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Fraud Company Reevaluating: A Discounted Cash Flow Model of Luckin Coffee

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Abstract. This research uses Luckin Coffee company as an event study to examine the breakdown traditional valuation models after disclosed trust issues related to a particular scandal. Additionally, the case study illustrates the model revisions made in response to a trust issue as the research as to the research overall approach contrasted with other studies that used either a multiple period or time window model. Instead, the research employed a baseline year and post fraud approach, using the restated financial statements from 2020, to create both a Discounted Cash Flow (DCF) valuation model and a relative, or market based, valuation model, using adjusted features such as a governance risk premium or discount to account for the markets repudiated view of “trust penalty" related to firms engaged in fraudulent activity. the research findings suggest that the adjusted range coincided with the market price reaction to the trust impairment of the firm, elevating the explanatory pother research and overall impact of the adjusted valuation models and findings. The study also provides additional considerations and insight for financial professionals to adjust valuation models and price highly uncertain assets based on quantitative risk factors when assessing highly uncertain investments.

Keywords: Financial Fraud, Revaluation Model, Trust Penalty, Luckin Coffee

1. Introduction

Financial fraud, which has always been a significant hurdle for almost all conventional methods of company valuation, certainly poses a challenge to precisely accounting for the value of the corporations, particularly in extreme situations of information asymmetry, such as that concerning the 2020 fraud scandal with Luckin Coffee. Luckin Coffee—a soaring significant brand in China and a noteworthy story prior to the fraud—was unexpectedly thrust into a shocking public scandal regarding its accounting practices in 2020. As with many companies, with accounting irregularities, the Luckin Coffee case illustrates the research accesses of conventional models, such as Discounted Cash Flow (DCF) and relative valuation, might not be a good proxy when trust erodes.

From a modest coffee shop to a brand that spread across China and almost took down Starbucks, these companies, despite accounting scandals, can still represent significant commercial value. In these situations, many investors struggled with two main issues: (1) how to find the real underlying value of the firm when the reported data may lack some credibility, and (2) how to estimate the additional risk factors that the market may perceive due to management failures. Both of those

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issues have a direct impact on the investor's action, particularly considering what a safe level of margin may be worth.

In this paper, the research will illustrate a practical, real, and efficient baseline standard for valuation for all firms that have trust-based issues by creating a clear, useful, and standard model for recovery for governance and reputation. Accordingly, the research considers Luckin Coffee as a case study and address a three-stage analysis for revaluation: the baseline year reconstruction, parameter adjustment, and effect verification. This paper does not attempt to recreate every multi-year complicated model, but rather derive the reasoning associated with important parameter adjustments to allow for a solution rapidly implementable for revaluation. Some adjustments are noted as key parameters: First, the governance Risk Premium (GRP), which is a parameter represents an additional risk premium added to the research lighted Average Cost of Capital (WACC), reflecting the extra risks faced by investors in the market due to corporate fraud. Predictions regarding this risk premium may, of course, vary across different cases. Second, the Reputation Discount (RD), which is a parameter involves reasonable adjustments to relative valuation multiples to capture deviations arising from reputational damage, thereby accounting for the expected premium or discount penalties imposed by the market on companies with impaired credibility.

By examining these parameters, this research empirically supports the "trust penalty" in markets and clearly exhibits one way valuation models may be reasonably restored. The findings support the prospect of reducing "trust penalties" when there is underlying value to report on value. This yields a meaningful valuation conclusion and potential long-term investment opportunities. As such, this paper offers a theoretical contribution primarily expressed in two aspects. First, providing a clear framework, and associated parameters for the coverage of valuation models procedural developing in high-risk scenarios are intended for later use in investment banking, asset management activities, and institutional investor activities. Second, the research present market pricing evidence to show some price adjustment occurs after an undoing of its underlying value to the state of fraud. The price is not instantaneously recovered but positively responds after a recovery period from the state of fraud.

2. Literature review

Traditional valuation approaches presume the existence of a stable information environment and trustworthy accounting data. Valuation approaches become unstable if the information from financial statements is not reliable [1]. If firms are in an environment of significant information asymmetry or accounting manipulation, the estimates of intrinsic value that will diverge sharply from the market price estimates in the economic environment, and the parameters it can work with in valuation must change.

A new body of literature is documenting the economic costs associated with accounting fraud. It concludes that the losses investors are subjected to after public fraud is significantly larger than any potential penalties from legal action [2]. Another paper also finds significant returns to investors as the research as a statistically significant increase in risk of future price crashes, and both collectively acknowledge that the erosion of investor trust affects firm finances and price for a longer horizon [3]. Taken together, this supports the proposition of a "trust penalty" in the valuation model after fraud.

Recent research has also provided additional evidence connecting governance and reputation risk to firm value. Studies published on the relationship of ESG disclosure or levels of corporate transparency. For example, better governance structures subject firms to a benefit of lathe research r financing costs and higher valuations [4]. These findings as a reputation-based discount; some

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researchers document findings where accounting manipulation results in price and risk across structures [5]. Collectively, this evidence supports incorporating a governance risk premium (GRP) to the discount rate and a reputation discount (RD) to comparable multiples to estimate intrinsic value.

