Welcome

Accounting Quality + Risk Matrix

Events

Financial Reporting
Controls
Insiders
Stakeholders
Auditors

Appendix 1: AQRM Tutorial
Appendix 2: Finding Your Portfolio ID
References
Welcome to the Accounting Quality + Risk Matrix, by Audit Analytics (“AQRM”). This is a powerful tool to screen your portfolio for risk indicators based on qualitative disclosures.

- Highlight indicators of potential earnings management and other accounting quality issues.
- Quickly understand potential governance and control risks.
- Drill down to assess detailed data surrounding the potential issue.

AQRM is for any investor or analyst interested in a company’s public disclosures, especially for qualitative and contextual items. Using methodologies that have been refined for over a decade, we normalize SEC disclosure data.

As a leading provider of audit, accounting, and risk intelligence, Audit Analytics provides data services to financial institutions, accounting firms, regulators and universities. Based on our long experience serving the data and research needs of so many market leaders, we developed this tool to share our insights with the investing public. Using our proprietary analysis, informed by the latest research in the accounting field, we highlight Notable, Significant, and Critical events and anomalies to help you in your due diligence and in the monitoring of risks to your portfolio.

In this manual, we will walk you through the functionality of this tool, and provide further insight into the flagged items.

Thank you for your interest in the Accounting Quality + Risk Matrix, by Audit Analytics. We are dedicated to improving our products and are continuously adding new databases and features. If you have any questions, or would like a demonstration, or if there is something you would like to see, please contact us.

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With the Accounting Quality + Risk Matrix, we give you access to our vast SEC public company databases in a simple, easy-to-use, and intuitive format. As part of your due diligence and portfolio research process, this app will tell you whether an issuer has had any of the notable disclosure events or potential risk anomalies that we track. For example, the matrix will indicate whether any companies in your portfolio has had a one-time adjustment, an unusual change in audit fees, a late filing, or other potential issues.

We have developed three levels, or grades, of severity, which are indicated by the app: Notable, Significant, and Critical. The presentation of the levels using shapes and shading allow you to quickly assess the risk matrix for a given company or portfolio. Your eye will intuitively interpret the results. These levels are not meant to be hard-and-fast. Instead, they should give an idea of the level of attention that an investor might want to give to a particular issue. For instance, a non-reliance restatement regarding a company’s revenue recognition would be considered Critical, since revenue recognition is such a sensitive area and restatements of this sort tend to have long-term negative consequences. But ultimately our grades are suggestions, and an individual could place more or less weight on any of our flags.

The app allows you to quickly perform this kind of research on your entire portfolio, using either individual tickers or a Bloomberg Portfolio ID. (Please note the Appendix for a tutorial on how to screen your portfolio.) Event flags can be overlaid on a stock chart of the company for easy analysis of the share price movements surrounding our event flags and an overview of company performance.

Clicking on a flag will provide you with our analysis of the given event or disclosure, when applicable. For example, the image at left shows the detail for a Change in Accounting Estimate that Southwest Airlines (LUV) recorded in the second quarter of 2014, which increased earnings per share by $0.04.

The Accounting Quality + Risk Matrix is organized around five basic categories of metrics and events: (1) Financial Reporting, (2) Controls, (3) Insiders, (4) Stakeholders, and (5) Auditors.

Financial Reporting
- Change in Accounting Estimate
- Out of Period Adjustment
- Restatement
- Impairment
- Accounting Disclosure Complexity
- Benford’s Law
- Altman Z-Score
- Beneish M-Score

Controls
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- Disclosure Controls
- Late Filing

Insiders
- CEO Change
- CFO Change

Stakeholders
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- SEC Staff Letters

Auditors
- Auditor
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- Auditor Ratification
- Auditor Change
- Audit Fees - Significant Change
- Audit Opinion - Going Concern

1These flags are in the development phase and will be released shortly in an update to the AQRM app.
This section will describe in detail the flags and events presented in the Accounting Quality + Risk Matrix. For each flag, we will provide some background and explanation. The nature and rationale for each data point is explained using a combination of academic, proprietary, and intuitive support. The basic logic for assigning one of the degrees of severity (Notable, Significant, or Critical) is also given.\(^2\)

The accounting quality and risk flags in the AQRM app are loosely grouped into five areas:

- Financial Reporting
- Controls
- Insiders
- Stakeholders
- Auditors

These are general categories under which the individual flags are organized. It is important to note, however, that the different categories are not completely separate from each other. A financial restatement, for example, is naturally included under the Financial Reporting section, but a restatement reflects on a company's system of internal controls, the auditor's role in the reporting process, and other factors – even the influence of stakeholders; it is not uncommon for restatements to result from an SEC staff's review of a company's financials.

\(^2\)Note that the descriptions do not include every detail of the classification and logic. Some proprietary methods are not disclosed, and other methods would be too complex to succinctly document here. Feel free to contact us for more information on any given flag.
Investors are rightly concerned with earnings quality and the quality of accounting information. After all, what else does an investor have to go by? To the average investor, a company’s assets are hardly more than a number on paper. Investors must rely on the quality of financial reporting.

Due to generally accepted accounting principles (“GAAP”), there are any number of accounting quirks that could cause spikes and drops in a given year. Many of a company’s periodic accounting figures are dependent on management assumptions and estimates. That is not to say, of course, that management is necessarily “cooking the books” with malleable assumptions and estimates. Rather, these quirks are often simply a result of applying GAAP to inherently ambiguous measurements. But the fundamental questions are: how accurately do the accounting figures represent the underlying economic reality of the company’s business? And are the figures presented consistent and comparable with the company’s own previously reported figures, as well as other companies’ figures?

A common practice for investors and analysts, then, is to make multi-year comparisons of a company’s financial results. A typical analyst looks at trends in the company’s profit margins over a five- to ten-year period. If earnings are predictable and persistent over many years, it’s often a sign of high quality earnings. But when the margins vary wildly from one period to the next, there might be accounting quality issues. One-time charges and adjustments to the income statement will tend to skew the percentages and distort the trends.

The main purpose of our Financial Reporting flags is to highlight one-time accounting adjustments that affect a company’s earnings in a given period. This provides insight into the company’s earnings quality. Such adjustments range from well-documented events, such as Non-Reliance Financial Restatement, to the little-noticed Changes in Accounting Estimates and Out of Period Adjustments.

This section documents the Accounting Quality + Risk Matrix flags that deal specifically and directly with accounting quality measures. These flags contain a mixture of proprietary qualitative analysis and quantitative income effects.

### Change in Accounting Estimate

A change in estimate is made at the discretion of management, and affects the operating results of the period in which the change occurs. This makes it an information-rich disclosure, specifically with respect to the quality of earnings. Suppose a company changes the estimate of its Sales Return and Allowance reserve, which increases revenue and earnings for the period by 10%. Does that 10% bump represent growth? How much does it reflect the underlying economic reality? These are very important questions for an investor, but these changes in estimates are often buried in the footnotes or in the MD&A. Estimates are often material to the financial statements, and are notoriously difficult to audit.

For the sake of comparability between periods, such assumptions are expected to remain the same, unless a good reason arises to change them (ASC 250-10-45-19). Undisclosed changes in assumptions could result in misleading figures: for example, what looks like a growth in revenue could really be due to a change to a company’s estimated sales reserve. The impact of a change in estimate is included in earnings in the period of adjustment. Changes in accounting estimates could be a relatively easy source of earnings management. Unusual or opaque changes in accounting estimates should capture the attention of users of financial statements.

