



# NOBLE EXPLAINED

A case study for investment managers on using artificial intelligence to detect fraud in listed companies.



# Transparently.AI Case Study

## Noble Group

Transparently.AI provides an AI-driven automated forensic accounting tool that enables the early identification of manipulators, fraudsters and corporate collapse. We present a case study for accounting manipulation/fraud and the assessment of those events by Transparently.AI's Manipulation Risk Analyser (MRA).

The Noble Group scandal is a prime example of how our system identified significant issues that were identifiable in the company's financials much earlier than when they were picked up by activist short sellers and the wider market.

We provide screenshots and descriptions of our analytics from the Transparently.AI platform. We have included the last risk report available on our system for Noble as an appendix item.

**March 2024**

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## The Noble Group scandal

In the early 2000s, Chinese demand underpinned a commodity boom some believed might extend for decades. Commodity traders thrived, none more so than the Singapore-listed Noble Group.

Its share price rose a staggering 18-fold between 1998 and 2011, making it Asia's best-performing stock outside the tech giants like Tencent. By 2011, Noble Group boasted revenue comfortably inside the top 100 companies globally and was Asia's largest commodity trader. Seen as an established blue chip, Noble began to rival the likes of Glencore and Cargill.

The company today is a shadow of its former self. Targeted by short sellers in 2015, Noble was embroiled in an accounting fraud scandal that led to a plummet in its market value, a debt restructuring, and eventual delisting from Singapore's stock exchange.

Noble Group is an interesting case study for Transparently.AI, which has an AI-powered solution to detect accounting manipulation and fraud in companies.

The tool analyses a company's financial statements seeking red flags signs of accounting manipulation. From its analysis, the system produces a 0-100% score along with an A+ to F rating that together articulate the extent to which a company is manipulating its accounts. The tool produces a 30-plus page report that captures all of the red flags it has detected in a company's financial statement.

For Noble, our AI solution showed evidence of financial stress and poor accounting quality much earlier than the short sellers, in fact even throughout the long commodity bull market from 2001 until 2011.

Read on to find out what we discovered. First, some background.

## What is Noble Group?

The main research shop that targeted Noble Group in 2015, Iceberg Research, likened the company in one report to Enron, the poster child for corporate accounting scandals. It's not our place to comment specifically on this comparison, but what we can do is comment on factual similarities and divergences between the two.

As with Enron, Noble Group's core business was commodity trading. It bought commodities from producers and sold them to end users, acting as an intermediary. Whereas Enron began with natural gas and branched from there, Noble began with bulk commodities, branched into agriculture and then into energy.



Commodity trading is a risky business: Margins are thin, the working capital requirement is onerous, and fluctuations in currencies and commodity prices can quickly threaten vital access to short-term finance.

As a consequence, commodity traders are incentivised to exaggerate their financial strength and are frequently involved in accounting scandals. In recent years there have been several in Singapore alone, including Agritrade International, Hin Leong Trading and ZenRock Commodities Trading.

A commodity business can be asset light or asset heavy, depending on whether a firm invests in logistics assets such as ships, ports, pipelines, storage and processing facilities. Some commodity traders invest in upstream businesses to secure offtake from mines or supply from farmers.

When asset light, traders tend to be volatile businesses but relatively safe if well capitalized. When asset heavy, traders become financially strained when commodity prices are weak or if interest rates rise. An asset-heavy model only makes sense to lock in supply or to secure wider margins.

In short, commodity trading is a difficult business, even in the best of times.

## **Noble during the boom: What our system found**

Through the commodities boom from 2001 until 2011, Noble's manipulation risk score on our system hovered between 55% and 60%. This score indicated significant issues with accounting quality and meant that Noble was generally in the bottom 35% of companies globally for estimated accounting quality and transparency.

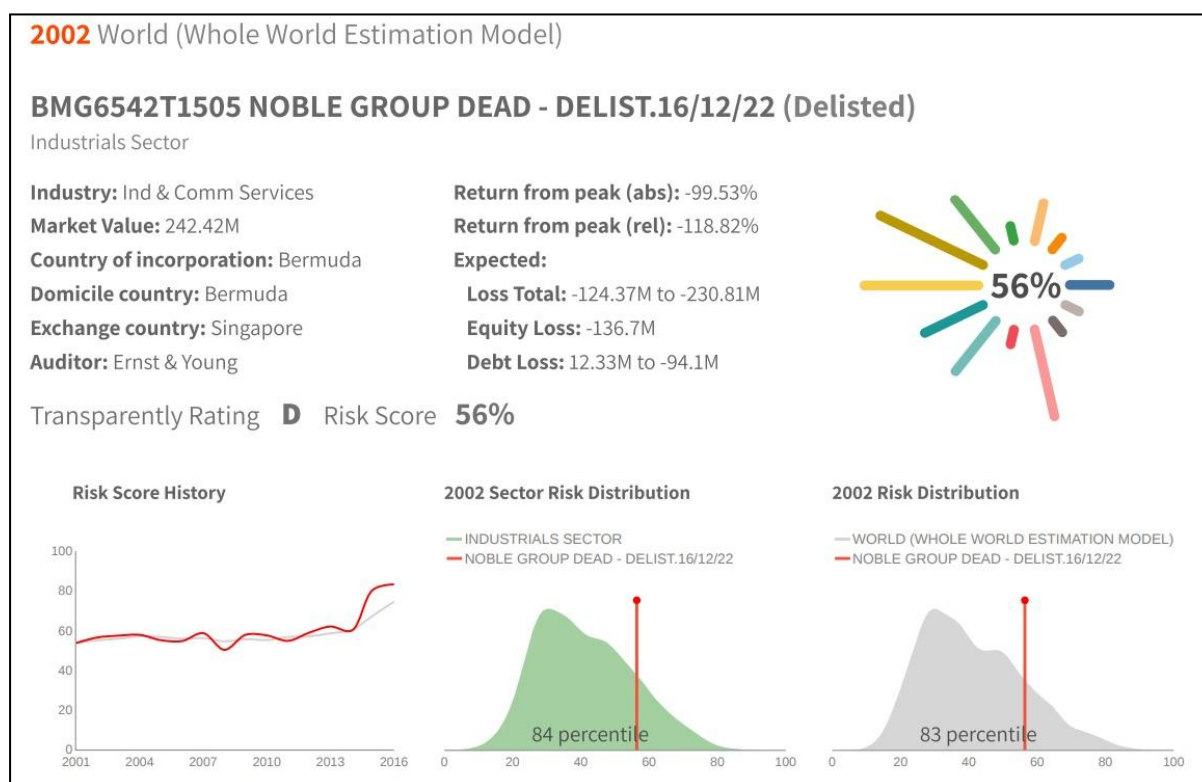
Figure 1 shows the front page summary from the risk report that the Transparently.AI system produced for Noble Group's 2002 financials. The system gave Noble a "D" rating, which signals poor accounting quality and an urgent need to investigate the company further.

The manipulation risk score gave Noble a joint probability of 56% that its accounts were manipulated and that the company was headed to failure.

In other words, the system gave better than even odds that problems at the company were serious enough to lead to potential failure. The model estimated potential losses to stakeholders of between \$124 million and \$230 million. At the time, this represented between 50% and 95% of Noble's market capitalization.

The risk distribution charts showed that Noble was in the 83rd percentile globally for account manipulation risk.

**Figure 1: Excerpt from Transparently.AI's report for Noble in 2002**



Source: *Transparently.AI*

In the context of a booming commodity sector, these poor scores suggested that something was amiss in the burgeoning Noble empire. Companies with accounting concerns in prosperous times invariably stumble when boom turns to bust - and so it was with Noble.

In short, anyone following the AI system would have been suspicious of Noble Group's accounting from the very beginning and the situation never improved. To be sure, the system was very early anticipating Noble's demise. Fraudulent companies can be hugely popular with investors for years before finally coming unstuck.

In the decade to 2011, the company consistently flagged concerns in risk clusters relating to growth signals, gearing and credit. Figure 2 for example shows an excerpt from the 2007 report which shows that Noble's ratio of liabilities to equity, a key measure of gearing risk, was more than three times the regional median.

Growth appeared unrealistically strong and was heavily dependent on debt finance. There was persistent evidence of aggressive smoothing.

## Figure 2: Noble always demonstrated a dangerous level of gearing

### Liabilities relative to equity

Total balance sheet liabilities divided by total shareholders' equity. (%)

Metric / Year	2005	2006	2007	2008	2009
Value	232.62	295.86	329.63	335.64	248.52
Region Average	128.66	125.25	125.55	132.15	128.49
Region Median	89.30	87.22	87.04	88.93	83.52
Region Standard Deviation	123.65	119.67	119.37	129.87	131.34
Region/Sector Average	152.30	149.57	146.20	154.46	150.47
Region/Sector Median	111.76	110.13	107.43	112.28	104.76
Region/Sector Standard Deviation	130.90	127.63	125.19	134.55	136.92

Source: *Transparently.AI's 2005 risk report for Noble*

Most concerning, our AI system repeatedly identified income quality as a primary concern at Noble Group. The system raised concerns pertaining to the abnormally low effective tax rate, often a sign of overstated income, the high share of income derived from affiliates, and an abnormally high share of income from non-operating and “other” non-operating sources.

From 2005 onwards, the system began to caution about the abnormally high share of income coming from joint ventures and associates. From 2009 onwards, the system identified interest capitalization and extraordinary credits as additional income quality concerns.

When a company generates a high level of income from affiliates and non-core sources, it can be a sign that its core operations are not generating sufficient income to sustain the business. Moreover, the higher the income generated from non-core operations, the greater the scope for income manipulation.

From Noble's earliest years after listing, the AI system also cautioned about investing activity and asset quality. The signals related to depreciation, investment in associates, abnormally high disposal of fixed assets, and unusual growth in long-term assets in relation to capex.

The system also flagged possible business manipulation in relation to expenses, abnormal cash generation and cost of goods sold.

One notable feature of Noble's business from the beginning was its extremely high level of accounts payable in relation to equity (see Figure 3).

In an average year, accounts payable exceeded equity, pointing to an excessive reliance on credit to finance operations. It also pointed to weak cash flow generation in relation to income. This can be a consequence of strong revenue growth.

Nevertheless, the excessive level of accounts payable represented a possible incentive to manipulate the financial statements to hide the company's fragility.

**Figure 3: High levels of accounts payable 2003-2007**

**Accounts payable relative to equity**

Accounts payable as a proportion of total equity. (%)

Metric / Year	2003	2004	2005	2006	2007
Value	93.59	101.02	105.23	111.06	95.44
Region Average	28.96	27.87	25.51	24.94	24.30
Region Median	15.88	15.58	14.61	14.04	13.06
Region Standard Deviation	33.90	31.95	29.66	29.27	29.38
Region/Sector Average	36.64	35.66	34.24	33.77	32.29
Region/Sector Median	22.54	22.80	22.40	22.20	20.80
Region/Sector Standard Deviation	37.87	35.75	33.22	33.00	32.37

Source: *Transparently.AI's 2005 risk report for Noble*

## Noble after the commodities boom

Noble fared remarkably well through the turmoil of the Global Financial Crisis in 2008, largely due to the enormous Chinese economic stimulus which bolstered demand for commodities.

In fact, Noble recorded its highest years for net profit in 2009 and 2010. Perhaps sensing the commodity bull run was drawing to a close, Richard Elman, the founder and chairman of the Group, stepped down as CEO at the end of 2009.

After relinquishing the CEO role, he continued as non-executive chairman. However, the transition of leadership proved intensely challenging. The group had five CEOs in the ensuing seven years: A sure sign of underlying problems.

Elman's replacement, Ricardo Leiman, decided to take Noble to an asset-heavy model and embarked on a S\$2 billion spending spree in 2009 and 2010, investing in a range of assets and adding to its already considerable debt.

By 2011, however, commodity markets were peaking and thereafter in decline. This reversal in the commodity environment pressured all commodity traders including Noble.

The asset-heavy model threatened to sink Noble in a prolonged commodity downturn.

Yusuf Alireza, the former co-president of Goldman Sachs's Asia ex-Japan unit, replaced Leiman as the CEO in April 2012.



