Analyzing a Listed Firm in Ghana for Early Warning Signs of Bankruptcy and Financial Statement Fraud: An Empirical Investigation of AngloGold Ashanti

Karikari Amoa-Gyarteng
School of Business, Ghana Baptist University College, PMB, Kumasi, Ghana.
Email of author: kariamoai1@gmail.com

Abstract
This research moves beyond traditional ratio analysis to find out the possibility of bankruptcy and financial statement fraud at AngloGold Ashanti (AGA). An examination of the financial statements of the company for the years 2010 to 2012 was made with the use of Modified Altman and Beneish models. The modified Altman model is a predictor of bankruptcy. To discover the possibility of financial statement fraud, this research used the Beneish model. The examination of AGA’s financial reports with the Beneish model revealed the company was not engaged in financial statement fraud. The Altman model on the other hand, brought to the fore the financial distress the firm went through in the years under review.

Keywords: Altman Z Score, Beneish M-Score, Fraud, Bankruptcy, Internal Control Systems

1. Introduction
According to a 2012 report by the Association of Certified Fraud Examiners (ACFE), there are three main types of fraud that are committed within corporate circles. They are Financial Statement Misrepresentation, Corruption and Asset Misappropriation. According to the same report, Financial Statement Misrepresentation represents 7.2% of all fraud cases. On average, an organization loses 5% of its revenue to fraud and this translates to $3.5 trillion per year globally (ACFE, 2012).

Louwers et al. (2007) state that fraud involves knowingly misrepresenting facts with the ultimate aim of cajoling the user of information to believe the falsehood. In the opinion of Louwers et al. (2007), financial fraud could lead users of financial information to make wrong decisions that could ultimately harm an economy. Corporate executives are motivated to engage in fraud for different reasons. Beasley et al. (1999) cites zeal to shore up financial results; a propensity to sustain a high stock price and a push to hide personal gain as a result of asset misappropriation as some of the factors that lead executives to commit fraud.

Isa (2011) argues that motivation aside; there are internal factors in corporations that assist executives to engage in fraudulent activities. Weak internal control systems and flexibility of accounting are some of those factors captured by Isa (2011). The Association of Certified Fraud Examiners posits that financial fraud more often than not occurs with management’s knowledge (ACFE, 1993). This can especially happen when weak internal controls and other corporate weaknesses are at play. Beasley (1996), Carcello and Nagy (2004) all conclude that proper corporate governance characteristics can minimize the occurrence of financial statement misreporting. Proper corporate governance measures should necessarily encompass a check on related party transactions. As Dunn (1999) found out, the history of previous financial statement fraud aside, related party transactions make a firm susceptible to issuing fraudulent financial reports. Related party transactions according to Dunn (1999) can lead to fraud because there is the possibility that a transaction will not attract a fair value. Impropriety emanating from such transactions is manifest in the fraud that was perpetrated by Enron Corp. (Hasnan, Rahman, Mahenthiran, 2008).

There is a theory that seeks to link economic situation of a firm and unethical practices such as financial statement misrepresentation. As concluded by Bell et al. (1991), a financially distressed organization with unethical managers can seek to improve their financial position, albeit artificially, through fraudulently generated financial statements. Financial statement fraud is not the only way a firm can engage in corporate fraud. Asset

---

1 Financial Statement Fraud is the intentional misrepresentation of material information in financial reports (ACFE, 2012)
2 Corruption as defined by Myint (2000) as the use of public office for private gain. Bribery, embezzlement, nepotism, extortion are examples of corruption.
3 Asset misappropriation refers to the type of fraud in which one steals or misuses an organizations resources (Albrecht et al., 2008)
4 Allen & Gale (1990) report that the Securities and Exchange Commission Act of 1934 which made it illegal for corporate executives to engage in shortselling and issue false information has reduced the possibilities of manipulating stock prices.
5 Johnstone & Bedard (2004) contend that related party transactions are difficult to audit and it is an indicator of audit risk. The General Accounting Office in a 2003 report has it that, related party transactions is one of the major corporate practices that leads companies to misrepresent financial statements.
misappropriation and corruption also constitute fraud (ACFE, 2012).