The case analyses of major scandals like Enron, Wirecard, and Luckin Coffee–show that recovery in valuation is dependent on credible remediation. Some results show that Luckin's post-fraud restatement and restructuring gradually restored the market's confidence and the price and reconstructed intrinsic value (RIV) became relatively close together [6]. This the empirical evidence to suggest that valuation under a trust crisis should be dynamic, and the research should allow for GRP and RD to decrease as credibility increased [7].

Previous literature has demonstrated that fraud leads to measurable trust costs through the cost of capital and relative pricing [8]. There are very few studies that offer an operational-based model to convert qualitative risk into modifying the parameters in the standard model. In this regard, the paper addresses this gap by proposing a transparent 'trust adjusted valuation' involving GRP and RD added to standard DCF and multiple and then test it empirically based on Luckin Coffee.

3. Research design

Luckin Coffee represents a perfect case to study valuation considering a trust crisis. In 2020, the company was found by regulators to have committed accounting fraud, resulting in a thorough financial restatement and a restructuring of its corporate governance framework. Unlike many accounting fraud cases, which result in liquidation, Luckin survived and listed again on the OTC market resulting in a complete observability of the 'collapse - recovery' trajectory. These factors make Luckin an interesting laboratory to assess how valuation metrics can be recalibrated after trust has been violated.

All financial data are sourced from publicly available information such as Luckin Coffee's Form 20-F (2020 Restated), SEC filings, and Yahoo Finance [9]. The research also utilizes a baseline year reconstruction method, starting from 2020, the first year after the company's fraudulent event occurrence and following years for valuations going forward [10]. Stage 1 which explicit forecast is based on the company's restated 2020 financial data following the fraud incident, coupled with conservative growth assumptions derived from subsequent financial results. Stage 2 is the terminal period which suggests a perpetual growth model a growth with a long-term growth rate g = 2.5%, reflective of sustainable macroeconomic growth. Table 1 presents all variables and assumptions.

Table 1. Cost of capital and valuation assumptions

Ratio	Name	Value
Rf	Risk-free rate (10Years U.S. Treasury, 2020)	0.9%
ERP	Equity risk premium	6%
IND beta	Industry beta for coffee retail	1.1
GRP	governance risk premium	3.25%
WACC	the research average cost of capital	10.8%
RD	reputation discount rate	35%
g	terminal growth rate (long term GDP proxy)	2.5%

Source: Yahoo Finance

Use re-stated 2020 financials to effectively produce a and trustworthy set of cash flow components. The governance risk premium (GRP) will be added to the discount rate, and a reputational discount (RD) will be applied to comparable multiples Finally the research compares the post-adjustment valuation bands to the displayed market value and evaluate their explanatory research.

4. Empirical analysis

In early 2020, Luckin Coffee was embroiled in an accounting scandal related to its admission of forging approximately USD 300 million in revenue. Following the admission, its stock dropped over 80% and was delisted from Nasdaq, but from the time of its disclosure, Luckin was expeditiously restructured to restore the company. This section reconstructs Luckin's intrinsic value based on restated data, including governance risk premiums and credibility discounts to illustrate how the confidence of the market began to come back.

4.1. Model adjustment of the value

By using the restated 2020 Luckin Financial statements and following forms from 2021 to 2025, the series of free cash flows (FCF) was reconstructed, shown in Table 2:

Table 2. Annual cash flow performance in Luckin Coffee

Year	CFO (millions in USD)	CFI (millions in USD)	FCF (millions in USD)
2020	-364.3	-262.4	-626.7
2021	19.4	0.1	19.5
2022	2.9	-115.7	-112.8
2023	408.6	-485.7	-77.1
2024	579.4	-439.8	139.6
2025(TTM)	893.6	-794.2	99.4

Source: Luckin Coffee Annual Report

Table 3. Luckin Coffee value calculation

Year	FCF (millions in USD)	Present Value (millions in USD)
2021	19.5	17.6
2022	-112.8	-91.9
2023	-77.1	-56.7
2024	139.6	92.6
2025	99.4	59.5
	Terminal Value (PV)	735.1
	Enterprise Value (EV)	756.3

Source: Luckin Coffee Annual Report

As it mentioned before, this study used the adjusted parameters with WACC (10.8%) and g (2.5%), the DCF model yields the following results in Table 3.

The implied equity value is -589.9 M USD (or about -0.29 USD per share), after adjusting for liabilities and incorporating the 35% reputation discount. This result illustrates the extreme levels of

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investor risk aversion in the post fraud period market participants priced Luckin's equity below its liquidation value, perceiving it as a distressed asset.

4.2. Relative valuation adjustment

For a comparative relative valuation exercise, Starbucks and competitors from the region (e.g. Tim Hortons China, Cotti Coffee) the research re leveraged as benchmarks. The multiple averages of the sector around 2020–2021 the research re approximately a P/S = 3.2× and a P/E = 25×. By applying the hypothetical 35% reputation discount, the multiples will be adjusted to a P/S = 2.1× and P/E ≈ 16×.

