EVALUATION OF HOANG ANH GIA LAI'S BUSINESS OPERATIONS AND STOCK MARKET PERFORMANCE

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Executive Summary

This paper attempts to analyze Hoang Anh Gia Lai (HAG) business operations, financial health, and stock performance. We initiate coverage on HAG with a BUY Recommendation based on a target price of 11,220 VND, implying a 28.9% upside to the last close of $8,700 VND as of 10/11/2023. This implied share price was arrived at through a weighted mix of DCF, APV, and relative valuation models. The report aims to provide shareholders with more insights into HAG's strategic decisions with measurable financial metrics, thus empowering informed decision making.

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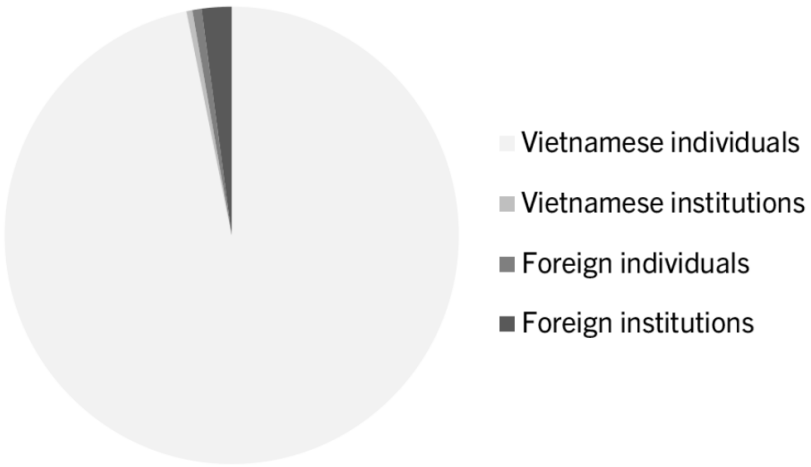
1 INTRODUCTION

1.1 Company Overview

Hoang Anh Pleiku Private Enterprise was founded in 1993 by Mr. Doan Nguyen Duc and transformed into Hoang Anh Gia Lai Joint Stock Company (HAG) in 2006. Since then, HAG has been operating as a multi-industry corporation, with its main industry being agriculture. Besides, the company also maintains a number of other supporting industries such as trading and services, hospitals, and sports. In particular, HAG is a significant agricultural exporter, with its major markets being China, Japan, and South Korea. In terms of HAG's shareholders, Vietnamese investors account for the majority at 97.22%, and the remaining 2.78% are foreign shareholders (Figure 1).

Figure 1: HAG Investor Composition



Source: HAG 2022 annual report

Since 2016, the company has been engaged in a strategic transformation, focusing its activities on three primary areas: (1) banana farming, (2) pig farming, and (3) durian farming. In the fruit sector, with 1,000 hectares of durian, the company plans to harvest significantly from next year, keeping up with low-cost prices and ensuring profits. Stable selling price on the domestic market is an important advantage, not falling below 20,000 VND/kg. At the same time, banana and durian exports, especially to the Chinese market, are a key source of income, with a sharp increase in revenue and output expected in the last quarter of 2023.

In addition to the fruit sector, HAG has also achieved significant success in the pig farming industry. Exporting more than 82,530 pigs in the first half of 2022 has positively contributed to financial results with profit after tax of up to 531 billion VND. Although pig prices fluctuate, cost management and focus on exports have helped HAG maintain positive profit performance from this activity.

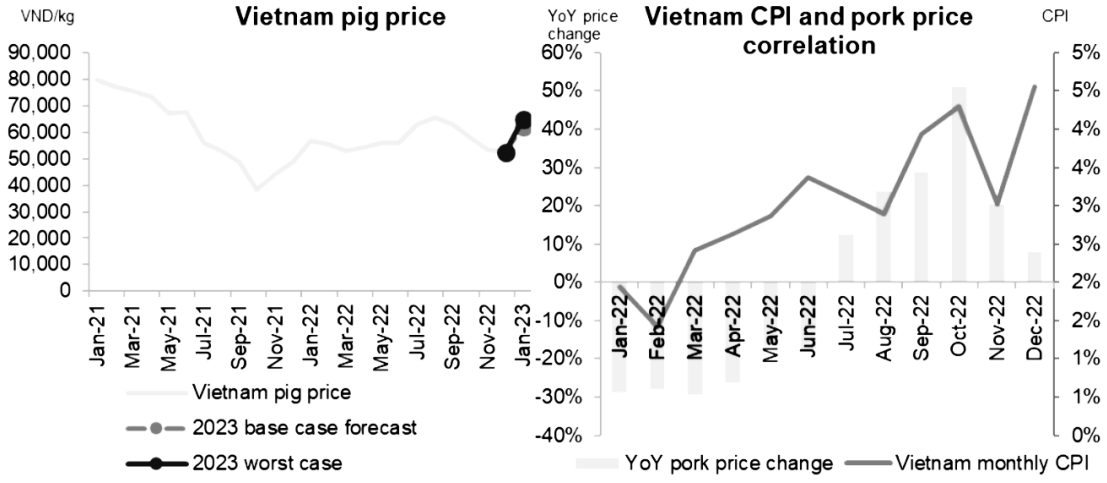
Additionally, HAG also implemented a quality management system and international standards in fruit production, ensuring compliance with demanding market requirements in Japan, Korea, Singapore, and Europe, such as Global GAP standards or equivalent. According to the 2022 annual report, the total revenue HAG earns from fruit is 2,156 billion VND, accounting for 42.2% of total revenue and 33.2% of total revenue with 1,697 billion VND from pigs.

1.2 Market Overview

The livestock sector in Vietnam faces various difficulties in the initial half of the calendar year 2023. These challenges encompass subdued demand, heightened input expenses, ongoing disease threats, price instability in the market, and fierce competition from imported goods. As per data from the General Statistics Office (GSO), the total pig population experienced a 2.5% growth, reaching 26 million pigs, while the live-weight production saw a 6.5 percent increase, totaling 2.3 million tons by the end of June 2023. Nevertheless, industry experts cast doubt on these figures, estimating the actual pig population to be around 23 million, significantly lower than the GSO's reported data.

Due to sluggish market demand, hog prices fluctuated between VND 49,000 and VND 55,000 per kilogram from January to May, falling below the production cost of approximately VND 55,000 per kilogram. Consequently, many small-scale farmers either reduced or abandoned their herds. This has led Vietnam to transition towards large-scale, industrialized commercial farming, adopting a fully integrated 3F model (Feed-Farm-Food), which currently holds over 60% of the market share. If the cost of pigs rise to VND62,000/kg, we anticipate that Vietnam's CPI will experience an additional 0.6% increase (Figure 2).

Figure 2: Vietnam pork prices 2021 - 2022



Source: AHAV, ACBS, GSO

Diversification in the agricultural and livestock sectors, along with its proactive ability to export, puts HAG in a strong position in a developing rural economy and in the context of strengthening international market demand. Vietnam is one of the largest banana exporting countries in the world with suitable climate and soil conditions. Vietnam has always been one of the leading banana exporting countries globally with many different destinations around the world such as: China, Laos, Cambodia and countries in the Middle East and Eastern Europe. In 2023, the durian market in Vietnam has a positive outlook with exports expected to reach a high level and have the opportunity to compete with Thailand in the durian industry. However, the banana market still faces many difficulties and challenges such as the need to improve infrastructure and transportation to ensure timely transportation of bananas to export markets. In 2021, China accounted for the largest share of Vietnam's banana exports, with a share of 87%, equivalent to 200 million US dollars (Figure 3).

1.3 Project Overview

1.3.1 Project Problems

Given the recent changes within HAG, marked by the company's concentrated emphasis on banana, pig, and durian farming, along with noteworthy revenue expansion and considerable reduction in debt, albeit persisting within the high leverage warning zone. HAG's two prominent problems have been identified, namely: (1) the effectiveness of HAG strategic performance and competitive positioning is uncertain, especially given the firm's new ventures into pig and durian farming and (2) despite impressive revenue growth in 2022 and the first half of 2023, liabilities to assets and equity remain high, indicating HAG's high risks to creditors and investors.

1.3.2 Project Objectives

This project has four key objectives: (1) to evaluate HAG's strengths, weaknesses, opportunities, threats, and competitive dynamics, (2) to assess the firm's current financial health, (3) to examine whether HAG's stock price is fairly valued within the context of the prevailing market dynamics and (4) to identify and assess potential risks faced by HAG and recommend effective risk mitigation strategies.

1.3.3 Project Scope

HAG's publicly available financial data were collected over the period from 2018 – 2022 for analysis. Moreover, the scope of our project narrows its focus to HAG's largest revenue drivers, namely (1) fruit production (bananas and durians) and (2) pig farming.

1.3.4 Project Contribution

First, through strategic analysis, the project assesses HAG's strategic business decisions and how it would affect their competitive positioning in the industries wherein HAG operates, i.e. agricultural business. Second, by aligning HAG's strategic decisions with measurable financial metrics, the project offers shareholders an objective and data-driven view of the company's operational success. Third, by

determining the fair value of HAG's share price, the project sheds light on HAG's perceived market value and helps investors make more informed investment decisions. Lastly, risk identification and quantification help equip stakeholders with a clearer vision and understanding of potential losses, thus enabling them to make informed decisions and proactively manage their portfolios.

2 DATA AND METHODOLOGY

2.1 Data

This project utilises publicly-available data of HAG from secondary sources, which can be categorised into (1) internal and (2) external channels. A crucial internal source of information referenced throughout this project is the official website of HAG, accessible via https://www.hag.com.vn. It provides updates on the HAG's financial health, operations, and management. Since these reports are provided by the company itself, they are ensured of reliability and accuracy.

To offer a more comprehensive and market-oriented perspective on the firm's performance, external sources of data have also been integrated. For example, Vietstock and TradingView are two platforms that offer the latest information regarding HAG's as well as its competitors' stock performance. Besides providing ease of access and data extraction, these external sources also facilitate cross-verification of data across different sources.

2.2 Methods

2.2.1 Overview of Key Methods

Table 1: Overview of Key Methods

Section	**Method**
Strategic analysis	Secondary data research SWOT analysis Porter's five forces analysis
Financial analysis	Financial ratios analysis
Stock valuation	Discounted cash flow Adjusted present value Comparable company analysis
Risk assessment	Valuation risks assessment Investment risks assessment

2.2.2 Strategic Analysis

SWOT Analysis SWOT analysis involves examining a company's four areas: 'strengths', 'weaknesses', 'opportunities', 'threats'. Strengths and weaknesses constitute internal attributes within HAG, while opportunities and threats pertain to external factors in the environment. SWOT Analysis aids in the evaluation of an organisation's resource capabilities and deficiencies, along with its market opportunities and external threats to future prospects (Thompson et al., 2007). Henceforth, it yields insights into (1) aligning the HAG's strategy and (2) determining the immediacy for the firm to address its resource shortcomings and safeguard against specific external threats (Thompson Strickland, 2001).

However, the model has several limitations. Firstly, its static nature can make it inappropriate especially in environments marked by constant change and fierce competition. Mintzberg (1990) criticises its lack of forward-looking perspective, potentially hindering the formulation of future-oriented strategies. Furthermore, variable categorisation challenges and the absence of a quantitative benchmark impede a comprehensive evaluation of performance and competitive gaps (Mintzberg, 1990).

