

ADJUSTED CASH EARNINGS (ACE)

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1. Overview

Accounting income is the sum of cash flows and accruals with the former being more “objective” than the latter. If current income is used to forecast future income and cash flows, then biases in current accruals can distort these forecasts. Therefore, analysts and investors try to identify biased accruals by scrutinizing financial statements and related footnotes. Doing so requires knowing accounting standards, familiarity with the company business, experience, and time. This spreadsheet provides a framework and tools to screen a large set of companies for further analysis of biased accruals.

This spreadsheet starts with a measure of “hard” equity that leaves out all subjective assets and liabilities. That is, hard equity is the equity computed using modified cash accounting. We then define hard earnings as change in hard equity plus net dividends. Because hard equity is based on modified cash accounting, we call these hard earnings as cash earnings.

Hard earnings are lowered to the extent a company spends cash to grow, e.g., inventories and PP&E need to grow as sales grow. That, is one would expect soft equity to grow as sales grow. Therefore, the spreadsheet defines adjusted hard earnings as the sum of hard earnings and expected change in soft equity due to sales growth. We call these adjusted hard earnings as Adjusted Cash Earnings (*ACE*).

1.1. Key metrics and their purpose

The excess of reported earnings over Adjusted Cash Earnings in the current period suggests that future reported profit margins would decline. To understand why, let us examine the two scenarios in which reported earnings can exceed ACE in the context of depreciation expense. In the first scenario, the company has deflated its depreciation expense in the current period but will have to depreciate more in the future. This will cause the future profit margin to be less than the current profit margin. In the second scenario, the company had inflated its depreciation expense in the past, e.g., via excessive write-offs and is now booking less depreciation expense. In either case, the ratio of depreciation expense to sales will rise in the future relative to the current period, which will hurt reported profit margins.

These observations motivate the key metrics in the spreadsheet, namely, the difference between reported earnings and ACE scaled by sales and reported earnings to get a sense of materiality.

To get a sense of stocks of instead of just flows, we also examine the ratio of soft equity to sales. A rising ratio portends declining reported profit margins.

1.2. Soft versus hard items

The measurement of ACE spreadsheet relies on separating what we refer to as “hard” assets and liabilities from “soft” assets and liabilities. Hard items such as cash, short-duration receivables and payables, and debt are likely to be objectively measured while “soft” items such as inventories, PP&E, deferred revenues, and pension accruals are more subjective.

2. Computation of ACE

The spreadsheet computes ACE in two steps described below.

2.1. Step 1: Compute Cash Earnings [aka Hard Earnings]

2.1.1. Concepts

- Comprehensive earnings = change in equity + net dividends.

- ◆ Equity = assets - liabilities.
- Comprehensive cash earnings or “hard” earnings = change in “hard” equity + net dividends
 - ◆ “Hard” equity= “hard” assets minus “hard” liabilities.
 - ◆ We motivate the terminology "hard" assets/liabilities by the idea that hard items are less dependent on estimates and other subjective judgments. Thus, Cash Earnings can also be viewed as Hard Earnings.

2.1.2. Specific steps

- Compute change in hard equity
 - ◆ Hard assets = financial assets + receivables that are like financial assets
 - ◆ Hard liabilities = financial liabilities + payables that are like financial liabilities
 - ◆ “Hard” equity= “hard” assets minus “hard” liabilities
 - ◆ If one considers financial assets and financial liabilities as the only hard items, then one arrives at a very restrictive definition of cash earnings. This definition is sometimes used in practice.
- Net dividends = Comprehensive earnings - change in equity
- Comprehensive cash earnings or “hard” earnings = change in “hard” equity + net dividends
- Compute soft components
 - ◆ Soft component of earnings = Reported earnings – Hard earnings
 - ◆ Soft component of equity = Reported equity – Hard equity
- Optional: To illustrate how to determine if an item is hard or soft, we evaluate receivables in the “Example” tab. We consider two indicators of the subjectivity of collection risk: days of receivables (=receivables/sales per day) and allowance for bad debts as percent of receivables. We then specify cutoffs for these two measures of quality of receivables. Receivables qualify as hard assets if and only if both cutoffs are met.