When utilizing Luckin's restated 2021 revenue and earnings, this range of valuation (USD 1.2 to 1.5 B) closely approximates Luckin's observed OTC market capitalization during the period (2021 to 2023), implying that reputation effects significantly increase.

4.3. Scenario based DCF valuation

To model valuation uncertainty, the following three DCF scenarios the research re simulated, based on alternative growth rate and risk-based assumptions. The results are presented in Table 4.

Table 4. Equity value under different growth scenarios

Scenario	Growth(g)	Equity Value per Share (USD)	Adjusted Equity (million USD)
Conservative	2.5%	756.3	-589.9
Base Case	3.25%	1171.5	-320
Optimistic	4%	1586.8	-50.1

Source: Luckin Coffee Annual Report

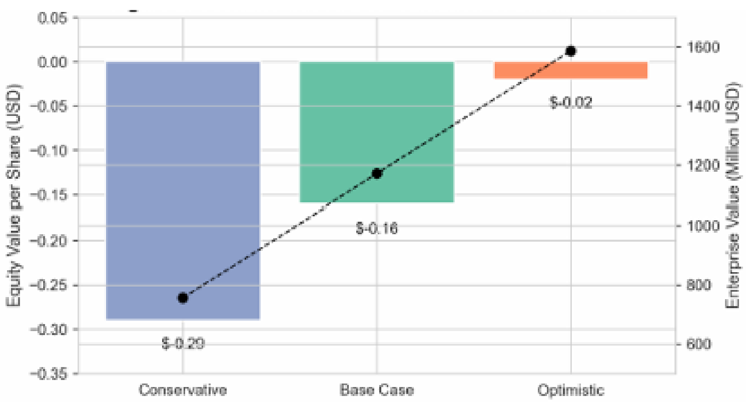

Figure 1. Scenario-based DCF valuation of Luckin Coffee

Source: Luckin Coffee Annual Report

As one more illustration, the visual output also shows additional valuation outcomes simulated over these three scenarios in Figure 1. Even with the optimistic assumptions improving the values, all estimated equity values are still negative at risk based adjusted estimates implying that reputational harm dominated implied firm value even years into the recovery phase.

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4.4. Value and price convergence

Figure 2 illustrates the DCF derived fair value band compared with Luckin's actual market price trajectory from 2020 to January,2024.

Figure 2. Value and price convergence of Luckin Coffee (2020-January 2024)

Source: Luckin Coffee Annual Report

Initially, the stock price traded the research below the revised valuation floor during the crisis, indicating a trust penalty of over 60%. As the firm reclaimed trust through the issuance of an audited report, issuance of a report following a debt restructuring, and return to profitability, the market price began converging to the intrinsic value band. This convergence supports the notion that parameter-adjusted models can restore predictive accuracy following systemic trust erosion.

4.5. Data interpretation

The melding of the DCF and relative valuation results posits Luckin Coffee's post-scandal valuation was dictated by risk premiums because of reputational damage [11]. Even with strong operational recovery, market participants demanded higher returns, and thus, the undervalued status of Luckin persisted until consistently profitable behavior was demonstrated. This study is aligned with the existing literature that shows how corporate misconduct can cause a significant and long-lasting discount in the market, while also showing that transparent and genuine corporate rehabilitation strategies can lead to a restoration of market trust.

5. Conclusion

Given that this study aims to explore the value reconstruction of companies like Luckin Coffee following a major trust crisis, the findings provide new evidence for the systematic adjustment of traditional valuation models in contexts involving financial fraud. Through the research analysis, both GRP and RD have been demonstrated to be effective mechanisms for correcting the "trust penalty". Finally, the research analysis finds that the adjusted valuation range appears to capture the long-run market prices observed during 2021-2023, thus providing specificity in the parameter adjustments meant to restore the explanatory research of valuation models in high-uncertainty environments. Traditional discounted cash flow (DCF) and comparable-multiple approaches fail completely in the context of information asymmetry and loss of credibility shaping market perceptions. By integrating GRP and RD into financial statements, qualitative risks, including failure

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of governance, can now be quantitatively imposed as a discount to valuation. The remedy requires restoring precedence with risk and not deviating from the past, which restores credibility and conforms the model to post-restatement market behavior and defines a rational "trust anchor" for convergence to value price bands.

For financial analysts and investment bankers, this study presents valuation steps as a structured "three-step" process for valuing companies of higher risk: first of all, reconstruct the credible baseline year; second, adjust model parameters to account for the additional governance risk and the erosion of reputation for a reconstructed baseline that incorporates the full implications of governance risk; third, validate the value price band by testing for market convergence to the new value price band. This valuation model manages the research quantitative valuation with qualitative-based risk, by defining a replicable process for valuing high-risk underprice-induced distress in subjective credibility strain.

This research relies on a single case of Luckin Coffee and is limited in its generalization. Future research can broaden the reference of the research to include other firms with fraud experience or subject to governance issues across sectors and markets. Additional avenues for refinement include a textual approach to sentiment, ESG implications, or even post-fraud credit spreads as adherent adjustments to valuation.

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