<table>
<thead>
<tr>
<th>Company</th>
<th>Ticker</th>
<th>Period End</th>
<th>Actual EPS (1)</th>
<th>Consensus Estimate (2)</th>
<th>Surprise</th>
<th>Change in Estimate: Impact on EPS</th>
<th>Adjusted EPS (3)</th>
<th>Adjusted Surprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAYTHEON CO/</td>
<td>RTN</td>
<td>6/29/14</td>
<td>1.59</td>
<td>1.59</td>
<td>0.0%</td>
<td>0.18</td>
<td>1.41</td>
<td>-11.3%</td>
</tr>
<tr>
<td>LOCKHEED MARTIN CORP</td>
<td>LMT</td>
<td>6/29/14</td>
<td>2.76</td>
<td>2.66</td>
<td>3.8%</td>
<td>0.88</td>
<td>1.88</td>
<td>-29.3%</td>
</tr>
<tr>
<td>GENERAL DYNAMICS CORP</td>
<td>GD</td>
<td>6/29/14</td>
<td>1.88</td>
<td>1.76</td>
<td>6.8%</td>
<td>0.12</td>
<td>1.76</td>
<td>0.0%</td>
</tr>
<tr>
<td>NORTHROP GRUMMAN CORP /DE/</td>
<td>NOC</td>
<td>6/30/14</td>
<td>2.37</td>
<td>2.20</td>
<td>7.7%</td>
<td>0.50</td>
<td>1.87</td>
<td>-15.0%</td>
</tr>
<tr>
<td>TEXTRON INC</td>
<td>TXT</td>
<td>6/28/14</td>
<td>0.51</td>
<td>0.47</td>
<td>8.5%</td>
<td>0.09</td>
<td>0.42</td>
<td>-10.6%</td>
</tr>
</tbody>
</table>

Note: This table presents an analysis of a selection of percentage-of-completion changes in estimates, which are highly susceptible to management’s discretion. Before the estimates are backed-out, each of the five defense contractors meet or beat earnings estimates. After adjusting for the estimates, four out of five miss.

1: “Actual EPS” is GAAP Diluted EPS for the three month period, excluding discontinued operations.
2: “Consensus Estimate” was obtained from the Zacks Analysts Blog.
3: “Adjusted EPS” removes the impact of the percentage-of-completion change in accounting estimate.
Consider the following example. In its Q2 10-Q for the period ended June 30, 2012, Wynn Resorts LTD (WYNN) disclosed in the footnotes to the financial statements that it had recorded a change in estimate to decrease its allowance for doubtful accounts. This change in accounting estimate increased net earnings by over $23 million for the quarter, or $0.23 per diluted share. Total earnings per diluted share for the three months ending June 30, 2012 were $1.37, compared to $0.97 for the three months ending June 30, 2011. The $0.23 increase due to the change in estimate accounted for most of the increase in earnings on a year-over-year basis.

We assign severity based primarily on where the estimate, especially positive ones, affects the financial statement: the higher the line item, the more severe the flag. Adjustments to revenue recognition (sales return allowance, breakage, etc.), the allowance for doubtful accounts, or to inventory have the potential to inflate gross margin and give the impression of better operating results than the economic reality.

Revenue is, of course, a critical area in general. Investors and analysts pay special attention to top-line growth, and management knows that a bump at the top can make a big difference. A recent COSO analysis of US company fraud cases found that over 60% of all known fraud cases examined were related to revenue recognition. (Beasley, et al. 2010) Not all revenue recognition adjustments warrant a Critical flag. For example, percentage of completion and contract accounting adjustments are excluded from signaling a Critical flag. These, though often very material to the reporting period, are typically routine in nature. A company like Boeing (BA) will report material changes in estimates related to their contract revenue accounting each quarter. Because of the frequency of these changes, we categorize these particular revenue recognition adjustments as Significant rather than Critical.

If positive and revenue recognition (not contract accounting/percentage completion) = Critical
If positive and inventory OR allowance for doubtful accounts = Critical
If positive and revenue recognition (Contract Accounting only) = Significant
Else if positive = Significant
Else = Notable

Out of Period Adjustment

Out of Period Adjustments, like Changes in Estimates, are accounting entries that affect the current period. That is, they are non-recurring adjustments. Unlike Changes in Estimates, which can evolve with changing circumstances, Out of Period Adjustments correct immaterial errors from prior periods. Since the errors are immaterial, restatements and amended filings are not required. Instead, the change can be made in the current period on a prospective basis.

There are two reasons to pay specific attention to Out of Period Adjustments. First, they are non-recurring adjustments that affect earnings in the period. Second – and perhaps more importantly, depending on your perspective – they are corrections of accounting errors, which have an obvious relation to the overall earnings and accounting quality of a company. Therefore, it is very important to understand the nature of such an adjustment and the magnitude of the effect that it has on the period in which it occurs.

Avon Products (AVP), for example, recorded four Out of Period Adjustments to various expense accounts over the course of about 18 months. Each of these corrections were individually immaterial, the company argued, and so they were quietly disclosed and accounted for on a prospective basis. But altogether the adjustments added up to $50 million, 21% of fiscal 2012 operating income, affecting seven consecutive quarters. Were these numerous small adjustments really just a restatement in disguise? Either way, they certainly reflect poor accounting procedures.

A further consideration with Out of Period Adjustments is that they are a bit “cutting edge” in terms of financial reporting trends. Companies seem to be getting more creative about the ways corrections are disclosed. (Taub 2012) Our own research has noted a substantial change in the way companies report errors: the disclosure of corrections is becoming more subtle and there are fewer Item 8-K Non-Reliance disclosures. (Audit Analytics 2013) We’ve even noted a decrease in the frequency of the use of the word “restate” in actual restatement disclosures. Considering these trends away from disclosure clarity, our ability to track and uncover these sometimes opaque disclosures can be a benefit to the intrepid investor. Although Out of Period Adjustments are immaterial (at least in management’s assessment), they are nevertheless

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3The allowance for doubtful accounts is a contra-account to accounts receivable. It is an estimate of bad debt: the amount of sales made on credit that won’t eventually get paid.
corrections of errors and non-recurring adjustments. Due to the potentially sensitive nature of these adjustments, we classify them as “Notable”.

Any = Notable

Restatement
A financial restatement is perhaps the most immediate and significant red flag as regards a company’s accounting quality. In addition to the unreliable financial statements, a restatement can also raise significant suspicions about the company’s management and overall health.

The negatives associated with a restatement are numerous: it calls into question the accounting quality of the company; it raises doubts about the company’s management and control structure; it exposes the company to shareholder litigation, regulatory action, and higher costs of capital.

It should come as no surprise, then, that financial restatements have negative implications for stock performance. An internal study of restatements found that, although different types of restatements had different effects on the company’s stock price, the following statement holds for all types: the company stock of a restating firm would underperform the market for the fifty days following a restatement. (Audit Analytics 2007) A recent study from the accounting literature found evidence that the negative market reaction to a restatement lingers even longer – close to three years after a restatement is announced. (Chen, Cheng and Lo 2013)

Investors respond particularly negatively to qualitative revenue recognition restatements. (Anderson and Yohn 2002) This makes sense: revenue is one of the key metrics used to value companies. And revenue is a sensitive area for accounting quality as well; over 60 percent of fraud cases studied by COSO involved revenue manipulations. (Beasley, et al. 2010)

On the other hand, there is substantial evidence that after a restatement, a company’s financial reporting quality improves. (Wiedman 2013, Herly, Bartholdy and Thinggaard 2013) Since not all restatements are equal, investors should be aware of the specifics of the restatement.

Our restatement database is the leading source for academic research into this issue. AQRM provides the investor with access to the same data-rich, expert analysis of individual restatements. Using AQRM, you will be aware of any restatements, including so-called little “r” restatements. These are corrections of errors that do not require an 8-K Item 4.02 disclosure and do not necessitate the withdrawal of the auditor’s opinion(s) for the affected financial statements. There is some debate about the governance characteristics of firms that utilize little “r” restatements to correct errors, but recent research suggests that these firms have lower profitability than non-little “r” firms. (Tan and Young 2014) AQRM not only highlights restatements for you, it also provides the user with the ability to dig deep into the details to understand the nature of the restatement.

The logic for assigning flags to restatements is given below. Any Item 4.02 restatement (a non-reliance, or reissuance, Big “R”) is classified as “Critical”, as are cases where a company has had more than one restatement in the past two years. All other restatements with a material impact on net income are classified as “Significant”. (These are “Qualitative” restatements.) Restatements with a cumulative net impact of zero, “Technical” restatements, are classified as “Notable”. In these cases, the restatement may not have had an effect on the previously reported net income, but it is still worth looking into and understanding.
If a reissuance restatement (had an Item 4.02 8-K) = Critical
Else if > 1 restatement = Critical
Else if gentype = Qualitative = Significant
Else if gentype = Technical = Notable

**Benford’s Law**

A little-known mathematical formula has proved to be an intriguing and useful tool to identify accounting irregularities. Known as Benford’s Law, it states that in many kinds of numerical data, such as the lengths of rivers or the populations of counties, the likelihood that any given number taken from the population begins with a given digit (“1”, “2”, etc.) occurs in a constant, repeatable pattern. Numbers beginning with “1” occur about 30% of the time, with “2” about 18% of the time, all the way down to numbers beginning with “9”, which occur at a rate of about 5%. Based on this law, a simple analysis of the first digit of the numbers in a data set has helped uncover fraud and other data problems in a number of instances, including accounting, scientific, and legal cases.

