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Equity Valuation: Hindustan Aeronautics Ltd.

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Master in Finance

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Acknowledgments

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Resumo

Esta tese procura determinar o justo valor das ações da Hindustan Aeronautics Limited a 31 de março de 2024. O valor estimado é então comparado com o valor de mercado para determinar se a empresa está subvalorizada ou sobrevalorizada à data em questão.

Para este efeito, a tese baseia-se nos relatórios da empresa e do sector para aplicar duas técnicas de avaliação: o método dos cash flows descontados (DCF) e avaliação relativa. O método DCF baseou-se nos free cash flows para a empresa. As estimativas dos cash flows para o período entre 2025 e 2030 basearam-se numa análise pormenorizada dos dados históricos da empresa entre 2020 e 2024, incorporando tendências macroeconómicas e específicas do sector.

Por último, a tese fornece informações sobre o desempenho do sector da defesa indiano e destaca potenciais catalisadores que podem complementar o crescimento a longo prazo da Hindustan Aeronautics Limited.

A análise efetuada, com base nos dois métodos de avaliação, indica que as ações estavam sobrevalorizadas, em relação ao seu justo valor. O preço das acções, na data da análise, era de ₹3.327, enquanto o justo valor calculado a partir do método de avaliação DCF era de ₹2.885, o que implica uma potencial desvantagem de 13%. A análise da avaliação relativa também complementa as conclusões do modelo DCF, implicando uma sobrevalorização das ações da HAL. Os rácios P/E, EV/EBITDA e EV/EBIT sugerem que o preço de mercado atual é superior às estimativas calculadas.

A confluência entre estes diferentes métodos de avaliação reforça a nossa opinião de que a ação está atualmente cotada acima do seu valor de mercado.

Palavras-Chave: Hindustan Aeronautics Ltd., avaliação, fluxo de caixa atualizado, WACC, valor terminal, múltiplos.

Classificação JEL: G30, O22

Abstract

This thesis seeks to determine the fair value of Hindustan Aeronautics Limited shares as of March 31st, 2024. The estimated fair value is then compared to its market value to determine if the company is undervalued or overvalued in the market on the date in question.

For this endeavour, the report leverages company filings and industry reports to deploy two valuation techniques: the discounted cash flow (DCF) method and relative valuation. The DCF method was based on the Free Cash Flow to the Firm. The cash flow estimations for 2025 to 2030 were based on a detailed analysis of the company's historical data from 2020 to 2024, incorporating macroeconomic and industry-specific trends. Lastly, the report provides insights into the performance of the Indian defence sector and highlights potential catalysts that can supplement the long-term growth of Hindustan Aeronautics Limited.

The analysis using both valuation methods indicates that the stock was overvalued compared to its fair value. The stock price on the date of the analysis was ₹3,327, whereas the fair value computed from the DCF valuation methods was ₹2,885, implying a potential downside of 13%. The relative valuation analysis also complements the findings from the DCF model, implying an overvaluation of HAL's stock. The P/E, EV/EBITDA, and EV/EBIT ratios all suggest that the current market price is higher than our calculated fair value estimates.

The confluence between these different valuation methods reinforces our view that the stock is currently priced above its fundamental value in the market.

Keywords: Hindustan Aeronautics Ltd., Valuation, Discounted Cash Flow, WACC, Terminal Value, Multiples.

JEL Classification: G30, O22.

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Introduction

Equity valuation plays a crucial role in the finance industry, equipping investors with a comprehensive understanding of a company's real worth. By leveraging diverse valuation methods and conducting extensive analysis, valuation reports help reveal divergences that may exist in the market value and the actual intrinsic value of the company.

This thesis aims to determine the equity value of Hindustan Aeronautics Limited (HAL), a leading aerospace and defence company based in India, to forecast the intrinsic value of its equity as of the close of 31st March 2024.

HAL came into existence in the year 1963. It engages in the design, development, manufacture, repair, overhaul, and servicing of a range of products including, aircraft, helicopters, aero-engines, avionics, accessories, aerospace structures, and industrial marine gas turbines (Hindustan Aeronautics Limited [HAL], 2024).

It was conferred with the "Navratna" status by the Government of India (GoI) in June 2007, which gives it strategic and operational autonomy and enhanced powers to make prompt investment decisions, subject to an overall investment ceiling set by the GoI.

Its major supplies and services are for the Indian Defence Services – India Air Force (IAF), Army, Navy and Coast Guard, and has been supporting the fleet of Indian Defence for over five decades.

The company generated a record-high Total Income of ₹32,277 crores (Crore - a unit of measure to denote 10 million) (\$3.87B) in FY23-24. Revenue from operations stood at ₹30,381 crores (\$3.64B) as compared to ₹26,928 (\$3.23B) crores in the previous year (HAL, 2024).

Over the recent years, there has been a shift in market dynamics, with India lowering its dependence on foreign suppliers through a mix of policy initiatives that aim to substantially enhance the design and manufacturing capabilities of public enterprises involved in defence production ("Guns N' Growth: Inside Defence Sector's Explosive Make-In-India Story," 2024).