His mission was to restore Noble to an asset-light model, most notably by selling Noble Group's agricultural business to China's Cofco Corp in 2014.

The damage caused by Noble's 2009-10 spending spree at the peak of the commodity boom, though was far from obvious, in Noble's profit numbers.

From the time of Elman's exit in 2009 until the end of 2014, Noble's reported net profit totalled S\$2.4 billion. The profit numbers between 2009 and 2013 dwarfed Noble's profit prior to 2008.

It was remarkable that such a highly leveraged commodity company could sail through the worst financial crisis since the Great Depression and a subsequent commodity downturn with such resilient profits.

## Cash-flow conundrum

The cash-flow statement, however, told a different story.

Over the same period, Noble's cumulative operating cash flow was negative S\$500 million; the company was bleeding cash. Cumulative free cash flow was negative S\$2.4 billion over the same five year period to 2014.

The divergence between Noble's net profit and operating cash flow was striking and eerily reminiscent of Enron. Unlike Enron, however, Noble was a genuine commodity-trading business. Affirming this, Noble's margins were thin, around half those of major competitors. This made it improbable that Noble was engaged in account manipulation remotely on the scale of Enron. Enron's margins were completely unrealistic.

Moreover, the accounting rules governing mark-to-market, or fair value accounting, had changed since Enron's time. Enron was able to record the full NPV of long-term commodity contracts as revenue as soon as they were signed.

In fact, Enron was able to double count this revenue by selling the contract to an off-balance sheet entity.

Under IFRS at the time of Noble, firms were only allowed to recognize profit at the inception of a contract if the contract price differed from future prices or, in the absence of a futures curve, prices proposed by a team of experts.

Nevertheless, aspects of Noble's accounts appeared unrealistic. In particular, Noble made up for its wafer-thin margins by increasing its inventory turnover. Between 2010 and 2014, Noble's reported inventories fell by S\$125 million while its turnover grew by 228%. Inventory days fell from 26 days to 13 days.

Given fixed shipping times and other inevitable delays associated with bulk and agricultural commodities, this improvement in inventory efficiency was remarkable and indeed suspicious.

## Noble in 2011-2015: What our system found

Through the period from 2011 until 2015, Noble's manipulation risk score steadily deteriorated on the Transparently.AI system. The system gave Noble a rating of D in 2012. The risk score of 59% put Noble in the 82<sup>nd</sup> percentile for manipulation risk globally – no mean feat for a Fortune 500 company.

All of the same problems observed from 2001 until 2011 persisted: the reliance on affiliates, associates and joint ventures, the abnormally low effective tax rate, the income smoothing and accruals, the gearing and credit concerns, and the incredible working capital strain.

From 2010 onwards, accounts receivable turnover and accounts payable turnover were suddenly flagged as items requiring extreme care. It appeared that Noble, a group with extreme working capital strain, was suddenly getting paid much quicker than before and far quicker than peers.

In addition, the company was also paying its suppliers far quicker than before and quicker than peers. How this might be possible in a company with negative operating cash flow was a mystery and reflected the incredible acceleration in inventory turnover. It was as if inventories had disappeared from the balance sheet.

### Figure 4: Noble's receivable turnover from 2010 onwards

#### Accounts receivable turnover

Sales revenue divided by average accounts receivable. (ratio)

Metric / Year	2010	2011	2012	2013	2014
Value	28.57	28.24	27.94	28.51	25.09
Region Average	9.12	8.94	8.85	8.81	8.99
Region Median	6.13	5.98	5.92	5.79	5.84
Region Standard Deviation	8.13	8.10	8.06	8.20	8.47
Region/Sector Average	7.20	7.05	6.94	6.82	6.86
Region/Sector Median	5.30	5.13	4.96	4.90	4.91
Region/Sector Standard Deviation	6.31	6.29	6.28	6.27	6.41

Source: Excerpt from the Transparently.AI risk report for 2005

Interest coverage was incredibly low. For example, the ratio of EBITDA relative to interest expense in 2011 was a mere 2.58x in comparison to the regional average of 45.3x. Now, the lower the ratio, the more the company is burdened by debt expenses and the less capital it has to use in other ways.

Noble therefore had a high interest expense, which was matched by similar measures suggesting the company might have more debt than it was reporting. The high interest expense made little sense given that inventory funding costs had fallen drastically in relation to turnover. In a commodity trading business, inventory is typically the dominant expense.

From 2011 onwards, there were also new concerns relating to corporate governance and asset quality. Accounts restatement had become more common and the system picked up a number of statistical anomalies in the corporate governance risk cluster. In particular, dilutionary capital issuance was becoming extreme.

By the end of the 2015 financial year in May 2015, the AI software had given Noble a risk score of 80%, putting it in the 97<sup>th</sup> risk percentile globally. The company by this stage looked like a basket case on our system. However, the firm would not collapse into insolvency until 2018 when it was forced to restructure.

## Noble hits an Iceberg

On February 15, 2015, an independent research house known as Iceberg Research issued the first of four immensely damaging reports on Noble Group. It was later revealed that a former Noble employee with an intimate understanding of Noble's accounts had written the reports.

The [first report](#) focussed on Noble's valuation of its associates. This report famously showed how Noble used an accounting loophole to value a 13% interest in Yancoal, a listed Australian coal miner, far in excess of its true value. Noble classified Yancoal as an "associate" on its balance sheet even though it should have been a long-term investment.

The carrying value of Yancoal was S\$678m in the 2013 annual report even though the market value was a mere S\$11m at the time. Noble similarly valued other "associates" far above their fair market value.

Moreover, the company typically booked a profit based on these excessive valuations at the time that associates were entered into the accounts. Iceberg gave numerous examples of other inflated valuations of associates, including that of the S\$1.5 billion agricultural business that Noble sold to Cofco in 2015.

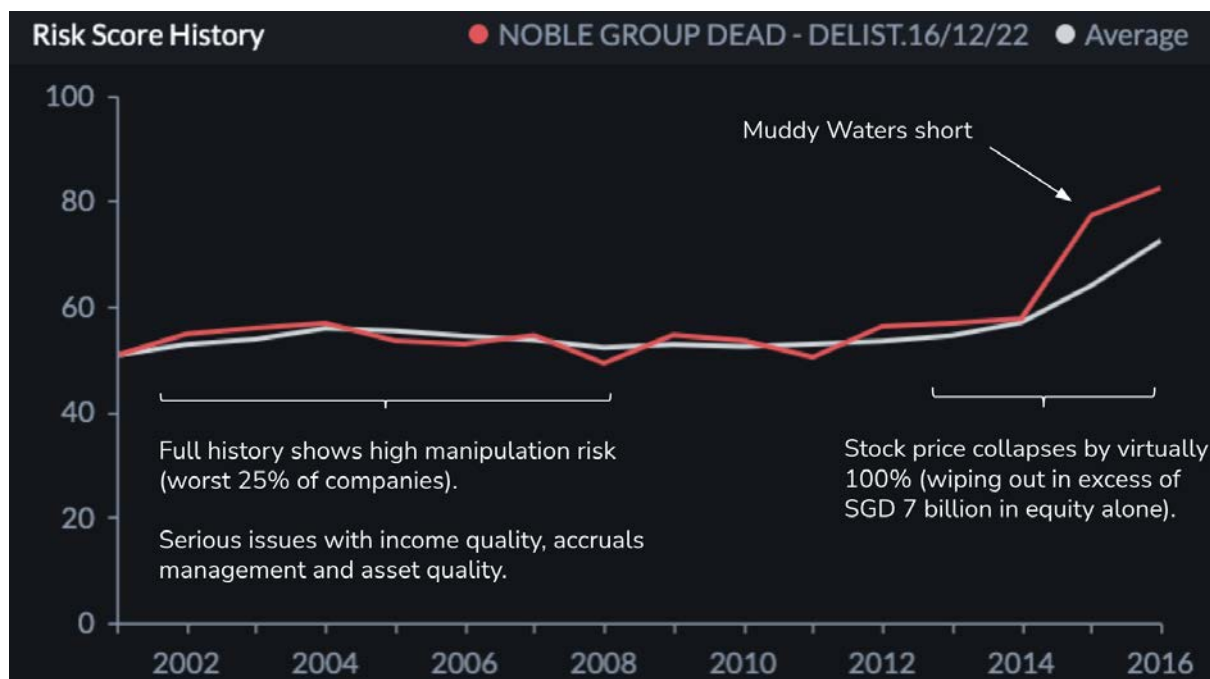
Iceberg’s [second report](#) focussed on the divergence we have identified between Noble’s net profit and operating cash flows. Iceberg explained that the divergence was primarily due to an increase in the assessed fair value of unrealised commodities contracts.

The value of these contracts “surged from near zero in 2009 to an unprecedented net S\$3.8b (\$5.8b assets and \$2b liabilities)” in late 2014.

This was pure mark-to-market accounting, as per Enron, except Iceberg claimed that Noble’s fair value contract valuations were “3.5 times the level of Enron’s contracts at its peak, eleven months prior to filing for bankruptcy.”

Noble’s growth in fair value accounted for more than 100% of reported net profit each year from 2009 until 2014, with the exception of 2012 when it accounted for 90% of profit.

**Figure 4: Noble’s Transparently.AI risk score through the years**



Source: *Transparently.AI*

Iceberg’s [third report](#) detailed how Noble understated its gross and net debt. Iceberg claimed that Noble’s gross debt was 41% higher than reported (+S\$1.6 billion) and that its net debt was 64% higher than reported (+S\$2 billion).

The main instrument used to hide debt was the inventory repo. Under a repo, a trader sells commodity inventories to a bank and buys back the inventories at a later date. As a consequence, inventories appear as sales on the last day of the reporting period only to re-emerge a day later.

Because of this action, interest costs appeared high in relation to the reported level of liabilities, an anomaly captured by the Transparently.AI system.

A couple of weeks after this third report, the infamous short seller [Muddy Waters](#) disclosed a short position in Noble shares, saying the company “existed solely to borrow and burn cash.” Noble responded saying that the comments were “inaccurate, unreliable and misleading.”

In February 2016, Iceberg released its [fourth report](#) entitled “Noble Group, a repeat of Enron.” It was largely a rebuff of counter-claims by Noble Group.

## Noble Group’s collapse

Noble recognised almost S\$2b in impairments in the year following Iceberg’s first report. The company’s debt rating was reduced to junk status and, as previously noted, in 2018 the company underwent a S\$3.5 billion debt restructuring, leaving it a mere shadow of its former self.

Shareholders reluctantly approved a debt-for-equity swap, resulting in majority control by creditors, mainly hedge funds.

In August 2022, Singapore authorities fined Noble Group S\$12.6 million for publishing “misleading information” in its financial statements. The fine followed a four-year investigation involving the Monetary Authority of Singapore (MAS), the Accounting and Corporate Regulatory Authority (ACRA), and the Commercial Affairs Department.

Iceberg Research criticised the fines as too small but, in many cases, Noble Group had exploited loopholes.

The company’s main violation was that it had applied an incorrect accounting treatment to certain offtake agreements with mine owners and coal producers. Instead of classifying these agreements as service contracts, they were treated as financial instruments which allowed them to inflate reported profits and net assets.

*Disclaimer: Views presented in this case study do not constitute financial research or advice. Transparently Pte Ltd does not have trading positions in the companies it expresses a view of. In no event should Transparently Pte Ltd be liable for any direct or indirect trading losses caused by any information contained in these views.*

*All expressions of opinion are subject to change without notice, and we do not undertake to update or supplement this report or any of the information contained herein.*



# Appendix I

Noble Group risk report 2016

# transparently.AI<sup>®</sup>

Automated early detection of  
accounting manipulation and fraud



PRIVATE & CONFIDENTIAL

## 2016

NOBLE GROUP DEAD - DELIST.16/12/22

# F

Rating (A+ to F)

## Report Purpose

This report identifies sources of accounting manipulation risk for the selected company and financial year. An overall accounting quality risk score is provided (0-100%), where **0 is high quality and 100 is low quality**. In addition, a **rating (A+ through to F)** is provided that represents a combination of the risk score and where that score lies relative to selected region and year, and relative to the stock's sector (within the region and year).

