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Insights into the SEC's Accounting Quality Model

An Interview with Craig M. Lewis

By Douglas M. Boyle, James F. Boyle, and Brian W. Carpenter

In Brief

The SEC's most notable initiative in applying technology to solve the problem of detecting fraud has been its accounting quality model (AQM). The program's goal is to efficiently identify companies that represent a high risk for fraud as well as the potentially fraudulent items in their reporting. The AQM was spearheaded by Craig M. Lewis, former director and chief economist of the SEC's Division of Economic and Risk Analysis. This article introduces the AQM and features an interview with Lewis himself, in which he discusses the project's merits, its limitations, and its common criticisms, as well as touching upon the SEC's broader role in finding fraud.

The SEC's new state-of-the-art accounting quality model (AQM) has been initiating "a new era for the detection of accounting fraud and improper disclosures" (Douglas M. Boyle, James F. Boyle, and Brian W. Carpenter, "The SEC's Renewed Focus on Accounting Fraud," *The CPA Journal*, February 2014, p. 68). The AQM accesses public company financial reports filed with the SEC, measures how the company's discretionary (abnormal) accruals differ from a peer benchmark, and iden-

smooth income and therefore, manage earnings. Thus, bringing it back to accounting quality models, in a nutshell, outlier discretionary accruals can be a powerful indicator of attempts to manage earnings. The trick is to identify those outliers ("Risk Modeling at the SEC," Craig M. Lewis, speech to Financial Executives International's committee on finance and information technology, Dec. 13, 2012).

To help identify those outliers, the AQM model incorporates factors that fraud studies

and Not Enough Analysis," June 2014, pp. 14-15, and accompanying responses by the authors and editors).

The authors endeavored to continue this discussion with Lewis himself. In the resulting interview below, he concurs that the AQM cannot be a substitute for "nuts-and-bolts auditing," and offers insights on how the AQM works that can help guide public company auditors, audit committee members, and financial managers.

An Interview with Craig M. Lewis

Douglas M. Boyle, James F. Boyle, and Brian W. Carpenter for The CPA Journal: Please tell readers about your background.

Craig M. Lewis: I began my career as an auditor at Arthur Young and Company, before completing a PhD in finance at the University of Wisconsin–Madison, taking a tenure-track position at Vanderbilt University's Owen Graduate School of Management, where I have been on the faculty for 28 years.

My research interests have long included corporate financial policy and asset pricing. Most recently, I have employed textual analysis of qualitative factors in corporate disclosures to detect potential accounting fraud. My earlier work included topics such as convertible debt financing, corporate capital formation, forecasting stock market volatility, and herding by equity analysts. I have received the James A. Webb Award for Excellence in Teaching, the Outstanding EMBA Professor, and the Dean's Award for Teaching Excellence.

CPAJ: How did you become involved with the SEC and what were your responsibilities there?

Lewis: In May 2011, after I had spent a year and a half as an economic fellow at the SEC, SEC Chair Mary Schapiro named me chief economist and director of the SEC's Division of Economic and Risk Analysis. During my three years in that role, I led efforts to bolster the role of economic analysis in the financial regulatory process, particularly with implementation of the landmark Dodd-Frank financial reform law. I returned to Vanderbilt in 2014.

My responsibilities at the SEC can be broken down along two principal lines of business. The first was to support SEC rule making by conducting rigorous economic analysis; the second was to

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tifies potential accounting irregularities, in order to understand and investigate the risk factors of aggressive earnings management practices. Still, some observers are concerned that the AQM may be used as a substitute for proper audit fieldwork, or that flagging more irregularities may unduly influence financial reporting decisions.

How the AQM Works

The AQM's goal is to provide the SEC with an efficient, focused tool to combat public company accounting fraud by identifying companies that represent a high fraud risk, as well as the high fraud risk reporting areas within their financial statements. The AQM facilitates this process by accessing the SEC's XBRL database of public company financial reporting filings, and quickly comparing a company's financial data to that of peer registered companies.