This may at first seem unlikely or odd, but it is actually quite intuitive. Take, for instance, the revenue line item of an income statement. The line item begins with the value of zero each year. For revenue to grow from 1 (in thousands, millions, or billions of dollars) to 2, sales need to grow by 100%, while growth of 50% is needed to move from sales of 2 to sales of 3. Following this example, growth of only 11% in revenue is needed to move from sales of 9 to 10. Therefore, it is much more likely to have financial statement numbers that start with the digit 1 than 2, 2 than 3, and so forth, and this decreasing likelihood is given by Benford’s Law.1

A number of academic studies have provided ample evidence that accounting numbers also follow the distribution of Benford’s Law – that is, unless the numbers are being manipulated or “fudged”. (Durtschi, Hinson and Pacini 2004) Nigrini, for example, discusses many methods that auditors could use to apply Benford’s Law to enhance analytical procedures. (Nigrini and Mittermaier 1997) Recently, a research paper published by Deutsche Bank found that companies with “accounting irregularities”, as measured by Benford’s Law deviations using the KS Score, significantly underperformed the market. (Jussa, et al. 2015)

As one might expect, manually adjusted or random numbers do not conform to Benford’s, and this extends well to accounting irregularities. (See, for instance, Overhoff 2011.) A recent paper finds significant evidence of a correlation between abnormal Benford distributions of financial statements and the likelihood of restatements, fraud investigations, and other negative outcomes for a business. (Amiram, Bozanic and Rouen 2014) In other words, Benford’s Law can be used to identify cases where there is a higher risk of accounting irregularities. Perhaps the strongest evidence of this is found by Amiram et al., who noted that restated financial information conformed to Benford’s Law significantly better than the pre-restated numbers containing the misstatements.

Interestingly, even a familiarity with the law does not make it easy to manipulate numbers in such a way as to maintain conformity with the law. (Gambarara and Nagy 2004) Amiram ran a thousand simulations to adjust a company’s financials, and in almost every case the adjusted numbers failed to conform to the law. (Fisher 2014)

There are at least three possibilities why a company’s financial statements may deviate from Benford’s Law: 1) random chance, 2) indicative of entropy/disorder and 3) intentional manipulation. (Chang 2012) Therefore, a statistically significant divergence from the Benford distribution can be an indicator that there is something wrong with a company’s numbers.

1This example is taken from “Financial Statement Irregularities: Evidence from the Distributional Properties of Financial Statement Numbers.” (Amiram, Bozanic and Rouen 2014)
Financial Reporting

Our calculations to measure the deviation from Benford’s Law follow the methodology developed by Amiram, Bozanic, and Rouen (2014), with a few minor adjustments. There are two metrics that we use to calculate the deviation from Benford’s Law, namely, the Kolmogorov-Smirnov test (KS Score) and the Mean Absolute Deviation (MAD).

The KS Score calculates the maximum cumulative difference between the expected distribution according to Benford’s Law and the actual distribution (calculated from XBRL information). This method has a “critical value” which, if the calculated KS Score exceeds it, shows that the deviation of the actual distribution is statistically significant, within the specified confidence interval.

The MAD Score calculates the average difference between the individual digits of the actual distribution versus the expected. Unlike the KS Score, there is no critical value that allows for a direct comparison between the actual and expected deviations. However, many papers, including Amiram et al., have found the MAD Score useful in certain contexts.

We flag deviations from Benford’s Law in two ways. First, a flag will occur if the company’s financial statements deviate from the law in a statistically significant way. That is, using the Kolmogorov-Smirnov test, there will be a “Notable” flag if the KS Score is greater than the Critical Value with 95% confidence. Second, a “Significant” flag will occur if a company fails the KS test and the MAD Score increased in two consecutive years.

If KS score fails 1% test = Notable
If MAD score increases two consecutive years = Notable

**Accounting Disclosure Complexity**

This is a metric of a company’s accounting disclosure complexity based on the nature and characteristics of the company’s XBRL filing disclosures. The basic idea behind this flag is simple: the more complex a company’s accounting, the more likely it is to have accounting-related distress, whether due to misstatement, fraud, or uncertainty. Further, since accounting necessarily reflects the underlying business, it stands to reason that a company with unusually complex accounting is either in an unusually complex (and therefore potentially risky) industry, or that the company is purposefully introducing opacity into its financial disclosures – and what good reason might a company have to do that?

The complexity of a company’s financial disclosures raises another issue: namely, the related difficulty of analyzing and assessing a company with unusually complex disclosures. Miller, for example, finds that companies with more complex filings are associated with lower overall trading. (Miller 2010) And even more interestingly, it seems that larger, more complex firms are discounted by the market. (Lang and Stulz 1993) With these findings in mind, an investor might be especially interested in noting whether a company in his or her portfolio is increasing in complexity from year to year.

Of course, there are many ways to measure the complexity of a business’s operations and accounting practices. Common methods from the academic literature often take into account the number of business units, foreign operations, industry, etc. The measure we use in our flag is elegant in its simplicity. XBRL, or eXtensible Business Reporting Language, is a standardized programming language that enables semantic information to be reported in a machine-readable format. The SEC requires most U.S. issuers to report in XBRL. Most of the possible variations of accounting information have standardized, normalized tags that are used by the majority of companies. The tag for total assets, for example, is “us-gaap:assets”, which is what most companies should use to label the total assets on their balance sheet.

**Industry Grouping Map: NAICS Codes and Description**

<table>
<thead>
<tr>
<th>NAICS Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>Mining, Oil and Gas Extraction</td>
</tr>
<tr>
<td>22</td>
<td>Utilities</td>
</tr>
<tr>
<td>23</td>
<td>Construction</td>
</tr>
<tr>
<td>31 + 32 + 33</td>
<td>Manufacturing</td>
</tr>
<tr>
<td>42</td>
<td>Wholesale Trade</td>
</tr>
<tr>
<td>44 + 45</td>
<td>Retail</td>
</tr>
<tr>
<td>11 + 48 + 89</td>
<td>Agriculture, Transportation and Warehousing</td>
</tr>
<tr>
<td>51</td>
<td>Information</td>
</tr>
<tr>
<td>52</td>
<td>Finance and Insurance</td>
</tr>
<tr>
<td>53</td>
<td>Real Estate and Rental and Leasing</td>
</tr>
<tr>
<td>54</td>
<td>Professional, Scientific and Technical Services</td>
</tr>
<tr>
<td>55</td>
<td>Management of Companies</td>
</tr>
<tr>
<td>56</td>
<td>Administrative, Support and Waste Management</td>
</tr>
<tr>
<td>61 + 62</td>
<td>Education and Healthcare</td>
</tr>
<tr>
<td>71 + 72 + 81 + 92</td>
<td>Entertainment, Recreation and Other Services</td>
</tr>
</tbody>
</table>
XBRL contains a large glossary of standardized tags, and most company filings use these standard tags. But, sometimes a company may not think that a standard tag properly describes one of the company’s particular financial numbers. In cases like this, the company may create what is called an “extension”, which is an ad hoc tag designed to describe the number in question more precisely. It turns out that a metric based on the ratio of unique “extensions” to standardized “tags” used by a company in a given filing is a very accurate measurement of a company’s accounting disclosure complexity. (Hoitash and Hoitash 2015) In the paper cited, Hoitash and Hoitash find that complexity measured in this way is correlated with many adverse outcomes, including financial restatements and internal control issues. Such firms also tend to have lower earnings quality (as measured by discretionary accruals) and higher audit fees, which, as we note elsewhere in this paper, can be associated with an auditor’s perception of higher risk.

Our Accounting Disclosure Complexity measurement primarily follows the methodology developed by Hoitash and Hoitash in “Measuring Accounting Complexity with XBRL” (2015). Based on these considerations, the Accounting Quality + Risk Matrix will flag a company if its accounting disclosure complexity is in the top 5th percentile of its industry grouping, based on NAICS codes.