Porter's Five Forces Porter's five forces analysis was also included, which identifies and analyses five competitive forces shaping the agricultural business industry. The five forces are: (1) industry rivalry, (2) supplier bargaining power, (3) customer bargaining power, (4) threat of substitutes, and (5) threat of new entrants. The model, while provides a more comprehensive picture of HAG's competitive positioning than SWOT Analysis, also has limitations. Similar to the SWOT model, Porter's framework is static, providing a historical snapshot and thus may needs regular re-examination. Other critics of the model suggests that it lacks strategic specificity, offering less guidance for managers (Dobbs, 2014) and its assertion that industry structure solely drives competition, disregarding external influences can lead to potentially oversimplifying analysis (Porter, 2008).

Financial Ratios Analysis Financial ratios serve as a tool to assess a company's relative position compared to its peers or against its own historical performance over time (Bakry, 2014). For HAG, the focus lies on evaluating its profitability, liquidity, and capital structure. These ratios (Appendix 9.7) are then benchmarked against industry peers, including DBC, BAF, MML, PAN, LTG, and NAF (Table 2). The comparables selection criteria include their industry classification (agriculture production), comparable products and services and size, as measured by market capitalisation. Despite the practicality and ease of computation associated with financial ratios, it is important to acknowledge certain flaws of using ratios for industry-comparison. The primary challenge revolves around a reliance on assumptions and estimates, introducing subjectivity into assessments. Moreover, different companies, even in the same industry, operate uniquely, making direct comparisons less applicable. Additionally, the overall accuracy of the underlying financial data is critical, as inaccuracies can lead to misleading conclusions.

Table 2: HAG Comparable Firms

Ticker	**Company Name**
DBC	DABACO Group Joint Stock Company
BAF	BaF Vietnam Agriculture Joint Stock Company
MML	Masan MEATLife Joint Stock Company
PAN	PAN Group Joint Stock Company
LTG	Loc Troi Group Joint Stock Company
NAF	Nafoods Group Joint Stock Company

2.2.3 Stock Valuation

Given that HAG (1) presently has a high amount of debt, (2) pays no dividends, and (3) exhibits relatively volatile earnings, the implied share price for HAG will be compute through a mix of intrinsic and relative valuation approaches, including the discounted cash flow (DCF) model, adjusted present value (APV) model, and comparable company analysis (CCA). After the allocation of suitable weightings to each valuation method, the project combines these models to formulate a comprehensive estimate of HAG's value.

Discounted cash flow (DCF) For DCF analysis, we first forecast HAG's revenue using simple linear regression applied to historical data. Then pro-forma statements are generated, and the Weighted Average Cost of Capital (WACC) as well as Terminal Growth Rate (TGR) are computed under a set of assumptions. The firm's enterprise value is then determined by discounted projected cash flow for the year 2023 - 2028, and the implied share price is obtained by dividing this value by the number of outstanding shares.

This cash-flow-focussed valuation method has been widely acknowledged for its ease of application and practicality in both industry and academia (Titman Martin, 2016; Koller et al., 2020). However, with the enterprise value being heavily influenced by the terminal value, any inaccuracies in the estimation of the WACC and TGR can greatly skew the results (Pignataro, 2022). Another major flaw of the model is its lack of consideration for a firm's financial distress and probability of default (Koller et al., 2020). Note that we adopt the end-of-year convention for this project, although the mid-year convention are preferred by many to account for continuous cash flows (Pignataro, 2022).

Adjusted present value (APV) For companies carrying a substantial debt burden like HAG, its intrinsic debt value may significantly diverge from its book value, exhibiting fluctuations in tandem with enterprise value. Models relying on the WACC such as the DCF model are not highly effective for firms whose debt-equity ratio undergoes constant changes and thus maintaining a fixed WACC assumption becomes inappropriate (Arzac, 1996; Titman Martin, 2016). In such instances, the APV model is preferred. It dissects cash flows into unlevered cash flow and interest tax savings components, providing an estimation of the firm's enterprise value as the sum of these parts. The implied share price is subsequently derived by dividing the total value by the number of outstanding shares. This approach proves particularly advantageous in circumstances where the dynamics of debt may vary significantly.

Comparable company analysis Unlike intrinsic valuation methods (DCF, APV), relative valuation relies on market data, comparing a company with similar firms using observed transaction prices (Titman & Martin, 2016). First, HAG's comparable firms are identified, and key metrics (EV/EBITDA, P/E) are calculated for each. Averages of these ratios are then calculated and applied to HAG's EBITDA and revenue for estimating its enterprise value. Implied share price is obtained by dividing enterprise value by its outstanding shares. CCA provides a timely market perspective, val-

idating DCF projections and offering industry insights with well-constructed assumptions. However, challenges include finding suitable comparables and potential skewed results due to market fluctuations (Koller et al., 2020).

Composite valuation Previous studies have highlight the variability in results among different valuation methods, such as the one by Tiwari (2016). As each valuation method has its advantages and disadvantages, to enhance accuracy, we adopt a composite valuation model that integrates value estimates from multiple methods (Table 3). This approach, supported by Yee (2004) and Vardavaki & Mylonakis (2007), ensures that the implied share price incorporates information from all the methods considered.

Table 3: Composite Valuation Matrix

Method	**Weighting**
Discounted Cash Flow	20%
Adjusted Present Value	50%
Relative Valuation	30%

We assign a higher weight to the APV model than the DCF model due to HAG's existing high level of debt. The collective weight assigned to intrinsic valuation methods surpasses that allocated to relative valuation, attributable to a predominant interest in evaluating HAG's performance over an extended period of time rather than examining cross-sectional differences among various stocks. Empirical studies, including those by Kaplan Ruback (1995), Berkman et al. (2000), Kim Ritter (1999), and Lee et al. (1999), affirm the superiority of intrinsic valuations when used for such assessment.

2.2.4 Risk assessment

Valuation risks Beyond computing the company's implied share price, we also analyse its sensitivity to risks through scenario and sensitivity analyses, thus providing enabling better informed decision making in scenarios with high levels of uncertainty (Gao et al., 2016).

Scenario analysis In our scenario analysis, we focus on revenue growth and the TGR as key variables. The analysis comprises three scenarios – normal case, best case and and worst case, providing insights into share price projections under diverse circumstances.

Sensitivity analysis Sensitivity analysis explores variations in computed share price caused by shifts in HAG's TGR and WACC. Our aim is to identify the threshold at which changes in WACC and TGR would impact our investment recommendation.

Investment risks Quantitative and qualitative risk assessment were performed to evaluate HAG investment risks. This involved analysing factors such as legal risk, environmental risk etc. and also computing quantifiable metrics such as Altman Z-score and Value at Risk for HAG.

Altman Z-score model Altman's Z-Score model is a quantitative metric employed to speculate on the likelihood of a business initiating bankruptcy proceedings within the next two years. The model was developed by Altman (1968) as a measure of firms' financial stability. First, key financial ratios were computed and subsequently, these ratios are assigned specific weights derived from Altman's original formula (Table 4).

Table 4: Altman's Z-score Model

Variable	**Coefficient**
$X1$ (Working Capital / Total Assets)	1.20
$X2$ (Retained Earnings / Total Assets)	1.40
$X3$ (EBIT / Total Assets)	3.30
$X4$ (Market Capitalisation / Total Liabilities)	0.60
$X5$ (Sales / Total Assets)	0.99
Altman Z-Score	

Source: Altman (1968)

The limitation inherent in the model relates to the derivation of the coefficients through multiple discriminant analysis, as it involves a pronounced reliance on both the economic context and the sector in which the company operates in (Georgiev & Petrova, 2015). Additionally, the original Altman's model, as presented in this paper, was formulated exclusively based on the examination of listed companies within the United States. Empirical investigations have indicated that predictive efficacy diminishes across different countries due to the variations in the economic landscapes of each respective country (Karas & Srbová, 2019).

Value at Risk Value at Risk (VaR) measures a portfolio's maximum downside risk an investor could expect (Dowd, 1998). This project employs two primary models to evaluate, the (1) historical approach and the parametric approach.

Historical simulation is a non-parametric method that takes into account historical data of a firm to estimate VaR without assuming statistical distributions, offering simplicity. HAG's share prices were obtained over a defined historical period of 250 trading days. Then we simulated hypothetical returns based on the current portfolio weights and VaR estimates are derived from the resulting histogram of portfolio returns. One key advantage lies in its independence from assumptions about statistical distributions, avoiding the need for estimating volatilities and correlations (Jorion, 2001). However, major flaws of this model are its reliance on limited data sample size and the assumption that history will repeat itself, potentially leading to distorted VaR estimates (Damodaran, 2007; Dowd, 1998).

For the the parametric method, we used Bachelier's (1900) single-asset model. Historical data is used to estimate the mean and variance of the probability distribution, assuming that past data is indicative of future price movements to a certain extent. Once these parameters are estimated, VaR

can be computed for a given confidence level (Cheung & Powell, 2012). Despite its simplicity, this method may yield suboptimal VaR estimates due to violations of the normality assumption for returns (Cont, 2001).

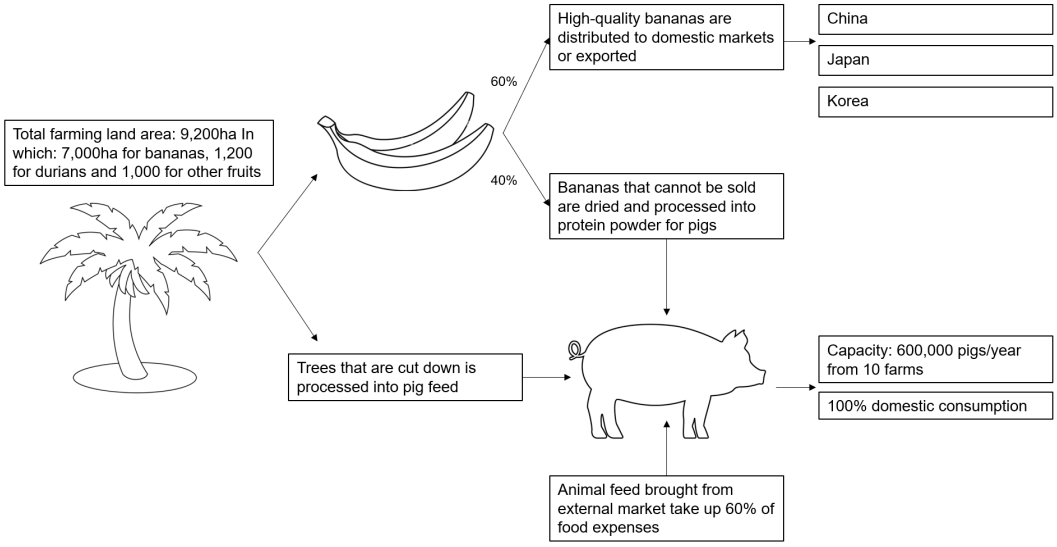
Kupiec's (1995) proportion of failure (POF) test were used backtest the VaR models employed. The POF test assesses whether the observed exceptions are within reasonable bounds compared to the expected occurrences. However, the POF-test exhibits two primary drawbacks: statistical weakness with small sample sizes, as seen in the project's 250-trading-day sample, and a focus solely on the failure rate without considering the succession of occurrences, potentially overlooking models that produce serially dependent violations or clustered exceptions (Campbell, 2005; Jorion, 2007).

3 STRATEGIC ANALYSIS

3.1 Business Model

Farming land constitutes approximately 75%, primarily dedicated to banana cultivation. The trees harvested from this land serve a dual purpose: non-banana-bearing trees are processed into fibrous pig feed, while bananas that meet the standards are sold, with 60% being distributed domestically or exported to key markets like China, Korea, and Japan.