The AI system underlying this analysis has been trained to look for patterns in the accounts associated with accounting manipulation and various types of fraud. It does this by identifying these patterns in known historic cases of serious accounting manipulation, fraud and resulting corporate failure.

## Report Navigation

The report provides a history of the accounting manipulation risk score and illustrates the distributions for all scores within the selected region/year and sector/year. These charts also highlight where the selected stock lies within the region (e.g. 99th percentile implies the company is in the worst 1%).

Risk categories are provided (5 ratings from Low Risk to Very High Risk) for each of the 14 clusters of characteristics which generate the overall risk score. These risk ratings reflect the importance of each cluster regarding its contribution to the overall risk score and where that contribution lies relative to other stocks in the selected region and year. **The 5 ratings correspond to quintiles**. So a rating of Extreme Care refers to the worst 20% of companies on that metric, High Caution is the next 20%, etc.

Within each cluster that has a rating of Investigate Further or higher, up to a maximum of three of the most critical individual factors are listed. Importantly, **there are many more factors driving each cluster; only a maximum of three of the most serious factors for the selected stock are displayed**. The report text provides explanations for the clusters and factors. These are effectively **definitions of the features** the system has identified for the selected company, **recommendations for further user research and the importance of the feature**.

Note that some clusters might be highlighted but with no factors displayed. In these instances a risk alert has been triggered for the broad cluster but no single factor stands out as individually significant.

## Results Interpretation

The higher the overall manipulation risk score, the greater the likelihood of serious accounting manipulation, possibly extending to fraud, and subsequent corporate failure. The median time to failure from higher risk scores is 2-3 years (where failure represents a substantial collapse in the stock price).

For large cap companies, scores over 30-40% are worthy of further investigation. For smaller companies, scores over 50% are concerning. It is also very important to assess where the score lies within the region and sector distribution charts. For example, a company may have a score of 50% and be in the 75th percentile for the region (worst 25% of companies) and 90th percentile for its sector (worst 10% of companies). In addition, a company may have a lower score of, say, 30% but be in the 80th percentile (worst 20% of companies) of its sector. All of these examples represent concerning scenarios. Hence, **ANY single high value for the overall score, the region percentile and/or the sector percentile should be sufficient to trigger further investigation by the user**.

**The letter risk rating (A+ through F) incorporates all of these features to provide an overall indication of both absolute and relative risk of issues with accounting quality.** The rating scale is defined on page 4.

Having established that a company's scores are of concern, the cluster and factor analysis provides details regarding sources of higher manipulation risk.

**Please note that a single cluster (and/or factor), or even a range of clusters, may have high risk signals, while the overall risk score may be low.** Virtually all companies have some features that the system identifies as potentially concerning, but these may not be enough to result in a significant overall manipulation risk score. The factors and clusters are not equally-weighted. The system dynamically weights these depending on such things as the geographic region, the sector, the year, etc. Hence, we recommend starting with the headline risk score to determine if that is problematic. If so, the cluster and factor signals will explain the sources. In addition you, the user, may be particularly sensitive to certain clusters. For example, perhaps you are especially averse to companies with cash quality issues. In that case, even if the overall risk score is low, you may determine that a company is problematic if that cluster is being highlighted in the report

### **Important**

**It is very important that users consider the combination of identified key features, rather than focusing on individual components. The report is NOT a generic combination of accounting attributes.**

**The combination of features identified by the AI system and provided in the report is UNIQUE to that company,** based on the system's historic analysis of past manipulation and fraud. There are more possible unique combinations of clusters and factors within this report than there are fundamental particles in the observable universe

### Accounting manipulation risk ratings

Each company in Transparently.AI's Manipulation Risk Analyser receives a numerical risk score (0-100%). This score is an estimated joint probability reflecting the likelihood of accounting manipulation, the extent of manipulation and the resulting potential for a serious, adverse market event. In addition, metrics are provided to indicate where this score lies relative to the estimation region selected for a company and the company's sector (and within the selected financial year for each of these). It is important that these three metrics are all evaluated to determine both the absolute and relative risk estimated by the system.

To make this process easier, Transparently.AI also provides a single Accounting Manipulation Risk Rating that incorporates all of these features. Possible ratings are A+, A, A-, B+, B, B-, C+, C, C-, D, E and F. Each of these ratings are defined below.

Rating	Interpretation
A+	Highest quality accounts. Typically less than 5% of companies exhibit accounts at this level of quality. Indicative of a very high standard of corporate governance and accounting transparency.
A	Very high quality accounts. Companies with this rating will generally be within the top 10% of the selected region/year for accounting quality. Indicative of a high standard of corporate governance and accounting transparency.
A-	High quality accounts. Within approximately the top 15% of companies for accounting quality and transparency.
B+	Top quintile accounts. Within approximately the top 20% of companies for accounting quality and transparency.
B	Top quartile accounts. Within approximately the top 25% of companies for accounting quality and transparency.
B-	Reasonable accounting quality. Within approximately the top third of companies for accounting quality and transparency.
C+	Modest accounting quality. Companies lying within, approximately, the top 40% of all companies on accounting quality and transparency.
C	Some issues with accounting quality. Companies lying around the middle of the universe on accounting quality and transparency.
C-	Significant issues with accounting quality. Companies within this grouping are typically in the bottom 40% of the universe for estimated accounting quality and transparency.
D	Poor accounting quality. Bottom third of companies for accounting quality and transparency. Some of these companies will have been publicly identified as having significant accounting issues.
E	Very poor quality accounting and transparency. Bottom 20% of companies on accounting quality and transparency. Some of these companies will have been publicly identified as having serious accounting issues and will have already undergone some form of significant market pressure.
F	Substantial issues with accounting quality and transparency. Bottom 10-15% of companies on this ranking. Many of these companies will have been publicly identified as having serious accounting issues and will have already undergone some form of significant market pressure.





1. THE EXPLANATORY COMMENTS REGARDING WARNING SIGNS OF ACCOUNTING MANIPULATION SHOULD BE READ IN COMBINATION TO BUILD A NARRATIVE REGARDING OVERALL EVIDENCE OF RISK. DO NOT SELECT INDIVIDUAL FACTORS AND FOCUS ON THOSE IN ISOLATION.

This system is very different from other standard fundamentally-based risk models. Those models are based on static thresholds for individual factors.

**THIS REPORT IS NOT A GENERIC COLLECTION OF FACTORS.** This report provides the UNIQUE COMBINATION of characteristics identified for the selected company and the selected financial year, which the system has learned is associated with (and drives) the estimated level of risk. This combination is generated from a much larger array of possible factors that could appear in the report.

The report text provides an explanation/definition of each factor to aid interpretation. But it is the COMBINATION of factors which represents the CRITICAL INFORMATION for users.

2. THIS REPORT PROVIDES THE SYSTEM'S RISK ASSESSMENT AS AT THE TIME THE REPORT IS GENERATED. IT IS SUBJECT TO POSSIBLE CHANGE AT ANY TIME. THE SYSTEM IS CONSTANTLY LEARNING FROM THE ANNOUNCEMENTS OF ALL COMPANIES GLOBALLY AND APPLYING THOSE LEARNINGS TO ALL OTHER COMPANIES GLOBALLY.

Therefore, a company's risk level and report details can change even if the company itself has not announced any new information. This is a dynamic system that is always hunting for new forms of accounting manipulation, and using those findings to enhance its accuracy.

3. LETTER RATINGS (A+ THROUGH F) REPRESENT A MODEL COMBINING ACCOUNTING MANIPULATION RISK SCORES WITH THE RELATIVE MAGNITUDE OF THOSE SCORES COMPARED WITH OTHER COMPANIES IN THE SELECTED REGION AND YEAR AND IN THAT COMPANY'S SECTOR. These are intended for general guidance and information purposes only. UNDER NO CIRCUMSTANCES ARE THESE INTENDED TO BE USED OR CONSIDERED AS FINANCIAL OR INVESTMENT ADVICE, a recommendation or an offer to sell or invest, or a solicitation of any offer to buy any securities or other form of financial asset.

This report's disclaimer provides further information regarding report restrictions.

2016 World (Whole World Estimation Model)

**BMG6542T1505 NOBLE GROUP DEAD - DELIST.16/12/22 (Delisted)**

Industrials Sector

**Industry:** Ind & Comm Services

**Market Value:** 1.54B

**Country of incorporation:** Bermuda

**Domicile country:** Bermuda

**Exchange country:** Singapore

**Auditor:** Ernst & Young

**Return from peak (abs):** -99.53%

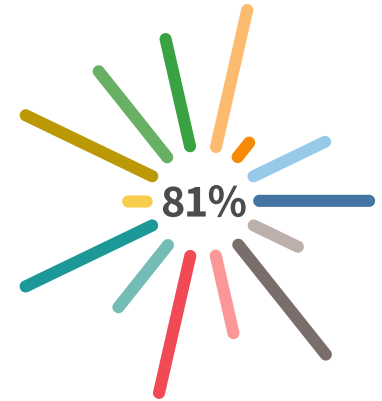
**Return from peak (rel):** -118.82%

**Expected:**

**Loss Total:** -586.73M to -3.42B

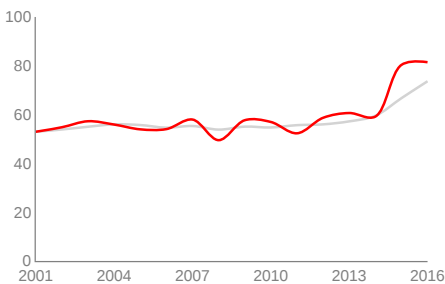
**Equity Loss:** -1.25B

**Debt Loss:** 667.83M to -2.17B

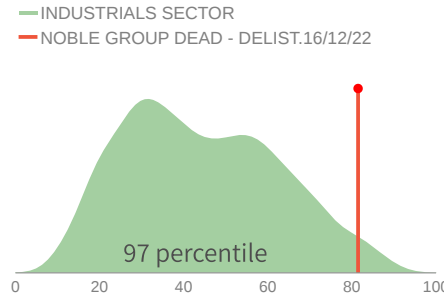


Transparently Rating **F** Risk Score **81%**

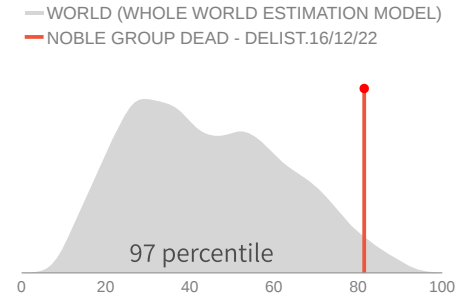
Risk Score History



2016 Sector Risk Distribution



2016 Risk Distribution



Overview

Income Quality	Extreme Care
Cash Quality	Extreme Care
Margin Signals	Extreme Care
Gearing	Extreme Care
Valuation Signals	Extreme Care
Credit	High Caution
Accruals Management	High Caution

Corporate Governance	High Caution
Smoothing Activity	Investigate Further
Investing Activity	Investigate Further
Asset Quality	Investigate Further
Working Capital Signals	Low Risk
Business Manipulation	Very Low Risk
Growth Signals	Very Low Risk

# Signals

## Summary

<b>Income Quality</b>	<b>Extreme Care</b>
Affiliates	Extreme Care
Other Non-Operating Income	Extreme Care
Non-Core Businesses	Extreme Care
<b>Cash Quality</b>	<b>Extreme Care</b>
Non-Cash Items	Extreme Care
Dividends	High Caution
Non-Production Assets Trend	High Caution
<b>Margin Signals</b>	<b>Extreme Care</b>
Changes in Operating Margin	Extreme Care
EBIT Margin	Extreme Care
Gross Profit Margin	Extreme Care
<b>Gearing</b>	<b>Extreme Care</b>
Total Borrowings	Extreme Care
Gearing Ratio	Extreme Care
Total Liabilities	Extreme Care
<b>Valuation Signals</b>	<b>Extreme Care</b>
Book Value	Extreme Care
Size	Extreme Care
Tobin Q	Extreme Care
<b>Credit</b>	<b>High Caution</b>
Credit-Related Data Quality	Extreme Care
Altman Z-score	Extreme Care
Interest Coverage Ratio with EBITDA	Extreme Care
<b>Accruals Management</b>	<b>High Caution</b>
Abnormal Accrual-Sales Activities	Extreme Care
Volatility of Accrual-Sales Activities	Extreme Care
Accrual-Companies Activities	Extreme Care
<b>Corporate Governance</b>	<b>High Caution</b>
Options	Extreme Care
transparently.AI Statistical Anomaly 4	Extreme Care
Accounts Restatement	High Caution

### Smoothing Activity

Investigate Further

Volatility of Cash ..... High Caution

Cash with Respect to Smoothing ..... High Caution

Income with Respect to Smoothing ..... High Caution

### Investing Activity

Investigate Further

Investing activities ..... Extreme Care

### Asset Quality

Investigate Further

Investments In Associates ..... Extreme Care

Long-Term Assets ..... High Caution

## Details

In the following section a description of each problematic cluster and factor is provided to enable users to determine the drivers of manipulation risk scores and ratings. Only the UNIQUE combination of factors identified for this stock (and selected from a much larger range of factors) is provided.

