginning total assets. CFO_i is defined as earnings after extraordinary items + Depreciation – Changes in Working Capital, scaled by beginning total assets. $DCFO$ is a dummy variable, taking a value of 1 when CFO_i is negative, 0 otherwise. The variables are winsorized at 1% level. t-statistics are in parentheses. ***,**,* denotes significance at the 1%, 5% and 10% level, respectively.

Table 3: The profit margin test

$E_i^{POS\_CFO} = \gamma_0 + \gamma_1 . S_i^{POS\_CFO} + u_i$ if CFO>0; $\Delta\pi_i = \sum_i \{E_i^{NEG\_CFO} - \widehat{\gamma_0} - \widehat{\gamma_1} . S_i^{NEG\_CFO}\}/n$

Panel A: γ_0, γ_1 are estimated based on individual years

	Public Companies			Private Companies			Difference between two groups	
Variable	N	Mean	SD	N	Mean	SD	t-stats	p-value
$\Delta\pi_{2001}$	296	-0.181	0.381	12,888	-0.339	0.568	4.783	0.000
$\Delta\pi_{2002}$	326	-0.159	0.284	13,920	-0.333	0.542	5.757	0.000
$\Delta\pi_{2003}$	352	-0.139	0.263	14,833	-0.357	0.579	7.039	0.000
$\Delta\pi_{2004}$	311	-0.126	0.290	14,912	-0.380	0.585	7.622	0.000
$\Delta\pi_{2005}$	329	-0.145	0.281	16,717	-0.416	0.613	8.001	0.000
$\Delta\pi_{2006}$	360	-0.145	0.276	17,507	-0.400	0.605	7.968	0.000
$\Delta\pi_{2007}$	371	-0.188	0.361	20,108	-0.447	0.610	8.143	0.000
$\Delta\pi_{2008}$	422	-0.161	0.278	23,919	-0.466	0.622	10.067	0.000
$\Delta\pi_{2009}$	411	-0.154	0.246	25,306	-0.436	0.613	9.323	0.000
$\Delta\pi_{2010}$	381	-0.174	0.353	24,667	-0.402	0.576	7.711	0.000
$\Delta\pi_{2011}$	438	-0.160	0.304	23,622	-0.376	0.575	7.849	0.000
$\Delta\pi_{2012}$	390	-0.140	0.298	23,850	-0.368	0.557	8.093	0.000
$\Delta\pi_{2013}$	389	-0.162	0.280	23,549	-0.370	0.566	7.209	0.000
$\Delta\pi_{2014}$	407	-0.173	0.280	22,936	-0.349	0.562	6.318	0.000
$\Delta\pi_{2015}$	425	-0.173	0.300	23,645	-0.339	0.573	5.960	0.000
$\Delta\pi_{2016}$	477	-0.194	0.338	27,421	-0.343	0.591	5.510	0.000
$\Delta\pi_{2017}$	423	-0.228	0.380	29,360	-0.357	0.621	4.241	0.000
$\Delta\pi_{2018}$	174	-0.169	0.287	6,967	-0.353	0.574	4.221	0.000
All Years	6,682	-0.166	0.308	366,127	-0.383	0.588	30.093	0.000