Asset Misappropriation as indicated by Albrect et al. (2008) can be divided into the theft of cash and theft of non-cash assets. The Association of Certified Fraud Examiners reports that 85% of asset misappropriation cases involve the dishonest use of cash (ACFE, 2012). According to a KPMG (2004) report, asset misappropriation most times occurs when organizations have weak internal controls. In the words of Albrect et al. (2008), weak internal controls include improper documentation and bad record keeping; lack of physical safeguards and having more than one person complete a task. Holtfrerter (2004) underlines the importance of having a good system of internal controls when he concluded that an organization could forestall the occurrence of asset misappropriation by institutionalizing strong internal control mechanisms.

Corruption as noted by Myint (2000), festers when there is a lack of transparency and accountability. On account of corruption, business organizations and governments have fallen (Myint, 2000). Corruption has a dire consequence for any nation’s economy. In a survey of 150 public officials from 60 countries conducted by Gray and Kaufmann (1998), many respondents decried corruption as an obstacle to economic development. In general, fraud has a negative impact on an economy. As Isa (2011) points out, false financial information has the potential of leading investors astray to invest in unprofitable areas in the economy. Corruption as indicated by Myint (2000) leads to wastage, inequity and social decay, which are all features of bad economies.

1.1 History and Current Issues

PricewaterhouseCoopers (2005) in an economic crime survey has it that the number of companies reporting financial misrepresentation has increased by 140% globally. There has also been a 71% increase in the number of companies reporting corruption. These overwhelming statistics notwithstanding, nearly 80% of companies globally do not conceive it possible that their firms will ever suffer fraud (Kroll, 2011). The profile of fraud companies has been diverse over the years. Beasley et al. (2010) reports that companies that engaged in fraud were start ups that had no assets or revenues through to big organizations that commanded more than $400 billion in assets. In the same vein, fraud historically can exist across all industries (Beasley et al. 2010). Examples of corporate fraud as enumerated by Kroll (2011) featured Enron and WorldCom companies. Enron hid $3.1 billion debts whilst WorldCom overstated profits by categorizing operating expenses as capital expenditures. Companies such as Tyco International, AOL Time Warner and Bristol-Myers Squibb all engaged in the act of corporate fraud (Kroll, 2011).

Fraud is not confined to only US based companies. The Indian IT giant, Satyman Computer Services engaged in fraudulent activities such as forgery, income manipulation and asset stripping on a scale twice as big as Enron’s.

In the American situation, there was a legislative response leading to the passage of the Sarbanes-Oxley Act of 2012 (Kroll, 2011). Deloitte (2008) though reports a preponderance of fraud in the midst of the tight legal environment. In the immediate aftermath of the coming into being of the Sarbanes-Oxley Act in the United States, many firms have formulated highly leveraged balance sheets with huge debts underneath (Deloitte, 2008). Highly leveraged firms may face bankruptcy if they are unable to meet repayment schedules, though it may also increase shareholder Return on Investments.

In the report of Deloite (2008), fraud and bankruptcy are listed as bedfellows. Bankrupt companies, or firms close to it, are more likely to engage in corporate fraud including financial statement fraud. Specifically, bankrupt companies are 300% more likely than healthy companies to receive a financial statement fraud AAER by the SEC in the United States of America. In the same vein, companies charged with fraud are more likely to file for bankruptcy (Deloitte, 2008). Between 2002 and 2005, not less than 10% of all bankrupt companies were issued with financial statement fraud AAER. It was highest in 2003 at 16% of all bankrupt companies (Deloitte, 2008). Dunn (1999) found that a good number of bankrupt companies have fraud schemes in their history. According to Beasley et al. (2010), in the period between 1998 to 2007, about 300 fraud cases were recorded with a total cumulative financial statement misrepresentation of $120 billion.

---

1 Doyle et al.(2007) report that firms that are younger, financially weaker, complex and rapidly growing are more likely to have weak internal control systems.

2 Electronic record keeping such as computerized accounting systems is recognized by the Center for Tax Policy Administration of the OECD as an internal control measure. As stated by the OECD (2003), safeguarding assets and reporting transactions correctly are symptomatic of good record keeping practices.

