



FRAUD FIRE COMMITTEE COLUMN

The Fraud Fire Committee is chaired by IAAI Past President Bob Kramer. It is the goal of this committee to disseminate financial investigative techniques and methodologies that can be used to investigate, document and prosecute arson-for-profit crimes, and to deny payment of the related fraudulent insurance claims. Any member who has information to share (or ideas about a possible future column) is asked to contact Mr. Kramer at (513) 684-6439. Chad E. Thompson, CPA, CFE contributed this issue's article.

Burned Out-of-Sight Inventory May Hold Clues to Financial Motive

Sometimes, there are various financial incentives for a business owner or manager to commit arson at the business facility. Financial motive to commit arson can include the desire to liquidate excess or obsolete inventory, the desire to escape debt, or the desire to promptly stop an unprofitable venture. In the case of arson-for-profit, inventory is often times an integral piece of the financial motive puzzle.

The importance of inventory stems from the fact that its manipulation has a direct impact on the recovery sought from the suspect, as well as a favorable impact on the financial statements of the business. The suspect may be overstating the inventory reportedly on-hand at the time of the fire to increase the recovery from insurance or other parties. Also, an overstatement of inventory results in an equal overstatement of the company's bottom line profit. Therefore, inventory may be intentionally overstated to make pre-fire operating results appear positive. In this case, the suspect may be hoping to divert the examiner's attention away from motive by making it seem unlikely that the owner/manager would willingly set fire to a *profitable* business.

Opportunity to Overstate Inventory

Inventory can be overstated with respect to quantities, values, or both. Detecting an overstatement in values is relatively simple because prices are set within a narrow range by the overall market, and can be corroborated by interviewing the suspect's vendors or personnel from businesses similar to the suspect's. Therefore, the most prevalent means of overstating inventory is to manipulate the quantities on-hand at the time of the fire.

Perhaps the best procedure an examiner can employ to detect an overstatement of inventory quantities is to physically observe the damaged inventory. In some cases, inventory is burned to a point at which it is still identifiable. Here, the examiner simply needs to compare the remnants of the identifiable inventory to what the suspect is claiming was on-hand.

However, consider a fire that consumed an inventory of pillows, grain, clothing or other highly flammable goods. In this case, the inventory is reduced to a pile of ash, and therefore cannot be corroborated through observation. Accordingly, the *opportunity* to overstate inventory quantities is greatest when the inventory is burned out-of-sight. To detect an overstatement, the examiner needs to employ analytical review procedures. These procedures include the following:

- Consideration of the Nature of the Business
- Comparative Ratio Analysis
- Cash Flow Analysis
- Inventory Transition

In the case of suspected arson, the examiner should ideally employ all of the foregoing procedures. However, circumstances of the particular investigation and the availability of records will dictate which can be performed. In all cases, however, the nature of the business should be considered.

The Nature of the Business

Diving right into a numbers analysis can make the examiner fall victim to myopic vision and therefore potentially miss the big picture and possibly the real answer. Accordingly, the examiner should first consider the nature of the suspect's business and develop certain expectations with respect to inventory. For instance, considerations can include, but are not limited to, the following:

- Is this a business that should maintain an extensive inventory?
- How important is inventory to this business?
- Does this business sell items that are rapidly changed by technology?

Generally speaking, there are two extreme variations of profit making. These include the high turnover model and high margin model. In the case of a high turnover business, profit is generated by making a small profit on each of a very large number of transactions. An example is a grocery store. High turnover businesses generally need an extensive inventory and must have a capital structure to support an extensive inventory. The capital structure of a high turnover business usually includes significant equity contributions or long-term debt equal to its optimal inventory balance.

A high margin business does not have a high volume of sales transactions. Instead, the business realizes a substantial profit on each sale. Because products are not sold often, it is imprudent to hold a large volume of such products in inventory. In fact, limited inventory may only be held for demonstration purposes while actual sales are satisfied by ordering inventory. Therefore, the examiner should first consider whether the suspect's business is a high turnover or a high margin business, or somewhere in the middle.

Also consider whether inventory is an important component of the suspect's business model. For instance, inventory is of paramount importance to a retailer. But consider an automotive repair shop. The repair shop's revenue is primarily generated through labor, and expensive parts are purchased on an as-needed basis. Therefore, one would not expect a significant amount of inventory to be on-hand.

Consider a business that maintains an inventory of products which face rapid technological changes. In this case, holding an extensive amount of inventory is inherently risky. If inventory cannot be sold in a timely manner, the business will have to discount such items to generate cash. The discount may result in a selling price below what the business paid for the item. In addition, the inventory may become obsolete and unable to be sold at any meaningful price. Therefore, a business that sells from an inventory of rapidly changing products should not have a significant inventory relative to sales. The author has been involved in cases where the desire to liquidate obsolete inventory was the primary financial motive to commit arson.