India's defence exports touched a record ₹21,083 crores (\$2.53B) in the financial year 2023-24, a growth of 32.5% over the last fiscal when the figure was ₹15,920 crores (\$1.91B). Upon comparing the last decade with the previous one, the growth picture gets more dramatic — defence exports have grown by 21 times in the last decade, from ₹4,312 crores (\$0.52B) during 2004-05 to 2013-14 to ₹88,319 crores (\$10.58B). The government aims to nearly triple India's total annual defence production to ₹3 lakh (lakh- a unit of measure to denote one hundred thousand) crore (\$35B) by 2028-29.

Against this backdrop, HAL stands out as a key player in the Indian defence sector, providing critical aerospace and defence components. Its strategic importance to the government ensures consistent order inflows and revenues, closely tied to the nation's defence forces.

Given the above factors, the motivation to write an equity valuation report for HAL stems from the company's strategic importance in the Indian defence sector and its potential for growth in the face of increasing defence exports and government initiatives to promote indigenisation.

The first milestone in this thesis will be to conduct an overview of the existing key literature within the industry exploring the major corporate valuation models. From this, models that complement the business operations of the company will be implemented in the valuation process.

Following the literature review, the report analyses the company from an operational standpoint, reviewing the core business divisions, order books, and other detrimental factors that influence its moat and dominance within the governing sector - Defence and Aerospace. Subsequently, the report conducts a macroeconomic study to analyse other economic factors that will fuel the industry's growth in the years ahead.

Upon sourcing relevant financial data and establishing the assumptions used for forecasting the company's result, the report computes the target share price by leveraging the valuation methodologies - the Discounted Cash Flow (DCF) model and the Relative Valuation.

In conclusion, the thesis provides a comprehensive analysis of HAL encompassing both quantitative and qualitative factors to compute the intrinsic value of its equity, enabling potential investors and stakeholders to make well-informed investment decisions.

CHAPTER 1

Literature Review

Equity valuation has been the core of financial analysis, providing managers and investors with the necessary insight to make investment and management decisions. According to Damodaran (2006), valuation can be considered as the heart of finance. Playing a pivotal role in portfolio management, it facilitates practitioners to find firms that trade at less than their true value and then hope to generate profits as prices converge on value.

Fernandez (2001) states that “Value should not be confused with price, which is the quantity agreed between the seller and the buyer in the sale of a company” (p. 5). There may exist differences in these two values due to multiple reasons. He further emphasizes its use to compare the value obtained with the share’s price on the stock market and to decide whether to sell, buy or hold the shares.

Although it is possible to classify the various valuation models in different ways based on their core assumptions and implementation techniques, Damodaran (2006) presented four approaches for valuing companies: Discounted Cash Flow (DCF), Liquidation and Accounting Model, Relative Valuation, and Contingent Claim Model.

According to Steiger (2008), the DCF analysis is a very powerful tool that is not only used to value companies but also to price initial public offerings (IPOs) and other financial assets. It is widely used by professionals in investment banks, consultancies, and managers around the world for a range of tasks that it is even referred to as “the heart of most corporate capital-budgeting systems” (Luehrman, 1998, p. 51).

The second method, liquidation and accounting valuation entails determining the worth of the assets a company currently possesses, by assessing accounting-derived valuations and book values (Damodaran, 2006).

According to Bhojraj and Lee (2002), the third is the relative valuation approach, which involves understanding the valuation of similar assets close to a standard ratio to arrive at firm value estimates. As a result, to arrive at this value estimate, the latter requires using a market multiple derived from accounting, for instance, price to cash earnings, price to sales, or price to book value, from similar businesses to the company's accounting figure.

According to Damodaran (2006) the final method, Contingent Claim Valuation, assesses the assets worth whose option properties are similar to using option valuation models.

Although there are a lot of valuation methods available, some have been proven to be preferred over others due to their characteristics. Nel (2009) shows that the DCF approach, multiples, and the NAV method are equally popular among academia and investment practitioners. The DCF approach should always be considered as the method of choice when valuing the equity of a going concern. This is well supported by research, which has established the superiority of the DCF approach (Berkman et al., 2000; Courteau et al., 2003; Goedhart et al., 2005). He further emphasized that within the various particular methods of DCF, Free Cash Flow to the Firm is the most suitable valuation method.

Given its accuracy and its acceptance in the finance world, we are utilizing both DCF valuation and Relative valuation methodologies for the analysis in this report.

These valuation techniques are widely recognized and respected within the industry for their ability to provide a comprehensive and insightful evaluation of a company's financial health and potential future performance. By incorporating both DCF and Relative valuation methods, we can offer a well-rounded and thorough assessment that will assist in making informed investment decisions.

1.1. Discounted Cash Flow Model

Fernandez (2001) states that the DCF method seeks to determine the company's value by estimating the cash flows it will generate in the future and then discounting them at a discount rate matched to the cash flow risk.

According to Damodaran (2006), this approach is flexible and can be applied to value firms with predictable earnings and little growth, and to those in high growth with negative earnings and cash flows; and implicitly assumes that a firm is a going concern, with potentially an infinite life. To determine the value of the company, future cash flows are divided into two distinct periods: during and after an explicit forecast period (Koller, et al. 2010).

Fernandez (2001) defines the standard formula associated with the DCF Model as:

$$Enterprise\ Value = \sum_{t=1}^{t=n} \frac{CF_t}{(1 + WACC)^t} + \frac{TV_n}{(1 + WACC)^n} \quad (1)$$

where:

- CF_t = Company's cash flow in period t
- TV_n = Company's terminal value in the period n

- n = Periods taken into consideration
- WACC = Weighted Average Cost of Capital

According to Nel (2009), when valuing shares, the model splits the valuation of a share between the growth period (also known as the planning period) and the valuation of the period beyond the planning period, referred to as the terminal value.