3 Rangan (1998), Shivakumar (2000) demonstrate that firms manipulate earnings when they are about to issue equity and they do so to increase shareholder value.

4 Asset stripping is when firms or their executives purchase undervalued companies before selling them off to make profits. As argued by Campos et al.(2005), it is driven in part by the firms potential profitability.

5 Accounting and Auditing Enforcement Releases from the United States SEC.
1.2 Environmental Statement
Kroger (2004) indicates that America has since the 1930’s relied on a complex private-public system of checks to deter executives of companies from misleading investors. The complex regime to prevent fraud has four layers of institutions: Independent auditors, corporate board of directors, private securities analysts and the Securities and Exchange Commission (SEC). This is the same in Ghana where there is an SEC that acts to ultimately protect investors. The danger of fraud is well documented. ACFE (2012) argues that fraud can destroy companies. Precision Machinery and Instrument manufacturer, Olympus lost $3 billion in market capitalization a few days after news of a potential fraud scandal was made public. Beasley (et al., 2010) reports that companies engaged in fraud often experience bankruptcy and a delisting from the stock market.

The long term negative effects, as enumerated above are quite apparent. Recent fraud scandals and their attendant consequences have made Chief Financial Officers relatively hesitant in employing accounting manipulations in managing earnings (Jensen, 2011). The fact that global fraud was historically exacerbated by a situation of inadequate rules and regulations has been well documented. Though not completely erasing fraud, the promulgation of new regulations in many jurisdictions across the world is helping to stem the tide. However, the Economist (2000) suggests that the remedy for fraud is disclosure, honest accounting and vigilance from shareholders.

2.0 Discussion of the Facts
This paper utilized the Modified Altman Z score model to determine if potential bankruptcy signals could be detected. An analysis of the quality of the company’s reported earnings was then made by utilizing the Beneish M-Score model.

2.1 Altman’s Discriminant Function Algorithm
The modified Altman discriminant function \( Z^* = 6.5X_1 + 3.2X_2 + 6.7X_3 + 1.05X_4 \) was utilized to ascertain whether or not bankruptcy was imminent. The indices are defined thus:

- \( X_1 = \) Working Capital / Total Assets
- \( X_2 = \) Retained Earnings / Total Assets
- \( X_3 = \) Earnings before Interest and Taxes / Total Assets
- \( X_4 = \) Market Value of Equity / Book Value of Total Liabilities
- \( Z^* = \) Overall Index

According to Altman (2000), the indices are significant for the following reasons:

- \( X_1 \): This index measures the net liquid assets of the firm in relation to total capitalization. A distressed firm will hold a shrinking portfolio of current assets and therefore lower capital, which translates to a low index.
- \( X_2 \): This index measures leverage of a firm. A high index is indicative of a firm that has financed its operations through retention of profits.
- \( X_3 \): This index measures asset productivity without taking into cognizance interest and tax
- \( X_4 \): This measures how a firm’s assets decline in value before it goes insolvent

Altman (2000) indicates that firms that have a \( Z^* \) score of more than 2.6 are considered safe and unlikely to go bankrupt. A \( Z^* \) score between 1.1 and 2.6 is indicative of a firm whose potential bankruptcy cannot easily be predicted. It is thus termed to be in the grey area. A less than 1.1 \( Z^* \) score signifies a likelihood of bankruptcy.

Zones of discrimination as postulated by Altman (2000) are summarized thus:

- \( Z^* > 2.6 \) — Safe zone
- \( 1.1 < Z^* < 2.6 \) — Grey zone
- \( Z^* < 1.1 \) — Distress zone

The \( Z^* \) score for AngloGold Ashanti was calculated for the years 2010 to 2012.