Figure 3: HAG 3F business model



Source: Company and market data

Approximately 40% of bananas that don't meet sales criteria are repurposed; they are dried and processed into protein powder for pig feed. These internal sources account for 40% of the total food expenses, with the remaining 60% being purchased externally. As of 2023, the farm's capacity stands at approximately 600,000 pigs per year, all designated for domestic consumption.

HAG follows the 3F model, which consists of:

- **Feed:** This is a self-producing animal feed business that ensures a complete nutritional balance for each stage of animal development.
- **Farm:** These are industrial-scale livestock farms where animals are raised in closed and hygienic environments, meeting sanitation standards.
- **Food:** The pork meat is strictly controlled by producers to meet the standards set by relevant authorities and is completely transparent in terms of its origin.

Table 5: Closed-loop 3F model (Feed - Farm - Food)

Feed Factory	Factory with a capacity of 600 tonnes/day and 5 banana powder processing chains
Farm	10 farms, 600,000 pigs/year
Food Retail	Outsourced slaughter and processing of meat to a third-party under HAG's supervision
Distribution	HAG's Babi Mart stores; Not yet available in major retail chains

Source: Company and market data

3.2 SWOT Analysis

SWOT analysis allows for an examination of the strengths, weaknesses, opportunities as well as threats to HAG. For a more detailed breakdown, please refer to Section 9.5.

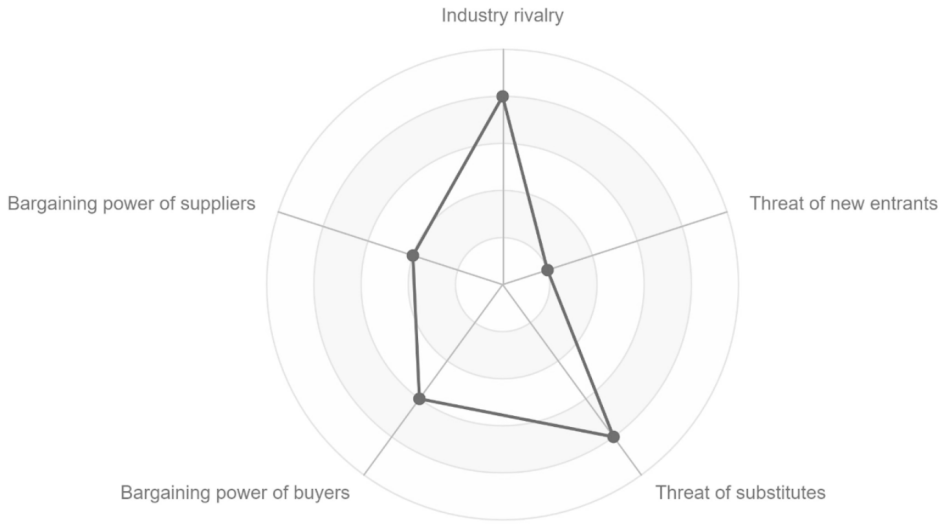
Table 6: HAG SWOT Analysis

Strengths	(S1) Established brand and competitive position (S2) Unique product and sustainable business model (S3) Strong financial restructuring
Weaknesses	(W1) Financial difficulty and high debt (W2) Low marketing visibility
Opportunities	(O1) High domestic and foreign market potential (O2) Demand for sustainable practices and healthy products
Threats	(T1) Diseases and natural disasters (T2) Interest rate fluctuations (T3) Unsuccessful equity issuance (T4) Strong industry rivalry, particularly in the retail and agricultural sectors (T5) Volatile food and product feed prices

3.3 Porter's Five Forces Analysis

The Vietnamese meat sector faces intense industry rivalry, marked by the popularity of the 3F business model and HAG competing with key domestic counterparts like BAF. Bargaining power of suppliers is low, given the undifferentiated nature of inputs. HAG's bargaining power with buyers is moderate due to consistent demand for essential goods, but pricing limitations on non-branded products. The threat of substitutes is high, especially for non-branded products, furthered by HAG's limited presence in major retail chain. The threat of new entrants is low, as barriers related to acquiring farmland, establishing integrated systems, and adhering to quality standards demand substantial investment and time (See Appendix 9.6).

Figure 4: HAG Porter's Five Forces Analysis

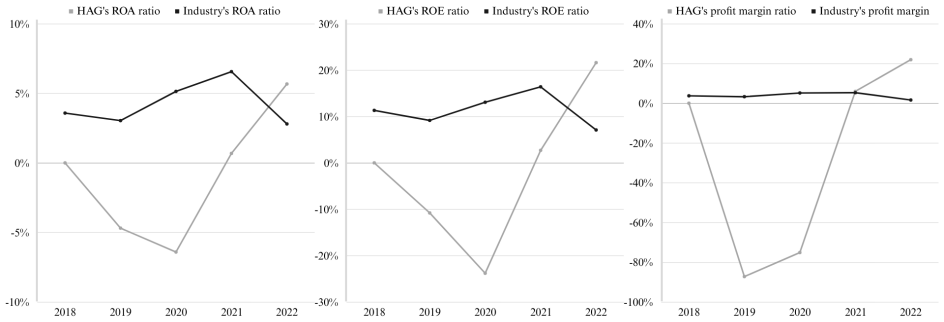


4 FINANCIAL ANALYSIS

4.1 Profitability

When the pandemic strikes in 2020, the ROE ratio of HAG varies and shows a warning decrease of -6.4%. However, the indexes rebound to 0.69% and 5.68% in the following years, particularly in 2022 when the firm's ROE ratio surpasses the market average. The ROA and net profit margin ratio of HAG also encountered a positive momentum in the ensuing years. It is observed that since HAG switched its investment focus to fruit and livestock production, the company's operating profitability has significantly improved. Thus, HAG's profitability ratios indicate prospective positive and reverse improvements despite fluctuations in the first half of the examined period.

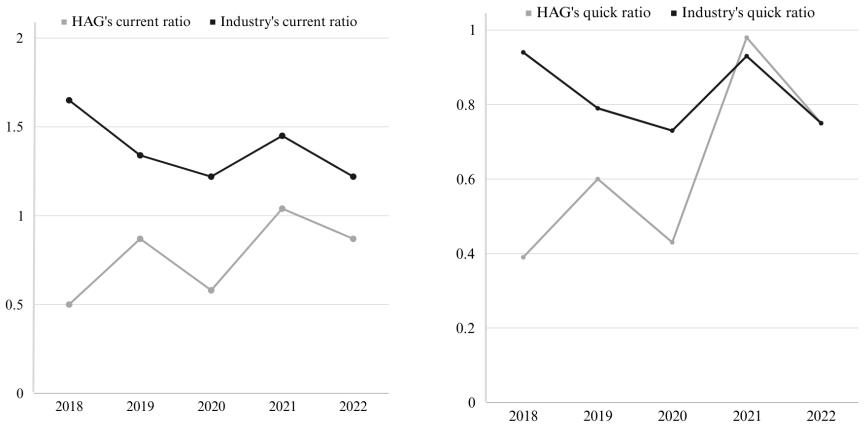
Figure 5: HAG's Profitability Ratios



4.2 Liquidity

The current ratios of HAG fluctuate around 1, with a slight increase in 2021 and 2022 (1.04 and 0.87, respectively). However, despite the initial decline, HAG's quick ratio skyrockets to 0.98 in 2021. Compared to the industry average, HAG's quick ratio shows no significant difference in recent years, thereby causing positive changes in the near future. Overall, to fortify its financial position, HAG is progressively enhancing cash-generating and liquidity capabilities.

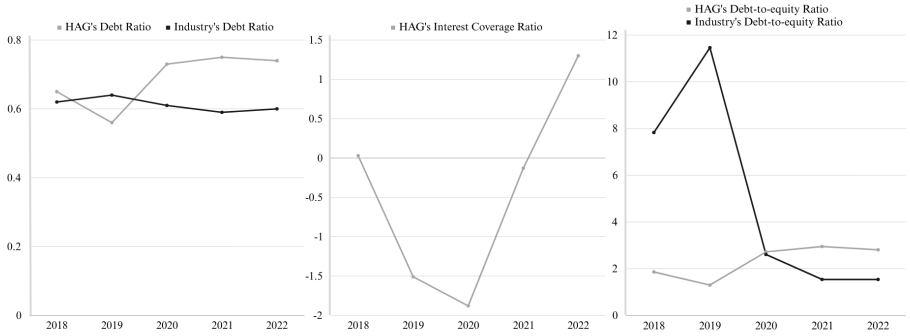
Figure 6: HAG's Liquidity Ratios



4.3 Capital Structure

Even though a downward tendency in HAG's liabilities is observed, the amount remains huge. The debt ratios fluctuate around 0.7, which is considered to be an adequate number. Notably, the interest coverage ratios display negative values in 2020, peaking at roughly -1.88. before increasing rapidly to -0.13 and 1.3 in the subsequent years. These metrics indicate that the company should employ more techniques for adjusting leverage to progressively reduce its debt loans.

Figure 7: HAG's Debt Ratios



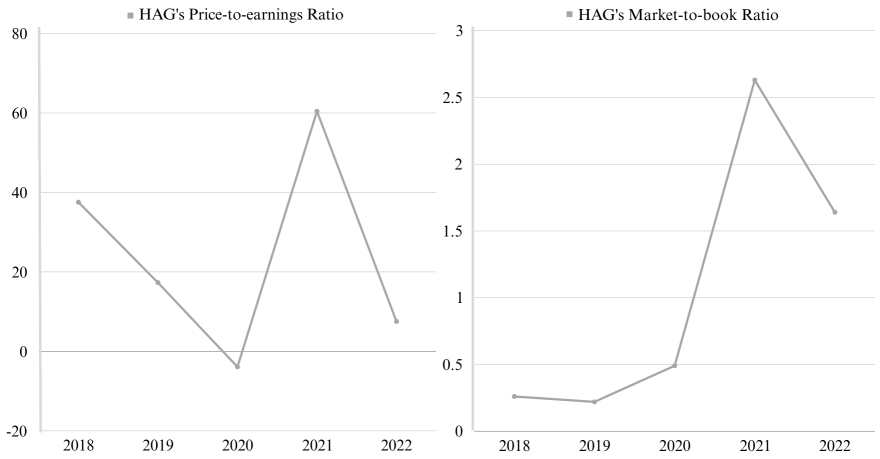
Additionally, despite the stable debt-to-equity ratios, the debt statistics highlight HAG's major

debt utilisation compared to the industry average. Although there have been positive momentums of the firm in the recent period, HAG needs to manage its debt load more effectively in order to improve its financial stability and minimise possible hazards.

4.4 Market Value

In general, HAG's price-earnings ratio ratios underwent considerable fluctuation throughout the time frame. The ratio sees a sharp decline of 3.89, hitting the most significant peak of 60.42 in the following year before dropping to approximately 7 as the firm enters 2023. On the other hand, the company's market-to-book ratios are maintained at roughly below 1 over the examined period, revealing that the company is being undervalued.

Figure 8: HAG's Market Value Ratios



5 STOCK VALUATION

5.1 Discounted Cash Flow

DCF analysis is particularly relevant to HAG as it provides a suitable means to evaluate the company's performance using cash flows as a valuation measure. We projected HAG's revenue (Table 8) and subsequently its free cash flows (FCF) in a pro forma fashion based on several assumptions (Appendix 9.2 and 9.4).