Where possible, data tables are also provided for the factor and aggregated region/sector metrics. Some factor models are highly complex and their output does not relate to any form of metric that can be easily interpreted by users. Hence, data tables are only provided for the simpler factors.

Please note that some companies have extreme values for certain factors. Transparently's system includes standardization procedures to ensure that outliers do not adversely affect results. One consequence of this is the possibility for table data of a company displaying the standardized value of a factor rather than the raw factor. This may result, for example, in factor data showing as unchanged over consecutive years. In addition, unusually large/small numbers may appear within the region and sector aggregate data as a result of outliers, despite the automated adjustment process.

**Where factors are highlighted as high or low this may be relative to region means OR medians and/or sector means OR medians.**

Some tables may contain non-consecutive years of data. Reasons may include the company not reporting data for that year, unavailable required datapoints for that year or data that does not meet requirements for the model (e.g. negative margins).

Data is also based on financials converted to USD from foreign currencies and a selection of adjustments made to the definitions of accounting line items to model different accounting standards.

### Income Quality

Extreme Care

Signal score 5 out of 5

Not all income is equal. Beyond the core operations of a business, non-operating income, such as income from affiliates, gains from investing activities, and extraordinary items, are subject to considerable discretion from management. These types of incomes provide greater opportunities for manipulation and lack of transparency.

Income from affiliates may not be at arm's length. The transactions between the affiliated entities may not be conducted on the same terms and conditions as expected in transactions between unrelated parties. Companies may use related party transactions to manipulate their financial results or conceal their true financial position.

Gains from investing activities like sales of stocks and bonds, or non-recurring gains from the sale of a division of the company, should be monitored to ensure the correct amount of income is reported. Finally, extraordinary charges/credits are those that are not expected to be repeated. As a result, they can be difficult to accurately estimate and have the potential to be manipulated.

In 2014, Tesco said it overstated its half-year profits by an estimated £250m because of irregular movements in rebates – the income that Tesco received from suppliers for hitting a certain level of sales or for support for promotions. The recognition of rebate was a judgment made by Tesco managers, who would not necessarily have to provide evidence for their assessment. As the estimates were based on an individual's judgment, there is an element of subjectivity.

To manage the risk of manipulation related to non-operating income, we suggest evaluating multiple factors, such as the complexity and volume of non-operating income, its importance to the financial statements, and the possibility of fraud or error. Additionally, it's crucial to assess related party transactions regarding non-



operating income to confirm they are carried out at arm's length and comply with applicable accounting standards.

This firm exhibits very high income quality risk.

## Contributing Factors

### Affiliates - Extreme Care

Companies investing in joint ventures and associates can share risks and resources and gain access to new markets or technologies. These investments allow for profit or loss sharing, but the recognition of such investments may be subject to manipulation.

When a company has a large proportion of income (profits or losses) driven by the share of profit from its joint ventures and associates, there is a higher risk of manipulation.

In some cases, the parent company may have the ability to influence the financial results of its joint ventures and associates through various means, such as manipulating contracts or providing financing that is not at arm's length. This could lead to the parent company manipulating the financial results of the joint ventures and associates to make its own financial results look better and share more profit in the parent company.

Additionally, if a parent company has a significant portion of its profits or losses coming from its joint ventures and associates, there is a risk that it may over-rely on these entities to meet its financial targets. This could lead to the parent company taking on excessive risk or making decisions that prioritize short-term gains over long-term sustainability.

To mitigate these risks, it is crucial to conduct research on the joint ventures and associates to gain a better understanding of their financial performance and their relationship with the parent company. Additionally, it is essential to consult with the company's auditors or other financial experts to determine if the company is complying with accounting standards in its financial reporting on the recognition of the share of profits or losses from joint ventures and associates.

This firm exhibits a very high risk signal for this factor.

### Proportion of income/losses from affiliates

Absolute value of income/loss from affiliates as a proportion of the absolute value of pretax income. (%)

Metric / Year	2013	2014	2015	2016
Value	8.71	8.44	9.42	10.28
Region Average	0.47	0.46	0.51	0.54
Region Median	0.00	0.00	0.00	0.00
Region Standard Deviation	1.80	1.76	1.93	2.09
Region/Sector Average	0.50	0.49	0.52	0.53
Region/Sector Median	0.00	0.00	0.00	0.00
Region/Sector Standard Deviation	1.85	1.81	1.95	2.06

### Other Non-Operating Income - Extreme Care

Apart from their core business operations, companies may seek to generate additional income by utilizing non-operating sources such as investment properties and financial instruments. These sources can provide the company with an opportunity to diversify its income streams and potentially increase its profits. However, these sources can also carry additional risks, including the potential for manipulation.

Unusual income generation with non-operating sources may suggest that a company is attempting to artificially inflate its earnings or hide losses. Non-operating sources of income typically include one-time gains, gains from the sale of assets, or other non-recurring sources of revenue. If a company's non-operating income constitutes a significant proportion of the company's equity, it may be a sign that the company is attempting to mask underlying financial problems or losses.

To examine the issue in greater detail, we recommend investigating the components that comprise the unusual incomes/losses from non-operating sources to determine if there is a reasonable explanation for such amounts. In addition, we recommend investigating the assets held by the company to determine if the company relies too heavily on those assets to generate income.

This firm exhibits a very high risk signal for this factor.

### Other non-operating income

Other non-operating income/losses as a proportion of total assets. (%)

Metric / Year	2013	2014	2015	2016
Value	-0.38	-0.20	0.05	2.36
Region Average	0.82	0.81	0.87	0.81
Region Median	0.31	0.31	0.33	0.29
Region Standard Deviation	1.68	1.57	1.72	1.59
Region/Sector Average	0.88	0.86	0.90	0.83
Region/Sector Median	0.40	0.41	0.43	0.37
Region/Sector Standard Deviation	1.63	1.50	1.61	1.51

### Non-Core Businesses - Extreme Care

This factor aims to assess how related parties impact the financial statements of the company. Related parties can have an influence on the company's financial performance by sharing profits or losses, or by having ownership of a certain portion of the company's profits or losses. Ultimately, these effects can impact the company's net profit or loss for the year that is attributable to its owners.

The system is flagging the company due to a significant portion of its profit/losses being attributable to joint ventures and associates or being shared with non-controlling interests. This may suggest that the company is heavily reliant on non-core operational activities, or that the non-controlling interests have significant influence on the company's financial performance.

However, it is important to note that while this factor may appear to be externally-driven, the company may also use it as an excuse to manipulate its financial statements and create a false sense of financial stability. The effect could also directly be a consequence of manipulation.

To further investigate this issue, we recommend conducting research on the joint ventures, associates, and non-controlling interests to better understand their financial performance and relationship with the parent company. Additionally, consulting with the company's auditors or other financial experts is essential to determine if the company is complying with accounting standards when reporting on the recognition of profits or losses from joint ventures and associates, as well as profit or loss attributable to non-controlling interests.

This firm exhibits a very high risk signal for this factor.

## Income/losses from abnormals

Absolute value of abnormals as a proportion of the absolute value of pretax income. (%)

Metric / Year	2013	2014	2015	2016
Value	24.81	35.28	17.82	100.00
Region Average	29.15	23.31	23.09	23.33
Region Median	11.14	6.77	6.89	7.27
Region Standard Deviation	37.37	33.19	32.95	33.15
Region/Sector Average	27.85	23.49	22.37	22.59
Region/Sector Median	11.95	8.57	8.17	8.03
Region/Sector Standard Deviation	35.93	32.55	31.64	31.87

## Cash Quality

Extreme Care

Signal score 5 out of 5

Cash is one of the most critical resources in any business. A company needs to generate enough cash from its activities so that it can meet its expenses and have enough left over to repay debts and grow the business. A company's cash flow provides indications regarding its financial health.

Though cash is more difficult to manipulate, companies can still use manipulative techniques to impact their cash flow and balances. Companies may use techniques such as inflating accounts receivable (e.g. Luckin Coffee scandal), allowing the company to record sales higher than actual sales made, or delaying payments to creditors, meaning the company delays paying their liabilities. In addition, companies can also manipulate the timing of cash outflows, such as delaying maintenance costs or stretching out payments to suppliers. These types of activities can give a false impression of the firm's true financial position, making it more difficult to assess its overall risk.

Given these signals, we recommend examining the statement of cash flows and significant related transactions within the financial period, such as cash flows from operating activities, dividends paid, and changes in inventory. Additionally, it may be beneficial to conduct an inquiry into the company's cash management practices to uncover any additional vulnerabilities or weaknesses in its control systems.

This firm exhibits very high cash quality risk.

### Contributing Factors

#### Non-Cash Items - Extreme Care

Non-cash items refer to expenses or gains that do not involve the exchange of cash and can include items such as depreciation, amortization and equity-settled share option expense. Sometimes, non-cash items can be employed as a means to manipulate financial statements.

Excess non-cash items to operating cash may suggest that a company is using accounting methods to artificially inflate its earnings by recognizing non-cash expenses or gains in its income statement without a corresponding impact on its operating cash flows. This can be a sign of poor financial management or potential accounting irregularities.

Let's say a company has been experiencing declining sales and profits for several quarters. To try to reverse the trend, the company's management decides to use accounting methods to artificially inflate the company's earnings by recognizing non-cash gains in the income statement without a corresponding impact on operating cash flows.

Note that a value of 100 indicates negative cash from operations.

To investigate further, we suggested reviewing the non-cash footnotes to the financial statements to ensure that they provide sufficient information about the nature and impact of non-cash items on the financial statements.

This firm exhibits a very high risk signal for this activity.

## Non cash items relative to cash flow

Non cash items in funds from operations excluding net income, depreciation, amortization and deferred taxes, relative to net cash flow from operating activities. (%)

Metric / Year	2012	2013	2015	2016
Value	16.11	58.79	100.00	100.00
Region Average	9.73	11.97	14.63	13.06
Region Median	4.71	3.79	4.70	3.66
Region Standard Deviation	49.16	57.51	60.91	58.73
Region/Sector Average	8.13	9.54	11.55	10.35
Region/Sector Median	4.71	3.79	4.70	3.66
Region/Sector Standard Deviation	48.44	56.48	59.30	58.60

## Dividends - High Caution

The dividend payout ratio measures the proportion of a company's earnings paid out as dividends to its shareholders. A high dividend payout ratio indicates that a company is distributing a significant portion of its profits to its shareholders, while a low payout ratio suggests that the company is retaining more of its earnings for future growth. A negative value represents a company paying dividends while loss-making.

If a company has a low dividend payout ratio but a significant amount of cash on its balance sheet, it could indicate that the company is manipulating its financial statements. One way to manipulate financial statements is by creating fictitious cash balances or inflating the reported amount of cash on the balance sheet. This is sometimes done to make the company appear more financially healthy or to meet investor expectations. In addition, a low dividend payout ratio can indicate firm stress given insufficient cash to pay dividends.