<table>
<thead>
<tr>
<th>INDEX</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>( X_1 )</td>
<td>0.079</td>
<td>0.128</td>
<td>0.057</td>
</tr>
<tr>
<td>( X_2 )</td>
<td>(0.277)</td>
<td>(0.131)</td>
<td>(0.102)</td>
</tr>
<tr>
<td>( X_3 )</td>
<td>0.042</td>
<td>0.183</td>
<td>0.092</td>
</tr>
<tr>
<td>( X_4 )</td>
<td>0.759</td>
<td>0.917</td>
<td>0.757</td>
</tr>
<tr>
<td>( Z^* )</td>
<td>0.20</td>
<td>2.61</td>
<td>1.41</td>
</tr>
</tbody>
</table>

2.2 Analyzing the Quality of AGA’s Reported Earnings by Utilizing the Beneish M-Score Model
The Beneish model assesses the possibility of earnings manipulation as it estimates the extent to which reported earnings deviates from the actual (Warshavsky, 2012). According to Warshavsky (2012) accounting manipulations include inter alia:

- Recording revenue too soon, not recognizing current expenses appropriately and improperly reducing liabilities.

The Beneish model as attested to by Warshavsky (2012), is similar to the Altman model only that it does not predict bankruptcy. It is a model that seeks to unearth financial statement fraud. Firms that return a high Beneish
score are potential manipulators of their financial statements. The Beneish model employs eight indices. According to Beneish et al. (1999) the indices have varying rationales as outlined below:

**Days Sales in Receivables Index (DSRI):** This measures how accounts receivables as a percentage of sales have changed compared to the year before. It captures distortions in accounts receivables that originate from an inflation of revenue.

\[(\text{Accounts Receivable}_{cy} / \text{Sales}_{cy}) - (\text{Accounts Receivable}_{py} / \text{Sales}_{py})\]

*Note: The current year and previous year are respectively denoted *cy* and *py*.*

**Gross Margin Index (GMI):** This compares the gross margin between the previous year and the current year. Deteriorating margins may predispose a firm to engage in financial statement fraud.

\[(\frac{\text{Sales}_{py} - \text{Cost of Sales}_{py}}{\text{Sales}_{py}}) - (\frac{\text{Sales}_{cy} - \text{Cost of Sales}_{cy}}{\text{Sales}_{cy}})\]

**Asset Quality Index (AQI):** The greater the AQI the higher the possibility of fraud. It captures manipulations in “other assets” which can be an indication of excessive capitalization of expenditure.

\[1 - \frac{(\text{Current Assets}_{cy} + \text{Property Plant & Equipment}_{cy})}{\text{Total Assets}_{cy}} - (\frac{1}{1 - \frac{(\text{Current Assets}_{py} + \text{Property Plant & Equipment}_{py})}{\text{Total Assets}_{py}}} - \frac{1}{\text{Current Portion of Long Term Debt}} - \frac{\text{Depreciation and Amortization Expense}}{(\text{Long Term Debt}_{cy} + \text{Current Liabilities}_{cy}) / \text{Total Assets}_{cy}} - (\text{Change in Working capital} - \text{Change in Cash} + \text{Change in Current Tax Payable} + (\text{Current Portion of Long Term Debt} - \text{Depreciation and Amortization Expense}) / \text{Total Assets}_{cy})\]

**Sales Growth Index (SGI):** This index compares sales between two consecutive years. An increase in sales could mean the company is doing well. However, growth companies are more susceptible to earnings manipulation as they will want the perception of continuous growth maintained.

\[\frac{\text{Sales}_{cy}}{\text{Sales}_{py}}\]

**Depreciation Index (DEPI):** This index indicates that growth in income as a result of declining depreciation could be a sign of earnings manipulation.

\[\frac{\text{Depreciation Expense}_{py}}{(\text{Depreciation Expense}_{py} + \text{PPE}_{py})} - (\frac{\text{Depreciation Expense}_{cy}}{(\text{Depreciation Expense}_{cy} + \text{PPE}_{cy})})\]

**Sales, General and Administrative Expenses Index (SGAI):** Higher sales and administrative expenses indicate a decrease in administrative efficiency and predispose firms to engage in financial statement fraud.

\[\frac{\text{Sales, General and Administrative Expenses}_{cy}}{\text{Sales}_{cy}} - (\frac{\text{Sales, General and Administrative Expenses}_{py}}{\text{Sales}_{py}})\]

**Total Accruals to Total Assets Index (TATA):** This index captures accounting profits which are not real and are not supported by profits at hand. High accruals at the time of decreasing cash could be an indication of revenue manipulation.