The AQM utilizes concepts from the accounting literature such as the Jones Model, which measures the extent to which a public company's discretionary accruals differ from a group of peer-industry registered companies. Craig M. Lewis, pioneer of the AQM, describes such accruals as follows:

Discretionary accruals, however, may be subjective and require the preparer to exercise considerable accounting judgment. As is generally recognized, this influence over the potential accrual values can allow for opportunities to, for example,

have shown to be associated with potential fraudulent financial reporting. These factors improve the model's ability to examine XBRL filings and to detect anomalous measures that may be associated with fraudulent transactions.

Questions on the Use of the AQM

The AQM's introduction raised some concerns regarding the appropriate use of such technology: Some fear that the model may be used as a substitute for rigorous audit fieldwork, and others fear that the electronic flagging of irregularities may unduly influence a corporation's financial reporting decisions in order to avoid being flagged. In response to a *CPA Journal* article on the introduction of the AQM (Boyle et al, 2014), former *CPA Journal* editor-in-chief Maria L. Murphy acknowledged that "there is definitely a debate about whether economic modeling and surveillance tools to detect earnings management, such as the AQM, are the right way to address these issues." The original article, along with Murphy's editorial response, prompted additional discussion over the appropriate use of the model in a later issue of *The CPA Journal* about the SEC's goals in using the AQM, whether as a crutch to avoid audit fieldwork or a proper and targeted precaution against fraudulent reporting. (See Joseph V. Bencivenga, "Too Much Data

engage in risk assessment that is driven by sophisticated data analytics and develop the division's capabilities to support these initiatives with the appropriate infrastructure.

IOSCO [the International Organization of Securities Commissions] is a global organization that brings security market regulators together with the intention of developing coordinated regulatory approaches that work together. Accepting a leadership role on IOSCO's Committee on Emerging Risks [CER] allowed me to work on a number of projects designed to identify key risk areas for financial regulators. The CER comprised economists from other security market regulators, many of whom also were chief economists at their respective organizations.

CPAJ: *Could you describe the genesis/history of the AQM model?*

Lewis: Let me refer you to a speech I gave

Inspections, and Examinations (OCIE), developed an analytical model that uses performance data to identify hedge fund advisers worthy of further review by either OCIE or the Asset Management Unit. ...

A number of successful cases have been brought based on our work, and I believe that this project successfully demonstrates the value of the coordinated application of analytics across divisions and offices.

This success has only fed our ambition for what we can do with sophisticated data-driven monitoring programs. ... We are particularly excited about what we call an "Accounting Quality Model" (AQM). This model is being designed to provide a set of quantitative analytics that could be used across the SEC to assess the degree to which registrants' financial statements appear anomalous. ...

[A]t the highest level of generality, it is a model that allows us to discern whether a registrant's financial statements stick out

2) Which factors would be indicative of possible earnings management? and 3) What can we learn from past accounting scandals and the academic financial accounting literature?

Authors' Note: *In his aforementioned speech to the FEI, Lewis addressed in general terms the factors considered in the AQM as follows:*

Our [AQM] extends the traditional approach by allowing discretionary accrual factors to be a part of the estimation. Specifically, we take filings information across all registrants and estimate total accruals as a function of a large set of factors that are proxies for discretionary and non-discretionary components. Further, we decompose the discretionary component into factors that fall into one of two groups: factors that indicate earnings management or factors that induce earnings management. Discretionary accruals are calculated from the model estimates and then used to screen firms that appear to be managing earnings most aggressively. ... Our approach necessitates the classification of factors into those that explain either discretionary accruals or non-discretionary accruals. The classification process should be informed by staff experience, intellectual capital, and the substantial accounting literature related to earnings quality and discretionary accruals. As I described above, by integrating actual staff experiences and knowledge into the model, we have a powerful method for identifying those factors that can indicate outliers.

So, the obvious question is, then, what are some of the factors that we take into account when trying to identify outlier discretionary accruals? We can characterize discretionary accruals as different types of risk indicators and risk inducers. Risk indicators are factors that are directly associated with earnings management while risk inducers are factors that are associated with strong firm incentives to manage earnings.