If complexity is in top 5th percentile of industry/group = Notable

**Altman Z-Score**

The Altman Z-Score is a formula designed to predict bankruptcy. It was originally developed and published in 1968 by Edward Altman, who at the time was a professor at New York University. Since then, it has become a widely-used and trusted measure of financial distress. Consisting of five essential measures of performance, the Z-Score is a robust tool for evaluating a company’s health and performance.

In Altman’s original paper, the Z-Score proved to be 72% accurate in predicting bankruptcy within the prior two years. (Altman 1968) In subsequent tests, the professor found the Z-Score to be between 80%-90% accurate in predicting bankruptcies. (Altman 2000) Further, research by Morgan Stanley indicated that companies with weak Z-Scores were found to underperform the market by about 5 to 6 percent per year over the course of almost two decades. (Mathurin 2009)

Following Altman’s work, we use two different formulas. The Z-Score is used for manufacturing-type companies, and the Z”-Score is used for non-manufacturing companies. Financial companies are excluded entirely from either calculation. Certain conglomerates with large financial units, such as General Electric (GE), are also excluded.

For manufacturing companies, the calculation is as follows:

\[ Z = 1.2A + 1.4B + 3.3C + 0.6D + 1.0E, \text{ where:} \]

- A = Working Capital / Assets
- B = Retained Earnings / Assets
- C = EBIT / Assets
- D = Market Cap / Liabilities
- E = Revenue / Assets

For non-manufacturing companies, the calculation is as follows:

\[ Z'' = 6.56A + 3.26B + 6.72C + 1.05D, \text{ where:} \]

- A = Working Capital / Assets
- B = Retained Earnings / Assets
- C = EBIT / Assets
- D = Market Cap / Liabilities

We flag companies based on the Z and Z” scores using two separate methods. First, if the company falls below the threshold identified as the distress zone, then we will indicate that with a Notable flag. Second, if the Z or Z” score decreases two consecutive years AND falls within the “grey zone”, then that will likewise be indicated by a Notable flag. The second flag is meant to catch cases where the Z-Score is not yet in the distress zone, but the decreasing Z-Score value indicates deteriorating financial health.
Beneish M-Score

The Beneish M-Score is a mathematical formula that is designed to detect earnings manipulation. It was developed by Messod Beneish, a professor of accounting at Indiana University, in the late 1990s, and gained notoriety when a number of MBA students at Cornell used the metric to highlight Enron as a major risk – convincing one of the school’s funds to close its position in the energy giant a year before its bankruptcy. (Morris 2009)

The model comprises eight separate metrics into one comprehensive formula.

\[ M = -4.84 + 0.92\cdot DSRI + 0.528\cdot GMI + 0.404\cdot AQI + 0.892\cdot SGI + 0.115\cdot DEPI – 0.172\cdot SGAI + 4.679\cdot TATA – 0.327\cdot LVGI, \]

where:

- **DSRI** = \( \frac{\text{Accounts Receivable} / \text{Revenue}}{\text{Prior Year(Accounts Receivable) / Revenue}} \)
- **GMI** = \( \frac{\text{Prior Year(Gross Profit) / Revenue}}{\text{(Gross Profit / Revenue)}} \)
- **AQI** = \( \frac{((\text{Assets} – \text{Current Assets}) – \text{PPE}) / \text{Assets}}{\text{Prior Year((Assets – Current Assets) – PPE) / Assets}} \)
- **SGI** = \( \frac{\text{Revenue} / \text{Prior Year(Revenue)}}{\text{PPE}} \)
- **DEPI** = \( \frac{\text{Prior Year(Depreciation / (Depreciation + PPE))}}{\text{(Depreciation / (Depreciation + PPE))}} \)
- **SGAI** = \( \frac{\text{SGA Expense / Revenue}}{\text{Prior Year(SGA Expense / Revenue)}} \)
- **TATA** = \( \frac{\text{Operating Income – Operating Cashflow}}{\text{Assets}} \)
- **LVGI** = \( \frac{(\text{Longterm Debt + Current Liabilities) / Assets}}{\text{Prior Year((Longterm Debt + Current Liabilities) / Assets)}} \)

In his paper, Beneish made the following argument to support the usefulness of this measure. First, “the typical manipulator loses approximately 40% of its market value on a risk-adjusted basis in the quarter containing the discovery of the manipulation. Assuming that, on a similar basis, a typical firm’s equity appreciates between 1% and 2% per quarter, it takes 20 to 40 non-manipulators in the investor’s portfolio to offset a single manipulator in the quarter.” (Beneish 1999)

In other words, dropping one manipulator from an investor’s portfolio can be a big boost to performance.

Indeed, in a follow-up paper, Professor Beneish found that a portfolio constructed using the M-Score earned an annualized risk-adjusted return of 21.6%, 480 basis points higher than a portfolio constructed using a more basic accruals-quality metric. (Beneish and Nichols 2005)

Following Beneish, we will indicate whenever a company’s M-Score exceeds the threshold of -1.78. This indicates that the company has a high probability of manipulating earnings. (Note that, as with the Altman Z-Score, financial companies are excluded from the calculation.)

If \( M > -1.78 \) = Notable
In what has been described as the most significant securities legislation since the 1930s, the Sarbanes-Oxley Act of 2002 (SOX) made drastic changes to the audit and regulatory landscape. Primarily a response to the accounting scandals of the early 2000s, SOX addressed a number of issues that had been plaguing the accounting industry. One of the chief concerns of the Act was the control structure of public companies, especially those controls related to disclosure requirements.

Perhaps the most famous and contentious provision of the act is Section 404 (SOX 404), which concerns Internal Controls over Financial Reporting (ICFRs). SOX 404 requires management, and in certain cases the independent auditor, to assess and report on the effectiveness of the company’s internal control structure, specifically as regards financial reporting. Companies above a certain size (at least $75 million in public float) must obtain an auditor’s attestation to the effectiveness of the company’s internal controls.

The other section of the Act addressing controls, SOX 302, created new corporate duties and filings for public registrants. The CEO and CFO of a registrant, besides providing in each quarterly and annual report certain prescribed certifications, must also disclose a conclusion regarding their evaluations of the registrant’s “Disclosure Controls and Procedures” (DCs). In effect, the CEO and CFO must include in the company’s filing a report in which they declare the disclosure controls to be effective or ineffective, and provide their reasons for this conclusion, where relevant. The SEC has clearly stated that the purview of DCs is broader than that of ICFRs. Disclosure controls consider all of a company’s disclosure requirements; in addition to financial reporting, they cover required event disclosures (such as 8-Ks), ownership transactions, and the like. Section 302 Disclosure Control assessments, unlike Section 404 ICFR assessments, are performed and disclosed quarterly, and are the responsibility of management alone. The auditor does not attest to the effectiveness and design of a company’s disclosure controls.

The following section documents the Accounting Quality + Risk Matrix flags related to a company’s control structure.

**Internal Controls (SOX 404)**

Section 404 entails two separate provisions. 404(a) establishes the responsibility of management to maintain an internal control structure, and, importantly, to assess the effectiveness of the internal control system and disclose the findings of their assessment in their annual financial filing. 404(b) goes even further. It requires an independent auditor to attest to the reliability of corporate financial reporting systems. A requirement for the disclosure of an opinion on financial controls over financial reporting was not a completely new idea; the Foreign Corrupt Practices Act of 1977, for example, included a provision requiring the establishment of a system of internal controls, though disclosure was mostly voluntary.

Although the response to Section 404(b) reports was mixed at first, with much criticism and skepticism, these reports are now beginning to be perceived in a different, more positive light; according to many market observers, investors are finding financial reporting to be more reliable than ever. (Tysiatic 2012)

There is little doubt that the increased focus on internal controls has helped overall financial reporting quality in U.S. markets. What happens, then, when a company has ineffective ICFRs? As one would expect, there is generally a negative market reaction to the disclosure of an adverse SOX 404 opinion. (Zhang and Pany 2008)

But the negative market reaction is not the only negative consequence associated with ineffective internal controls. There are adverse operational consequences linked to SOX 404 deficiencies as well. Numerous studies have found a correlation between ICFR deficiencies and a higher cost of capital. One study notes that “the lender’s assessment of the risk of extending a line of credit and the probability of extending the line of credit are negatively affected when the company receives an adverse internal control opinion.” (Schneider and Church 2008) Another study found that “loan spread is higher for [internal control weakness] firms...by about 37 basis points...after controlling for all other factors that are known to influence loan contract terms.” (Kim, Song and Zhang 2011) Adverse 404 opinions are also correlated with higher CFO and management turnover. (Li, Sun and Ettredge 2010)

*Final Rule 33-8124: “…these procedures are intended to cover a broader range of information than is covered by an issuer’s internal controls related to financial reporting.”*
Overall, ICFR deficiencies are linked with riskier operations, poor performance, weaker management, and lower earnings quality. (Schneider, et al. 2009) Although rare, they represent a critical red flag for any investor.