Table 7: Weighted Average Cost of Capital (WACC)

Parameter	**Value**
Market Cap	8,114,744,000
% of Equity	35.72%
Cost of Equity (CAPM)	9.25%
Risk-Free Rate	4.50%
Beta	1.04
Market Risk Premium	4.57%
Debt	14,603,644,212
% of Debt	64.28%
Cost of Debt	5.56%
Tax Rate	20%
Terminal Growth Rate (TGR)	**6.16%**

Table 8: Terminal Growth Rate (TGR)

TGR		**Weighting**
Long-term average GDP growth rate (CAGR 2023 - 2028)	6.56%	45%
Long-term average growth rate of Vietnam agriculture sector (CAGR 2023 - 2028)	7.96%	45%
Long-term inflation (CAGR 2023 - 2028)	4.22%	10%
Terminal Growth Rate (TGR)		**6.96%**

For the WACC, we calculated the cost of equity to be 9.80% using the CAPM method, with the risk-free rate and market risk premium matching Vietnam's 2022 averages. We estimated the TGR at 7.26%, based on two growth metrics: (1) the long-term average GDP growth rate (CAGR 2023 - 2028) and (2) the long-term average growth rate of the Vietnam agriculture sector (CAGR 2023 - 2028) (Appendix i). HAG's implied share price was calculated to be 9,074 VND using the DCF model.

5.2 Adjusted Present Value

We conducted APV valuation as another method to determine the performance of the company, resulting in an implied stock price of 10,206 VND per share. The APV is based on the same WACC

Table 9: DCF Valuation

Item	**Value**
Present Value of FCF	-4,335,280,896
Terminal value	39,056,484,035
Present Value of Terminal Value	27,281,926,838
Enterprise Value	22,946,645,942
(+) Cash	72,372,525
(-) Debt	14,603,644,212
Equity Value	8,415,374,255
Number of shares outstanding	927,399,283
Implied stock price	**9.07417**

of 9.80% and TGR at 7.26% as calculated above.

Table 10: APV Valuation

Item	**Value**
Sum of Present Value of Unlevered FCF	-4,335,280,896
Present Value of Terminal Value	27,281,926,838
Sum of PV of interest tax savings	1,049,211,583
Enterprise Value	23,995,857,526
(+) Cash	72,372,525
(-) Debt	14,603,644,212
Equity Value	9,464,585,839
Number of shares outstanding	927,399,283
Implied stock price	**10.20551**

5.3 Comparable Companies Analysis

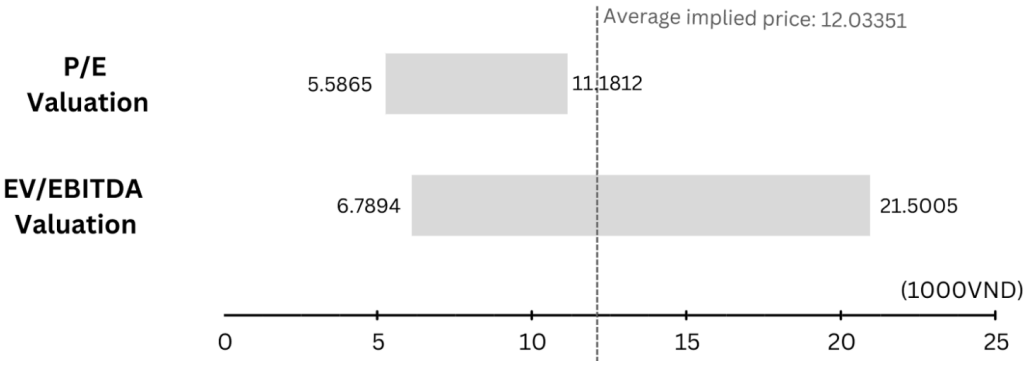
For each of these comparable, two key valuation metrics are calculated: EV/EBITDA ratio and the P/E ratio.

The implied stock price from the EV/EBITDA method is range from 6,789 VND to 21.5005. Additionally, with median ratio of 7.48x, the estimated share price is nearly 15,317VND. For the P/E method, the price scale is evaluate between 5.586 VND and 11.185 VND. The P/E method shows the median price is approximately 8,749 VND, with ratio of 7.19x. The ultimate result of implied stock price when using relative valuation equals the average of the two methods above, which is around 12.033 VND.

Table 11: CCA Valuation

EV/EBITDA Valuation	**Min**	**Median**	**Max**
EV/EBITDA	4.45	7.48	9.68
Equity Value	6,296,512,233	14,205,745,850	19,939,593,700
Implied Stock Price	6.7894	15.3178	21.5005
PE Valuation	**Min**	**Median**	**Max**
PE	4.59	7.19	9.19
Equity Value	5,180,941,368	8,113,988,363	10,373,170,189
Implied Stock Price	5.5865	8.7492	11.1852
CCA Valuation			
EV/EBITDA		50%	15.3178
P/E		50%	8.7492
Average Implied Stock Price			**12.0335**

Figure 9. Implied stock price range



5.4 Composite Valuation Model

With an assigned weight of 25%, 50% and 25% for the implied share prices calculated from DCF, APV and CCA models respectively, HAG's implied share price was calculated to be 10,527 VND.

Table 12: Composite Valuation

Method	**Weight**	**Price**
DCF	20%	9,074.17
APV	50%	10,205.51
CCA	30%	12,033.51
Total		**10,527.64**

6 RISKS

6.1 Valuation Risks

Sensitivity Analysis The WACC and TGR are sensitised as key drivers of our DCF sensitivity analysis model and flexed in +/-0.10% increments to reflect noise in economic activity. A 10 bps in WACC drives a +44.60%/-34.61% and a 10bps change in TGR drives a +46.36%/-35.99% change in implied share price, indicating highly material sensitivity. 60% of sensitised values affirm a buy/strong buy recommendation. Holding WACC constant sees share price ranging from 3,200 VND to 18,904 VND (3/5 values a buy); holding TGR constant sees a smaller variation from 3,426 VND to 18,533 VND (3/5 indicative of a buy). Considering a last close of 8,700 VND, either a 10bps decrease in the WACC or a 10bps increase in TGR would prompt a SELL of HAG's share.

Table 13: Sensitivity Analysis

		TGR				
	11.33634	**7.06%**	**7.16%**	**7.26%**	**7.36%**	**7.46%**
WACC	6.34%	11.66127	7.80035	4.77566	2.34208	0.34176
	6.44%	16.58535	11.50967	7.66685	4.65635	2.23418
	6.54%	23.39316	16.41085	11.35895	7.53413	4.53773
	6.64%	33.41938	23.18698	16.23735	11.20909	7.40218
	6.74%	49.64950	33.16654	22.98198	16.06484	11.06010

Scenario Analysis Our analytical approach involves assessing three distinct scenarios based on our assumptions regarding both revenue growth rate and gross profit margin. Relative to the prevailing share price, we advocate a buy/sell recommendation for each scenario: a BUY for both the bullish and baseline cases, and a SELL for the bearish case. Notably, in the worst-case scenario, we anticipate a 13.89% decline in price, prompting a SELL recommendation. Conversely, under favourable conditions, investors are advised to consider a BUY, with the potential for profit reaching up to approximately 40

Table 14: Scenario Analysis

Scenario summary	**Base case**	**Best case**	**Worst case**
Change			
Revenue growth rate	13.79%	18.79%	8.79%
Gross profit margin	21.73%	31.73%	11.73%
Result			
Share price	9.074	12.312	7.535
Percent change	3.12%	39.91%	-14.38%

6.2 Investment Risks

6.2.1 Corporate Failure Risk

The resulting Z-Score of 1.08, as per Altman's (1968) framework, places HAG in a distress zone, indicating a moderate level of financial risk. Notably, X4 (Market Capitalization / Total Liabilities) at 0.60 and X5 (Sales / Total Assets) with a coefficient of 0.99 might raise concerns as they contribute less than other factors, indicating HAG's weaker market valuation in relation to liabilities and lower sales with respect to total assets.

Table 15: Altman's Z-Score Results

Variable	**Coefficient**	**Score**
$X1$ (Working Capital / Total Assets)	1.20	(0.10)
$X2$ (Retained Earnings / Total Assets)	1.40	0.09
$X3$ (EBIT / Total Assets)	3.30	0.09
$X4$ (Market Capitalization / Total Liabilities)	0.60	0.56
$X5$ (Sales / Total Assets)	0.99	0.43
Altman Z-Score		1.08

6.2.2 Market Risk

The closing price on October 11, 2023, stands at 8,700 VND. The calculated Value at Risk (VaR) at a 95% confidence level provides insights into the potential maximum loss that an investor might encounter under adverse market conditions.

Table 16: Value at Risk

Confidence Level	**90%**	**95%**	**99%**
Historical	-309.74	-430.87	-602.68
Parametric	-318.73	-411.82	-586.43

Historical model For the Historical VaR model, the figure of -430.87 VND signifies that, based on past market behavior, there is a 5% probability that the portfolio's value could decline by up to 430.87 VND or more.

Parametric model Similarly, the Parametric VaR, with a value of -411.819 VND, employs statistical parameters to estimate potential losses. This figure indicates the maximum expected loss at a 95% confidence level, considering the assumed distribution of returns and associated parameters.

The Kupiec POF test has also been employed to evaluate the adequacy of VaR models in capturing exceptions, comparing the observed and expected number of exceptions at different confidence levels. The hypotheses are as stated below:

H0: The VaR model is accurate; the number of exceptions follows the expected frequency or is less than or equal to the expected frequency.

H1: The VaR model is inaccurate; the number of exceptions exceeds the expected fre

Historical model At all conventional confidence level, the p-values exceed the significance level of 0.05. Therefore, we fail to reject the null hypothesis, suggesting that the Historical VaR model adequately captures the observed exceptions at the specified confidence levels.

Table 17: Kupiec's Back Test - Historical VaR Model

Conf. Level	**# of Exceptions**	**Kupiec Chi-squared**	**p-value**	**Conclusion**
90%	24	0.0450	0.8320	Fail to reject null
95%	12	0.0213	0.8839	Fail to reject null
99%	2	0.1084	0.7419	Fail to reject null

Parametric model While the p-values for the 90% and 95% confidence levels are above 0.05, indicating a failure to reject the null hypothesis, the p-value at the 99% confidence level is 0.0054, falling below the significance level. Thus, we reject the null hypothesis at the 99% confidence level, suggesting that the Parametric VaR model does not adequately capture the observed exceptions at this level.