Panel B: γ_0, γ_1 are estimated over the entire period

	Public Companies			Private Companies			Difference between two groups	
Variable	N	Mean	SD	N	Mean	SD	t-stats	p-value
$\Delta\pi_{2001}$	296	-0.188	0.381	12,888	-0.399	0.584	6.183	0.000
$\Delta\pi_{2002}$	326	-0.174	0.284	13,920	-0.393	0.572	6.888	0.000
$\Delta\pi_{2003}$	352	-0.145	0.263	14,833	-0.395	0.588	7.966	0.000
$\Delta\pi_{2004}$	311	-0.129	0.290	14,912	-0.378	0.570	7.700	0.000
$\Delta\pi_{2005}$	329	-0.145	0.280	16,717	-0.380	0.572	7.439	0.000
$\Delta\pi_{2006}$	360	-0.139	0.275	17,507	-0.371	0.579	7.570	0.000
$\Delta\pi_{2007}$	371	-0.176	0.362	20,108	-0.388	0.590	6.905	0.000
$\Delta\pi_{2008}$	422	-0.158	0.278	23,919	-0.400	0.608	8.150	0.000
$\Delta\pi_{2009}$	411	-0.172	0.246	25,306	-0.397	0.604	7.536	0.000
$\Delta\pi_{2010}$	381	-0.179	0.351	24,667	-0.391	0.579	7.139	0.000
$\Delta\pi_{2011}$	438	-0.155	0.304	23,622	-0.383	0.573	8.330	0.000
$\Delta\pi_{2012}$	390	-0.142	0.298	23,850	-0.380	0.564	8.307	0.000
$\Delta\pi_{2013}$	389	-0.165	0.280	23,549	-0.379	0.567	7.455	0.000
$\Delta\pi_{2014}$	407	-0.166	0.280	22,936	-0.378	0.578	7.382	0.000
$\Delta\pi_{2015}$	425	-0.167	0.298	23,645	-0.377	0.585	7.358	0.000
$\Delta\pi_{2016}$	477	-0.193	0.337	27,421	-0.376	0.606	6.602	0.000
$\Delta\pi_{2017}$	423	-0.221	0.380	29,360	-0.367	0.635	4.689	0.000
$\Delta\pi_{2018}$	174	-0.161	0.287	6,967	-0.384	0.598	4.902	0.000
All Years	6,682	-0.166	0.308	366,127	-0.383	0.588	30.093	0.000

Note:

$E_i$is defined as net profit after extraordinary items. S_i is defined as total sales. $E_i^{POS\_CFO}$ is earnings when cash flow is positive, scaled by beginning total assets. $S_i^{POS\_CFO}$ is sales when cash flow is positive, scalded by beginning total assets. $E_i^{NEG\_CFO}$, and $S_i^{NEG\_CFO}$ are earnings and sales when cash flows is negative, scaled by beginning total assets respectively. $\Delta\pi_i$ is defined as the shift in profit margin; we estimate the relation for positive cash flow as in the first equation, and then use the estimated coefficients (based on both individual years and the entire period) to calculate the average of deviation when cash flow is negative.

The variables are winsorized at 1% level.

***,**,* denotes significance at the 1%, 5% and 10% level, respectively.

Table 4: The profit margin test with positive and negative deviations ($\Delta\pi_i$)

$E_i^{POS\_CFO} = \gamma_0 + \gamma_1 . S_i^{POS\_CFO} + u_i$ if CFO>0; $\Delta\pi_i = \sum_i \{E_i^{NEG\_CFO} - \widehat{\gamma_0} - \widehat{\gamma_1} . S_i^{NEG\_CFO}\}/n$