Obtaining industry financial statistics will help the examiner understand the nature of the suspect's business and also help in developing expectations with regard to inventory. One can obtain industry statistics from a variety of sources. Bizstats is a good starting point and is free of charge. This site includes information such as inventory turnover, inventory per square foot, and the relative size of inventory to total assets for various business types.

The expectations that the examiner develops when assessing the nature of the suspect's business will be invaluable. The examiner may perform financial analysis that indicates claimed inventory is overstated. If the nature of the business also indicates that the claimed inventory is inconsistent or implausible, the financial analysis will then be buttressed with a layer of common sense.

Comparative Ratio Analysis

The foundation of accounting is the concept of *double entry bookkeeping*. Simply stated, this means that there are two sides to every transaction. As a result, the act of intentionally overstating inventory in the financial records will cause an equal error in another account or group of accounts. The author's experience with regard to inventory overstatement indicates that most of the time, inventory is increased while cost-of-sales is decreased by an equal amount.

One can possibly detect an overstatement in inventory by performing comparative ratio analysis. Comparative analysis is performed with the suspect's historical financial records. As previously stated, the most common counter entry for inflating inventory is to decrease cost-of-sales. Accordingly, a comparative analysis performed on cost-of-sales is a meaningful test for inventory overstatement.

When performing comparative analysis, the examiner should be looking for a fluctuation in the cost-of-sales account in the year of the fire. For this purpose, cost-of-sales for the year of the fire, as well as more than one prior year, should be stated in terms of a percent of sales (i.e. divide cost-of-sales by sales for the same period). Once cost-of-sales is calculated as a percent of sales for a number of years, the ratios should be compared and examined for unusual fluctuations. For instance, the author was recently involved in a case where the following was observed from a comparative cost-of-sales analysis:

	2 Years before Fire	1 Year Before Fire	Year of Fire
Cost of goods sold ratio (% of sales)	59.61 %	60.23%	45.27%

As shown in the table above, cost-of-sales for the year of the fire declined significantly while the two prior years were consistent. In this case, it was apparent that the cost-of-sales and inventory balances were misstated during the year of the fire.

On a cautionary note, the cost ratio can legitimately change if there is a material change in the company's product mix. For example, if a company sold twice as many high profit items this year as opposed to the prior year, one would expect that the cost-of-sales ratio would decrease. Accordingly, the examiner should interview the suspect and ask if there were any significant changes in the product sales mix during the year of the fire. Any assertions in this regard will have to be corroborated with proper documentation.

Another powerful ratio for detecting inventory overstatement is the "days ratio." This ratio indicates the number of day's worth of sales held in inventory. As an example, if a company sells \$10 worth of product per day and has \$100 in inventory, the company therefore has 10 days worth of sales in inventory.

The days ratio is technically calculated as follows: $[(inventory * 365) \div \text{annualized sales at cost}]$. However, for non-CPA's, the author recommends that the ratio initially be calculated with sales at retail as opposed to sales at cost. This is recommended because sales at retail are easily obtained (sales tax returns, bank deposits, sales invoices, income tax returns). Also, converting sales to sales at cost can be tricky, especially if

the suspect has tampered with the cost-of-sales accounts. Therefore, this effort is best performed by a forensic accountant.

The days ratio is technically not correct when retail sales are used in the denominator. However, the ratio should be calculated for a number of periods and comparatively examined for large fluctuations or negative trends. Therefore, as long as it is calculated in a consistent manner, the analysis should be sound. In the event that a large fluctuation or negative trend is observed, a forensic accountant can convert the ratios to cost based ratios, and then compare the ratios with the ratios of similar type businesses and highlight aberrations.

In finance, inventory is considered a "spontaneous" item, which means that its balance is expected to increase as sales increase. The days ratio will help the examiner determine if an increase in inventory was expected because of an increase in sales. Over a number of periods, if inventory increases due to commensurate increases in sales, the days ratio is relatively static from period-to-period. However, if inventory increases over the periods while sales are relatively unchanged, the ratio shows an increasing trend. Moreover, if inventory increases over the periods while sales are decreasing, the ratio increases significantly. The latter scenario is the situation most often observed when a company has deteriorating operating results and has overstated inventory. A rising days ratio can be a red flag indicating that either inventory is overstated, or the operating results of the company are deteriorating such that inventory cannot be sold in a timely manner.

Cash Flow Analysis

In certain cases, the author was able to prove that the suspect did not possess the financial wherewithal to have obtained the amount of inventory purportedly on-hand. Cash flow analysis is technically difficult and should be performed by a forensic accountant or other financial professional. The cash flow analysis involves a quantification of all cash inflows and outflows for a period beginning before the fire and up until the date of the fire. Cash inflows include sales proceeds, collections from prior period sales, and loan proceeds. Cash outflows include operating expenses, purchase of new inventory, payments for inventory purchased in other periods and payments on loans or other liabilities.