Table 18: Kupiec's Back Test - Parametric VaR Model

Conf. Level	**# of Exceptions**	**Kupiec Chi-squared**	**p-value**	**Conclusion**
90%	21	0.7479	0.3872	Fail to reject null
95%	14	0.1827	0.6691	Fail to reject null
99%	8	7.7336	0.0054	Reject null

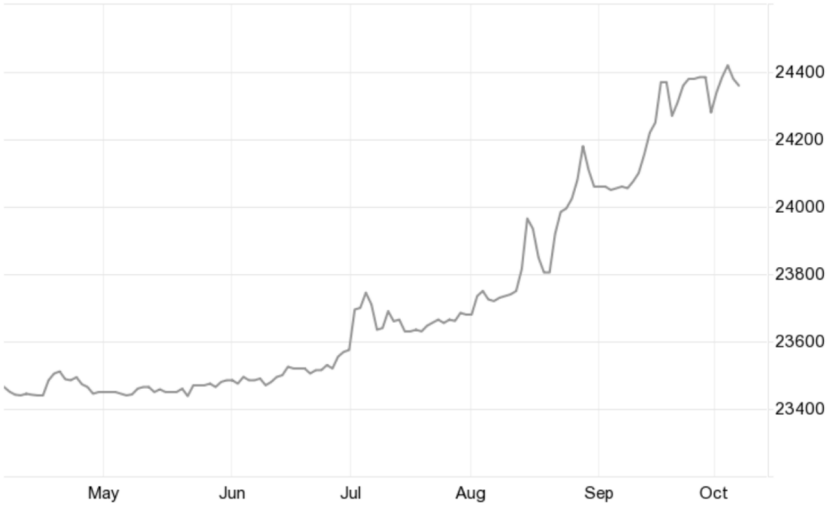
6.2.3 Commodity Price Volatility

Because HAG is mainly an agricultural production and business company, in which goods account for a large proportion of revenue and costs, price fluctuations of commodities such as bananas, pigs, durian and animal feed could have a significant impact on company profits. The prices of HAG's products are linked to the world market, especially China. However, that becomes a potential risk when exporting because the Chinese market itself has been developing strongly and has many opportunities. In the first half of 2023, the prices of most of Vietnam's key agricultural products have risen significantly due to a shortage of supply, while importing countries are increasing their demand for food reserves. Consequently, during the latter six months of 2023, the prices of these major agricultural products may continue to remain high, benefiting export businesses. This also presents an opportunity for the agricultural sector to support economic recovery in the final months of the year (Linh, 2023). The company manages this risk by utilising technology to achieve optimal efficiency, ensuring a safe and healthy profit margin for its products during economic downturns, and diversifying its export markets to hedge against the risk of market price fluctuations.

6.2.4 Exchange Rate Risk

Exchange rate risk relates to the risk that alterations in currency exchange rates may impact a company's operation and profitability. HAG's business activities generate transactions in different currencies because the Company operates in three countries: Vietnam, Laos and Cambodia, expenses in each country are paid in local currency. Exchange rates of currencies used in main transactions in Laos and Cambodia may increase compared to Vietnam Dong, increasing operating costs and affecting the Company's profit performance. In the second half of 2023, experts predict that the period of strong fluctuations in the US dollar has ended, the USD/VND exchange rate in the last 6 months of 2023 will continue to be stable (VNA, 2023). Although this is good news, since the majority of HAG's exports are directed to the Chinese market, relying on only one market without diversification can increase risks for HAG. Therefore, implementing risk prevention strategies is necessary to prevent major fluctuations in exchange rates that may occur in the future.

Figure 10. USD/VND exchange rate performance from April to October 2023



Source: tradingeconomics.com

In their annual report, HAG outlines their risk reduction strategies, which include creating detailed plans and schedules for importing and exporting with foreign partners; establish payment terms to minimise exchange rate risks and maintain a record of liabilities that match their cash flow structure from business operations in different currencies.

6.2.5 Interest Rate Risk

Considering (1) the nature of HAG's agricultural projects, which entail substantial capital investments over an extended time frame and (2) its existing high leverage, comprising a significant portion of bank loans and corporate bonds with floating interest rates, an increase in interest rates could lead to higher interest expenses, potentially posing challenges for HAG. To mitigate this risk, the group has adapted its capital structure according to each stage of its operation cycle. Apart from securing capital through

loans and regular bonds, HAG has also raised funds by issuing shares and convertible bonds to both domestic and foreign investors at favourable, stable interest rates that are not significantly impacted by volatilities in interest rates.

6.2.6 Legal Risk

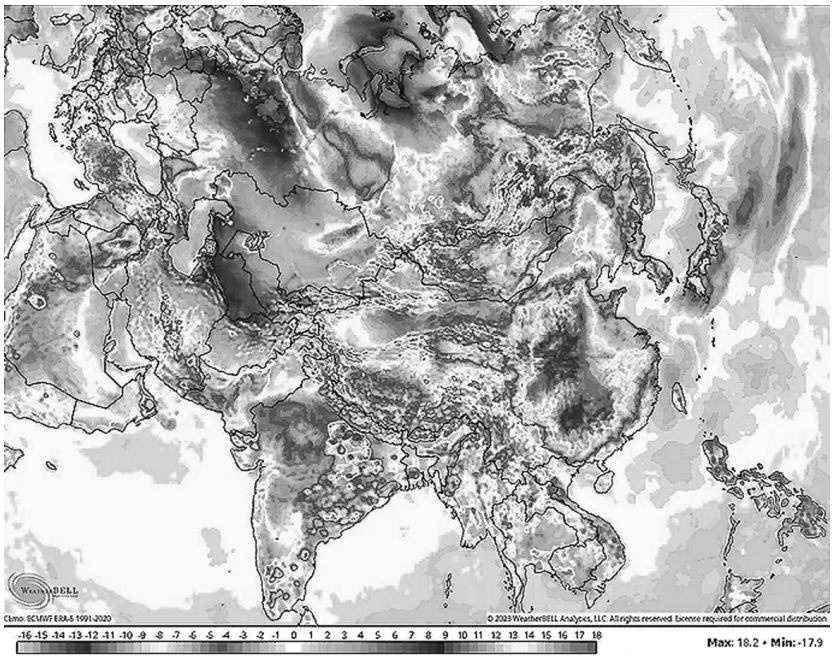
HAG is a listed enterprise, so the group's business activities are governed by the Enterprise Law and legal documents on securities and the stock market. The company's management and business activities will be affected by changes in laws and policies. Besides, the agricultural market is also influenced by barriers imposed by importing countries. In Vietnam's agricultural sector, we face many legal risks. One of the main challenges is regulations on land use rights, which can hinder the implementation of large-scale startup projects. The fact that agricultural land areas are often small and unevenly distributed makes it difficult to accumulate and concentrate land to implement large-scale projects. Furthermore, the lack of legal support in leasing land or contributing capital with land use rights creates instability in asset management (Quang Huy, 2017). HAG has built a legal department to regularly update changes in laws and legal impacts to limit related risks.

6.2.7 Environmental Risk

Natural disasters such as fires, droughts, floods, etc., pose significant threats to an agricultural company like HAG since they can destroy or severely damage crops and livestock, leading to significant financial losses. In response to this risk, HAG states that they are implementing advanced technology for forecasting natural disasters, allowing for proactive response measures. Additionally, they assess the probability of risks and potential damage for each sector, and based on this analysis, decide on the suitable insurance strategy. According to the National Center for Hydrometeorological Forecasting, the El Nino phenomenon (warm phase) has appeared in Vietnam. It is forecast that the El Nino phenomenon will continue to develop from June to the end of 2023 and maintain until 2024 and the peak time of El Nino occurring during the season is from November 2023 to January 2024 with a probability of increasing intensity about 73%, the probability of reaching average intensity is about over 95%. This will have an impact slightly on the agricultural sector and localities are encouraged to make policies to proactively adapt agricultural production (Chí Linh, 2023).

Biological threats such as African swine fever, foot-and-mouth disease, and blue-ear disease also significantly affect HAG as well as the livestock industry across the nation, necessitating rigorous control efforts involving local authorities and agencies (Sy, 2023). It is recommended that HAG continuously monitor the use of vaccines as recommended by the Department of Animal Health as well as maintain their strict safety protocols to prevent outbreaks in their pig farming facilities.

Figure 11. Comparative Temperature Anomalies in Asia during the April Heat Event due to El Nino



Source: European Centre for Medium-Range Weather Forecasts (ECMWF)

7 CONCLUSION

Our analysis indicates a promising future trajectory for HAG's recovery starting in 2024. Firstly, the company's strategic move into durian cultivation allows it to tap into the lucrative Chinese fruit market, enhancing its revenue growth opportunity. Secondly, HAG's ongoing financial restructuring, marked by a strong reduction in debt levels and positive trends in key profitability ratios in 2022, underscores a HAG's commitment to improving its long-term financial health. Consequently, we anticipate positive earnings announcements and an upward trajectory in HAG's share price over the next 12 months.

HAG should urgently address its shortcomings, particularly its low brand visibility by implementing more targeted and comprehensive marketing campaigns especially for its banana-fed pig brand Bapi. Increasing advertising efforts on traditional and social media platforms and securing prominent placement in major retail stores are initial steps that could significantly elevate brand recognition and consumer engagement. Additionally, considering the anticipated profitability of durian exports surpassing banana profits in the near future, HAG should emphasise its durian exports to the Chinese market to capitalise on the growing demand of the fruit. The company should focus on maintaining the high quality of its durians and establishing a strong market presence through effective distribution channels.

Our project encountered notable flaws, primarily stemming from the valuation methodologies being

initially designed and tested for developed economies. Since there is a myriad of critical disparities in socioeconomic factors, regulatory frameworks, technology, and political environments, the reliability of our project outcomes in the context of a developing economy like Vietnam may have been compromised. Future projects must proactively tailor valuation methods to account for the local business landscape, thus enhance the accuracy of our assessments, providing a more robust and valid foundation for decision making. Another significant flaw of this engagement project lies in the inadequacy of revenue and cash flow forecasting methods, with reliance on linear regression and a five-year moving average. Since it uses historical data, we are making an explicit assumption that HAG's future performance exhibit patterns similar to its past, which may not be true in the dynamic landscape today. To address this, it is recommended to incorporate real-time market data and future expectations into forecasting models for improved accuracy and responsiveness, such as employing the bottom-up approach for predicting revenue or using percentage growth expected by the market or the firm itself.