Panel A: γ_0, γ_1 are estimated based on individual years

	Positive $\Delta\pi_i$								**Negative $\Delta\pi_i$**							
	Public Companies			**Private Companies**			**Difference**		**Public Companies**			**Private Companies**			**Difference**	
Deviation	N	Mean	SD	N	Mean	SD	t-stats	p-value	N	Mean	SD	N	Mean	SD	t-stats	p-value
$\Delta\pi_{2001}$	54	0.067	0.082	1,729	0.124	0.307	-1.368	0.172	242	-0.236	0.400	11,159	-0.411	0.565	4.798	0.000
$\Delta\pi_{2002}$	64	0.057	0.113	1,580	0.144	0.314	-2.208	0.027	262	-0.212	0.288	12,340	-0.394	0.535	5.481	0.000
$\Delta\pi_{2003}$	54	0.065	0.114	1,704	0.145	0.348	-1.686	0.092	298	-0.176	0.266	13,129	-0.422	0.571	7.415	0.000
$\Delta\pi_{2004}$	61	0.055	0.060	1,472	0.164	0.355	-2.397	0.017	250	-0.170	0.306	13,440	-0.439	0.575	7.381	0.000
$\Delta\pi_{2005}$	57	0.055	0.076	1,400	0.177	0.333	-2.766	0.006	272	-0.187	0.290	15,317	-0.470	0.604	7.719	0.000
$\Delta\pi_{2006}$	48	0.096	0.152	1,394	0.189	0.361	-1.783	0.075	312	-0.182	0.272	16,113	-0.450	0.595	7.957	0.000
$\Delta\pi_{2007}$	53	0.095	0.153	1,013	0.263	0.482	-2.528	0.012	318	-0.235	0.364	19,095	-0.484	0.593	7.475	0.000
$\Delta\pi_{2008}$	52	0.099	0.146	1,071	0.284	0.522	-2.548	0.011	370	-0.198	0.272	22,848	-0.502	0.604	9.668	0.000
$\Delta\pi_{2009}$	42	0.068	0.096	1,201	0.252	0.437	-2.727	0.007	369	-0.179	0.245	24,105	-0.470	0.600	9.312	0.000
$\Delta\pi_{2010}$	45	0.062	0.084	1,383	0.219	0.434	-2.433	0.015	336	-0.206	0.363	23,284	-0.439	0.562	7.593	0.000
$\Delta\pi_{2011}$	56	0.082	0.109	1,746	0.180	0.373	-1.975	0.048	382	-0.196	0.308	21,876	-0.421	0.565	7.770	0.000
$\Delta\pi_{2012}$	46	0.129	0.168	1,746	0.196	0.372	-1.219	0.223	344	-0.176	0.293	22,104	-0.413	0.545	8.068	0.000
$\Delta\pi_{2013}$	42	0.078	0.102	1,948	0.171	0.347	-1.742	0.082	347	-0.191	0.281	21,601	-0.418	0.557	7.582	0.000
$\Delta\pi_{2014}$	50	0.076	0.107	2,070	0.196	0.421	-2.014	0.044	357	-0.208	0.280	20,866	-0.403	0.545	6.764	0.000
$\Delta\pi_{2015}$	44	0.077	0.113	2,824	0.169	0.396	-1.535	0.125	381	-0.202	0.301	20,821	-0.408	0.559	7.181	0.000
$\Delta\pi_{2016}$	62	0.073	0.102	3,230	0.214	0.405	-2.744	0.006	415	-0.234	0.342	24,191	-0.418	0.571	6.540	0.000
$\Delta\pi_{2017}$	41	0.070	0.107	3,321	0.293	0.484	-2.960	0.003	382	-0.260	0.384	26,039	-0.440	0.587	5.954	0.000
$\Delta\pi_{2018}$	17	0.063	0.142	622	0.227	0.466	-1.453	0.147	157	-0.194	0.288	6,345	-0.410	0.551	4.893	0.000
All Years	877	0.076	0.115	28,839	0.212	0.413	-9.750	0.000	5,805	-0.203	0.311	337,288	-0.434	0.573	30.703	0.000