There are several models in the DCF Valuation Model, divided into two different perspectives: Firm and Equity Valuation. For the first perspective, which values the entire company, we use the Free Cash Flow to the Firm (FCFF); and for the second perspective, which values only the shareholders' value, we use the Free Cash Flow to Equity (FCFE) valuation model. The main difference between the two is that FCFF is calculated after taking interest payments and debt cash flows into account (Nel, 2009).

1.1.1. Free Cash Flow to Firm (FCFF)

Damodaran (2012) defines FCFF as the cash flow left over after taxes and after all reinvestment needs have been met. It can be computed by starting with the tax-adjusted operating profit, deducting capital expenditures, and adjusting non-cash deductions.

$$FCFF = \text{After-tax Operating Income} - (\text{Capital Expenditures} - \text{Depreciation} + \text{Change in non-cash Working Capital}) \quad (2)$$

Substituting the Cash Flows in Equation (1) with the FCFF, we can determine the enterprise value, which represents the company's total value.

$$\text{Enterprise Value} = \sum_{t=1}^{t=n} \frac{FCFF_t}{(1 + WACC)^t} + \frac{TV_n}{(1 + WACC)^n} \quad (3)$$

where:

- $FCFF_t$ = Free Cash Flow to the Firm in period t

1.1.2. Terminal Value

The present value of cash flows following this explicit forecast period referred, to as terminal value or continuing value, is critical in valuation as it often constitutes a major portion of the company's total value (Koller et al., 2010).

Terminal value is defined as the present value of a company's expected future cash flows beyond the explicit forecast period, assuming a constant growth rate into perpetuity (Damodaran, 2012). Steiger (2008) suggests that due to the difficulty in asserting precise figures outlining the company's growth over a very long horizon, the terminal value should be based on average growth expectations, which are easier to predict.

Terminal value is calculated with the assumption of a stable growth rate that can be maintained indefinitely. This rate reflects the company's inability to sustain high growth, thereby estimating the value of cash flows beyond the explicit forecast period (Damodaran, 2012).

The stable growth rate significantly influences terminal value, making the firm's value highly sensitive to this rate. Due to its importance, He recommends several constraints on the stable growth rate: it should be lower than the growth rate of the economy in which the company operates, or, if the company is multinational, it should be lower than the growth rate of the global economy or the specific area of operation.

$$Terminal\ Value_t = \frac{FCFF_{t+1}}{WACC - g} \quad (4)$$

$$FCFF_{t+1} = FCFF_t \times (1 + g) \quad (5)$$

where:

- g = Constant growth rate for the cash flows after the forecasted period

1.1.3. Weighted Average Cost of Capital (WACC)

The determination of an appropriate discount rate requires careful analysis of the company's financing structure and the current market conditions. The rate used to discount the FCFFs is called the WACC. This is one of the most important input factors in the DCF model, as small changes in the WACC can cause large changes in the value of the firm (Steiger, 2008).

According to Fernandez (2001), the WACC is calculated by weighing the cost of the debt and the cost of equity with respect to the company's financial structure. This is the appropriate rate since we are valuing the company as a whole (debt plus equity), we must consider the required returns to both debt and equity in the proportion to which they finance the company.

To compute WACC accurately, we need to consider three key elements as outlined in Koller, et al. (2010): the cost of equity, the after-tax cost of debt, and the target capital structure. As shown below in equation (6).

$$WACC = \frac{E}{E + D} \times K_e + \frac{D}{E + D} \times K_d \times (1 - t) \quad (6)$$

where:

- E – Market Value of Equity
- D – Market Value of Debt
- K_e – Cost of Equity
- K_d – Cost of Debt
- t – Corporate tax rate

1.1.4. Cost of Debt

An important input while calculating the WACC is the cost of debt, which measures the current cost to the firm of borrowing funds to finance projects. This rate not only reflects the company's default risk but also the market's interest rate (Koller et al., 2010).

Since interest is tax deductible, the after-tax cost of debt is a function of the tax rate. The tax benefit that accrues from paying interest makes the after-tax cost of debt lower than the pre-tax cost. Furthermore, this benefit increases as the tax rate increases (Damodaran, 2012).

$$\text{After-tax Cost of Debt} = \text{Pre-tax Cost of Debt} \times (1 - t) \quad (7)$$

Pre-tax Cost of debt is computed by adding the risk-free rate and the default spread, which is the difference between the yields of a corporate bond and a risk-free bond (government bond) with the same maturity. For companies that do not have outstanding bonds that trade regularly, debt costs are estimated using their ratings and associated default spreads (Damodaran, 2012).

1.1.5. Cost of Equity

According to Allman (2010), the Cost of Equity is the return an equity holder would demand for offering equity funds. The Capital Asset Pricing Model (CAPM) is a widely used approach for estimating the cost of equity. It is calculated using the formula:

$$K_e = r_f + \beta_L \times [E(R_m) - r_f] \quad (8)$$

where:

- K_e – Cost of Equity

- r_f – Risk-free rate
- β_L –Beta Levered
- $E(R_m)$ – Expected Market Return
- $[E(R_m) - r_f]$ – Market Risk Premium

The CAPM model states that investors should get paid an investment rate that is above the risk-free rate, accounts for market returns, and incorporates compensation for non-diversifiable risk. To account for the non-diversifiable risk, we measure the performance of the company versus the market.