2.1.3. Clarification: Effect of dividends

Metric	Affected by dividends
Balance sheet	
Reported equity	Yes
Hard equity	Yes
Soft component of equity = Reported equity – Hard equity	No
Income statement	
Reported earnings	No
Hard earnings	No
Soft component of earnings = Reported earnings – Hard earnings	No

2.2. Step 2: Compute Adjusted Cash Earnings (ACE)

Cash earnings ignore all soft accruals. This is too restrictive because some soft accruals (e.g., growth in PP&E) are inevitable when a firm grows. Adjusted Cash Earnings (ACE) allow for soft accruals that can be justified by sales growth. Thus, ACE is defined as the sum of cash earnings and growth in soft equity driven by sales growth.

- Growth in soft equity driven by sales growth = Soft component of equity * sales growth.
- Adjusted Cash Earnings (ACE) = Cash earnings + Growth in soft equity driven by sales growth

- ◆ Adjusted Cash Earnings can also be called Growth-adjusted Hard Earnings.
- ◆ As mentioned earlier, the difference between reported earnings and adjusted cash earnings (ACE) arises from biases in soft accruals and measures the subjective judgment in reported earnings. This difference is the first-cut estimate of the potential bias in reported earnings.

Summary
Reported cash flows: No accruals
Step 1: Cash earnings = Change in hard equity + Net dividends = Cash flows + Changes in hard accruals
Step 2: Adjusted cash earnings = Cash earnings + Growth-justified change in soft accruals
Reported earnings: All accruals [Hard and soft]

In sum, the spreadsheet allows for the measurement of the difference between a GAAP “soft” actual accrual and estimates of what the “accrual ought to be.” The larger this difference, the lower the earnings quality, and the lower the forecasted future profit margin.

3. Metrics and their interpretation

3.1. Income statement

The difference between reported earnings and ACE measures the potential bias in earnings. This bias is then scaled by sales or reported earnings. The ratio of soft earnings to hard earnings can rise due to two reasons:

- There was no manipulation in the past but this year we are creating abnormally high soft accruals. If hard earnings represent reality, but we use reported earnings as a proxy for hard earnings, we will overestimate future hard earnings if we extrapolate today’s reported earnings. When the future arrives, we will find that future hard earnings are less than what we forecasted. If soft accruals reverse at that time, then reported earnings will drop even more than the drop in hard earnings.
- Last year, we unwound the high soft accruals from years before the last year. This led to unusually low soft earnings last year. We have now returned to the normal proportion of soft earnings to hard earnings this period. This deflated reported earnings last year and has normalized reported earnings this year and has led to a spurious growth the reported earnings. We should not extrapolate this growth into the future.

3.2. Balance sheet

The measurement of soft equity over time sets the stage for asking whether the profit margin in the future is likely to improve. One can consider the trend in the ratio soft equity/sales to evaluate this issue. A declining trend over time suggests that the “embedded” future expenses are relatively low to sales; it suggests that, probabilistically, margins will increase.

4. Why ACE is better than cash flows

Three problems arise if cash flows are used to assess earnings biases. The first two relate to the problems inherent in the cash flow statement. The third one deals with the fact that a summary dismissal of all accruals is overly restrictive.

- Cash flows omit the effect of significant non-cash events. The cash flow statement omits non-cash exchanges. Examples are initial acquisition of assets under capital leases, acquisitions of companies for stock, and non-cash compensation such as stock options.
 - ◆ Our remedy: ACE relies on changes in balance sheet accounts thereby incorporating cash transactions as well as non-cash transactions.
- Cash is not the only objectively measurable item or “hard” item. The cash flow statement explains changes in cash and cash equivalents. However, many more balance sheet items are objectively

measurable. For example, most financial assets and financial liabilities are objectively measurable. In addition, some non-financial assets/liabilities are no less “hard” than cash, and thus equally measurable. High quality receivables fall into this category. These receivables can thus be said to be “as good as cash” though they are treated as accruals in the cash flow statement. The same holds for many accounts payable, as they are no less “hard” than loans from financial institutions.