Note that a negative payout ratio indicates dividends were paid while income was negative. This implies an effort by management to maintain dividends (and possibly an illusion of firm strength) while the company is loss-making.

To investigate further, it is recommended that one analyze the company's dividend payout ratio trends over several years to identify any significant changes or abnormalities. It is also recommended one compare the company's dividend payout ratio with industry standards and its competitors to determine its relative position.

This firm exhibits a high risk signal for this activity.

## Payout ratio

Dividends paid as a proportion of income before extraordinary items. (%)

Metric / Year	2013	2014	2015	2016
Value	46.91	85.23	-2.71	0.00
Region Average	23.41	23.22	23.40	24.17
Region Median	8.44	7.25	7.80	9.68
Region Standard Deviation	35.20	34.05	35.02	34.16
Region/Sector Average	24.73	24.46	25.13	25.13
Region/Sector Median	8.44	9.58	10.48	11.41
Region/Sector Standard Deviation	34.70	33.34	34.43	32.99

## Non-Production Assets Trend - High Caution

The trend of non-production assets can be a useful indicator in identifying potential manipulation. Non-production assets are assets that are not directly used in the company's production process, such as investments and prepayments. These assets are usually stable over time, and any significant deviation from their historical trend can raise questions about the company's financial practices.

If a company's non-production assets are consistently and significantly lower than their historical trend over several years, it may indicate that the company is experiencing financial difficulties or is in a declining industry. In this scenario, the company may be incentivized to manipulate its financial statements to make its financial position look stronger than it actually is.

To conduct a more thorough investigation, we suggest examining the reason for the unusual trend, such as changes in management, business operations, or other contributing factors. We also recommend analyzing other financial impacts of the trend, such as gains from short-term investments and dividend income. Additionally, we suggest comparing the trend to industry benchmarks.

This firm exhibits a high risk signal for this activity.

## Margin Signals

Extreme Care

Signal score 5 out of 5

Anomalous patterns in firms' margins are a common sign of serious accounting manipulation.

For instance, a company that experiences an unexplained spike in profit margins may be manipulating its financial statements to inflate earnings. Moreover, when a company's profit margins are significantly higher than industry norms, it may indicate accounting fraud. This could be due to artificially inflating sales, understating expenses, or manipulating accounting records.

Margins that do not correspond with other financial metrics, such as revenue growth or cash flow, may indicate accounting fraud. Inconsistent gross and net margins may also be a sign of accounting fraud. In 2020, the SEC alleged China-based company Luckin Coffee Inc, intentionally and materially overstated its reported revenue. For example, Luckin allegedly materially overstated its reported revenue by approximately 28% for the period ending June 30, 2019, and by 45% for the period ending Sept. 30, 2019.

In the event that margin signals suggest the potential for fraud, it is advisable to seek information from external sources, such as industry benchmarks or analyst reports, to assess whether the margins are in line with industry standards. Additionally, it is recommended to confer with management, and request any additional explanations or documentation that may support the margins.

This firm exhibits very high margin manipulation risk.

### Contributing Factors

#### Changes in Operating Margin - Extreme Care

Operating margin is a key financial metric that represents the amount of profit a company generates from each dollar of revenue it earns. This factor evaluates changes in operating margins, rather than levels. Any unusual trends or inconsistencies in the operating margins can be a red flag for potential manipulation efforts.

A sudden and unexplained increase in operating margin could suggest that the company is manipulating its financial statements to create a false impression of profitability.

For example, let's consider a company reporting an unusually large jump in operating margins between the previous financial year and the current financial year. This may not be supported by corresponding improvements in revenue or cost management. This could suggest that the company has manipulated its financial statements by overstating revenue or understating expenses.

When unusual trends or inconsistencies in operating margins are identified, it is recommended one analyze the company's revenue and expenses account in detail to understand the drivers of the changes in operating margins. It is also suggested to obtain explanations and supporting documentation from management regarding the unusual trends or inconsistencies in the operating margins.

This firm has a very high risk signal for this.



## Gross profit margin change

Inverse of the change in gross profit margins. A value of less than 1 indicates an improvement in gross profit margins (i.e. the GMI component of the Beneish M score). (ratio)

Metric / Year	2013	2014	2015	2016
Value	1.13	0.81	1.82	0.09
Region Average	0.94	0.93	0.97	0.96
Region Median	0.99	0.99	0.99	0.99
Region Standard Deviation	0.40	0.36	0.36	0.33
Region/Sector Average	0.95	0.94	0.98	0.97
Region/Sector Median	0.99	0.98	0.99	0.99
Region/Sector Standard Deviation	0.39	0.35	0.34	0.31

## EBIT Margin - Extreme Care

EBIT, or earnings before interest and taxes, is a financial metric that measures a company's profitability before factoring in interest expenses and income taxes. Unlike operating margin, which only includes operating income and expenses, EBIT typically takes into account both operating and non-operating income and expenses. When a company's EBIT margins deviate from their normal range, it may be an indication of potential manipulation efforts.

A company with an unusually low EBIT margin can be incentivized to manipulate its financial statements to create a false impression of profitability.

For example, let's consider a company that is facing declining sales and revenue due to increased competition and unfavorable market conditions. As a result, the company's EBIT margin has been steadily declining, and its financial position is becoming weaker. To address this, the company's management may feel pressure to increase its reported profitability to maintain investor confidence and attract new investors. One way the company could do is to manipulate the financial statements to reduce the impact of its non-operating expenses, which are causing the low EBIT margins.

When these signals are observed, we recommend that operating margin and EBIT margin should be evaluated in conjunction to pinpoint the specific area that requires further investigation.

To investigate further, it is advisable to obtain an understanding of the company's non-operating activities, including any non-recurring or unusual events that may have occurred during the period. It is also recommended one evaluate the reasonableness of any non-operating expenses or income to ensure that they are not materially misstated. This may involve comparing with industry benchmarks or similar transactions.

This firm has a very high risk signal for this.

## EBIT margin

EBIT as a proportion of sales revenue. (%)

Metric / Year	2012	2013	2014	2016
Value	1.33	1.37	1.37	1.46
Region Average	13.52	13.51	13.86	14.47
Region Median	9.23	9.13	9.32	9.79
Region Standard Deviation	13.41	13.62	14.15	14.59
Region/Sector Average	11.03	11.00	11.17	11.84
Region/Sector Median	9.23	9.13	9.32	9.79
Region/Sector Standard Deviation	10.48	10.78	10.79	11.68

## Gross Profit Margin - Extreme Care

Gross profit margin is a financial metric that measures a company's profitability and efficiency in generating revenue from its products or services. It represents the difference between a company's revenue and the cost of goods sold, divided by the revenue.

An unusually low gross profit margin can indicate an incentive for manipulation, indicating that a company is facing challenges in generating revenue, controlling costs, or facing stiff competition in the market.

Let's say a company is facing intense competition in its industry and is struggling to maintain its market share. To make matters worse, the cost of its raw materials has increased, which is putting pressure on its profit margins. In such a situation, the company might be tempted to manipulate its gross profit margin to make it appear more favorable to investors and stakeholders.

We suggest investigating the company's pricing strategies and pricing decisions to determine if they have changed and contributed to the unusual activity. We also suggest investigating unusual changes in production/sales costs. Additionally, it is also essential to analyze the inventory turnover to determine if there are any inventory valuation issues that could be affecting the gross profit margins.

This firm has a very high risk signal for this.

### Gross profit margin

Gross profit as a proportion of sales revenue. (%)

Metric / Year	2013	2014	2015	2016
Value	4.88	5.51	5.76	6.22
Region Average	30.65	32.76	33.33	33.75
Region Median	25.51	27.29	28.00	28.51
Region Standard Deviation	20.76	22.05	22.08	21.90
Region/Sector Average	25.71	26.88	27.32	27.76
Region/Sector Median	22.22	23.07	24.03	24.49
Region/Sector Standard Deviation	17.89	18.39	18.43	18.41

## Gearing

Extreme Care

Signal score 5 out of 5

Gearing is a term generally used to describe a company's level of debt compared to its equity.

High levels of gearing can provide a source of business stress, as companies with a lot of debt may struggle to meet their debt obligations, or avoid breaching debt covenants, if they experience a downturn in their business. This can lead to pressure on the company's management to manipulate their financial statements in order to make their financial position appear stronger than it actually is. For example, they may use off-balance sheet financing or creative accounting techniques to understate debt levels or overstate income, assets, or cash flows. This can create a false impression of the company's financial health, making it more attractive to investors or lenders.

High borrowing costs or high debt servicing costs can also incentivize management to manipulate the accounts. If a company has high debt servicing costs, it will likely face challenges in meeting its debt obligations, such as making interest payments or repaying principal amounts. This can impact the company's profitability, liquidity, and overall financial health.

We use multiple metrics to evaluate the company's debt levels, including the amount and type of debt, and the associated stress, such as a high proportion of short-term debt to long-term debt. These metrics are used to generate signals for the company's gearing risk.

To minimize the risk of manipulation related to gearing, we recommend assessing the company's debt obligations. This can be achieved by evaluating the company's debt agreements and loan covenants to determine the terms and conditions of its debt. Additionally, it is essential to evaluate the company's ability to meet its debt obligations and generate sufficient cash flow to cover interest and principal payments.

This company exhibits a very high gearing manipulation risk signal.

Note: Gearing is not the same as gearing manipulation risk. A company may have high gearing levels but still have low gearing manipulation risk if it has transparent and appropriate accounting policies and does not engage in manipulative practices. Similarly, a company with low gearing levels may still have high gearing manipulation risk if it employs manipulative techniques to conceal its true gearing levels.

### Contributing Factors

#### Total Borrowings - Extreme Care

Borrowing levels, including lease liabilities, relative to earnings generation capacity could potentially increase the risk of manipulation in a company's financial statements. Companies may use various accounting techniques for financial reporting practices to manipulate their reported borrowing levels, which could impact their gearing ratios. In addition, unusual borrowing levels may be associated with manipulation elsewhere in the accounts.

The system has flagged this company for having high borrowing levels, which may include lease liabilities, and this indicates a high risk of manipulation. If this signal is accompanied by a high-risk signal for gearing, it is important to evaluate both signals together. Pay particular close attention to lease liabilities, if any, which represent the future cash outflows that the company is obligated to pay to the lessor as per the terms of the lease agreement.

When a company has high borrowing levels, it comes with the associated stress of interest and principal repayments. This could drive the firm to manipulate financial statements to hide true borrowing levels and/or influence other portions of the accounts, particularly when their earnings capacity is low.

In the case of companies having lease liabilities, high lease liabilities, often tied to inflated right-of-use assets, may indicate manipulation risk as companies boost asset values or engage in related-party leases. Compliance with accounting standards like ASC 842 or IFRS 16 adds complexity, potentially leading to inaccuracies and manipulation risk. It's essential to consider interest rates and gearing when evaluating a company's financial health and scrutinize the nature and accounting of lease liabilities for a comprehensive assessment.

To further assess the situation, we recommend evaluating the sustainability of earnings to determine if the company's earnings generation capacity is sufficient to service its debt obligations. We also recommend researching the company's debt management strategy, including stated plans for utilizing debt.

In this case, the company is generating a very high risk signal from this perspective.

### **Borrowing relative to EBIT**

Total borrowing (short and long term borrowing) is compared with EBIT. (ratio)

Metric / Year	2012	2013	2014	2016
Value	6.81	8.65	6.31	22.78
Region Average	4.32	4.48	4.52	4.69
Region Median	2.67	2.88	2.89	3.03
Region Standard Deviation	5.31	5.24	5.32	5.49
Region/Sector Average	4.55	4.72	4.64	4.70
Region/Sector Median	2.67	2.88	2.89	3.03
Region/Sector Standard Deviation	5.45	5.43	5.42	5.54

### **Gearing Ratio - Extreme Care**

A higher gearing ratio, which indicates a higher proportion of debt relative to equity, can be associated with higher manipulation risk as it may result in increased stress and pressure on management and the firm.