Panel B: γ_0, γ_1 are estimated over the entire period

	Positive $\Delta\pi_i$								Negative $\Delta\pi_i$							
	Public Companies			Private Companies			Difference		Public Companies			Private Companies			Difference	
Deviation	N	Mean	SD	N	Mean	SD	t-stats	p-value	N	Mean	SD	N	Mean	SD	t-stats	p-value
$\Delta\pi_{2001}$	47	0.070	0.086	832	0.182	0.390	-1.955	0.051	249	-0.236	0.395	12,056	-0.439	0.574	5.536	0.000
$\Delta\pi_{2002}$	39	0.073	0.138	946	0.175	0.337	-1.890	0.059	287	-0.208	0.282	12,974	-0.435	0.564	6.796	0.000
$\Delta\pi_{2003}$	50	0.063	0.117	1,031	0.194	0.415	-2.219	0.027	302	-0.180	0.265	13,802	-0.439	0.575	7.831	0.000
$\Delta\pi_{2004}$	59	0.054	0.060	1,189	0.197	0.401	-2.743	0.006	252	-0.172	0.305	13,723	-0.428	0.554	7.321	0.000
$\Delta\pi_{2005}$	57	0.055	0.081	1,385	0.202	0.372	-2.965	0.003	272	-0.186	0.289	15,332	-0.432	0.558	7.251	0.000
$\Delta\pi_{2006}$	60	0.079	0.137	1,525	0.191	0.370	-2.345	0.019	300	-0.183	0.275	15,982	-0.424	0.567	7.367	0.000
$\Delta\pi_{2007}$	63	0.090	0.143	1,597	0.210	0.425	-2.229	0.026	308	-0.230	0.369	18,511	-0.439	0.574	6.385	0.000
$\Delta\pi_{2008}$	56	0.096	0.144	1,843	0.215	0.442	-2.016	0.044	366	-0.197	0.273	22,076	-0.451	0.592	8.202	0.000
$\Delta\pi_{2009}$	25	0.090	0.108	1,715	0.211	0.401	-1.497	0.135	386	-0.189	0.243	23,591	-0.441	0.592	8.347	0.000
$\Delta\pi_{2010}$	36	0.072	0.088	1,621	0.197	0.405	-1.863	0.063	345	-0.205	0.358	23,046	-0.433	0.566	7.439	0.000
$\Delta\pi_{2011}$	61	0.080	0.108	1,532	0.197	0.395	-2.310	0.021	377	-0.193	0.309	22,090	-0.424	0.561	7.964	0.000
$\Delta\pi_{2012}$	42	0.138	0.171	1,646	0.197	0.370	-1.024	0.306	348	-0.176	0.292	22,204	-0.423	0.553	8.314	0.000
$\Delta\pi_{2013}$	41	0.078	0.103	1,706	0.185	0.363	-1.890	0.059	348	-0.193	0.281	21,843	-0.424	0.556	7.707	0.000
$\Delta\pi_{2014}$	60	0.070	0.102	1,764	0.202	0.426	-2.407	0.016	347	-0.206	0.281	21,172	-0.426	0.563	7.255	0.000
$\Delta\pi_{2015}$	51	0.069	0.102	1,927	0.207	0.449	-2.192	0.029	374	-0.199	0.302	21,718	-0.428	0.567	7.782	0.000
$\Delta\pi_{2016}$	61	0.073	0.096	2,622	0.232	0.417	-2.966	0.003	416	-0.231	0.342	24,799	-0.441	0.587	7.239	0.000
$\Delta\pi_{2017}$	47	0.067	0.103	3,406	0.279	0.465	-3.124	0.002	376	-0.257	0.386	25,954	-0.451	0.605	6.192	0.000
$\Delta\pi_{2018}$	22	0.052	0.132	552	0.232	0.468	-1.800	0.073	152	-0.192	0.290	6,415	-0.437	0.578	5.211	0.000
All Years	877	0.076	0.115	28,839	0.212	0.413	-9.750	0.000	5,805	-0.203	0.311	337,288	-0.434	0.573	30.703	0.000

Note:

$E_i$is defined as net profit after extraordinary items. S_i is defined as total sales. $E_i^{POS\_CFO}$ is earnings when cash flow is positive, scaled by beginning total assets. $S_i^{POS\_CFO}$ is sales when cash flow is positive, scalded by beginning total assets. $E_i^{NEG\_CFO}$, and $S_i^{NEG\_CFO}$ are earnings and sales when cash flows is negative, scaled by beginning total assets respectively. $\Delta\pi_i$ is defined as the shift in profit margin; we estimate the relation for positive cash flow as in the first equation, and then use the estimated coefficients (based on both individual years and the entire period) to calculate the average of deviation when cash flow is negative.

The variables are winsorized at 1% level. ***,**,* denotes significance at the 1%, 5% and 10% level, respectively.