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9 APPENDICES

9.1 Pro-forma Statements

Figure 12: Pro-forma balance sheet

Unit: '000VND	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E
ASSETS											
A. SHORT-TERM ASSETS	**6,567,906,781**	**7,073,675,026**	**8,930,375,455**	**7,051,853,577**	**8,038,560,913**	**14,391,206,464**	**16,284,411,364**	**17,385,237,124**	**19,005,188,210**	**19,708,326,287**	**23,131,124,472**
I. Cash and cash equivalents	337,736,719	254,431,616	97,151,198	78,298,037	72,372,525	310,942,066	308,423,278	251,336,205	289,779,259	323,561,233	400,967,538
III. Short-term receivables	4,747,120,864	4,569,330,218	6,410,638,635	6,535,652,693	6,765,361,545	11,096,219,007	12,626,254,228	14,071,992,066	15,767,716,068	15,810,493,490	18,443,650,312
IV. Inventories	1,397,223,406	2,201,556,690	2,347,965,565	410,031,564	1,148,037,609	2,883,631,520	3,244,979,785	2,951,919,365	2,835,974,474	3,447,702,509	4,138,370,510
V. Other short-term assets	85,825,792	48,356,502	74,620,057	27,871,283	52,789,234	100,413,872	104,754,073	109,989,487	111,718,409	126,569,055	148,136,111
B. LONG-TERM ASSETS	**41,543,534,835**	**31,558,812,063**	**28,335,444,096**	**11,387,831,414**	**11,759,826,640**	**23,951,961,640**	**21,077,876,371**	**19,177,463,546**	**17,470,991,922**	**18,687,624,024**	**20,073,183,500**
I. Long-term receivables	6,531,099,389	8,261,530,824	2,295,094,417	2,958,712,989	2,430,132,241	4,495,313,972	4,088,156,889	3,253,482,102	3,445,159,638	3,542,448,968	3,764,912,314
II. Fixed assets	10,732,352,612	10,280,435,755	12,626,270,334	2,809,669,569	3,821,150,484	8,053,975,751	7,518,300,379	6,965,873,303	5,833,793,897	6,438,618,763	6,962,112,419
III. Investment properties	37,104,803	67,867,999	65,237,146	62,606,294	59,975,442	58,558,337	62,849,044	61,845,252	61,166,874	60,878,990	61,059,699
IV. Long-term assets in progress	16,910,792,900	11,229,762,864	12,006,780,151	3,495,149,075	4,620,301,248	9,652,557,248	8,200,910,117	7,595,139,568	6,712,811,451	7,356,343,926	7,903,552,462
V. Long-term financial investments	2,788,206,391	284,237,784	277,318,516	1,778,826,680	441,689,596	1,114,055,793	779,225,674	878,223,252	998,404,199	842,319,703	922,445,724
VI. Other long-term assets	1,322,831,892	456,105,268	439,121,101	282,866,807	386,577,629	577,500,539	428,434,269	422,900,069	419,655,863	447,013,674	459,100,883
VII. Goodwill	3,221,146,848	978,871,569	625,622,431								
TOTAL ASSETS	**48,111,441,616**	**38,632,487,089**	**37,265,819,551**	**18,439,684,991**	**19,798,387,553**	**38,343,168,104**	**37,362,287,734**	**36,562,700,670**	**36,476,180,132**	**38,395,950,311**	**43,204,307,972**
LIABILITIES AND OWNER'S EQUITY											
A. LIABILITIES	**31,300,554,930**	**21,823,683,301**	**27,238,024,092**	**13,766,451,651**	**14,603,644,212**	**9,311,155,712**	**6,856,563,085**	**5,939,299,923**	**5,022,036,761**	**4,104,773,599**	**3,187,510,438**
I. Short-term liabilities	13,136,735,456	8,089,793,475	15,428,980,447	6,754,505,795	9,218,063,487	7,773,826,247	6,856,563,085	5,939,299,923	5,022,036,761	4,104,773,599	3,187,510,438
II. Long-term liabilities	18,163,819,474	13,733,889,826	11,809,043,645	7,011,945,856	5,385,580,725	1,537,329,465	0	0	0	0	0
B. OWNER'S EQUITY	**16,810,886,686**	**16,808,803,788**	**10,027,795,459**	**4,673,233,340**	**5,194,743,341**	**29,032,012,392**	**30,505,724,649**	**30,623,400,747**	**31,454,143,371**	**34,291,176,712**	**40,016,797,534**
I. Owner's equity	16,810,886,686	16,808,803,788	10,027,795,459	4,673,233,340	5,194,743,341	29,032,012,392	30,505,724,649	30,623,400,747	31,454,143,371	34,291,176,712	40,016,797,534
TOTAL OWNER'S EQUITY AND LIABILITIES	**48,111,441,616**	**38,632,487,089**	**37,265,819,551**	**18,439,684,991**	**19,798,387,553**	**38,343,168,104**	**37,362,287,734**	**36,562,700,670**	**36,476,180,132**	**38,395,950,311**	**43,204,307,972**

Figure 13: Pro-forma income statement

Unit: '000VND	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E
Revenue from main activities*	1,550,000,000	1,733,522,000	2,911,152,000	2,097,418,000	5,110,782,000	4,926,213,000	5,674,759,000	6,423,305,000	7,171,851,000	7,920,397,000	8,668,943,000
Revenue from other sources	3,838,200,400	341,922,024	265,493,956	366	-113	889,123,327	299,307,912	290,785,090	295,843,316	355,011,906	426,014,310
3. Net revenue	**5,388,200,400**	**2,075,444,024**	**3,176,645,956**	**2,097,418,366**	**5,110,781,887**	**5,815,336,327**	**5,974,066,912**	**6,714,090,090**	**7,467,694,316**	**8,275,408,906**	**9,094,957,310**
4. Cost of goods sold	-3,013,495,226	-1,847,659,651	-2,970,915,613	-1,590,448,139	-3,937,380,869	-4,551,613,106	-4,942,788,834	-5,470,637,003	-5,904,795,756	-6,597,129,069	-7,299,201,168
5. Gross profit	**2,374,705,174**	**227,784,373**	**205,730,343**	**506,970,227**	**1,173,401,018**	**1,263,723,221**	**1,031,278,078**	**1,243,453,086**	**1,562,898,561**	**1,678,279,837**	**1,795,756,142**
6. Financial income	1,404,799,179	2,137,143,442	1,287,363,665	735,078,612	486,143,713	1,210,105,722	1,171,167,031	977,971,749	916,093,365	952,296,316	1,432,528,111
7. Financial expenses	-1,721,684,164	-1,963,934,151	-1,318,161,483	-1,090,293,038	-1,649,147,246	-1,548,644,016	-1,514,035,987	-1,424,056,354	-1,445,235,328	-1,516,223,786	-1,489,639,094
Of which: Interest expenses	-1,532,928,450	-1,263,369,664	-1,253,570,666	-971,878,185	-793,176,972	-1,162,984,787	-1,088,996,055	-1,054,121,333	-1,014,231,466	-1,022,702,123	-1,068,607,153
8. Share of associates and joint ventures' result	64,840,488	12,562,347	8,767,467	-5,819,760							
9. Selling expenses	-192,446,215	-308,856,859	-354,584,206	-129,287,166	-251,938,809	-473,472,950	-541,001,537	-529,788,922	-540,392,222	-616,588,961	-723,514,631
10. General and administrative expenses	-989,336,089	-672,601,510	-1,851,240,106	174,279,229	1,349,894,514	-864,431,282	-846,249,701	-706,117,183	-72,064,864	-233,355,865	-788,203,700
11. Operating profit	**940,878,373**	**-567,902,358**	**-2,022,124,320**	**190,928,104**	**1,108,353,190**	**-412,719,306**	**-698,842,116**	**-438,537,623**	**421,299,512**	**264,407,541**	**226,926,828**
12. Other income	21,546,363	42,577,126	98,148,465	79,670,972	35,975,907	55,583,767	62,391,247	66,354,072	59,995,193	56,060,037	60,076,863
13. Other expenses	-914,727,898	-1,380,140,330	-427,484,407	-401,205,709	-116,111,269	-647,933,923	-594,575,128	-437,462,087	-439,457,623	-447,108,006	-513,307,353
14. Other profit	**-893,181,535**	**-1,337,563,204**	**-329,335,942**	**-321,534,737**	**-80,135,362**	**-592,350,156**	**-532,183,880**	**-371,108,015**	**-379,462,430**	**-391,047,969**	**-453,230,490**
15. Profit before tax	**47,696,838**	**-1,905,465,562**	**-2,351,460,262**	**-130,606,633**	**1,028,217,828**	**-1,005,069,462**	**-1,231,025,996**	**-809,645,639**	**41,837,082**	**-126,640,428**	**-226,303,662**
16. Current corporate income tax expenses	-2,998,375	-2,253,490	-3,440,989	-885,768	-3,649,540	-2,645,632	-2,575,084	-2,639,403	-2,479,085	-2,797,749	-2,627,391
17. Deferred income tax expenses (*)	-38,454,058	98,914,750	-28,438,599	259,098,512	100,106,552	78,245,431	101,585,329	102,119,445	128,231,054	102,057,562	102,447,764
18. Net profit after tax	**6,244,405**	**-1,808,804,302**	**-2,383,339,850**	**127,606,111**	**1,124,674,840**	**-929,469,663**	**-1,132,015,751**	**-710,165,596**	**167,589,050**	**-27,380,614**	**-126,483,288**
Minority's interest	-111,262,364	-2,025,322,017	-1,127,678,506	-75,424,050	-4,070,556	-668,751,499	-780,249,326	-531,234,787	-411,946,043	-479,250,442	-574,286,419
Profit after tax for shareholders of parent company	117,506,769	216,517,715	-1,255,661,344	203,030,161	1,128,745,396	-1,598,221,162	-1,912,265,076	-1,241,400,383	-244,356,993	-506,631,056	-700,769,708