When a company has a higher gearing ratio, it means that it has a larger portion of its capital structure funded by debt. This can result in higher interest expenses and debt service obligations, which may increase the financial burden on the company. In turn, the management of the company may face increased pressure to meet debt obligations and maintain access to debt financing, which could lead to a higher risk of manipulation.

A higher gearing ratio can increase the overall financial risk and vulnerability of the firm, as it may be more susceptible to changes in interest rates, economic conditions, or other factors that could affect its ability to service its debt obligations. This heightened financial risk may further incentivize management to engage in financial manipulation to mitigate potential negative impacts on the company's financial position and reputation.

To investigate further, we recommend assessing the company's ability to generate sufficient cash flow to cover its borrowings. It is also important to consider other forms of company obligations beyond borrowings, such as pension obligations or other liabilities, to gain a comprehensive understanding of its financial position.

This firm exhibits a very high risk signal for this.

## Debt compared with total equity

Short term debt including the current portion of long term debt is added to long term debt including capitalized lease obligations. This is compared with total equity. (%)

Metric / Year	2013	2014	2015	2016
Value	134.50	93.62	216.23	123.96
Region Average	59.68	60.57	61.06	61.01
Region Median	31.43	32.14	33.22	34.55
Region Standard Deviation	74.08	74.87	74.81	73.04
Region/Sector Average	66.22	65.99	64.37	65.03
Region/Sector Median	39.25	38.11	37.03	38.72
Region/Sector Standard Deviation	75.93	76.64	75.24	73.92

## Total Liabilities - Extreme Care

The level of overall liabilities, which refers to the total amount of debt and other obligations owed by a company, can be an important indicator of a company's financial risk and stability. The level of overall liabilities can also be associated with the likelihood of financial manipulation.

The system is indicating that the company's total liabilities are unusually high, which in turn is generating a risk alert. High overall liabilities can increase the risk of financial manipulation. This is because a company with a large amount of liabilities may face pressure to meet debt repayment obligations, interest payments, and other financial commitments. In order to meet these obligations, management may resort to manipulating financial results to show better financial ratios or performance metrics.

Additionally, high overall liabilities may also limit a company's flexibility in terms of investment decisions, capital allocation, and strategic initiatives. This can further incentivize management to manipulate financial results in order to meet debt obligations or maintain access to funding sources.

This signal provides an overall picture of the company's liabilities level. In order to identify specific areas of concern, it is important to evaluate various risk factors, including interest rate risk, credit risk, liquidity risk, and other potential risks, to understand the company's ability to meet its liabilities. Additionally, assessing the company's cash flow generation and ability to service its liabilities is crucial. Evaluating these factors in combination can provide valuable insights into the financial health and risk profile of the company, and resulting manipulation risk.

## Liabilities relative to equity

Total balance sheet liabilities divided by total shareholders' equity. (%)

Metric / Year	2013	2014	2015	2016
Value	304.36	324.16	478.63	236.20
Region Average	124.40	126.59	126.59	126.76
Region Median	80.45	81.78	82.35	83.48
Region Standard Deviation	127.02	129.22	128.98	127.88
Region/Sector Average	147.20	148.01	144.99	145.94
Region/Sector Median	102.37	101.63	99.28	101.36
Region/Sector Standard Deviation	133.97	135.56	134.21	133.69

## Valuation Signals **Extreme Care**

Signal score 5 out of 5

Firms may manipulate in an effort to obtain a desired market valuation outcome. This can occur when the market is undervaluing the company, and management believes that the company's true value is higher. In such cases, management may use various tactics to artificially inflate the company's stock price and achieve the desired valuation.

Current market pricing activity may also provide an incentive to manipulate. For example, if a company's stock price is declining rapidly, management may be motivated to manipulate the market to prevent further losses. Alternatively, if the stock price is rising rapidly, management may be tempted to manipulate the market to capitalize on the momentum and increase the company's market valuation even further.

Companies that are small in size or have poor corporate governance may be more susceptible to market manipulation. Smaller companies may have fewer resources to devote to compliance and oversight, making them more vulnerable to fraud. Poor corporate governance can also create opportunities for management to engage in fraudulent activities without being detected or held accountable.

GT Advanced Technologies was a small technology company that produced equipment for the solar, LED and semiconductor industries. In 2013, the Company announced a supply agreement with Apple for sapphire screens, leading to a surge in its stock price. However, it was later revealed that GT had engaged in accounting fraud, inflating revenue, and misrepresenting the terms of the Apple agreement to mislead investors and boost the stock price.

When such valuation risk signals are observed, further analysis of the company may be required. Given valuation metrics employed are focused on incentives to manipulate, attention should be paid to whether or not there are significant manipulation signals in other clusters confirming the presence of manipulation.

This firm exhibits extreme valuation manipulation risk.

### Contributing Factors

#### **Book Value - Extreme Care**

This signal raises the possibility of a connection between the book value multiples and the manipulation risk of a company. The book value per share is calculated using historical costs, while the stock price is a forward-looking metric. The book value multiples can provide insights into whether its stock is overvalued or undervalued.

Generally, stocks trading on higher valuations (e.g., multiples) tend to exhibit a greater tendency to manipulate. However, in this context a lower book value multiple (higher book value yield) signals manipulation risk.

Where the book value per share is high relative to the share price, it indicates that the company may be undervalued in the market. This suggests that the market is not fully recognizing the company's value. This situation can create an incentive for management to manipulate the share price. They may feel pressure to boost the share price to bring it closer to the book value per share. This can be done through various means such as share buybacks, issuing false information, or engaging in accounting manipulation.

Moreover, a significant difference between the book value per share and the share price may also indicate that the book value may be overestimated. This overestimation can occur if the company's assets are overvalued or if there are liabilities that are not accounted for in the calculation of the book value.



To investigate further, we recommend paying attention to market information to see if there is any distortion of the market price and to further verify the reliability of market information. Additionally, we suggest looking for other signals in this report related to book value, such as the value of assets and inventory. If these factors show extreme risk signals, it may indicate further underlying issues with the company's financial health.

This stock exhibits very high manipulation risk signaled by market pricing relative to book value.

### Book value yield

Book value per share relative to the share price. (%)

Metric / Year	2013	2014	2015	2016
Value	85.89	80.52	158.48	233.04
Region Average	114.66	106.76	104.30	97.25
Region Median	83.56	77.94	75.06	69.68
Region Standard Deviation	101.37	94.36	94.88	86.19
Region/Sector Average	117.69	109.09	104.09	101.33
Region/Sector Median	87.88	82.32	77.56	74.02
Region/Sector Standard Deviation	98.44	91.87	91.86	86.56

### Size - Extreme Care

Market capitalization refers to the total value of a company's outstanding shares, and it is calculated by multiplying the current stock price by the total number of shares outstanding. It is a measure of the company's size in the financial markets.

Generally, smaller companies are considered to be at higher risk of manipulation, as they have lower levels of liquidity and market visibility, which makes them more vulnerable to manipulative activities. However, in this instance, the opposite appears to be true, and larger market capitalization is associated with higher manipulation risk. This could be due to a number of factors. For example, larger companies tend to have more complex corporate structures, which can make it easier to conceal manipulative activities. They may also have a larger number of shareholders, making it more difficult to detect suspicious trading patterns.

The size of the firm is essentially a given. There is nothing the analyst can do to investigate this factor further. However, one should note the model's signal of the strong tendency towards higher risk of manipulation amongst companies in this market cap group.

The system indicates that the size-related risk for this stock is very high.

### Firm size

Fiscal year-end market capitalization, billions

Metric / Year	2013	2014	2015	2016
Value	5.61	5.79	1.84	1.54
Region Average	0.72	0.78	0.82	0.84
Region Median	0.10	0.11	0.11	0.13
Region Standard Deviation	1.43	1.56	1.57	1.60
Region/Sector Average	0.64	0.71	0.76	0.77
Region/Sector Median	0.09	0.10	0.10	0.12
Region/Sector Standard Deviation	1.33	1.46	1.48	1.50



Tobin's Q, or the Q ratio, is a valuation metric that measures the market value of a company relative to its book value or total asset replacement cost. Tobin's Q does not measure a company's performance directly, but rather its market value relative to its replacement or book value. It represents the market's perception of that performance in comparison to its replacement cost.

Per the system's analysis, the company's Q ratio is low, indicating that its market value is low relative to its book value or total asset replacement costs. This could be because the market is undervaluing the company, possibly due to factors such as poor financial performance or a lack of growth prospects. However, this low Q ratio also increases the risk of manipulation, as management may attempt to boost the market price by inflating their revenue, creating a false impression of promising financial performance.

While Tobin's Q can provide valuable insights into a company's overall valuation, and incentives to manipulate, it is important to look beyond this metric to identify specific areas of high risk.

This stock exhibits a very high manipulation risk for this factor.

### Tobin Q

Market capitalization plus preferred equity and borrowings relative to average total assets.

Metric / Year	2013	2014	2015	2016
Value	0.62	0.52	0.44	0.41
Region Average	1.20	1.28	1.39	1.42
Region Median	0.86	0.89	0.90	0.97
Region Standard Deviation	0.97	1.08	1.30	1.21
Region/Sector Average	1.06	1.14	1.28	1.29
Region/Sector Median	0.78	0.81	0.82	0.86
Region/Sector Standard Deviation	0.84	0.94	1.22	1.14

## Credit High Caution

Signal score 4 out of 5

The concept of credit risk refers to the likelihood of borrower default on the debt they owe. This includes obligations to all forms of financiers, such as banks, bondholders and other lenders.

The credit risk of a corporation may be evaluated through its credit rating, where available. This score gives an indication of the probability that the organization will be unable to satisfy its debt obligations. Corporations might be encouraged to manipulate their credit rating and consequently resort to deceitful or unlawful practices to achieve better ratings and/or avoid bankruptcy.

Credit ratings are assigned to businesses by rating agencies, who evaluate an extensive set of financial figures to determine a company's creditworthiness. This includes metrics such as liquidity, debt ratios, profitability, and cash flow. As a higher rating can help a company access credit on more favorable terms and lower interest rates, some businesses may attempt to manipulate these figures to artificially inflate their rating.

Our system incorporates a wide combination of metrics of credit-related stress, including well-known ones such as the Altman Z-score and Piotroski F-score. The Altman Z-score establishes a numerical value that estimates the probability of a firm declaring bankruptcy. The Piotroski F-score is used to evaluate a company's financial position.

When analyzing credit risk, it is important to review credit ratings and reports from credit rating agencies to gain insight into the company's creditworthiness. Additionally, assessing the company's industry and market conditions, such as competition, the regulatory environment, and economic outlook should be conducted regularly. It is also important to track the company's credit risk/rating over time, particularly if there are any notable shifts in their financial standing and/or the market.

This company displays evidence of high credit manipulation risk.

Note: Credit manipulation risk is not the same as credit risk. For example, a company may have a low credit manipulation risk score but still have a high level of credit risk due to factors such as a weak credit rating or high debt levels. Conversely, a firm with a high credit manipulation risk score may still have a relatively low credit risk if it has strong financials, low debt levels, or diversified revenue streams. The signal reflects the contribution of credit-related metrics to the overall accounting manipulation risk score, and interactions with other clusters.

### Contributing Factors

#### Credit-Related Data Quality - **Extreme Care**

The availability and quality of credit-related data are crucial factors in assessing the credit risk of a company.

Poor credit data quality/availability increases credit assessment difficulty and hence increases credit risk. However, in this situation the reverse is true (lower measure value). Even when data availability is good, and a broad range of credit metrics are available, potential problems can arise when this factor interacts with other signals. Our system has identified a clear and significant relationship for this company between stronger credit data quality/availability and increased manipulation risk, in combination with the other key factors highlighted in this report.

This firm exhibits a very high risk signal for this indicator.

### Adjusted Piotroski score

The Piotroski score is a composite measure of credit risk comprised of 9 factors covering features such as aspects of profitability, leverage and efficiency. Lower values are associated with higher credit risk. We adjust the Piotroski score to account for missing data. This measure provides a value for the score taking into account the possibility that not all components of the score are available. Hence, it is a measure of both credit risk and data availability.