\[\frac{(\text{Change in Working capital} - \text{Change in Cash} + \text{Change in Current Tax Payable} + (\text{Current Portion of Long Term Debt} - \text{Depreciation and Amortization Expense}) / \text{Total Assets}_{cy})}{(\text{Change in Working capital} - \text{Change in Cash} + \text{Change in Current Tax Payable} + (\text{Current Portion of Long Term Debt} - \text{Depreciation and Amortization Expense}) / \text{Total Assets}_{cy})}\]

**Leverage Index (LVGI):** Increasing leverage could make a firm prone to earnings manipulation.

\[\frac{(\text{Long Term Debt}_{cy} + \text{Current Liabilities}_{cy}) / \text{Total Assets}_{cy}}{(\text{Long Term Debt}_{py} + \text{Current Liabilities}_{py}) / \text{Total Assets}_{py}}\]

The above indices were then applied to the function \[M = -4.84 + (0.92 \times \text{DSRI}) + (0.528 \times \text{GMI}) + (0.404 \times \text{AQI}) + (0.892 \times \text{SGI}) + (0.115 \times \text{DEPI}) - (0.172 \times \text{SGAI}) + (4.679 \times \text{TATA}) - (0.327 \times \text{LVGI})\] to calculate the MSCORE for AGA between the years 2010 to 2012. According to Beneish (1999), an MSCORE greater than -2.22 should trigger the suspicion that the company is involved in financial statement fraud. Beneish (1999) contends that the probability of earnings manipulation becomes high when there is an unusual increase in receivables, declining asset quality, growth in sales and accruals. Beneish (1999) sampled two broad categories of firms and classified them as manipulators and non-manipulators. The mean for the various predictive indices for both categories are as enumerated in the last 2 columns of table 3. If any of AngloGold Ashanti’s indices exceeded the mean for manipulators that should call for greater scrutiny.
3.0 Analysis of the Facts and Issues

3.1 Are There Potential Bankruptcy Signals At AngloGold Ashanti?

Altman (2000) postulates that, non-manufacturing firms that have a Z’ score of more than 2.6 are considered safe from the possibility of bankruptcy. The Z’ scores of AGA for the years 2010 to 2012 were respectively 0.20, 2.61 and 1.41. 2011 aside, AGA was in financial distress in all the years under review. The unfavorable Altman scores were mainly derived from the negative retained earnings the firm recorded between 2010 and 2012. It could be interpreted that it paid more money than it earned. The Z scores were not in a consistent downward trend and therefore even though the scores were lower than the benchmark in 2010 and 2012, bankruptcy cannot be safely predicted.

3.2 Probability of Earnings Manipulation

DPRI increased progressively from 2010 to 2013. This indicates that accounts receivables as a percentage of sales increased accordingly. The manipulators mean of 1.465 was greater than all the three years under review. GMI: Between 2011 and 2012, AGA‟s Gross Margin deteriorated. However, GMI for all three years under review were lower than the manipulators mean.

A and LVGI were higher for the manipulators mean at one point in time or the other within the years under review as depicted by the graph below.

TABLE 2- Beneish M Score of AngloGold Ashanti for the Years 2010 To 2012 and Beneish Mean Predictive Indices for Non-Manipulators and Manipulating firms