** Revenue from banana, pig and durian*

Figure 14: Pro-forma cash flow statement

Unit: '000VND	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E
I. CASH FLOWS FROM OPERATING ACTIVITIES											
1. Profit before tax	**47,696,838**	**-1,905,465,562**	**-2,351,460,262**	**-130,606,633**	**1,028,217,828**	**-1,005,069,462**	**-1,231,025,996**	**-809,645,639**	**41,837,082**	**-126,640,428**	**-226,303,662**
2. Adjustments for:											
Depreciation of fixed assets and properties investr	1,137,274,221	1,207,452,901	963,189,845	870,230,953	337,569,217	1,834,173,264	2,008,898,473	1,928,069,768	2,120,521,206	2,133,152,168	2,693,143,469
(Reversal of provisions)/provisions	19,682,377	63,625,281	1,614,455,830	-885,411,353	-908,288,047	-19,187,182	-26,961,094	-45,078,369	-376,985,209	-275,299,980	-148,702,367
Foreign exchange (gain)/loss from revaluation	44,675,852	58,008,292	-72,723,455	-104,788,770	222,844,063	29,603,196	26,588,665	20,304,740	38,910,379	67,650,209	36,611,438
Loss/(profit) from investment activities	-1,435,670,677	-165,792,637	-1,053,097,065	-455,074,138	-438,812,767	-709,689,457	-564,493,213	-644,233,328	-562,460,580	-583,937,869	-612,962,889
Interest expense	1,532,928,450	1,263,369,664	1,253,570,666	971,878,185	793,176,972	1,162,984,787	1,088,996,055	1,054,121,333	1,014,231,466	1,022,702,123	1,068,607,153
Adjustments for			16,172,109	1,759,669							
3. Operating profit before changes in working c	**1,346,587,061**	**521,197,939**	**370,107,668**	**267,987,913**	**1,034,707,266**	**2,297,884,608**	**2,533,028,886**	**2,313,184,143**	**2,234,217,262**	**2,364,266,650**	**3,036,696,804**
(Increase)/decrease in receivables	1,511,655,755	77,839,787	-821,286,302	-605,054,037	22,964,621	-261,069,818	-657,038,952	-936,476,245	-863,768,298	-671,182,668	-893,356,635
(Increase)/decrease in inventories	-695,030,279	-878,775,630	-430,250,325	-264,123,046	-595,021,928	-1,081,886,465	-1,179,579,709	-1,022,266,511	-1,162,122,100	-1,336,961,687	-1,551,464,145
Increase/(decrease) in payables (other than interes	-3,837,314,700	-1,233,712,837	270,122,076	82,660,109	-251,359,212	-1,432,132,651	-914,557,293	-435,199,440	-707,857,809	-1,006,532,094	-1,237,993,919
(Increase)/decrease in prepaid expenses	-215,749,814	120,173,500	-21,743,758	-54,040,134	-107,385,162	-41,591,354	-3,430,198	-82,378,713	-99,727,004	-89,973,012	-80,440,372
Interest paid	-971,481,036	-1,128,584,792	-1,130,267,163	-65,501,069	-63,237,554	-671,814,323	-611,880,980	-508,540,218	-384,194,829	-447,933,581	-524,872,786
Corporate income tax paid	-54,584,465	-12,947,293	-818,203	-2,205,764	-3,332,591	-14,777,663	-6,816,303	-5,590,105	-6,544,485	-7,412,229	-8,228,157
Other payments for operating activities	-1,758,964	-2,767,027									
Net cash flows from operating activities	**-2,917,676,442**	**-2,537,576,353**	**-1,764,136,007**	**-640,276,028**	**37,335,440**	**-1,205,387,666**	**-840,274,548**	**-677,267,088**	**-989,997,262**	**-1,195,728,621**	**-1,259,659,211**
II. CASH FLOWS FROM INVESTING ACTIVITIES											
1. Payment for fixed assets, constructions and oth	-2,597,907,012	-4,679,597,082	-2,335,313,765	-1,215,681,721	-544,321,349	-2,274,564,186	-2,209,895,621	-1,715,955,328	-1,592,083,641	-1,667,364,025	-1,891,972,560
2. Receipts from disposal of fixed assets and othe	531,497,895	1,492,108,659	2,653,633	227,716,258	17,965,272	454,388,343	438,966,433	228,337,988	273,474,859	282,626,579	335,558,840
3. Loans, purchases of other entities' debt instrum	-3,041,376,766	-4,183,656,108	-820,994,359	-2,910,721,238	-2,165,452,268	-2,624,440,148	-2,541,052,824	-2,212,532,167	-2,490,839,729	-2,406,863,427	-2,455,145,659
4. Receipts from loan repayments, sale of other en	3,903,352,004	1,327,282,202	352,437,170	1,889,196,184	2,330,063,239	1,960,466,160	1,571,888,991	1,620,810,349	1,874,484,985	1,871,542,745	1,779,838,646
5. Payments for investment in other entities	-7,783,830	-708,435,715	-421,331,381	-108,511,316	-232,446,836	-295,701,816	-353,285,413	-282,255,352	-254,440,147	-283,625,913	-293,861,728
6. Collections on investment in other entities	74,975,161	12,446,724,361	1,314,904,350	3,332,388,023	791,244,823	3,592,047,344	4,295,461,780	2,665,209,264	2,935,270,247	2,855,846,691	3,268,767,065
7. Dividends, interest and profit received	783,659,345	537,820,566	440,002,574	74,291,023	53,169,424	377,788,586	296,614,435	248,373,208	210,047,335	237,198,598	274,004,433
Net cash flows from investing activities	**-353,583,203**	**6,232,246,883**	**-1,467,641,778**	**1,288,677,213**	**250,222,305**	**1,189,984,284**	**1,498,697,781**	**551,987,961**	**955,913,909**	**889,361,248**	**1,017,189,037**
III. CASH FLOWS FROM FINANCING ACTIVITIES											
1. Receipts from equity issue and owner's capital contribution				55,000	22,594,000						
3. Proceeds from borrowings	7,594,866,696	4,568,150,621	7,805,577,396	1,458,994,671	1,802,441,405	4,646,006,158	4,056,234,050	3,953,850,736	3,183,505,404	3,528,407,551	3,873,600,780
4. Principal repayments	-4,127,343,823	-8,346,126,254	-4,731,080,029	-2,126,304,017	-2,118,518,662	-4,289,874,557	-4,322,380,704	-3,517,631,594	-3,274,941,907	-3,504,669,485	-3,781,899,649
Net cash flows from financing activities	**3,467,522,873**	**-3,777,975,633**	**3,074,497,367**	**-667,254,346**	**-293,483,257**	**356,131,601**	**-266,146,654**	**436,219,142**	**-91,436,503**	**23,738,066**	**91,701,131**
Net cash flows during the period	**196,263,228**	**-83,305,103**	**-157,280,418**	**-18,853,161**	**-5,925,512**	**340,728,219**	**392,276,580**	**310,940,015**	**-125,519,856**	**-282,629,307**	**-150,769,044**
Cash and cash equivalents at beginning of the	**141,473,491**	**337,736,719**	**254,431,616**	**97,151,198**	**78,298,037**	**72,372,525**	**310,942,066**	**308,423,278**	**251,336,205**	**289,779,259**	**323,561,233**
Cash and cash equivalents at end of the period	**337,736,719**	**254,431,616**	**97,151,198**	**78,298,037**	**72,372,525**	**413,100,744**	**703,218,645**	**619,363,293**	**125,816,349**	**7,149,951**	**172,792,189**

9.2 Revenue Projection using Linear Regression (2023 - 2028)

Table 19: Regression Results for Revenue Projection Models

	Banana model	Pig model	Durian model
Intercept Estimate	-188,172,912	-797,812,658	-523,396,775
Year Coefficient	93,974	395,192	259,381
Std. Error	393,149,548	264,718,432	138,607,279
t value	0.479	3.014	3.776
Pr(t)	0.665	0.057	0.0325
Residual Std. Error	615,500	414,400	217,000
Adjusted R-squared	-0.2372	0.6693	0.7686
p-value	0.6623	0.05696	0.03244

9.3 Liabilities Projection using Linear Regression (2023 - 2028)

Table 20: Regression Results for Liabilities Projection Models

	Short-term liabilities	Long-term liabilities
Intercept Estimate	-188,172,912	6,531e+12
Year Coefficient	93,974	-3,228e+09
Std. Error	393,149,548	5,763e+11
t value	0.479	11.33
Pr(t)	0.665	0.00147
Residual Std. Error	615,500	902200000
Adjusted R-squared	-0.2372	0.9695
p-value	0.6623	0.001481

9.4 WACC and TGR Calculation

The market capitalisation of HAG stands at 8,114,744,000, representing 35.72% of the equity portion. The cost of equity is derived using the Capital Asset Pricing Model (CAPM), incorporating a beta obtained from the Vietstock website, a risk-free rate set at 4.50% based on the Central Bank Rate as of June 2023, and a market risk premium sourced from Aswath Damodaran's Country Default Spreads and Risk Premiums website, which stands at 4.57%. On the debt side, HAG holds a debt level of 14,603,644,212, constituting 64.28% of the capital structure. The cost of debt is calculated as the interest expense divided by total liabilities, averaging the figures over the last five years. The average tax rate for Vietnamese firms of 20% were used. WACC was computed to be 6.16%. using the formula:

WACC = Cost of Equity × Proportion of Equity + Cost of Debt × (1 - Tax Rate) × Proportion of Debt

Table 7: Weighted Average Cost of Capital (WACC)

Parameter	**Value**
Market Cap	8,114,744,000
% of Equity	35.72%
Cost of Equity (CAPM)	9.25%
Risk-Free Rate	4.50%
Beta	1.04
Market Risk Premium	4.57%
Debt	14,603,644,212
% of Debt	64.28%
Cost of Debt	5.56%
Tax Rate	20%
Terminal Growth Rate (TGR)	**6.16%**

We have calculated the TGR to be 6.96% taking into account three growth metrics; (1) Vietnam long term GDP growth rate, (2) the inflation rate, in Vietnam over the long run and (3) the long term growth of the agriculture industry in Vietnam. We have assigned a weight of 45% to both the long term GDP growth rate and the growth of the agriculture sector. This is because we believe these factors play a role in determining HAGs performance as they reflect how closely HAGs success is tied to Vietnam overall economic conditions and the dynamics of its agriculture sector. On the hand we have assigned a weight of 10% to long term inflation as we anticipate that its immediate impact, on HAGs growth might be relatively lower.

Table 8: Terminal Growth Rate (TGR)

TGR		**Weighting**
Long-term average GDP growth rate (CAGR 2023 - 2028)	6.56%	45%
Long-term average growth rate of Vietnam agriculture sector (CAGR 2023 - 2028)	7.96%	45%
Long-term inflation (CAGR 2023 - 2028)	4.22%	10%
Terminal Growth Rate (TGR)		**6.96%**

9.5 Detailed HAG SWOT Analysis

Table 6: HAG SWOT Analysis

Strengths	(S1) Established brand and competitive position (S2) Unique product and sustainable business model (S3) Strong financial restructuring
Weaknesses	(W1) Financial difficulty and high debt (W2) Low marketing visibility
Opportunities	(O1) High domestic and foreign market potential (O2) Demand for sustainable practices and healthy products
Threats	(T1) Diseases and natural disasters (T2) Interest rate fluctuations (T3) Unsuccessful equity issuance (T4) Strong industry rivalry, particularly in the retail and agricultural sectors (T5) Volatile food and product feed prices

9.5.1 Strengths

S1: Established brand and competitive position

Currently HAG demonstrates its edge through its expansive fruit farms spanning 10,000 hectares in Vietnam, Laos and Cambodia. The strength of HAGs established brand also contributes significantly to its competitiveness by granting the company access to extensive industry networks and bolstering its bargaining power. Notably HAG successfully ventured into pig breeding in 2018 resulting in a revenue share by 2021. This achievement highlights the integration of pig breeding into HAGs diversified portfolio. With 10 established pig farming clusters and an annual production capacity of around 600,000 pigs these numbers clearly showcase the companys size, efficiency and solidify its position as a major player, in the fiercely competitive agricultural sector.

S2: Unique product and sustainable business model

Banana-fed pig, or "Thit heo an chuoi" is a relatively unique product known for its delicious taste and organic qualities, receiving high praise and enthusiastic reception from consumer's. Since waste bananas from the fruit farming business serve as a nutrient-rich source for pig feeds, by leveraging the unusable resources, HAG is able to not only reduce production costs but also capitalise on the

sustainable, environmental-friendly models, furthering its distinctive competitive advantage. In connection with the previous point, as a large company, HAG has the resources to produce high-quality products in a sustainable way that meet Global Gap standards or equivalent criteria, enabling exports to demanding markets such as Japan, South Korea, Singapore, and Europe.

S3: Strong financial restructuring
For over ten years HAG has been implementing restructuring measures to enhance operational efficiency, which has contributed to the companys stability. The analysis of the data from 2018 2022 reveals an improvement in HAGs debt ratios. When compared to the market average HAGs debt ratio indexes demonstrate discrepancies. Notably in 2019 HAG had a debt index (0.56) compared to its competitors in the same industry (0.64). In 2020 HAG successfully reduced its debts by 6 billion dongs, which is less than half of its liabilities, in 2018. These ratios indicate that HAG has effectively managed its borrowing and bode well for prospects.

9.5.2 Weaknesses

W1: Financial difficulty and high debt
The situation for HAG remains tough as there are large debt payments and continuing high interest levels. In the recent past, HAG also had to sell many properties to clear some debts; this results in higher lending rates and low productivity. At the beginning, HAG Agrico expanded its operations in rubber and oil palm cultivation onto 85,000 hectares at Gia Lai, ak Lak, Laos and some Cambodian parts. The rubber industry's prices have been going up and down with devastating consequences for this country. In order to deal with this situation, Thaco was appointed a strategic investor in the context of a finance re-structuration project. Therefore, HAG Agrico was able to clear off debts totalling 5.7 trillion dong, together with accumulated loss of 2.663 trillion as of September 30, 2020. Also, the State Securities Commission has imposed on HAG a fine of 3 billions VND due to unreported stocks deals in connection with those relating to HNG shares. Consequently, trade in HAG stock was suspended throughout the subsequent five months.

W1: Low marketing visibility
The company's marketing efforts in reaching and communicating with customers remain suboptimal. This weakness in marketing affects the company's ability to effectively engage and inform its target audience, potentially leading to missed opportunities for growth and customer retention. This is exemplified by HAG meat brand Bapi, which so far has not appeared in many retail stores and received very little advertising on both traditional media and social media.