Typically, non-diversifiable risk or Levered Beta (β_L) is estimated through regression analysis against a market portfolio return over a specified period (Allman, 2010).

$$\beta_L = \frac{\text{Covariance of the Firm's Returns with the Market's Returns}}{\text{Variance of the Market's Returns}} \quad (9)$$

Alternatively, Damodaran (2012) suggests calculating non-diversifiable risk via Bottom-up Betas, which involves deriving beta estimates based on fundamental factors such as industry characteristics, operating leverage, and financial leverage, rather than relying solely on historical stock price movements.

The market risk premium represents the extra return investors anticipate when choosing a risky market portfolio over risk-free assets. In the formula for the CAPM Model, it is defined as the difference between the expected market return and the risk-free rate.

According to Damodaran (2008), using the 10-year bond rate as the risk-free rate is the generally accepted practice across the industry. Alternatively, Steiger (2008) suggests that professionals use the London Interbank Offer Rates (LIBOR) as an approximation for the short-term risk-free interest rates.

1.1.6. Free Cash Flow to Equity (FCFE)

Damodaran (2008) states that FCFE represents the cash flow exclusively available to a company's equity shareholders. It is defined as the cash flow remaining after accounting for net capital expenditures, changes in working capital, and net changes in debt, and it represents the cash available for dividends or stock buybacks.

$$\begin{aligned} FCFE = & \text{Net Income} - (\text{Capex} - \text{Depreciation}) \\ & - (\text{Change in non cash NWC}) + (\text{Net Debt Issued}) \end{aligned} \quad (10)$$

According to Damodaran (2012), the following two variations to determine the Equity value exist, based on different growth assumptions for the company. The constant growth FCFE model is designed to value firms that are growing at a stable rate and are hence in a steady state.

$$P_0 = \frac{FCFE_1}{K_e - g} \quad (11)$$

where:

- P_0 – Value of stock today
- K_e – Cost of Equity
- $FCFE_1$ – Expected FCFE next year
- g – Constant growth rate in FCFE

Alternatively, a firm expected to grow much faster than a stable firm in the initial period and at a stable rate after that, can be valued using the following formula:

$$Value = \sum \frac{FCFE_t}{(1 + K_e)^t} + \frac{TV}{(1 + K_e)^n} \quad (12)$$

where:

- $FCFE_t$ – Free Cashflow to Equity in year t
- TV – Terminal Value
- K_e – Cost of Equity in high growth (hg) and stable growth (st) periods

The terminal price is generally calculated using the infinite constant growth rate model

$$TV = \frac{FCFE_{n+1}}{K_e - g} \quad (13)$$

1.1.7. Equity Value

Damodaran (2012) defines Equity Value (EQV) as the firm's total value from the perspective of the shareholders. After the computation of the enterprise value, we subtract net debt (total debt minus cash and cash equivalents) and add non-equity claims, such as minority interests, to arrive at the Equity Value.

The following equation represents the general formula of the equity value of the company:

$$\text{Equity Value} = \text{Enterprise Value} - \text{Net Debt} + \text{Non Equity Claims} \quad (14)$$

Finally, by dividing the equity value by the total number of shares, we estimate the fair value of the company per share. Overall, equity value is a fundamental component of valuation analysis, offering a comprehensive view of a company's financial health and growth potential.

1.2. Relative Valuation

Relative valuation is a method that gauges the value of an asset by comparing it to similar assets available in the market. Unlike discounted cash flow valuation, which focuses on cash flow, growth, and risk, relative valuation relies on market comparisons. According to Nel (2009), estimates are computed by using a comparable asset price/ratio as a benchmark to a common variable, such as earnings or sales.

According to Damodaran (2006), “In relative valuation, we are making judgements on how much an asset is worth by looking at what the market is paying for similar assets” (p. 57). He however cautions that the valuation of similar assets poses challenges as their price acts as a function of both the value of the equity in a company and the number of shares outstanding in the firm.

These issues can be addressed by standardizing the values in some way by scaling them to a common variable. Table 1.1 summarizes the most commonly used valuation multiples in the industry.

Table 1.1:

Determinants of Equity Multiples

Multiples	Price Multiples		EV Multiples	
	P/E Ratio	P/B Ratio	EV/EBITDA	EV/Revenue
Determinants	Payout, Risk and Expected Growth	Payout, ROE and Expected Growth	Reinvestment Rate, Tax Rate and Growth Rate	Operating Margin, Reinvestment Rate and Expected Growth
Formula	EQV / Net Income	EQV / Book Value of Equity	EV / EBITDA	EV / Revenue

Source- Adapted from Damodaran (2006)

According to Damodaran (2006), to conduct a relative valuation effectively, it is crucial to identify a set of companies with characteristics similar to the company being valued. According to Koller et al. (2020), the optimal peer group size is between 8 to 15 comparable firms. The recommended approach is to start with a broad peer group and narrow it down based on factors such as product and service similarities, current performance, economies of scale, and strategic advantages.

Company Overview

The history and growth of Hindustan Aeronautics Limited has been synonymous with the growth of the Aeronautical industry in India for more than 79 years. This section outlines its background and business model.