<table>
<thead>
<tr>
<th>INDEX</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Non-Manipulators</th>
<th>Manipulators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days Sales in Receivables (DSRI)</td>
<td>0.914</td>
<td>1.150</td>
<td>1.389</td>
<td>1.031</td>
<td>1.465</td>
</tr>
<tr>
<td>Gross Margin (GMI)</td>
<td>0.758</td>
<td>0.837</td>
<td>1.108</td>
<td>1.041</td>
<td>1.193</td>
</tr>
<tr>
<td>Asset Quality (AQL)</td>
<td>1.041</td>
<td>0.930</td>
<td>1.173</td>
<td>1.039</td>
<td>1.254</td>
</tr>
<tr>
<td>Sales Growth (SGG)</td>
<td>1.416</td>
<td>1.232</td>
<td>0.967</td>
<td>1.134</td>
<td>1.607</td>
</tr>
<tr>
<td>Depreciation (DEPI)</td>
<td>0.916</td>
<td>0.967</td>
<td>1.147</td>
<td>1.001</td>
<td>1.077</td>
</tr>
<tr>
<td>Sales, General and Administrative (SGAI)</td>
<td>1.009</td>
<td>1.026</td>
<td>1.083</td>
<td>1.054</td>
<td>1.041</td>
</tr>
<tr>
<td>Total Accruals to Total Assets (TATA)</td>
<td>0.139</td>
<td>(0.140)</td>
<td>(0.085)</td>
<td>0.018</td>
<td>0.031</td>
</tr>
<tr>
<td>Leverage (LVGI)</td>
<td>0.322</td>
<td>1.840</td>
<td>1.173</td>
<td>1.037</td>
<td>1.111</td>
</tr>
<tr>
<td>MSCORE</td>
<td>-1.44</td>
<td>-3.19</td>
<td>-2.48</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
However the overall M Score was only greater than the benchmark of -2.22 in 2010. In 2011 and 2012, AGA recorded M Scores that were all lower than the Beneish benchmark. This signifies that overall, AGA was not manipulating earnings in the years under review.

4.0 Conclusion and Recommendation
Beasley et al. (2000), Beasley (1996) and Dunn (2004) make the observation that there is a tendency for firms engaged in fraud to engage fewer external members on their board. The motivation is clear: internal officers appointed to boards are more malleable. Beasley et al. (2000) also make the observation that the incidence of fraud is relatively more widespread among companies not having an audit committee. The larger the audit committee, as observed by Beasley et al. (2000), the lower the incidence of fraud. This buttresses the point made by Dunn (1999) of the importance of internal controls.

The need for checks and balances in organizations and decentralization of power is underscored by Robinson (2002) who identified a negative relation between the independence of audit committee members and the incidence of fraud. Centralization of power and decision making as outlined by Dunn (2004) may provide an opportunity or incentive to commit financial statement fraud. Chief Executive Officers as enumerated by Dechow et al. (1996) could have the tendency of centralizing power which Dunn (2004) observes can incentivize executives to engage in fraud. According to Cressey (1953), an executive who engages in fraud only gets himself/herself in the act because the opportunity to perpetrate fraud was made available.

The incentives in engaging in fraud and the benefits it presents as was in the case of Enron are momentary. Bankruptcy and fraud prediction models such as those postulated by Altman (1968) and Beneish (1999) help potential investors to stay away from fraud companies. There has also been the promulgation of many laws in many jurisdictions including Ghana that seek to prevent fraud. However, the practice will only stop when executives report financial statements ethnically and choose to desist from engaging in the practice entirely. Auditors should work with the conviction of uncovering fraud. As attested to by Bonner et al. (1998), failure to detect fraud has proven costly not only to the fraud companies involved but also to auditing firms as well. Future of audit practice depends on the ability of auditors to detect fraud (Wilks & Zibelman, 2004). To achieve results in detecting and deterring corporate fraud, the way to proceed is for firms to employ teams of auditors instead of individuals. Hill (1982) and Miner (1984) report that team judgments are often times superior to those of individual auditors. Corporate organizational structures should have a mesh of management, boards of directors and audit committees who should all work in unison in the fiscal process to detect and prevent fraud. When internal controls are tight and there is a fair degree of oversight in place, there will be a disincentive to engage in financial statement fraud.

The Center for Audit Quality (CAQ) outlines three mechanisms to prevent fraud. According to CAQ (2010), management should not only build an ethical culture but uphold it. Employees will then be bound to follow suit. CAQ (2010) also suggests that financial statements should be analyzed by external users (especially creditors and investors) with a dose of skepticism. This will increase the perception amongst corporate executives that if they start a fraud scheme it will be detected. Communication is also essential in the fight against corporate fraud. As CAQ (2010) points out, if corporate executives exchange information, inconsistencies in financial reporting will be brought to the fore, and the opportunity to engage in financial statement fraud will be curbed.

References

1 The Saucier report (2001) recommends that the audit committee inter alia should not have any members of management; should share material issues with external auditors and members should be financially literate.