9.5.3 Opportunities

O1: High domestic and foreign market potential
The pig breeding sector demonstrates significant domestic market potential, with the market value of pork exceeding 10 billion USD and an anticipated growth to 4.7 million tons by 2030. According to

VNDirect Research (2022), there is a lot of room for expansion in the branded pork segment, which currently holds only 10% of the market share. This domestic outlook is in line with global trends, positioning Vietnam as the second-largest consumer of pig meat in Asia. Additionally, bananas also display strong market potential, with China displaying an annual demand for 20 million tons. HAG can also strategically focus on cultivating durian, considered a highly favoured, luxury fruit in China, and explores opportunities in the Cambodian pork market. In summation, there are considerable opportunities to capitalise on both domestic and foreign markets for HAG.

O2: Heightened demand for sustainable practices and healthy products
The demand for clean meat is on the rise in Vietnam, driven by factors such as increasing income, heightened nutritional awareness, and health concerns post-African Swine Fever and Covid-19 (VNDirect Research, 2022). Thus, HAG's Bapi meat brand is put forth to address and align with the growing preference for clean meat. The 3F model, emphasising Feed, Farm, and Food, ensures balanced nutrition, hygienic conditions, and traceability in pork production. This trend is thriving in Vietnam urban areas, facilitated by modern commerce channels, making branded and traceable clean meat easily accessible (VNDirect Research, 2022). Sustainable practices employed by HAG, further position businesses adopting the 3F model for success in the evolving Vietnamese pork market

9.5.4 Threats

T1: Diseases and natural disasters
Weather and diseases are key factors influencing the operations of a farming company like HAG. Farming companies in Vietnam all face the unpredictability of both climatic conditions and disease outbreaks, notably PRRS (Porcine Reproductive and Respiratory Syndrome) and occasional Foot and Mouth Disease outbreaks. For instance, the resurgance of African Swine Fever in the southern provinces of Vietnam has lead farmers to liquidate their herds, leading to a surplus in the supply chain. This surplus then disrupts market equilibrium and consequently negatively impacts the economic viability of pig farming. On the global stage, the presence of diseases impedes Vietnam's ability to export pork, hindering the growth and profitability of companies.

T2: Interest rate fluctuations
Interest rates can be volatile, and for a company with substantial borrowing like HAG, this can pose a great threat as the company has to pay an elevated amount of interest expenses.

T3: Unsuccessful equity issuance
Reflected in the firm's latest failure to raise capital. HAG faces a risk of not being able to fund growth initiatives and expand in the market. In April of the previous year, it's price was approximately 13,000 – 14,000 VND, prompting an attempt to issue shares at 10,500 VND per share with the aim of raising 1700 billion VND to supplement capital for subsidiaries and fulfill part of bond principal obligations. Unfortunately, this plan faced setbacks as HAG's stock price subsequently declined, currently hovering

around 7,000 – 8,000. Thus, there remains the risk of failling to obtain the adequate fund and support for HAG.

T4: Strong industry rivalry in retail and agricultural sectors

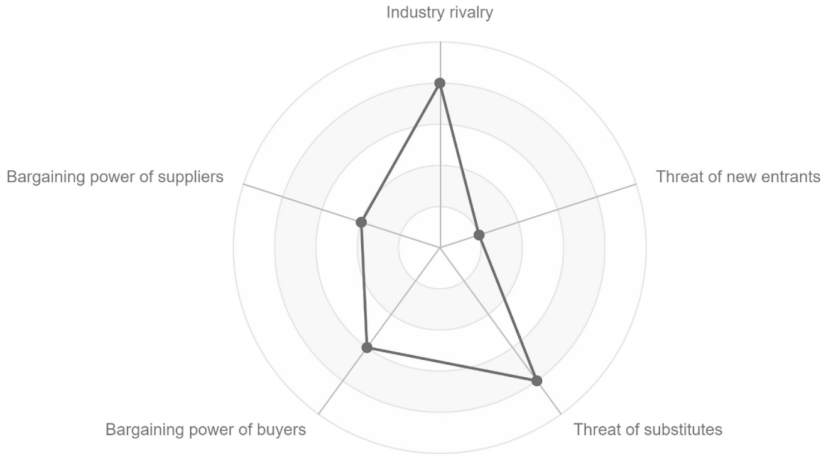
There is intense competition with the involvement of major players such as C.P., Masan, and Vissan. Even large steel industry enterprises like Hoa Phat have entered this market. To rapidly increase their scale, some companies choose to expand production through farm leasing or third-party outsourcing. In recent years, the agricultural sector, which once appeared as a promising opportunity, has now transformed into a potential threat due to heightened competition. As Vietnam continues to integrate into the global commodities market, the landscape has become increasingly competitive, putting pressure on established players like HAG. Many major Vietnamese conglomerates have shifted their focus from traditional real estate to invest in agriculture, intensifying the rivalry within the industry, with significant stock market players like Hoa Phat, Vingroup, and FLC entering the agricultural sector. The influx of smuggled pork from Thailand and Cambodia, which comes at lower prices, also created additional competitive pressures (Hoang, 2023).

T5: Volatile food and product feed prices

As a business in the agricultural sector, the unpredictable fluctuation of food prices poses a notable difficulty to HAG. KB Vietnam Securities Company suggests that livestock feed prices are likely to exhibit a slight decrease in the near future when the official reduction of taxes on corn and wheat is approved. Still, livestock feed prices are unlikely to decrease significantlyand will remain relatively high compared to the 2018-2019 period due to ongoing high input costs. This threat is furthered by the sharp increases in transportation costs which have driven up the prices of imported raw materials, and although the situation has shown some signs of improvement, it may not be fully resolved in the near term.

9.6 Porter's Five Forces Analysis

Figure 4: HAG Porter's Five Forces Analysis



9.6.1 Industry Rivalry: 4/5

The dimension of industry rivalry in the Vietnamese meat sector is notably intense, thus it is warranted a 4/5 score. The 3F model, taking up over 60% of the market share, sets the stage for robust competition. HAG faces formidable domestic competitors like BAF, which, since entering the market in 2021, has swiftly expanded its presence and aims to be one of the top three pig farming companies in Vietnam. Other established entities such as DBC and MML, along with newcomers like Nova Consumer, further add to the competitiveness of the industry.

9.6.2 Bargaining Power of Suppliers: 2/5

The bargaining power of suppliers in terms of key inputs such as water for irrigation and animal feed is rated at a low 2 out of 5. This is attributed to the fact that the Vietnamese agricultural sector has not been experiencing any sustained supply chain constraints. Additionally, the undifferentiated nature of the supply, as seen in water, contributes to the supplier's limited influence on pricing.

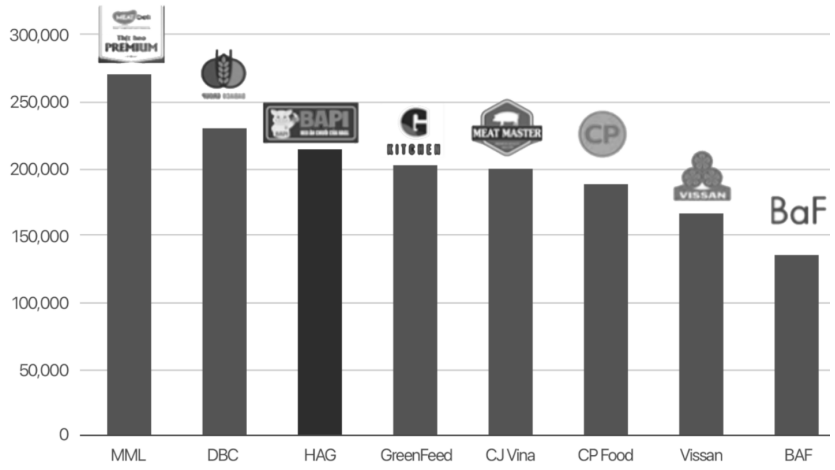
9.6.3 Bargaining Power of Buyers: 3/5

We assign the bargaining power of buyers for HAG a 3 out of 5. This is due to the fact that, these products are essential to the local cuisine, thus creating a consistent demand and the buyers' power is somewhat constrained. However, despite pigs and bananas being staples, the market's uniform pricing for these non-branded products limits consumer influence.

9.6.4 Threat of Substitutes: 4/5

The threat of substitutes is significant and we assign it a high score of 4/5 due to HAG's relatively recententry into the branded pig and durian market. In the non-branded sector, differentiation is low,

Figure 15: Prices of branded meat from major competitors in 2022



Source: VNDirect Research (2022)

particularly evidenced in the case of bananas. Thus, consumer preferences are unlikely to be tied to specific brands. Additionally, high industry rivalry intensifies this threat, with examples like BAF offering lower-cost alternatives. HAG's limited presence as a food brand, with its Bapi product not yet available in major retail store chains, further underlines the threat of HAG's bargaining position.

9.6.5 Threat of New Entrants: 1/5

New entrants entering the agriculture and food industry face three primary hurdles: (1) acquiring sufficient farm-land, (2) setting up and and maintaining an integrated system of factories and farms for the production of livestock feed and livestock farming; and (3) ensuring the efficiency of logistics and distribution channels, which are critical for supplying products to the market. Throughout the production process, there is a stringent adherence to expensive food safety requirements and quality assurance standards. Aside from demanding a substantial investment outlay initially, these missions also involve a long time period before realising profits.

9.7 Financial Ratios Formulae

Table 21: Financial Ratios Formulae

Ratio	Formula	Description
Liquidity Ratios		
Current Ratio	$\frac{CurrentAssets}{CurrentLiabilities}$	Measures ability to cover short-term liabilities
Quick Ratio	$\frac{CurrentAssets-Inventory}{CurrentLiabilities}$	Indicates immediate liquidity without relying on inventory
Inventory Turnover Ratio	$\frac{COGS}{AverageInventory}$	Measures how often inventory is sold and replaced
Total Assets Turnover Ratio	$\frac{TotalSales}{TotalAssets}$	Examines efficiency of asset utilization in generating sales
Asset to Equity Ratio	$\frac{TotalAssets}{Owners'Equity}$	Indicates proportion of assets financed by equity
Asset Ratios		
Inventory Turnover Ratio	$\frac{COGS}{AverageInventory}$	Assesses how quickly inventory is converted into sales
Total Assets Turnover Ratio	$\frac{TotalSales}{TotalAssets}$	Measures efficiency of total assets in generating revenue
Fixed Assets Turnover Ratio	$\frac{TotalSales}{FixedAssets}$	Examines how efficiently fixed assets generate sales
Asset to Equity Ratio	$\frac{TotalAssets}{Owners'Equity}$	Indicates proportion of assets financed by equity
Profitability Ratios		
Return on Assets Ratio	$\frac{NetIncome}{AverageTotalAssets}$	Measures profitability relative to total assets
Return on Equity Ratio	$\frac{NetIncome}{AverageOwners'Equity}$	Evaluates profitability relative to shareholders' equity
Profit Margin Ratio	$\frac{NetIncome}{TotalSales}$	Indicates percentage of profit per dollar of sales
Debt Ratios		
Total Debt Ratio	$\frac{TotalDebt}{TotalAssets}$	Evaluates proportion of assets financed by debt
Interest Coverage Ratio	$\frac{EBIT}{InterestExpense}$	Measures ability to cover interest payments
Debt-to-Equity (D/E) Ratio	$\frac{TotalLiabilities}{Owners'Equity}$	Examines relative contribution of debt and equity to financing
Market Ratios		
Price-to-earnings Ratio	$\frac{MarketPriceperShare}{EarningsperShare}$	Indicates market's expectations for future earnings
Market-to-book Ratio	$\frac{PriceperShare}{BookvalueperShare}$	Measures market's perception of a company's intrinsic value

Source: Bakry (2014)