2.1. Company Background

The Company finds its origin as Hindustan Aircraft Limited, which was incorporated on 23 Dec 1940 at Bangalore by Shri Walchand Hirachand, in association with the then Government of Mysore, to manufacture aircraft in India. Subsequently, in March 1941, the Government of India became one of the shareholders in the Company. In collaboration with the Inter-Continental Aircraft Company of USA, the Company commenced its business of manufacturing Harlow Trainer, Curtiss Hawk Fighter, and Vultee Bomber Aircraft. In January 1951, it was placed under the administrative control of the Ministry of Defence, marking the beginning of its close relationship with India's defence sector.

The company's impact on India's defence industry became more significant as it developed indigenous design capabilities. In 1951, the company successfully designed and flew its first indigenous aircraft, the HT-2 Trainer. This achievement was followed by the development of other indigenous aircraft such as the Pushpak, Krishak, HF-24 Marut jet fighter, and the HJT-16 Kiran basic jet trainer.

Later, in August 1963, Aeronautics India Limited (AIL) was incorporated as a company wholly owned by the Government of India to manufacture MiG-21 aircraft under licence. The amalgamation of the two companies i.e. Hindustan Aircraft Limited and Aeronautics India Limited was brought about on 1st Oct 1964 and the merged entity was named "Hindustan Aeronautics Limited (HAL)" with its principal business being design, development, manufacture, repair and overhaul of aircraft, helicopters, engines and related systems like avionics, instruments and accessories.

Since then, HAL has played a prominent role in the upliftment of India's defence capabilities by developing a wide range of aircraft, helicopters, and engines. These include flagship products such as the Advanced Light Helicopter (ALH) Dhruv and the Light Combat Aircraft (LCA) Tejas.

In addition to aircraft, HAL manufactures structures for aerospace launch vehicles and satellites, as well as cryogenic engines. This diversification highlights HAL's role in supporting India's space endeavours and contributing to the country's space exploration capabilities.

HAL operates 11 research and development centres co-located with its production divisions across India. These centres focus on advancing aerospace technologies and developing new products, ensuring that HAL remains at the forefront of innovation in the aerospace sector (HAL, 2024).

India's defence exports clocked ₹21,083 crores in the financial year 2023-24, marking a growth of 32.5% over the previous fiscal year. While private companies accounted for about 60% of these exports, public sector units like HAL contributed to the remaining 40%, playing a significant role in this growth.

HAL has demonstrated its ability to consistently deliver stable results on the backdrop of strong order books and improving margins. Order backlog stands at ₹94000 crore as of March 2024 end (vs ₹ 82000 crore in FY23 end) (HAL,2024).

2.2. Business Segments and Geographical Presence

HAL is India's leader in Airforce defence equipment and has transitioned from licensed production to indigenously designing and developing products.

Although the company does not provide a segmented revenue breakdown, it generates revenue from two core operational segments - Manufacturing and Maintenance, Repair and Overhaul (MRO) services. Manufacturing involves designing, developing, and manufacturing aircraft, helicopters, engines, and related systems like avionics, instruments, and accessories (Figure 2.1).

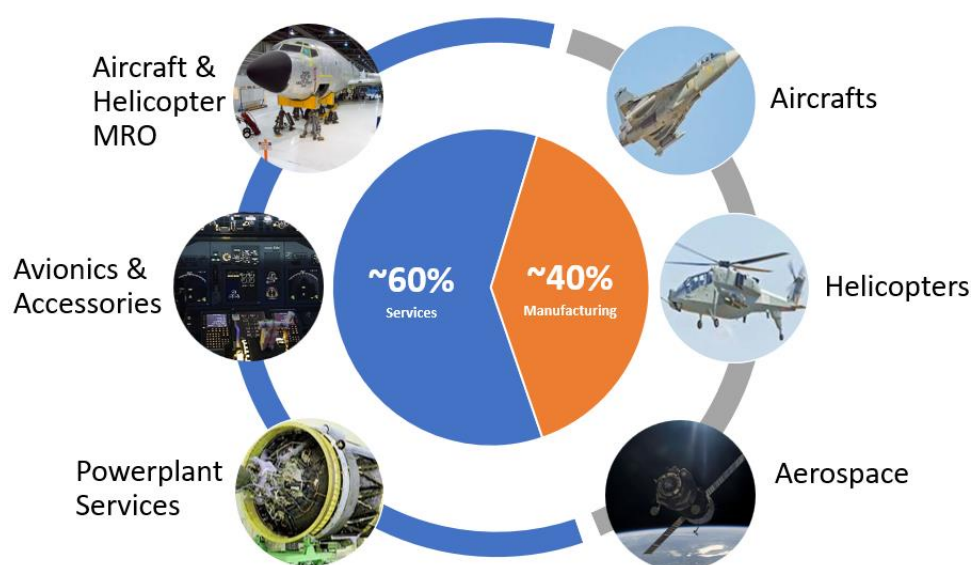


Figure 2.1: HAL's Revenue Segments | Source- Annual Report

Due to the cyclical nature of the industry, the revenue mix, on average ranges in between the 40-60 mark, with MRO generating the bulk of the share (HAL, 2024).

The milestone of having over 4,100 aircraft, 5,000 engines manufactured, and 11,000 aircraft and 33,000 engines overhauled, underscores HAL's pole position in India's defence. HAL accounted for 19% of India's Defence spending and 43% of capital spent by Airforce and Aeroengines in FY23, respectively.