If auditor or management says not effective = Critical

**Disclosure Controls (SOX 302)**

Disclosure control assessments are made and disclosed quarterly, and are certified by the company’s CEO and CFO. Since SOX 302 assessments are not subject to an independent auditor’s opinion, they can provide insight into not only the company’s control environment, but also into the quality of management. For example, one study found that companies with higher-quality management are more likely to disclose SOX 302 disclosure control deficiencies, and are more likely to classify deficiencies as material weaknesses, compared to companies with lower-quality management. (Stephens 2009)

Despite this interesting finding, the literature also provides ample evidence that adverse 302 disclosures have more negative connotations. Ineffective 302 disclosures are met with negative market reactions. (Hammersley, Myers and Shakespeare 2008) Ashbaugh-Skaife found evidence that companies with ineffective disclosure controls had higher abnormal accruals than companies that did not. (Ashbaugh-Skaife, et al. 2008) In fact, the correlation between ineffective DCs and lower earnings quality is well documented in the literature. (Gong, Ke and Yu 2009)

It is important to note that disclosure controls cover a broader group of processes and procedures than the internal controls of financial reporting addressed in Section 404. Companies are subject to all sorts of reporting requirements beyond just financial reporting, and it is the domain of disclosure controls to ensure – within a reasonable degree of certainty – that these non-financial disclosures are made properly and timely. It is clear, further, that non-financial disclosures are often of significant interest to an investor. In other words, companies with effective and well-designed disclosure controls are likely to make higher quality and more timely disclosures – a very desirable trait for a company, from the investor’s perspective.

Another unique aspect of Section 302 Disclosure Controls: they tend to have more nuance and variation than Section 404 ICFR disclosures. IFCR assessments are either effective or ineffective. Effective assessments are basically boilerplate: there’s not a whole lot of information in them. Ineffective assessments, on the other hand, always note Material Weaknesses. With DCs, the disclosures are not as neatly separated. It is not uncommon for a company to say that it has effective disclosure controls despite also having a material weakness – a logical impossibility, in our view. And not all ineffective disclosure controls necessarily have material weaknesses. Sometimes a company will note a “significant deficiency”, which does not rise to the level of a material weakness. Therefore, we have three levels of severity for red flags related to SOX 302 Disclosure Controls. Those disclosures with Material Weaknesses have a “Critical” flag. Those with ineffective controls in which the deficiencies do not rise to the level of Material Weakness are “Significant”. And those disclosures that are effective, but identify some kind of issue or minor deficiency, merit the “Notable” flag.

If material weakness = Critical
If ineffective and NOT material weakness = Significant
If effective and “other deficiency / disclosure” = Notable

**Late Filings**

Periodic reports are required to be filed within a certain time frame. A 10-K annual report, for example, has to be filed within 90 days of the company’s fiscal year end. 10-Q quarterly reports have to be filed within 45 days of the quarter end.

When a company cannot file a periodic filing by the required deadline, it must submit a Form NT.

Clearly, it doesn’t bode well for a company when it cannot file on time. Late filings suggest problems in a company’s financial reporting process. Perhaps their information systems are inadequate, or perhaps management is disorganized. The accounting literature supports the assertion that stockholders should take notice when a company in their portfolio is unable to meet the reporting deadlines.

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5 For large accelerated filers, the deadline is 60 days after the fiscal year end, and for accelerated filers, the deadline is 75 days.
6 40 days for large accelerated filers and accelerated filers.
One study documents evidence that significant negative consequences are correlated with late filing firms, noting that late filing firms are more likely to de-list. (Pevzner 2006) Another study suggests that stockholders do indeed respond negatively to late filings, especially when accounting problems are the cause of the delay. Negative reactions, this study found, are more pronounced when the NT is filed for a quarterly report. (Bartov, DeFond and Konchitchki 2013)

Our flags for NT filings have three designations of severity. Very late filings indicate severe financial reporting and control issues, and are therefore classified “Critical”. Based on the research that finds evidence that accounting-related delays are especially problematic, NTs that indicate accounting-related issues are also indicated by “Critical” flags. NT filings that do not indicate accounting-related issues are classified “Significant”. We also classify as “Significant” cases where a company has more than one NT filing in a 12 month period. All other instances of NT filings are denoted by a “Notable” flag. As always, the Accounting Quality + Risk Matrix allows users to drill down to our detailed analysis of any NT, to allow further investigation of the issues involved.

Applies only to NT 10-K, NT 10-Q, NT 20-F, NT 40-F
If actual filing date relative to filing date > 4 weeks = Critical
Else if issues (tier 1)7 = Critical
Else if issues (tier 2)8 = Significant
Else if > 1 NT in 12 month period = Significant
Else = Notable

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On March 19, 2013, IXIA (XXIA) filed an NT in which it noted that a material investigation was underway related to revenue recognition accounting issues (marked by the vertical line). This NT anticipated the Item 4.02 Non-Reliance restatement disclosure – and the subsequent price drop – by a full two weeks.

7Tier 1 NT issues: Discrepancies or errors discovered; In negotiations – SEC, regulators, etc.; Inability to pay auditors or dispute; Restate of financials pending; Investigation underway (internal, external or SEC); Internal controls issue; Material weakness issue; Accounting issues

8Tier 2 NT Issues: Consultation/correspondence with SEC about accounting matters; Going concern or financial difficulty
Executive management plays an important role in the Accounting Quality + Risk Matrix. The “tone at the top” is a critical aspect of executive management that has gained steam in recent years. If management gives off even a subtle impression of being unscrupulous, it is suggested that this will “trickle down” throughout the entire organization. The famous report of the National Commission on Fraudulent Reporting, released in 1987, made tone at the top one of its strongest recommendations to improve corporate reporting. (Treadway Commission 1987) The CEO and CFO are critical to a company’s tone at the top.

If further evidence is required that insiders are critical to accounting quality and risk, consider that in 89 percent of fraud cases studied by COSO, the SEC named the CEO and/or CFO for participating in the fraud. (Beasley, et al. 2010) Further, since the passage of Sarbanes-Oxley, the CEO and CFO have been required to personally certify the company’s financial statements.

Given that executive management is directly responsible for the quality of a company’s financial reporting, we have a number of flags related to the activity of these insiders. The following section details the flags in AQRM that deal with Insiders.

**CEO Change**

CEO turnover is frequently linked to poor firm performance in the accounting literature. Perhaps the most infamous case of a CEO departure setting off alarms is that of Jeff Skilling, the notorious CEO of Enron. In a prepared witness testimony given to the House Committee on Energy and Commerce, James Chanos, one of the few analysts to have pegged Enron as a fraud before the fraud was actually revealed, described Skilling’s departure:

> To us, however, the most important story in August 2001 was the abrupt resignation of Enron’s CEO, Jeff Skilling, for “personal reasons.” In our experience, there is no louder alarm bell in a controversial company than the unexplained, sudden departure of a chief executive officer no matter what “official” reason is given. Because we viewed Skilling as the architect of the present Enron, his abrupt departure was the most ominous development yet. Kynikos Associates increased its portfolio’s short position in Enron shares following this disclosure. (Chanos 2003)

The accounting literature supports the idea that shareholders and stakeholders should pay attention when there is a change in CEO. One study notes a positive relationship between CEO turnover and earnings management. (Hazarika, Karpoff and Nahata 2011) Another paper finds that new CEOs manage earnings downward early on in their tenure. (Geertsema, Lont and Lu 2013)

Khurana and Nohria, in an influential paper, found a number of interesting outcomes in a study of CEO turnover from 1980 to 1996. When a CEO that was forced to depart was replaced with an outsider, company performance improved more than 4% for the following three years. On the flip side, when an outsider replaced a retiring CEO, company performance dropped 6%. (Khurana and Nohria 2000) In general, CEO turnover is linked to poor performance, and investors do take note: equity volatility increases following CEO turnover. (Clayton, Hartzell and Rosenberg 2003)

The AQRM assigns severity to CEO changes based on the logic below. CEO departures that indicate issues have a “Critical” flag. More than one change in CEO in a two-year window also warrants a “Critical” flag. All other CEO changes are indicated by a “Notable” flag.

```plaintext
CEO Departure
With issues (to be named) = Critical
Else if > 1 change = Critical
Else = Notable
Exclude interim
```
CFO Change

The CFO may not get as much attention as the CEO, but the CFO has a great deal of influence, especially over the accounting and control structures of a company. In most corporate governance structures, the financial statements are compiled under the direct oversight of the CFO.