In our model, for example, the choice of accounting policy and firm interactions with independent auditors may be indicative of specific types of earnings management. An accounting policy that could be considered a risk indicator (and con-

If filers are no longer able to pursue the types of earnings management strategies that the model is good at identifying, financial statements will be more transparent and performance more comparable.

on this subject to the Financial Executives International's (FEI) committee on finance and information technology:

We are particularly focused on developing cutting-edge ways to integrate data analysis into risk monitoring. To that end, I created RSFI's [Division of Risk, Strategy and Financial Innovation, the former name of the Division of Economic and Risk Analysis] Office of Quantitative Research (OQR), which develops custom analytics intended to inform monitoring programs across the SEC. The best way to illustrate OQR's role at the Commission is by a concrete example. Recently, OQR staff developed a model used by the Division of Enforcement's Asset Management Unit. For that project, OQR, together with the Office of Compliance,

from the pack, while taking into account the contemporaneous attributes of that pack. The goal is to facilitate comparison across firms within their industry while accounting for and illustrating industry differences as well (Craig M. Lewis, "Risk Modeling at the SEC: The Accounting Quality Model," Dec. 13, 2012, http://www.sec.gov/News/Speech/Detail/Speech/1365171491988#V12s6THF_Kh).

CPAJ: *Could you please discuss the factors that the AQM considers in identifying potential reporting quality?*

Lewis: Other than those that I discussed in my speech, I do not feel comfortable discussing specific factors. The best way to intuitively motivate factor selection is to ask three questions: 1) Which quantitative factors could induce earnings management?

sistently measured) would be an accounting policy that results in relatively high reported book earnings, even though firms simultaneously select alternative tax treatments that minimize taxable income. Another accounting policy risk indicator might be a high proportion of transactions structured as “off-balance sheet.” Although the vast majority of firms use off-balance sheet financing for legitimate business purposes, many of the largest accounting scandals used off-balance sheet activities to hide poor financial performance. In both instances, the metrics associated with accounting policies can be consistently estimated from filings data

The AQM cannot be a substitute for “nuts-and-bolts” auditing. It is a tool that identifies areas that warrant further consideration.

and compared to peers. Another risk indicator could be the frequency and types of conflicts with independent auditors, as measured by changes in auditors or delays in the release of financial statements or earnings. Again, these risk indicators could be consistently estimated from filings data and compared to peers.

On the other hand, risk inducers are designed to capture managerial incentives to mask poor absolute or relative performance. For example, a firm may be losing market share or it may be less profitable than its competitors. A firm experiencing performance problems, particularly those it considers transient, may induce a response that inflates current earnings numbers in exchange for lower future earnings.

The factor-based approach is a flexible modeling framework that easily accommodates new modeling factors as we add and delete proxies for potential earnings management. The additional flexibility lets us efficiently respond to model feedback and customize the model to suit different missions within the Commission while allowing for sensitivity to the nuances of those differing goals (Lewis 2012).

CPAJ: *Could you describe the high-level*

process from the point in time when a filer submits information to the SEC? What can filers expect?

Lewis: The model is still in a prototype form. The idea is to take the XBRL filing and add it to our structured database of XBRL filings. At that time, anyone with access to the system will be able to use a screening tool that can report key financial metrics and risk scores. The reports can include similar benchmarks for different sets of industry peer groups.

CPAJ: *Could you update us on how the implementation of the AQM is going? What progress has been made? What are the next steps?*

Lewis: There have been both significant challenges and significant progress in bringing the model from the idea phase to a tool that can be used by SEC staff. One of the big lessons learned in the modeling exercise was that a tool would only be used if the results are presented in a user-friendly way. For example, the type of results reporting that financial economists consider to be standard is viewed by non-statisticians as arcane. Although it seems obvious with hindsight, our biggest breakthrough was when we developed an Excel-based interface, because then we had a software tool that the staff was very comfortable using.

CPAJ: *Do you believe that the learning curve with XBRL will initially cause a lot of false positives? If so, how can this issue be dealt with?*

Lewis: I do not know that XBRL per se will be responsible for false positives. If you are making a broader point about XBRL data quality, then to the extent that there are reporting errors, it could lead the AQM to identify an outlier. This would not be a bad outcome for the model, because filers have an obligation to report correct amounts. To the extent that the AQM “mistakenly” identifies reporting errors due to sloppy XBRL submissions, it will have the tangible benefit of cleaning

this data, which should then make it more useful to investors.