HAL has 20 production divisions spread across various locations in India. These divisions are responsible for manufacturing aircraft and helicopters among other components. It also operates 10 dedicated Research and Development (R&D) centres. These centres focus on designing, developing, and innovating new aerospace technologies and products (HAL, 2024).

Table 2.1:

HAL's Manufactured Products

Manufactured under Licenses		
Aircrafts	Helicopters	Engines
SU-30 MKI	Cheetah	AL-31FP
MiG021 variants	Chetak	Adour Mk 871-07
MiG- 27	Cheetal	Adour Mk 804E/ 811
Hawk Mk132	Lancer	Shakti 1H1
Dornier 228		garette TPE-331-5
Jaguar		Artouste IIIB
Mirage 2000		LM-2500

Source- Annual Reports & Namoura Research

Table 2.2:

HAL's Indigenously Developed Products

Indigenously Developed	
Aircrafts	Helicopters
LCA Tejas	ALH Dhruv
Jaguar Darin- III	ALH Mk IV (Rudra)
HTT-40	LCH
Mini UAV- 8tn	LUH

Source- Annual Reports & Namoura Research

Table 2.3:

HAL's ROH Services

Repair & Overhaul (ROH)			
Aircrafts	Helicopters	Engines- HAL Manufactured	Engines- Others
Su- 30MKI	Chetak	AL-31 FP	RD-33
Hawk	Chetak	Adour Mk 871-07	RD-11/ R-25
Mk-132		Adour Mk 804E/811	R-289
Dornier 228		Shakti 1H1	TM333-282
Jaguar		garette TPE-331-5	Gnome1400
Mirage 2000		Artouste IIIB	Industrial Avon
AN-32		LM-2500	Industrial 501K

Source- Annual Reports & Namoura Research

Tables 2.1, 2.2 and 2.3 presented above show the products and services offered by HAL.

HAL serves both national and international markets, providing products and services for defence and civil operations. The bulk of HAL's supplies cater to the Indian Defence Services, including the IAF, Indian Navy, Indian Army, and Indian Coast Guard.

In addition to its extensive domestic presence, HAL exports its products to over 20 countries spanning the South Asian Association for Regional Cooperation (SAARC) region, Southeast Asia, the Indian Ocean Region (IOR), Africa, and Latin America. Despite this international reach, exports accounted for approximately 1% of the company's revenue from operations in FY24 (HAL, 2024).

2.3. Shareholders and Ownership Structure

As of March 31st, 2024, the company's share capital comprised of 6,687 Lakh nominal shares, valued at 3,403 rupees each. The shareholder's structure is presented in Table 2.4.

Table 2.4:

HAL's Shareholders Structure

Category	No. of Shares	No. of Shareholders	% of Total Holdings
President of India	47,91,02,424	1	71.60%
Foreign Portfolio - Corp	8,30,56,641	730	12.40%
Mutual Funds	4,51,14,870	196	6.70%
Qualified Institutional Buyer	1,60,58,066	55	2.40%
Resident Individuals	3,63,69,060	7,05,864	5.40%
Corporate Bodies	30,94,116	2,997	0.50%
Others	59,79,823	23,684	0.90%
Total	66,87,75,000	7,33,527	100.00%

Source- Annual Report

Gol's majority stake creates a situation that presents both potential benefits and challenges. Discussed below are some of these concerns-

A major advantage of government ownership in companies like HAL is that it aligns the company's goals with national interests. This setup allows the government to keep control over important defence-related decisions. Another benefit is steady funding. The government can provide money for big, long-term projects that are common in the defence industry. This financial backing helps the company plan and work on projects that might take many years to complete. Government ownership can also prove advantageous in procuring international defence deals and collaborations.

While there are several advantages of such an ownership structure, it does not come free from its share of drawbacks. Government control can lead to delays in the decision-making processes and cause operational inefficiencies. Another potential drawback stems from the dependence on government orders as its major source of revenue. This dependence can lead to major fluctuations in revenue according to government spending priorities and budget allocations.

2.4. Stock Performance

The stock in general has been on a steady upward trajectory since 2018, although it endured a steep drop in price during the Covid-triggered correction, that was witnessed globally. However, it is worth noting that the stock has not witnessed any steep corrections since 2020.

When comparing the performance of HAL stock with Nifty50, it can be observed that HAL has delivered substantial overperformance, compared to the national Index. Taking into account the returns generated since 2020, HAL's performance of 600% return, dwarfs that of Nifty, which clocked in returns in the range of 120%. This comparison of return is shown in Figure 2.2