Like the CEO, the CFO is also required to certify the financial statements. Section 302 of the Sarbanes-Oxley act requires both the CEO and the CFO to certify that the report does not contain any untrue statement of a material fact or omit to state a material fact; that the report fairly presents in all material respects the financial condition of the company; and that the company has designed such disclosure controls and procedures to ensure that material information is made known to management, among other requirements.

This new reporting requirement for CFOs follows a trend throughout corporate governance: the CFO role is gaining more prominence. A recent survey of Fortune 1000 CFOs found that 81% considered themselves “strategic business partners” with the CEO, and more involved with top-level decisions than ever before. (Dill 2013)

As with the CEO, it is usually considered a red flag when a company’s CFO leaves, especially when the reasons for the departure are unconvincing. A recent study found that firms in which the CFO resigned were more likely to receive a going concern audit opinion than firms in which the CFO did not resign. This correlation was found specifically for the CFO, and was not found for the CEO. (Beams, et al. 2013)

A recent paper studied a decade of top-executive turnover in German companies, between 1999 and 2008. It found that any executive departure had an interdependency effect: routine executive turnover events increased the likelihood of other subsequent changes to executive management. (Hilger, Richter and Schaffer 2011) In other words, CFO turnover is a leading indicator of subsequent changes to executive management, including CEO and board turnover. Therefore, the AQRM app indicates CFO changes using the following logic, which parallels the severity assigned to CEO changes discussed above.

\[
\text{CFO Departure} = \begin{cases} \text{Critical} & \text{With issues (to be named)} \\ \text{Critical} & \text{Else if > 1 change} \\ \text{Notable} & \text{Else} \\ \text{Exclude interim} \end{cases}
\]
The Accounting Quality + Risk Matrix also tracks red flags that pertain to the actions of outside stakeholders. Specifically, AQRM highlights shareholder activism, the actions of regulators and litigation involving the given company. These events can have a significant impact on a company: from legal fees to corporate governance problems. This section outlines the AQRM flags related to stakeholder activity.

**Stakeholders**

The Accounting Quality + Risk Matrix also tracks red flags that pertain to the actions of outside stakeholders. Specifically, AQRM highlights shareholder activism, the actions of regulators and litigation involving the given company. These events can have a significant impact on a company: from legal fees to corporate governance problems. This section outlines the AQRM flags related to stakeholder activity.

**Shareholder Activism**

Shareholder activism is often a contentious topic in both the investment world and within the academic literature. A single activist investor can exert significant – and sometimes unwelcome – influence over a company’s performance. Recently, major institutional investors have been pouring money into activist hedge funds, noticing that activist funds overall have been outperforming the market averages. (Fortune Magazine 2013)

Opinion is mixed on the actual effect of shareholder activism. On one hand, activist investors are seen by some to disrupt a company’s governance. (Consider the example of Bill Ackman at J.C. Penney.) According to a 2005 paper on the subject, “Activist investors [sometimes] pursue agendas not shared by and often in conflict with those of passive investors. Activism by investors undermines the role of the board of directors as a central decision-making body, thereby making corporate governance less effective.” (Bainbridge 2005)

On the other hand, activist investors are sometimes able to induce positive changes in a dysfunctional management team. Another study found interesting evidence in this regard. Based on a large data set over half a decade, the researchers found that activist hedge funds attain success two thirds of the time. Target firms experienced “increases in payout, operating performance, and higher CEO turnover after activism.” (Brav, et al. 2008)

The positive effect of activist hedge funds is further supported in the literature. A recent paper, studying a population of 2,000 shareholder actions over more than a decade found that “activist interventions are followed by improved operating performance during the five-year period following these interventions.” (Bebchuk, Brav and Jiang 2013) Interestingly, the improved performance of these firms may not be all good news, since another paper found evidence that frequent shareholder activity (through proxy proposals) can be correlated with subsequent earnings management. (Hadani, Goranova and Khan 2011) Conversely, the same paper found that shareholder activism on behalf of the largest institutional investors tends to suppress earnings management.

With these trends in mind, we assign different levels of severity to instances of shareholder activism. Instances where the issue relates to a “dispute” between the company and the activist shareholder merit a “Critical” flag. Instances where the dispute relates to “control” are indicated by a “Significant” flag. Cases where the activism indicates a “concern” obtain a “Notable” flag.

If issue is ‘dispute’ = Critical
If issue is ‘control’ = Significant
If issue is ‘concern’ = Notable

**Litigation – Shareholder Actions**

Shareholder litigation cost corporations around $73 billion in settlements between 1997 and 2012. (Parloff 2014) Although one might argue that a large settlement is deserved punishment of a fraudulent or mismanaged company, the unfortunate reality is that the settlement costs are actually borne by the corporation itself; that is, by the company’s own innocent shareholders. Corporate officers and other insiders rarely contribute to the settlements themselves. (Coffee Jr. 2006) Indeed, the plaintiffs, as shareholders in a class action lawsuit against the corporation they own, are essentially suing themselves.

Nevertheless, there is a deterrent factor to consider: the threat of litigation can keep management honest. So the question at hand is what an investor or analyst can expect from a company undergoing class action litigation, and what the market reaction is to such litigation, both in the short term and the long.

*Flags related to SEC Comment Letters, sent as a result of the periodic reviews of company filings, are in the development phase and will be released shortly in an update to the Accounting Quality + Risk Matrix.*
Stakeholders

The literature supports the obvious: there is a significant negative market reaction to shareholder class action lawsuits. (Gande and Lewis 2009) According to one study, a portfolio of sued companies under performed the market for up to 48 months after litigation.10 (Bauer and Braun 2010) The same paper also finds evidence that a class action suit brought by shareholders is a materially adverse event in both the short and long term.

Further, there is evidence in the literature that the negative effects of shareholder class action lawsuits extend beyond stock price movements. One of the potential positive outcomes of a class action suit, for example, is that the company will reform its ways. However, one study of over 800 class action suits found that the sued firms reduced the information content of their public disclosures subsequent to the litigation. (Rogers and Van Buskirk 2009)

Based on these considerations, we indicate a “Critical” flag if there is any open shareholder class action or derivative litigation for the company.

If any open = Critical

Litigation - Intellectual Property

Any kind of litigation is rarely going to be considered a good thing for the defendant company. Legal fees, settlements, and the occasional adverse judgment can all impose significant burdens on a company. Most intellectual property litigation is settled before trial. (Lemley 2001) In the case of intellectual property, a case gone wrong could have an impact on the company’s entire business. And, as the global economy continues to evolve towards more and more advanced technology, it is unlikely that intellectual property litigation will decline or even level off any time soon.

On the other hand, the successful defense of a patent lawsuit can be a boon to a company, and such litigation can have significant implications for stockholders. Consider the following example.

In 2004, TiVo brought a patent infringement lawsuit in the U.S. District Court for the Eastern District of Texas, alleging that EchoStar’s DVR system improperly used TiVo’s patented “time warp” technology. In 2006, the jury ruled in favor of TiVo and awarded TiVo $73,991,964 in damages. Immediately following the verdict, TiVo’s stock jumped more than 10 percent. In January 2008, after the jury’s verdict was upheld on appeal, TiVo’s stock price increased more than 28 percent. Finally, when the appeals court upheld a lower court’s ruling that EchoStar had violated a court order by continuing to sell infringing products, TiVo shares soared nearly 62 percent. (Sunshine 2012)

This anecdote, although just one example, is supported by the literature. One comprehensive study of patent litigation outcomes found that the successful defense of a patent is worth about 1% to 1.5% in excess (positive) returns for the defendant company. (Marco 2005)

So while shareholder class action suits against a company might be more obviously risky to a company, material litigation of any sort is worth further investigation. Therefore, all open cases of intellectual property litigation are also indicated with a “Notable” flag.