CPAJ: *Are you concerned that filers will try to avoid detection by learning which outliers the program will look for? If so, how do you plan to overcome such learned behavior?*

Lewis: I am not troubled by this. In fact, it is exactly the trajectory I would like to see. My reasoning is simple: If filers are no longer able to pursue the types of earnings management strategies that the model is good at identifying, financial statements will be more transparent and performance more comparable. Hence, I gave it the name “Accounting Quality Model” rather than “Accounting Fraud Model.” By eliminating the simple strategies, filers must turn to increasingly more difficult strategies that, in theory, should be easier to detect. Although the SEC may think of the factors as their “secret sauce,” my reasoning presents a compelling case for making most of the factors public.

CPAJ: *What are the key factors that corporate boards and those individuals responsible for governance oversight should consider in regards to the AQM?*

Lewis: There is a significant amount of discussion about the model and the basic estimation approach has been made public. If I served on an audit committee for a board of directors, I would try and find a private sector analog to the model and see what accounting anomalies can be identified that may be important. It wouldn’t completely replicate the SEC’s model, but I would bet that it would get fairly close.

CPAJ: *Subsequent to the CPA Journal article, “The SEC’s Renewed Focus on Accounting Fraud,” (Boyle et al., 2014) the authors received a follow-up request from the editor to respond to a letter from a CPA. The comment from this reader was that the AQM should not replace “nuts-and-bolts” auditing and that the AQM should not be used a merely a costly “hunt for anomalies” resulting in potential information overload. The Journal’s editor-in-chief had voiced similar concerns about there being “too much data and not enough analysis.” What are your views concerning these concerns?*

Lewis: I completely agree with the view that the AQM cannot be a substitute for “nuts-and-bolts” auditing. It is simply a tool

that identifies areas that warrant further consideration. There are many valid reasons to explain why a firm stands out from its peers. If the AQM does identify an outlier, I would argue that this is an area that merits additional discussion in the financial statements.

An analytic model is hardly a costly approach. Once developed, the AQM would be very inexpensive to implement. I am not sure what critics mean by "information overload." I assume that anyone that is involved in the production of financial statements has a basic understanding of financial metrics and what an anomalous metric might imply.

CPAJ: What other insights would you like to provide?

Lewis: I am excited about the possibility of incorporating factors based on text analytics into the model. Text analytic techniques allow the identification of verbal topics that may be overly discussed, or not discussed enough. This allows one to extend the modeling framework to also "examine" the qualitative discussions of firms' financial performance. My paper with Jerry Hoberg shows that firms that were convicted of accounting fraud by the SEC have different vocabularies than nonfraud firms.

Implications for Public Company Auditors, Audit Committees, and Management

In view of Lewis's insights and comments on the SEC's AQM initiative, the authors suggest several actions that may be taken by auditors, audit committees, and management of public companies.

First, the authors would like to reiterate some of the advice originally provided in "The SEC's Renewed Focus on Accounting Fraud" (Boyle et al., 2014):

■ Individuals responsible for corporate governance should be proactive in attempting to identify potential outlier discretionary accruals for investigation and further scrutiny.

■ It is important for auditors to understand and potentially test outlier discretionary accruals for both understatement and overstatement of earnings, because either condition may be detected as an indicator of potential earnings management and flagged by the AQM for further examination.

■ The consideration of risk indicators and risk inducers should be included as an ele-

ment of a public company's corporate governance process and discussed during the external auditor's planning session as part of its consideration of fraud risk factors, as required under SAS 99, *Consideration of Fraud in a Financial Statement Audit*.

■ Once potential discretionary accrual outliers, risk indicators, and risk factors have been identified, public company directors, audit committee members, and auditors should analyze the underlying reasons for the findings.

Second, public companies should seek to avoid "sloppy XBRL submissions," which Lewis indicated could result in the AQM mistakenly identifying false reporting errors. Third, Lewis advised audit committee members to "find a private sector analog to the (AQM) model and see what accounting anomalies can be identified that may be important." Fourth, Lewis indicated that if the AQM or a private sector analog does identify an outlier, that area would merit addi-

tional discussion in the financial statements. Finally, public companies should be aware that certain language is associated with a fraud company, and that such "text analytic techniques" may be the next set of factors incorporated into the SEC's AQM. □

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The authors would like to thank Craig M. Lewis for his willingness to inform the public through this and other avenues, and hope that the implementation of the AQM will achieve the SEC's stated goals without eliciting the negative consequences feared by some.

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