A "quick and dirty" cash flow analysis can be performed with bank statements, tax returns, cancelled checks and purchase invoices. This analysis sacrifices accuracy for simplicity, but can still be helpful in identifying red flags and in identifying lines of inquiry to be posed to the suspect. The formula for a quick estimate of cash flow is summarized below:

Beginning of period cash balance	Obtained from the bank statement for the beginning of the period. The beginning balance on the statement should be used.
Plus: total deposits for period	The sum of all deposits and credits shown on the monthly bank statements.
Plus: beginning of period inventory	Obtained from income tax return or property tax return.
Less: total cash disbursements	The sum of all disbursements and debits shown on the monthly bank statements.
Less: end of period cash balance	Obtained from the end of period bank statement. The ending balance should be used.
Equals: cash available for ending inventory	

The cash available for ending inventory should be added to the increase in vendor debt, if any if any. The increase in vendor debt represents the

amount owed to vendors as of the date of the date of the fire, as compared to the amount owed at the beginning date used in the analysis. The sum of cash available and increased debt, if any, should be compared to cost value of the inventory purportedly on-hand at the time of the fire. If the purported inventory significantly exceeds the cash available for inventory plus the increase in vendor debt, there is a strong possibility that inventory is overstated. However, as previously stated, a forensic accountant should be used to prepare a comprehensive cash flow analysis.

Inventory Transition

An inventory transition analysis offers a relatively simple and straightforward way to determine the amount of inventory potentially on-hand at the time of the fire. The result of the inventory transition can be considered a "proof of inventory." To perform this analysis, start with a reasonably reliable reported inventory balance. In most cases, this balance is obtained from an income tax return or a personal property tax return prepared prior to the fire. Ideally, the date of the beginning inventory balance should be at least six months prior to the date of the fire.

Next, add what the suspect purchased from the date of the last reported inventory until the date of the fire. Purchases can be ascertained from contacting vendors, reviewing purchase invoices, and reviewing cancelled checks. The documentation used to calculate purchases should be such that it is obtained from outside parties or can be corroborated by outside parties. For instance, a purchase summary report prepared by the suspect after the fire may be inappropriate if it is believed that the suspect has manipulated records to effectuate the inventory overstatement.

The final step in the analysis is to deduct what was sold. Again, it is more appropriate to work with records that are obtained from outside sources. For instance, monthly sales tax returns can be provided from the local department of revenue. Also, bank statements can be obtained from the bank; deposits may serve as a reasonable proxy for sales. Sales obtained from bank statements, sales tax returns or other documents will need to be reduced to cost. This is accomplished by multiplying sales by a reliable historical cost-of-sales ratio.

The inventory transition formula is summarized below:

Beginning of period of inventory	Obtained from income tax return or personal property tax return.
Plus: purchases from beginning of period until fire	Obtained from purchase invoices, cancelled checks, or documentation provided by the suspect's vendors.
Less: sales from beginning of period until fire multiplied by historical cost ratio.	Obtained from sales tax return or (non-loan) bank deposits. The historical cost of sales ratio should be obtained from a period other than the year of the fire.
Equals: estimated inventory on-hand at the time of the fire.	

A comparison of the inventory evidenced by the transition analysis should be compared to the total cost value of what the suspect is asserting was on-hand at the time of the fire.

Putting it all Together

As previously stated, the examiner should ideally perform all of the foregoing analyses. In the case of a deliberate inventory overstatement each analysis represents a piece in the puzzle. Imagine a situation where comparative ratio analysis showed that inventory appeared overstated due to an abnormal decrease in the cost-of-sales ratio. The days ratio increased significantly during the year of the fire, so increased inventory was not explained by increased sales. At the same time, a cash flow analysis showed that it was not financially possible for the suspect

to have accumulated as much inventory as claimed. A transition analysis, prepared with records obtained from independent parties, revealed that the inventory on-hand was much less than claimed. Finally, the nature of the suspect's business made it impractical to hold the volume of inventory claimed.

The foregoing situations demonstrate that the results of the each analysis, while based on different methodologies and calculations, all indicate that inventory was overstated. Therefore, even though inventory was burned out-of-sight and cannot be observed, proof as to its overstatement is definitive and conclusive.

Intentionally overstating inventory potentially represents fraud, which can be introduced to prove the character of the suspect. Character is an important consideration in the preponderance of the evidence. The act of overstating inventory in and of itself can be used to prove financial motive to commit arson. Financial motive exists if the suspect's inventory was or would soon become obsolete. Motive exists when the suspect was unable to sell inventory in a timely manner and therefore was unable to generate cash to fund continuing operations. Motive exists when overstating inventory equally overstates profits such that the business appeared profitable at the time of the fire, but was really experiencing financial hardships. Finally, motive exists when the recovery sought by the suspect for inventory and other assets destroyed in the fire exceeds the net cash flow that the business was expected to generate in the future.

About the Author

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