If any open = Notable

10Note that this is only the case when the entire corporation is sued, as opposed to selected directors or other insiders.
Litigation - Regulatory

Our last flag related to litigation indicates whether a company has any open regulatory cases. Again, it’s unlikely that any instance of the company being subjected to litigation will have positive results, but this seems especially true when the action is brought by a regulatory entity. It should come as no surprise that such litigation is associated with negative market reactions. In a study of 245 cases related to the stock option backdating scandals, for example, the evidence showed a clear relationship to negative abnormal returns. The negative abnormal returns were significant when brought by the SEC, and were the most severe when action was brought by the Department of Justice. (Jain, Jain and Rezaee 2010)

The Accounting Quality + Risk Matrix indicates whether there is any such litigation open, and provides details about the nature of the case.

If any open = Critical
Auditors are seen as critical to promoting the integrity of the capital markets. (PricewaterhouseCoopers LLP 2013) Since the major securities legislation of the 1930s, auditors have played an integral role in the financial markets. The annual financial statements issued by a company registered with the SEC must generally be accompanied by an auditor’s report, which expresses an opinion as to whether the company’s financial statements are in accordance with generally accepted accounting principles ("GAAP").

The complaint is often made that the auditor’s opinion offers little in the way of hard informational value. But this criticism misses the mark. To get a better idea of the value of the auditor’s report, imagine if an S&P 500 company suddenly refused to be audited. What reliance could an investor place on that company’s financial statements? The opinion might not say much to investors on its own, but the lack of the opinion would speak volumes.

Further, with the audit opinion, it’s not so much what it says as who says it. If another S&P 500 company switched from a Big Four auditing firm to a little-known firm with a single partner and a couple of staff accountants, again: what investor could place reasonable reliance on those financial statements? The switch itself (why to such a small firm?) would be suspicious, and there would be little reason to think a firm of that size would be capable of auditing a multi-national corporation.

The following section describes the flags related to a company’s auditor: who the auditor is and the auditor’s tenure, shareholder ratification, abnormalities in audit fees, and more.

**Auditor**
The Accounting Quality + Risk Matrix will show the auditor of each company in your portfolio. Why is this important? As noted above, the auditor plays a pivotal role in the financial markets. Shareholders and other stakeholders perceive value in the auditor’s report. And one critical factor in assessing the value of the auditor’s report is the reputation of the company’s auditor.

There is no question that some auditing firms are more “valued” than others, and big, multinational companies are generally expected to be audited by one of the Big Four. Smaller firms are unlikely to have the resources to efficiently audit the financial statements of a global entity. And the Big Four firms are assumed to have higher reputational risk, which encourages higher quality audits. (DeAngelo 1981) Research from the accounting literature tends to support this claim. Krishnan, for example, found that the use of a Big 6 auditor was correlated with higher accounting quality as measured by discretionary accruals (Krishnan 2003), a finding that has been supported recently as well. (Dechow, Ge and Schrand 2010)

In fiscal 2012, all but one of the S&P 500 were audited by one of the Big Four accounting firms. In a group of companies, all other things being equal, if one company uses a small local firm to perform the audit, and the rest use the Big Four, this would be a clear red flag. Further, 98% of the Russell 1000 were audited by a Big Four firm in the last year, and all but one of the remaining companies were audited by a Global Six firm (Big Four plus BDO and Grant Thornton). Of the entire Russell 1000, only one company was audited by a relatively small regional firm.

**Auditor Since**
Auditor tenure is a hotly contested topic in the industry. Many think that auditor tenure could potentially impair independence (Turner, Mock and Manry 2008), especially when the auditor is receiving substantial audit fees from the company. (Gunny, Krishnan and Zhang 2007) On the other hand, many studies in the accounting literature have found a positive association between investor perceptions of earnings quality and auditor tenure. (Jackson, Moldrich and Roebuck 2008) Indeed, a recent study suggests that frequent auditor rotation would generate more opportunities for courtship and potentially weaken auditor independence. (Fiolleau, et al. 2013)

The AQRM portfolio view shows the tenure of the company’s auditor, which is information that is not readily available from a company’s SEC filings.\(^\text{13}\)

\[\text{11}\text{For most of the twentieth century there were the Big Eight. Mergers whittled them down to the Big Five by the end of the 1990s, and then the dissolution of Arthur Andersen in the early 2000s settled the Big Four of Deloitte, PricewaterhouseCoopers, Ernst & Young, and KPMG.}\]
\[\text{12}\text{Based on an analysis of the Audit Analytics Audit Opinions database, as of February 2014.}\]
\[\text{13}\text{The PCAOB has recently proposed that auditors be required to disclose tenure information – further evidence that this is an important piece of information.}\]
Auditor Ratification – Significant Vote Against
This flag indicates whether the company’s shareholders have recently voted in significant numbers against the ratification of the company’s auditor.

Auditor Ratification has been linked to investors’ perceptions of audit quality. (Liu, Raghunandan and Rama 2009) One study found that shareholder votes against ratification are positively correlated with auditor tenure, implying that shareholders are skeptical of long tenure.14 (Dao, Mishra and Raghunandan 2008) Another study found evidence of better accounting quality in companies that do put their auditors up to shareholder ratification compared to those that do not. In particular, the study noted that companies whose shareholders ratify their auditors are less likely to have restatements and tend to have lower abnormal accruals. (Dao, Raghunandan and Rama 2012)

Based on our own historical analysis, we found that only in rare instances are a significant number of votes cast against ratifying the auditor. About 90% of the time, the total number of votes cast against ratifying the auditor amounted to 3% or less of the total vote (i.e., in about 90% of cases, the auditor gets close to 97% approval). On the flip side, then, in only about 10% of cases are more than 3% of shareholder votes cast against ratification. (Audit Analytics 2013)

Based on this analysis, an investor should take note whenever shareholders vote against auditor ratification at a rate of greater than 3%, since that will capture the “worst” decile.

To add further gradations of severity to these auditor ratification flags, we continued the frequency distribution analysis. The “worst” decile is broken down into three levels, corresponding to the “Notable”, “Significant”, and “Critical” flags. The “worst” 2% of all auditor ratification proposals have votes against totaling more than 10% of the total vote. These are “Critical” cases. The rest of the auditor ratification red flags are broken down as follows:

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Flag</th>
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<tbody>
<tr>
<td>5% vote against</td>
<td>Notable</td>
</tr>
<tr>
<td>50% vote against</td>
<td>Significant</td>
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</tbody>
</table>

Auditor Change
As noted above, it is important to know who is auditing the company you are considering investing in. In most cases, however, simply knowing who the auditor is won’t be very informative – unless a major multi-national is using some small local accounting office. (Madoff’s investment practice, for example, was audited by an accounting firm consisting of just one employee: an obvious “Critical” red flag.)

But when a company switches auditors, this can sometimes be a risk indicator. Usually, a company switches auditors for fairly mundane reasons: a fee can’t be agreed upon, a relationship develops with another firm, etc. Nevertheless, it is important to know that a company switched auditors. Any time a new auditor comes in, there is the risk of at least two significant negative outcomes: first, the new auditors may uncover an issue that leads to a restatement; second, the new auditors, due to lack of familiarity with the client, may fail to give proper attention to key risks, which could allow mistakes to go uncorrected, leading to material problems in the future. So we highlight any auditor changes that a company may have had in the past two years.

Now, there are other instances in which an auditor change could indicate a more severe risk. In certain rare instances, the auditor and client part ways due to a dispute, typically regarding an accounting matter. In these cases, the auditor is obliged to report the issues constituting the disagreement. We highlight such instances with a Critical flag.

Another issue that indicates a potential Critical risk would be if a company were to change its auditors more than once in a two-year span. To us, this could only signify that a company was trying – and failing – to unduly influence the auditor’s opinion, or that the departing auditors were unwilling to express an unqualified opinion on the company’s financial statements. The multiple auditor switches in a relatively brief time period is a definite risk indicator.