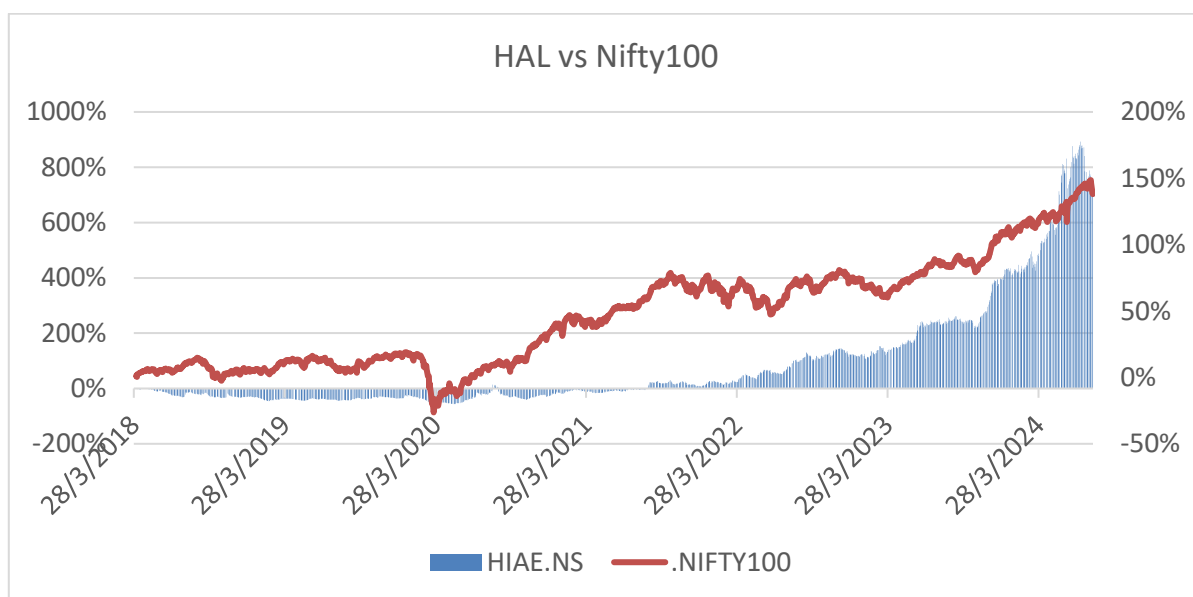


Figure 2.2: HAL Share Performance vs. Nifty100 | Source-Moneycontrol

2.5. Financial Analysis

This chapter evaluates HAL's financial health. The following sections gauge the performance of the company on three critical parameters- Profitability and Solvency. For this purpose, we will conduct this analysis over a period from FY2020 - FY2024.

This analysis will enable us to identify the areas of strength and weakness in the company, which can act as catalysts for sustained growth, while also highlighting sections that may adversely affect the performance in the long run.

2.5.1. Profitability Analysis

A profitability analysis is critical while performing a financial analysis as it provides an exhaustive assessment of a company's ability to generate profits. For this evaluation, we will review significant profitability ratios: return on sales (ROS), return on assets (ROA), and return on equity (ROE) (Table 2.5).

Table 2.5:

HAL's Profitability Ratios

HAL's Profitability ratios (2020-2024)						
		FY2020	FY2021	FY2022	FY2023	FY2024
ROS		16.5%	14.9%	15.0%	16.3%	26.2%
ROA		5.6%	6.2%	9.2%	9.3%	10.5%
ROE		22.7%	22.6%	29.2%	27.2%	28.9%

Source- Own Estimates

Upon analysing the first metric ROS, we observe a decline in the year 2021 from 16.5% to 14.9% on account of higher operating expenses, resulting in reduced operating profits. From the year 2022, there is a steady improvement noted, that can be credited to the management's endeavours to improve operational profitability. In the year 2024, the metric grew substantially from 16.3% to 26.2% as the company was able to improve operational efficiency and manage expenses relative to the growth in revenue.

When analysing ROA, we observe a steady uptrend throughout the period of analysis. The metric that stood at 5.6% in 2020 nearly doubled to 10.5% in 2024, once again highlighting the more efficient use of assets in generating higher profits. Asset turnover, which measures the efficiency with which a firm uses its assets to generate revenue, has been stable during the period. This shows that the company has been able to create more profits for a given asset base.

ROE gauges the efficiency with which a firm makes use of shareholders's equity. For the period of analysis, we observe that ROE has been in a general uptrend, in 2024, it stood at 28.9% indicative of the company's ability to generate consistent returns, making it more attractive to investors.

2.5.2. Solvency Analysis

Conducting a solvency analysis provides insights into the firm's long-term financial stability and its ability to meet its obligations. For this evaluation, we will review the debt-to-equity ratio and debt-to-asset ratio (Table 2.6).

Table 2.6:*HAL's Solvency Ratios*

HAL's Solvencyratios (2020-2024)					
	FY2020	FY2021	FY2022	FY2023	FY2024
Debt to Equity	3.00	2.36	2.02	1.85	1.68
Debt to Assets	0.75	0.70	0.67	0.65	0.63

Source- Own Estimates

The debt-to-equity ratio provides insights into the capital structure of the company and is computed by dividing the total debt by the total equity of the firm. The observed decline in the years 2021 and 2022 can be attributed to the decrease in total liabilities. The improvement witnessed from 2022 onwards can be attributed to the increase in shareholder's equity.

The debt-to-asset ratio is computed by dividing the total debt by the total assets of the firm. The decline in the ratio can be attributed to sustained asset growth and improved optimization over the observed period.

The observed trend of consistent decline in both these ratios is indicative of the improving financial health of the company.

2.5.3. Liquidity Analysis

Conducting a liquidity analysis assesses the firm's short-term financial health and its ability to meet its current obligations. For this evaluation, we will review the current ratio and quick ratio (Table 2.7).

