Justifying the Opposite: A Pedagogical Reminder for those Teaching Financial Ratio Analysis

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Abstract
Although introductory finance texts may be clear and instructors may be thorough, students often exhibit an extremely superficial understanding of financial ratio analysis upon leaving their introductory classes. We find that students’ understanding can be enhanced by requiring them to justify why the opposite of their initial impression of a financial ratio may be correct. Thus, students – or other analysts – may be too quick to judge whether the value of a particular financial ratio is “good” or “bad.” This approach requires little additional classroom time, yet seems to create a better understanding of the interrelated financial variables comprising the ratios.

Introduction
Students are likely to first encounter the study of financial ratio analysis in either Principles of Accounting or Introductory Financial Management courses. It seems that we, as faculty, develop two sets of standards by which we determine whether students studying this material have “met the standards.” For non-finance majors – often as many as 85% of our students – we might frown, but in the area of ratio analysis, we often accept students leaving the course knowing little more than how to calculate a current ratio. We listen to students as they cant “…the higher the current ratio, the better [the financial health of the firm].” Our finance majors can go a step further and, in addition to remembering that higher current ratios are better, they become relatively adept at three-stage DuPont decomposition of ROE into profit margin, asset turnover, and equity multiplier. Perhaps we are being somewhat facetious with this assessment of undergraduate learning of ratio analysis, but we suggest you quiz your introductory students before you say that we are, on average, overly harsh.

In this venue we wish to share with you one method that has worked well for us in strengthening students’ understanding of financial ratio analysis. It requires only a small commitment of additional time in class, but the results have – at least for us – justified the extra time. We refer to the technique as “Justifying the Opposite.” When presenting a ratio or group of financial ratios to students, we first ask them to comment on whether they perceive the value of the ratio to be favorable or unfavorable for the firm in question. Then we ask them to justify the opposite conclusion. The student is not required to believe that each conclusion is equally likely, but it forces students to think more thoroughly about the contents of the ratios, both numerator and denominator. Further, the process reminds students that we often conduct financial ratio analysis without access to the firm’s CFO. Thus, we typically cannot ask the questions that would permit us to clarify whether “favorable” or “unfavorable” appears to be the most logical response.

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We do not suggest that current textbooks are at fault. Indeed, a survey of current introductory finance texts illustrates that authors provide to students the appropriate pitfalls of employing financial ratio analysis, including but not limited to: lack of standardization in ratio calculation, differing interpretations by different stakeholders, trends, benchmarks, maturity of the firm, etc. Nor do we suggest that instructors present this material in a less-than-clear manner during classroom discussions. What we are suggesting is that there is a tremendous amount of material to cover in an Introductory Finance course, and quantitatively organized material is often not the forte of our typical student. Faculty understand financial ratio analysis, and often assume that students understand it also. It is our impression that students often struggle with a true understanding of this material…but they conduct their struggle quietly. Forcing them to “justify the opposite” requires them to lay their understanding on the line.

Employing Our Technique

Take a few moments to study the following financial ratios for a hypothetical firm, and then read how we might choose to present this material to students.

<table>
<thead>
<tr>
<th>JTO Corporation</th>
<th>Selected Financial Ratios</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>2003</td>
</tr>
<tr>
<td>Current ratio</td>
<td>1.5 X</td>
</tr>
<tr>
<td>Days sales in receivables</td>
<td>50.0</td>
</tr>
<tr>
<td>Inventory turnover</td>
<td>5.0 X</td>
</tr>
<tr>
<td>Total asset turnover</td>
<td>1.5 X</td>
</tr>
<tr>
<td>Times interest earned</td>
<td>6.0 X</td>
</tr>
<tr>
<td>Debt-to-equity ratio</td>
<td>1.0</td>
</tr>
<tr>
<td>Profit margin</td>
<td>5.0%</td>
</tr>
<tr>
<td>Return on equity</td>
<td>15.0%</td>
</tr>
</tbody>
</table>

Selecting the first impression that most students will offer regarding these ratios, note in each case the firm has gone from “worse” than the industry average to “better” than the industry average during the 2002 - 2003 period. Upon first consideration, the firm is in great financial health. But what if we ask the students – or you – to justify the opposite of your first impression? We follow with these possible explanations for the 2003 ratios.

Current Ratio: The ratio could be unfavorable. Receivables are down because of strict credit standards. Inventory is down also, and back-orders are becoming much more frequent. The only thing that is up is cash, and it is up considerably. Management has cut the second production shift due to the prospects of continued high maintenance costs, and will not invest in more inventory (or capital goods) until it sees higher demand across all product lines. Verdict: numerator of ratio is too high.