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14Interestingly, shareholders’ perception in this case seems to go against the objective evidence; many studies have found a positive correlation between auditor tenure and accounting quality.
A recent study sponsored by COSO discovered a significant correlation between fraud firms and auditor changes, noting that “Twenty-six percent of the fraud firms changed auditors between the last clean financial statements and the last fraudulent financial statements, whereas only 12 percent of no-fraud firms switched auditors during that same time. Sixty percent of the fraud firms that changed auditors did so during the fraud period, while the remaining 40 percent changed in the fiscal period just before the fraud began.” (Beasley, et al. 2010)

With these factors in mind, the AQRM assigns severity to auditor changes using the logic below. Any auditor change that is accompanied by issues surrounding the departure is “Critical”. In the extremely rare (and obviously troublesome) case of a company changing its auditor more than once in a two-year window, a “Critical” flag is also indicated. Any other kind of auditor change is classified as “Significant”.

<table>
<thead>
<tr>
<th>Auditor change with issues</th>
<th>= Critical</th>
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<tbody>
<tr>
<td>More than one change (last two years)</td>
<td>= Critical</td>
</tr>
<tr>
<td>One change without issue</td>
<td>= Significant</td>
</tr>
</tbody>
</table>

**Audit Fees – Significant Change**

There are a number of studies in the accounting literature suggesting that audit fees can be used as a potential risk indicator. One of the most infamous examples of this arose from the first year that of audit fees disclosure. In 2000, Enron disclosed the third highest audit fees of any US public company, behind only Citigroup and Waste Management. Both of these two companies at the top were coming off significant financial issues, which required unusually high auditor attention. Enron's audit fees also exceeded both those of GM and GE, a seemingly impossible circumstance considering the size and complexity of the latter two. Later, in court filings, it was revealed that Arthur Andersen, Enron's auditor, noted in internal memoranda that Enron was their riskiest client and that some of their accounting was troubling. Andersen could have resigned from the job, but the high audit fees compensated for the risk. This suggest two things: that auditors price client risk into the audit fees, and that abnormally high audit fees can potentially lead to problems with the audit.

With respect to academic studies, one study found a significant inverse relationship between audit fees and “one-year-ahead” changes in the client's operating performance. (J. Stanley 2011) This implies that high abnormal fees could indicate future operating risk. Adverse financial performance also increases the risk of financial reporting issues, since management has a strong incentive to use accounting methods to improve reported results. Research has argued that auditors perceive this risk, and therefore incorporate a premium into their audit fees. (Koh and Tong 2013) In other words, high audit fees are definite risk indicators. This is especially the case when audit fees are unusually large in a given year. (Coulton, et al. 2014)

On the other hand, abnormally low audit fees also present a risk. In the year prior to its implosion, for example, Fannie Mae (FNMA) disclosed audit fees that were about one tenth the fees of its peers. Perhaps the low fees were reflected in the amount of time and detail the auditors were able to spend examining the company’s books.

There are different reasons why unusually low audit fees can pose problems. Since it is easier for a company to change auditors than it is for an auditor to develop new business, an auditor has at least some incentive to avoid confronting the client, lest the auditor lose the engagement. Clearly, this conflict of interest in itself could have an effect on the audit quality. But beyond the inherent conflicts of interest all auditors inevitably face, low audit fees pose unique difficulties.

A recent study found that “audit quality declines in the presence of extended periods of reduced audit fees...” (Christensen, et al. 2013) If the auditor is not being properly paid for the work performed, it is reasonable to question whether the quality of the audit will be affected. To compensate for the lower fees, an auditor might reduce the work-hours associated with the job. Audit quality models suggest that this is the case. (Wooten 2003) A chairman of the PCAOB recently expressed concern regarding this very risk. Citing research that most auditor changes are accompanied with significantly lower new audit fees, the chairman wondered what might explain the decrease in fees. Did the new auditor reduce the scope of the audit? Did it cut hours? “Whatever the answers are in particular cases,” he said, “the emerging reality for all of us is the need to understand the effect of these trends and pressures on audit quality.” (Doty 2014)
This flag indicates significant changes in audit fees, after controlling for certain innocuous events that might affect audit fees (e.g., acquisitions, IPOs, etc.). The flag considers the absolute value of the fees as well as the ratio of fees to revenue. Both metrics must have significant changes in order to trigger a flag. Why could changes in audit fees indicate risk? Significant unexplained increases could indicate that the auditor had to spend more time auditing a specific complicated or risky area. Another explanation from the literature is that the auditor adjusts fees in order to compensate for a potential legal and reputational risk.

The significant change in audit fees flag is assigned a “Notable” level of severity in all instances, but the triggers for this flag depend on company size and other exclusionary factors. Larger companies tend to have less volatile audit fees, so large accelerated filers have a smaller threshold to trigger this flag: increases or decreases of 20% or more. On the other hand, smaller companies typically have more volatile fees, so the threshold is higher for accelerated and non-accelerated filers: 25% and 30%, respectively.

We also include some nuances to reduce false positives. Companies with a large acquisition, for example, can reasonably be expected to face higher audit fees. (Purchase accounting can be a very laborious process.) Companies that have recently gone public and those that have had a recent auditor change are also excluded.

If large accelerated filer, any change > +/- 20% = Notable
Else if accelerated filer, any change > +/- 25% = Notable
Else non-accelerated filer, any change > +/- 30% = Notable

Exclusion logic:
Exclude any that had acquisition in previous 2 years where value of acquisition > 20% of company's market cap.
Exclude any that had IPO in previous 2 years.
Exclude any that had an auditor change in previous 2 years.

**Audit Opinion – Going Concern**

As part of the auditor’s procedures surrounding a company’s financial statements, the auditor is required to assess the company’s ability to continue as a going concern. That is, considering the financial position of the company – especially its current assets and liabilities – the auditor must come to a conclusion as to whether there is any significant doubt about the company’s ability to continue operating. Usually, in practice if not formally, the assessment considers a twelve-month window or the business cycle of the entity.

A recent working paper notes that a going concern qualification results in “decreases in ownerships of blockholders and institutional investors. In addition, the presence of these opinions decreases CEO compensation and increases subsequent turnovers of top managers and auditors.” (Francis, et al. 2013) Other findings in the same paper suggest that “going-concern opinions might be useful for outside stakeholders to predict future organizational changes within companies.”

Clearly, if the auditor has indicated a significant doubt about the company’s ability to continue as a going concern, this is considered a Critical risk indicator.

If any = Critical
Time: within last 2 years
To find the Accounting Quality + Risk Matrix on the Bloomberg Terminal, use the command APPS AQRM <GO>. Click to run the app. (A 30-day free trial is offered. It expires automatically without cost and no legal paperwork.)

To begin, use the search box to enter a company ticker or a Bloomberg Portfolio ID. (See Appendix 2 for instructions to obtain a portfolio ID.)

Flags related to the company or the portfolio selected will display in a matrix. The results of the matrix can be downloaded into Excel by clicking on the download button.

Click on a flag to drill down to detailed data surrounding the potential issue.

Click on the company name to bring up the Company View.
Appendix 1: AQRM Tutorial

Company View
The Company View presents a 5 year history of a given company’s matrix. Click the chart symbol to see the company’s stock chart with the flags overlaid.

Event Flags
Different flags are used to show the potential severity of each event.

- Notable
- Significant
- Critical

The triggering events for each flag are detailed carefully in the AQRM user’s manual.

The different flags indicate Notable, Significant, and Critical issues, based on the reasons explained in the Events section above.

Event Flags
Clicking on an event flag gives you details about that event.

Clicking on any flag will bring up the detailed information on the flag, based on our proprietary analysis.

Stock Chart Overlay
Event flags are overlaid on a stock chart of the company, for easy correlation between flags and overall company performance.

Click on the chart icon to bring up the company’s stock chart with the events overlaid.

Click on each event flag to mark the flag, see the flag type, or go to the flag details screen.
Appendix 2: Finding Your Portfolio ID

You can use the Accounting Quality + Risk Matrix app to screen either a single ticker or your entire portfolio. To find your Bloomberg Portfolio ID, follow these simple instructions.

- Enter “PRTU” in the command box to bring up your PRTU window.
- In the terminal, select the portfolio you would like to screen using AQRM, in this case “software”.

- Copy the portfolio ID from the top right.
- Right-click and select copy.


References


References


