1 The Modified Jones model

1.1 Important Notice!

Important conditions for the estimations of the models!

- I eliminate firms in regulated industries (SIC codes between 4400 and 5000) and banks and financial institutions (SIC codes between 6000 and 6500). The two-digit SIC code is used to identify an industry.

- The model for discretionary accruals is estimated by every year and industry. I require at least 15 observations for each industry-year grouping.

The discretionary accruals are calculated by measuring the non-discretionary accruals as a portion of the total accruals in the Modified Jones model.

Step 1: Calculate the total accruals as follow:

\[
TACC_t = \Delta CA_t - \Delta Cash - \Delta CL_t + \Delta DCL_t - DEP_t \quad (\text{Eq. 1})
\]

\[TACC_t\] = Total accruals in year \(t\),
\[\Delta CA_t\] = Change in current assets in year \(t\),
\[\Delta Cash\] = Change in cash and cash equivalents in year \(t\),
\[\Delta CL_t\] = Change in current liabilities in year \(t\),
\[\Delta DCL_t\] = Change in short term debt included in current liabilities in year \(t\),
\[DEP_t\] = Depreciation and amortization expense in year \(t\).
Step 2: Estimate the Modified Jones Model, which is defined below:

\[
\frac{TACC_t}{A_{t-1}} = \frac{1}{A_{t-1}} \alpha_1 + \frac{\Delta REV_t - \Delta REC_t}{A_{t-1}} \alpha_2 + \frac{PPE_t}{A_{t-1}} \alpha_3 + \varepsilon_t \quad \text{(Eq. 2)}
\]

\( TACC_t \) = Total accruals in year \( t \) divided by total assets in year \( t - 1 \),

\( \Delta REV_t \) = Revenues in year \( t \) less revenues in year \( t - 1 \),

\( \Delta REC_t \) = Net receivables in year \( t \) less net receivables in year \( t - 1 \),

\( PPE_t \) = Gross property plant and equipment in year \( t \),

\( A_{t-1} \) = Total assets in year \( t - 1 \),

\( \alpha_1, \alpha_2, \text{ and } \alpha_3 \) = Parameters to be estimated, namely alphas,

\( \varepsilon_t \) = Residuals in year \( t \).

\( \rightarrow \) So how do I estimate the alphas \( \alpha_1, \alpha_2, \text{ and } \alpha_3 \)?

Alphas, coefficients or parameters are estimated by means of an ordinary least squares regression (OLS). This is shown in the video tutorial. After we know what the alphas are, you denote these as \( \hat{\alpha}_1, \hat{\alpha}_2, \text{ and } \hat{\alpha}_3 \). These are the estimated alphas or parameters.
Step 3: Calculate the discretionary accruals

The discretionary accruals will be calculated with the next formula (Note: You really don’t need the formulas in Eq. 3 and 4 to calculate the discretionary accruals $\Delta ACC_t$.

In SPSS or STATA you can calculate $\Delta ACC_t$ much faster, I show that in the videos):

$$ \Delta ACC_t = TACC_t - NDACC_t \quad \text{(Eq. 3)} $$

The non-discretionary accruals can be calculated with the next formula:

$$ \frac{NDACC_t}{A_{t-1}} = \hat{\alpha}_1 \frac{1}{A_{t-1}} + \hat{\alpha}_2 \frac{\Delta REV_t - \Delta REC_t}{A_{t-1}} + \hat{\alpha}_3 \frac{PPE_t}{A_{t-1}} \quad \text{(Eq. 4)} $$

$NDACC_t$ = Non-discretionary accruals divided by total assets in year $t - 1$,

$\Delta REV_t$ = Revenues in year $t$ less revenues in year $t - 1$,

$\Delta REC_t$ = Net receivables in year $t$ less net receivables in year $t - 1$,

$PPE_t$ = Gross property plant and equipment in year $t$,

$A_{t-1}$ = Total assets in year $t - 1$,

$\hat{\alpha}_1$, $\hat{\alpha}_2$, and $\hat{\alpha}_3$ = Estimated parameters, namely alphas.

That’s it for discretionary accruals!