Metric / Year	2013	2014	2015	2016
Value	0.67	0.56	0.22	0.22
Region Average	0.60	0.60	0.60	0.61
Region Median	0.67	0.67	0.67	0.67
Region Standard Deviation	0.20	0.20	0.20	0.20
Region/Sector Average	0.63	0.63	0.63	0.64
Region/Sector Median	0.67	0.67	0.67	0.67
Region/Sector Standard Deviation	0.18	0.19	0.18	0.18

### Altman Z-score - Extreme Care

Our system includes analysis of the Altman Z-score model, which is a widely used tool for assessing the credit risk of a company. It provides a broad, high-level assessment of a firm's credit risk and likelihood of bankruptcy. The Altman Z-score takes into account various financial ratios that measure a company's liquidity, solvency, profitability, and stability. These ratios include variables such as working capital, retained earnings, total assets, total liabilities, and earnings before interest and taxes. The model uses a weighted formula to calculate the Z-score, which is then interpreted to assess the company's credit risk.

Usually, the lower the Z-score, the higher the odds that a company is heading for bankruptcy. However, in this instance the system is associating a high Z-score with higher credit risk and hence increased accounting manipulation risk. This is likely a result of interactions between this factor and others. The system is most likely identifying other factors that are pushing manipulation risk significantly higher. The system has identified the combination of lower Z-score with all other factors listed in this report as indicative of higher manipulation risk.

This firm exhibits a very high risk signal for the factor.

### Altman Z score

The Altman Z score is a composite measure comprising indications of working capital, retained earnings, EBIT generation, solvency and sales activity. Generally, lower values are associated with higher credit risk (and thus firm stress which increases the incentive for and probability of accounting manipulation). However, in certain cases this system may signal that higher values are associated with greater manipulation risk.

Metric / Year	2013	2014	2015	2016
Value	2.25	2.22	2.17	2.13
Region Average	0.82	0.82	0.80	0.79
Region Median	0.73	0.73	0.71	0.70
Region Standard Deviation	0.59	0.58	0.57	0.56
Region/Sector Average	0.90	0.90	0.89	0.86
Region/Sector Median	0.79	0.80	0.79	0.77
Region/Sector Standard Deviation	0.53	0.53	0.53	0.51

### Interest Coverage Ratio with EBITDA - Extreme Care

The interest coverage ratio is a crucial indicator of a company's credit risk. It assesses the company's ability to fulfill its interest payments on its debt obligations by utilizing its operating income. A lower interest coverage ratio generally signifies a higher credit risk, as it implies that the company may not generate enough earnings to cover its interest expenses.

It's worth mentioning that there are different variations of the interest coverage ratio, and the one used in this factor is earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by interest expense. EBITDA is often viewed as a close approximation to a company's ability to generate free cash flow, as it excludes non-cash expenses like depreciation and amortization.

Based on our system's analysis, it appears that the company has a relatively low interest coverage ratio. This could indicate that the company has less flexibility in generating sufficient earnings to cover its interest expenses, which may increase the risk of defaulting on its interest payments. If the company is struggling to cover its interest expenses, it could negatively impact its credit rating, which in turn could increase its borrowing costs and limit its access to credit in the future.

Weak earnings generation relative to debt costs can exacerbate the risk of accounting manipulation. When a company's interest coverage ratio is low, it may be more inclined to engage in accounting manipulation to artificially boost its earnings in order to meet its interest payment obligations. This is because a lower interest coverage ratio indicates that the company may have limited ability to generate sufficient earnings to cover its interest payments, which can result in financial distress and potential default.

To explore the issue more extensively, we suggest analyzing the company's debt level to see if it is heavily burdened by debt. We also suggest examining the company's revenue and cost structure to determine whether there are any underlying issues that are impacting its EBITDA.

If this signal is not accompanied by an additional risk signal for earnings before interest and tax (EBIT), it may raise concerns about the impact of depreciation and amortization on earnings. This is because the excessive impact of depreciation and amortization on earnings could potentially distort the company's financial performance. As a result, it is important to conduct further investigation into the reasonableness and calculation of depreciation and amortization to determine whether they are being appropriately applied.

This firm exhibits a very high risk signal for this.

### EBITDA interest coverage

EBITDA relative to interest expenses. (ratio)

Metric / Year	2012	2013	2014	2016
Value	2.58	2.36	3.10	1.38
Region Average	44.25	48.66	53.42	57.56
Region Median	10.33	10.61	11.41	11.88
Region Standard Deviation	108.34	119.95	133.11	140.90
Region/Sector Average	45.18	49.62	56.24	63.34
Region/Sector Median	10.33	10.61	11.41	11.88
Region/Sector Standard Deviation	107.27	118.75	134.08	147.06

## Accruals Management High Caution

Signal score 4 out of 5

Some businesses can be misleading with their accrual manipulation activities, in a way that influences outsiders, stakeholders and the public. These techniques can be hard to spot, so a combination of reliable sub-models has been developed in order to identify the indications of accrual manipulation in a company's financial records. With the help of this combination of models, the risk of accrual manipulation can be evaluated and potential flags can be raised when anomalous patterns arise.

Accruals manipulation involves the utilization of non-cash accounting practices that manipulate the amount of revenue, expenditure and assets in the financial statements. An example of this is the HealthSouth Corporation accounting scandal in the early 2000s. This fraud was perpetrated by making entries of false nature, or unsupported entries, amounting to over \$2.8 billion, in order to overstate income and disguise operating expenses.

We examine trends and patterns in accruals to ascertain if there have been any noteworthy modifications or anomalies; testing the acceptability of the estimates associated with accrual calculations.

This company exhibits high accruals management risk.

### Contributing Factors

#### Abnormal Accrual-Sales Activities - **Extreme Care**

Our system utilizes a model to analyze the correlation between sales and accrual activities using historical data from a company. Through this analysis, we have identified both typical and atypical patterns. Our focus, in this context, is on the typical pattern.

An unusually low level of typical accrual amount can be a cause for concern because it suggests that the company may be manipulating its financial statements through other means. One such method could be through cash sales. Cash transactions are often considered a higher risk area for financial fraud as they have little to no documentation or audit trail, making them more difficult to track and verify.

Companies that rely heavily on cash transactions may have an increased risk of fraud, such as the misappropriation of cash or the misreporting of transactions. For instance, the company may intentionally record cash transactions incorrectly to inflate revenue or profits.

To look into the matter more closely, we suggest performing further investigation to understand the reasons behind the unusual accrual levels. Furthermore, we advise assessing the quality of the company's earnings and cash flows to determine if they are sustainable over the long term.

This firm exhibits a very high risk signal for this activity.

#### Volatility of Accrual-Sales Activities - **Extreme Care**

Our system is designed to detect the interrelationship between three key factors: changes in working capital, sales activities, and cash generated from operations. It flags any instances where this relationship deviates from expected norms. By measuring the volatility in these deviations, our system can provide valuable insights into possible financial risks or irregularities in the company's operations.

High volatility can indicate the risk of manipulation. Companies that engage in financial manipulation may artificially inflate their financial performance without considering the relationship between these three key factors. If the level of volatility in these deviations is high, it could indicate that a larger number of such manipulations have taken place, which may pose a higher risk to the company's financial health.

When such a factor is highlighted, it is recommended one closely monitor and analyze the factors that influence changes in working capital, sales activities, and cash generated from operations. Our system is signaling significant deviation from the norm.

This firm exhibits a very high risk signal for this activity.

### **Accrual-Companies Activities - Extreme Care**

Our system utilizes a model to examine the interrelationship between total accruals and sales activities, working capital conditions, and fixed asset levels over multiple years. By analyzing these factors, we can identify both typical and atypical patterns. Our main focus in this context is on the atypical pattern that may indicate subjective accruals. These subjective accruals may not follow standard accounting treatments or may not make sense given the company's operations, potentially indicating financial risks or accounting irregularities.

In general, a higher atypical accrual amount is linked to a greater risk of significant accounting manipulation. Nevertheless, in this case, the system indicates that a lower atypical accrual amount is associated with a higher risk of manipulation. This is likely due to interactions between atypical accruals and other factors within the AI model. Specifically, the system is pointing out that when a low atypical accrual amount is combined with high-risk scores in other factors considered in this report, it is indicative of higher manipulation risk.

This firm exhibits a very high risk signal for this activity.



# Corporate Governance

High Caution

Signal score 4 out of 5

Corporate governance plays an essential role in establishing the internal controls that help to prevent fraudulent activities. When a company's governance structure is weak, it can provide opportunities for senior executives and other insiders to engage in accounting manipulation, with the potential to increase the risk of further financial manipulation. Such activities can take various forms, including the falsification of financial statements, misapplication of accounting policies, and incorrect reporting of financial performance to investors and regulators.

In addition, share-based compensation plans and other forms of remuneration used by senior executives may be manipulated to benefit the individual or to influence financial performance measurements. For instance, a company may grant share options to its high-ranking individuals with a set-price which is lower than the current market value of the stock.

Understanding the importance of good governance, our system evaluates a range of factors to determine the financial health of a company. These indicators include the auditor's opinion, various aspects of the auditor's activities, and the application of accounting standards.

Our system is also designed to identify particular mathematical patterns that often represent poor governance. These patterns typically arise when insiders manipulate the accounts, by either faking data or using other similar actions to influence the accounts. In other words, these models are designed with the intention of identifying financial misrepresentation.

To reduce the potential risks posed by corporate governance mismanagement, it is important to evaluate the company's governance structure. This evaluation should assess current processes and controls to ensure they are able to maintain accurate financial reporting. A risk assessment should also be conducted to examine financial controls and processes for potential fraud or manipulation. It is essential to ensure that proper ethics and transparency are part of the corporate governance framework.

This company exhibits high governance risk.

## Contributing Factors

### Options - Extreme Care

We employ a variety of measures of capital issuance as related to corporate governance quality. Several of our measures focus on options issuance, given our system has historically found significant relationships between unusual levels of option issuance and corporate governance risk.

Most notably, higher issuance may be associated with significant future dilution of existing shareholders relative to option recipients (which may be insiders), increased expenses, reduced cash flow and potentially a negative impact on the firm's valuation.

However, in this instance the signal is reversed. The transparently.AI system is providing a very high risk signal for low/reduced options issuance, relative to existing shares on issue, being associated with higher governance risk. It may be linked to reduced employee motivation, challenges with attracting and retaining employees, and financial weakness



We recommend an evaluation of the level of options issuance and questioning management as to the reasons behind a reduction in issuance levels. Note also that the system may be identifying other factors that are pushing manipulation risk significantly higher, resulting in a marginal to lower contribution from this factor. We recommend reading this signal in conjunction with other factors highlighted in this report for the more accurate overall risk assessment.

### Option issuance

Change in option grants relative to shares on issue. (%)

Metric / Year	2013	2014	2015	2016
Value	2.57	1.98	0.10	-0.49
Region Average	0.08	0.06	0.05	0.06
Region Median	0.00	0.00	0.00	0.00
Region Standard Deviation	0.67	0.52	0.43	0.36
Region/Sector Average	0.06	0.05	0.03	0.05
Region/Sector Median	0.00	0.00	0.00	0.00
Region/Sector Standard Deviation	0.59	0.47	0.38	0.32

### transparently.AI Statistical Anomaly 4 - Extreme Care

To detect the possibility of financial statement manipulation, we employ several approaches that comprise direct measures such as those utilized by auditors and short sellers. Additionally, we analyze incentives for manipulation, especially when a firm is undergoing financial pressure.

We have a few techniques that rely solely on statistical models that identify anomalous patterns that have typically been linked with a higher risk of manipulation. Although it may be challenging to justify these patterns, our findings reveal a strong correlation with actual manipulation and corporate failure when recognized as high risk. Thus, they are effective indications of potential manipulation risk.

Our examination for the chosen financial year has disclosed an extreme risk signal of this kind for the past 3 years.

### Accounts Restatement - High Caution

A restatement of earlier accounts is frequently a significant red flag. Accounts may be restated due to changes in accounting policies, acquisitions/mergers, discontinued operations, etc. Crucially, they may also be restated as a result of accounting irregularities, errors and/or fraud.