- ◆ Our remedy: ACE incorporates changes in all hard assets and hard liabilities, not just cash.
- Cash flows are biased performance measures for growing firms. Firms buy inventories and PP&E before these inventories and PP&E generate cash receipts from customers. If firms are not growing, then this mismatch between expenditures and receipts does not hurt cash flows because current receipts resulting from prior expenditures are offset by current expenditures. When firms are growing, then this mismatch makes cash flows a biased performance measure because the current receipts are low relative to current expenditures. In general, one should expect growth in accruals such as inventories and PP&E for growing firms. Thus, cash earnings that strip out all changes in accruals are a biased performance measure for growing firms.
 - ◆ Our remedy: ACE adjusts for justifiable growth in soft accruals.

5. Advanced: A detailed income statement for cash earnings

The final part provides the hard income statement, which strips out the subjectivity of soft accruals. The statement splits enterprise expenses into two parts: (i) hard enterprise expenses with no future benefits [includes tax expense] and (ii) investment expenditures such as capital expenditures, R&D, and the acquisition of subsidiaries. This bifurcation yields two enterprise profit subtotals: (i) hard enterprise income before investment expenditures and (ii) hard enterprise income that deducts investment expenditures from the first subtotal. The key margin is the ratio of hard enterprise income before investment expenditures to sales. The hard margin is not biased by creation or reversal of soft accruals or biases due to changes in accounting conservatism. When the trend in hard margins differs from the trend in reported margins, the former is a better predictor of future reported margins because of the reversals in soft accruals.

	Reported margin is rising	Reported margin is falling
Hard margin is rising		Expect rise in future reported margins
Hard margin is falling	Expect decline in future reported margin	

6. Optional: Alternate views of ACE (not in the spreadsheet)

Although not shown in the spreadsheet, one can understand the derivation of ACE in two ways shown below: [Note: The tables below do not list all accounts that need adjustments. They pick out only the common ones. The tables also show only the enterprise items, as financial items are generally not subjective.]

6.1. Deriving enterprise ACE from enterprise cash flows

Enterprise cash flow [Enterprise profit with no accruals]
Change in receivables (Change in payables)
= Enterprise cash flow with hard accruals [Cash enterprise earnings: Enterprise profit without soft accruals]
Change in inventory due to growth in business Change in net PPE due to growth in business (Change in deferred revenue due to growth in business) (Change in long-term accrued expenses due to growth in business)
= Adjusted cash enterprise earnings: Enterprise cash flow adjusted for growth

Note that Enterprise cash flow = Operating cash flow + Net interest payments after tax – Capital expenditures.

6.2. Deriving ACE from earnings

Enterprise profit after tax
(Change in inventory)
(Change in net PPE)
Change in deferred revenue
Change in long-term accrued expenses
= Cash enterprise earnings: Enterprise profit without soft accruals [Enterprise cash flow with hard accruals]
The rest of the steps are the same as the above table.

7. Summary

The spreadsheet provides metrics to improve the aid the forecasting of changes in profit margin. While each metric provides useful insights, we comment on their relative merits below.

- Cash earnings or “hard” earnings: This metric scrubs the effect of changes in “subjective, soft accruals” from reported earnings. Examples of such accruals are changes in inventories, PP&E, deferred taxes, deferred revenues, inventories, pension liabilities etc. The metric is the useful for mature firms that are neither growing nor contracting because under such circumstances soft accruals should not change materially from one period to next.
- Adjusted cash earnings (ACE): ACE equals cash earnings plus an adjustment for the change in accruals due to growth in the business. If there is not much of a lag between investment in the business and sales growth, then one uses sales growth as a proxy for growth in the size of the business. ACE is a “quality of earnings” metric because it allows for growth in accrual only if it justified based on sales growth; ACE scrubs the effect of excessive growth in soft accruals from reported earnings.
- The trend in soft equity as a percentage of current revenues: Soft equity equals soft assets less soft liabilities. A disproportionate growth or decline in soft equity tends to reverse itself. When soft equity declines in the future, earnings decline, and vice versa. Thus, if soft equity grows as a percent of revenues in the current period, then profit margin is expected to decline in the future, and vice versa.
- Cash enterprise profit before subtracting expenditures that have future benefits: This metric eliminates the complexities that come with growth due to capital expenditures and R&D. Thus the idea that “hard earning estimate of earnings before the cost of using past long term investments in the enterprise” can then be compared to a similar number per books; it provide yet another aspect of a firm’s quality of earnings.