Days-Sales-in-Receivables: This ratio could be unfavorable, as alluded to above. The firm’s terms of trade credit are either so stringent or less desirable than other industry members that credit sales are down. The firm has lost the opportunity to profit from additional sales. Verdict: denominator of ratio is too low.

Inventory Turnover: This ratio could be unfavorable, as alluded to above. Back orders are common for some of our products, although, fortunately, our high profit item has remained in production. The firm is

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3 Illustrations can be found in many texts, including Section 3.3, pp. 62 – 73 of Fundamentals of Corporate Finance, 6E, by Ross, Westerfield, and Jordan, or pp. 96 – 108 of Financial Management: Principles & Practice, 3E, by Gallagher and Andrew.
saving costs, but it is also missing out on some profitable sales. Unsatisfied customers often look for other outlets. Verdict: denominator of ratio is too low.

*Total Asset Turnover*: This ratio could be unfavorable. Depending on how capital intensive the firm is, the reductions in inventory and receivables could be driving the change toward “favorable.” However, with an understanding that part of the plant and equipment is unreliable, we get the picture that the firm has not been replacing productive capacity as needed. Will the firm be prepared for long production runs when demand strengthens? Verdict: denominator of ratio is too low.

*T times-Interest-Earned*: This ratio could be unfavorable. Usually a higher value for this ratio indicates that pre-tax earnings are high or that the firm can consider adding more debt to the capital structure. Note in the debt-to-asset ratio the firm has already added debt. The firm’s pre-tax margin is high (only) because maintenance has been deferred (note unreliable equipment) and research and development has been postponed. Verdict: Quality of earnings should be measured in addition to magnitude of earnings.

*Debt-to-Equity Ratio*: This ratio could be unfavorable. Often we think of additional leverage as good, as it improves ROE, assuming the firm’s basic earning power (i.e., EBIT/Total Assets) exceeds the pre-tax cost of debt financing. It is difficult to say whether the firm was “good” before and “bad” now, or the opposite. But one illustration might be to consider the increase in leverage good, because it aids ROE and retains an attractive times-interest-earned. Perhaps the most important fact we could want to learn is why the debt was obtained. If to replenish productive capacity in an efficient manner, perhaps the change is good. If to pay creditors and employees on time, the change is probably bad. This ratio may be more ambiguous than others. Verdict: Profit – and cash flows – may be declining in the near future; therefore, numerator is too high.

*Profit Margin*: This ratio could be unfavorable. Only on few occasions will analysts prefer a lower to a higher profit margin. But the deferral of maintenance and reduction of research and development could easily be one of those situations that paint an increased margin as the harbinger of future problems. Of course, the popular business press has been full for the past few years of firms who have employed aggressive revenue recognition or inappropriate expense recognition or other questionable practices. Verdict: denominator is slightly lower but numerator is unjustifiably high.

*ROE*: This ratio could be unfavorable. Don’t focus on the magnitude of this number; that’s merely an artifact of our example. But note that this ratio is the product of an unfavorable profit margin times an unfavorable asset turnover times an unfavorable leverage factor. Financial ratio analysis is unlikely to be the place where “three wrongs make a right.” Verdict: denominator may be a little low but numerator is unrealistically high.

“That’s not fair!”

We would rather you avoid feeling that we are reading too much into the ratios to be able to make the above comments. Or, perhaps you feel that it would take Agatha Christie’s Hercule Poirot to have predicted the above sequence, leading to unfavorable financial ratios. Perhaps that’s true, but it obscures the main point. The point is that ratios have a numerator and a denominator, and favorable versus unfavorable status can be determined by either or by both. Students rarely dig into the financial statements to back up their initial predictions. It is usually not the case that this analysis is “over their heads,” but rather that the analysis is just not conducted. Financial ratio analysis can be more difficult and require much more analysis time than we teach our students to believe. Forcing your students to “Justify the Opposite” can be an effective means to having them admit, in advance, why their early premonitions may be wrong.
Perhaps you think this criticism of students applies to “all except yours.” Perhaps you feel that class time could be better spent in other areas. Or perhaps you find financial ratio analysis (at least the way it is traditionally taught at the undergraduate level) to be boring, so you don’t feel the need to emphasize it any further. But look at the business press! How many WorldComs, Tycoes, Enrons or Parmalats have to make the front page before we realize that students need enhanced training in interpreting financial ratios?

Conclusions

We maintain that students can be trained to exit their Introductory Finance course with a better understanding of financial ratio analysis. Further, we think that if you force students to verbally justify the opposite of their first impressions in class on a few occasions, they will develop a less trusting and more critical attitude toward the financial statements they are called upon to analyze. These are merely our impressions. However, before you dismiss these impressions, can you justify the opposite?

References