We identify recent restatements (relative to the selected financial year) in full year and interim accounts. While we also track reasons provided for restatements, we find that they are generally associated with significantly higher manipulation risk, regardless of reason.

We recommend users investigate all recent accounting restatements for signs of errors, omissions, irregularities, etc that are consistent with weaker corporate governance and hence higher manipulation risk.

## Smoothing Activity

### Investigate Further

Signal score 3 out of 5

Businesses may employ practices to obscure their accounting volatility, potentially resulting in higher stock prices. One strategy that is widely used is income smoothing, attained by employing earnings management practices such as manipulating accruals, early recognition of revenue, or deferred expenses. Still, if these practices become too extreme, it could be an indication of extreme manipulation and/or deceptive behavior.

Accrual-based accounting presents a mechanism that makes income smoothing much simpler to execute. This is because in many cases there is an inverse relationship between cash flows and non-cash elements. When this arrangement is pushed to an extreme, it serves as a warning sign that the company might be manipulating earnings volatility in an excessive manner.

Accrual accounting principles dictate that a company must recognize revenue from a two-year service contract over the course of the contracted services, even when payment has yet to be received. Yet, if a company experiences volatile financial performance with earnings that fluctuate significantly from year to year, they may choose to apply income smoothing. Revenue recognition is deferred from the first year of the contract to the second year, despite the services being provided. This produces a more even earnings stream over the duration of the contract, but raises suspicion as to potential manipulation.

To address the risk, certain steps should be taken. Firstly, policies regarding revenue recognition should be reviewed to ensure they accord with industry standards and accounting principles, and that these policies are implemented consistently. It is also important to examine any allowances for doubtful accounts, warranties and other allowances which are held; confirming that they are suitably established and not being utilized as a means of earnings smoothing. Finally, it is important to assess the company's relationships with both its customers and suppliers in order to investigate whether any transactions are being engineered to smooth out profits.

This company exhibits a market-average smoothing manipulation risk score.

### Contributing Factors

#### Volatility of Cash - High Caution

Cash income can be interpreted as the net cash that is actually received or paid, regardless of when the sale or service was made. Volatility in cash income can be a signal of potential manipulation activity.

Low volatility in cash income refers to a situation where the amount of cash received by a company from its operations remains relatively stable over time. In such a scenario, management may be incentivized to manipulate the company's financial accounts to boost its reported earnings. Also, when cash income is low in volatility, it becomes easier for management to manipulate accounts without raising red flags.

This signal should be assessed in conjunction with other factors in the same cluster that indicate the engagement of smoothing activity.

This firm exhibits a high risk signal for this activity.

## Volatility of cash income

Cash income in this context refer to net income less accruals in the income statement. The volatility of cash income (standardized across companies by total assets) is measured over 5 years, where available (minimum of 3 years). Volatility is measured in terms of the standard deviation of cash income. (%)

Metric / Year	2013	2014	2015	2016
Value	8.95	4.03	7.76	7.67
Region Average	11.52	12.20	12.93	13.09
Region Median	8.88	8.97	9.03	8.93
Region Standard Deviation	10.86	11.99	12.59	12.96
Region/Sector Average	9.94	10.66	11.18	11.11
Region/Sector Median	8.88	8.97	9.03	8.93
Region/Sector Standard Deviation	8.10	9.58	10.37	10.41

### Cash with Respect to Smoothing - High Caution

Cash income can be interpreted as the net cash that is actually received or paid, regardless of when the sale or service was made. Unusual levels of cash income can indicate higher smoothing/manipulation risk.

When a company has lower cash income, it may face financial challenges, such as reduced profitability, cash flow constraints, or difficulties in meeting financial obligations. In such situations, there may be increased pressure to present better financial results or hide unfavorable financial performance. This can create incentives to engage in income smoothing or manipulation to hide the negative financial position.

We suggest investigating the sources of any unusual cash income activity to understand if it is related to normal business operations, non-recurring items or other factors. Furthermore, it would be helpful to seek clarification from the company's management regarding the unusual cash income activity.

This firm exhibits a high risk signal for this factor.

### Income with Respect to Smoothing - High Caution

The ultimate goal of smoothing activity is to achieve stable net income levels. Both excessively high or too low net income can create incentives for management to engage in smoothing or manipulative practices in financial reporting.

When a company reports lower net income, it may be perceived as a negative financial performance indicator by stakeholders. This may create pressure for the company to improve its reported net income levels in subsequent periods, even if the underlying financial performance may not support such improvement. In this instance, there may be an increased likelihood of engaging in income smoothing and other forms of manipulative activity.

To explore the issue more extensively, we recommend comparing this signal with other risks highlighted in this report for a more color regarding specific drivers of the overall manipulation risk score.

This firm exhibits a high risk signal for this factor.

## Investing Activity

### Investigate Further

Signal score 3 out of 5

Investing in assets and businesses with low visibility to outsiders can be extremely risky. This is because high volumes of investment activity, with sizable inflows and outflows of capital, can lead to opportunities for manipulation and exploitation.

Businesses may try to enhance their financial statements by manipulating their investments. This could involve exaggerating the value of their investments, concealing investment losses, misclassifying investments, incorporating complex financial instruments, and inducing artificial demand. All these methods can be highly intricate and difficult to detect.

A company may decide to buy a high-value property with the intention of artificially inflating its net worth. Through the use of various practices, the asset is deliberately overvalued, despite evidence of its actual worth in the market. The company may pay a higher or lower price than the market value and they may also classify the asset as intended for sale instead of use to avoid incurring any depreciation expenses.

An illustration of this approach is when a company invests in a variety of start-ups across multiple industries, reselling these investments shortly thereafter for a considerable profit. This process can be repeated, steadily acquiring and then quickly flipping start-ups before they have a chance to mature or become lucrative. This approach offers the impression of high investment activity, while also potentially producing swift, but unsustainable, rewards.

Low levels of investing activity can also be a sign of potential manipulation.

It is possible that when a company avoids making investments, they may be trying to maintain the illusion of financial stability in order to disguise any financial hardship the company is facing.

The risks involved with a company's investment activities can have a significant impact on its finances. As such, it's important for companies to fully evaluate their investment decisions and assess the investment performance to ensure it meets the desired objectives and produces favorable returns. Additionally, external elements need to be taken into consideration too, such as the changing market environment, interest rates, and any relevant regulations.

This company exhibits moderate investing activity manipulation risk.

### Contributing Factors

#### Investing activities - **Extreme Care**

Net change in investing activities, which is the difference between the acquisitions of fixed assets and disposals of fixed assets, can be a positive indicator of growth and investment. However, it is important to consider the potential risk of manipulation behind the net change in investing activities.

Our system may have detected a negative change in the company's investing activities, which is the result of disposing of fixed assets exceeding their acquisition. While this negative change can provide the company with more cash on hand to facilitate its main business operations, it can also be a red flag for investors and financial analysts. A negative change in investing activities may suggest that the company is facing financial difficulties, which could potentially lead to the manipulation of financial statements to present a more favorable picture of the company's financial health.

Alternatively, the system may also flag a company for zero or very low positive values for this factor, implying little to no investing activity which may signal a firm under stress and unable to engage in significant investment.

To delve deeper into the matter, we recommend looking into whether the company is executing its plans for expanding operations and infrastructure. Additionally, we suggest examining whether the company is selling off fixed assets to generate cash for legitimate business purposes.

This firm exhibits a very high risk signal for this activity.

### Change in investment in fixed assets

Fixed asset investments as a proportion of total assets (%). A negative value represents net investment while a positive value represents disposals.

Metric / Year	2013	2014	2015	2016
Value	2.44	1.85	0.39	-1.06
Region Average	4.16	3.89	3.55	3.61
Region Median	2.18	2.10	1.95	2.00
Region Standard Deviation	5.18	4.84	4.34	4.45
Region/Sector Average	3.40	3.21	3.09	3.13
Region/Sector Median	1.82	1.77	1.71	1.77
Region/Sector Standard Deviation	4.45	4.24	3.96	4.00

Signal score 3 out of 5

When assessing the financial well-being of a firm, asset quality is an area that should be given significant consideration. Due to the fact that management may be afforded a considerable degree of discretion in how assets, especially intangibles and goodwill, are reported on the balance sheet, any alterations to accounting policies, such as amortization, run the risk of resulting in manipulation of figures.

An effective way to measure a company's asset quality risk is to examine its balance sheet. Having a large proportion of tangible assets such as property, plant and equipment can indicate less risky asset quality. This is because tangible assets are often more easily quantifiable, meaning they can be accurately evaluated by external parties. Conversely, assessing intangible assets such as customer relationships or intellectual property can be trickier, as they are often harder to measure and vary based on who is doing the evaluation. This was seen in the case of the German payments company Wirecard in 2018, when they were accused of exaggerating the value of their intangible assets in order to alter the company's value.

In the face of these potential risks, further measures should be taken to examine the accuracy of the firm's financial statements in this area. A key option is to inspect the company's accounting policies in relation to intangible assets, to ascertain that they are compatible with accounting principles and industry standards. Another possible solution is to assess the value of intangible assets separately to evaluate their reasonableness.

This firm exhibits moderate asset quality risk.

### Contributing Factors

#### Investments In Associates - Extreme Care

Investment in associates usually takes place when a company owns between 20% and 50% of the voting shares of the other company. It means that the company holds a significant influence over the management of another company, without having control over it.

Investment in associates can provide the company with a source of income, as the company is entitled to a share of the profits. Also, it can give the company access to new markets or technologies as the associates may operate in different industries or have unique capabilities.

A high value of investments in associates can indicate the risk of manipulation. This is because the acquisition price of the investment in associates is often subjective and can be easily manipulated. Additionally, the share of profits generated by the investment in associates can also be used to manipulate financial results, especially if the company has a significant influence over the associate company's management or financial policies.

To investigate further, we recommend reviewing the financial statements to assess the value of the investments in associates. In cases where there is an impairment assessment of the investments in associates, seeking expert advice from professionals such as valuation experts and accountants is highly recommended. They can provide valuable insights and analysis on the potential impact of the impairment.

This firm exhibits a very high risk signal for this activity.

## Investments in associated entities

Investments in associated companies (e.g. non-consolidated subsidiaries, JVs, loans to related companies, etc) relative to total assets. (%)

Metric / Year	2013	2014	2015	2016
Value	6.23	11.70	4.69	5.46
Region Average	1.57	1.61	1.63	1.67
Region Median	0.00	0.00	0.00	0.00
Region Standard Deviation	3.47	3.54	3.51	3.57
Region/Sector Average	1.48	1.50	1.51	1.54
Region/Sector Median	0.00	0.00	0.00	0.00
Region/Sector Standard Deviation	3.23	3.27	3.21	3.29

## Long-Term Assets - High Caution

Other long-term assets, including prepaid expenses, long-term receivables, intangible assets, and other non-current assets not easily liquidated, can be susceptible to manipulation.

An increase in other long-term assets (lower value in table below) can pose the risk of manipulation. For instance, companies may capitalize expenses such as advertising or research and development costs that do not comply with accounting standards to artificially inflate the value of the other long-term assets. Similarly, companies may inflate estimates used to calculate the value of deferred tax assets to make them appear higher.

To further investigate, we recommend understanding the nature of other long-term assets from management and inquiring about the reasons for any changes. We also recommend consulting with accounting experts to obtain a better understanding of the relevant accounting standards and principles.

This firm exhibits a high risk signal for this activity.

## Long term asset changes

Annual change in 1 minus the the ratio of current assets plus net fixed assets to total assets. This is the AQI portion of the Beneish M score. (ratio)

Metric / Year	2013	2014	2015	2016
Value	1.18	1.25	0.57	1.07
Region Average	1.11	1.09	1.11	1.08
Region Median	1.00	0.99	1.01	0.99
Region Standard Deviation	0.59	0.51	0.52	0.46
Region/Sector Average	1.12	1.09	1.11	1.07
Region/Sector Median	1.00	1.00	1.01	0.99
Region/Sector Standard Deviation	0.53	0.48	0.49	0.44



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