Table 2.7:*HAL's Liquidity Ratios*

HAL's Liquidityratios (2020-2024)					
	FY2020	FY2021	FY2022	FY2023	FY2024
Current Ratio	1.34	1.59	1.80	1.68	1.73
Quick Ratio	0.71	0.93	1.22	1.29	1.37

Source- Own Estimates

The current ratio is calculated by dividing current assets by current liabilities. Upon reviewing HAL's current ratio, it is observed that the ratio reached its peak in 2022 and then witnessed a sharp decline in 2023 due to the growth in current liabilities outpacing that of its current assets. The ratio has since then shown an improvement in 2024 on account of more current assets.

The quick ratio is indicative of a company's ability to meet its short-term obligations using its most liquid assets and is calculated by removing inventories from current assets and then dividing the resulting figure by current liabilities. Upon reviewing HAL's quick ratio, there is a steady trend observed where the ratio has improved year on year. This improvement is indicative of the company's improving performance.

2.6. Industry Analysis

The following section outlines the trends observed in the global defence industry over the recent years and highlights significant developments that can act as catalysts in influencing future growth specifically in the Indian Defence segment.

2.6.1. Global Defence Industry Overview

According to Nomura (2024), Global military spending reached \$2,443 billion in 2023, marking a 6.8% year-over-year increase - the largest since 2009. This significant uptick reflects the increasingly complex geopolitical landscape, characterised by rising tensions and evolving security threats worldwide. The United States, China, Russia, India, and Saudi Arabia emerged as the top five military spenders in 2023, collectively accounting for 61% of global military expenditure, as shown in Figure 2.3

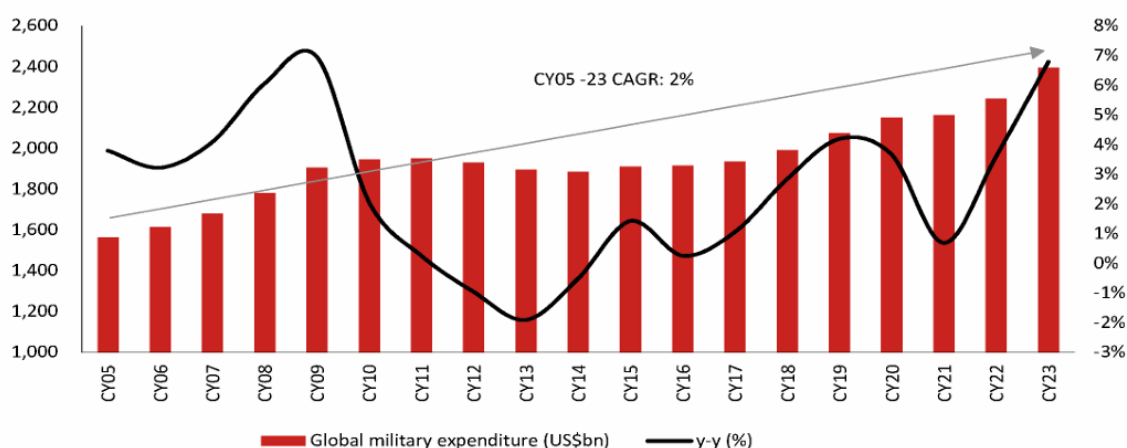


Figure 2.3: Global Military Expenditure (2005-2023) | Source-Nomura Research

Data on military spending shows major changes in the military balance between Russia and Ukraine. While Russia increased its military budget to an estimated \$109 billion in 2023, Ukraine significantly narrowed the spending gap. Ukraine's military expenditure surged by 51% to \$64.8 billion, highlighting its efforts to strengthen defence capabilities with substantial international support (Nomura, 2024).

In 2023, NATO continued to play a crucial role in global military spending, with its 31 member states contributing \$1,341 billion, or 55% of the world's total. European NATO members increased their military budgets, reflecting a reassessment of security priorities in light of regional conflicts. This signifies a concerted effort by NATO members to enhance their defence capabilities.

In Asia, China's military spending reached an estimated \$296 billion in 2023. In response to China's rising military expenditure, several neighbouring countries have increased their military spending. Japan and Taiwan both increased their military expenditure by 11%, allocating \$50.2 billion and \$16.6 billion, respectively. This trend is expected to persist as countries in the region respond to China's ongoing military modernization efforts.

The Middle East registered the highest annual growth rate in military spending in the past decade, with a 9% increase to \$200 billion in 2023. Israel, the second-largest spender in the region after Saudi Arabia, increased its military budget by 24% to \$27.5 billion, largely due to its operations in Gaza following the October 2023 Hamas attack (Nomura, 2024).

These developments in global military expenditure reflect the dynamic nature of international security and the ongoing efforts of nations to adapt to an ever-changing geopolitical landscape.

2.6.2. Changing Dynamics of the Indian Defence Industry

According to Nomura (2024), India's prominent position in the strategically and geopolitically important South Asian region has led to the prioritisation of the upgradation and enhancement of its defence capabilities to address regional security concerns.

In 2023, India emerged as the fourth-largest global military spender, with expenditures reaching \$83.6 billion, marking a 4.2% increase from the previous year. This growth primarily stemmed from rising personnel and operational costs, which constituted approximately 78% of the total military budget, reflecting the government's commitment to bolstering its armed forces amidst ongoing tensions with neighbouring countries like China and Pakistan.

Notably, 75% of the capital outlays for military procurement were allocated towards domestically produced equipment, highlighting India's push towards self-reliance in arms development and production. This strategic shift seeks to reduce dependence on foreign manufacturers while fostering the growth of the indigenous defence industry. Changes in India's defence budget over the years are shown in Figure 2.4.

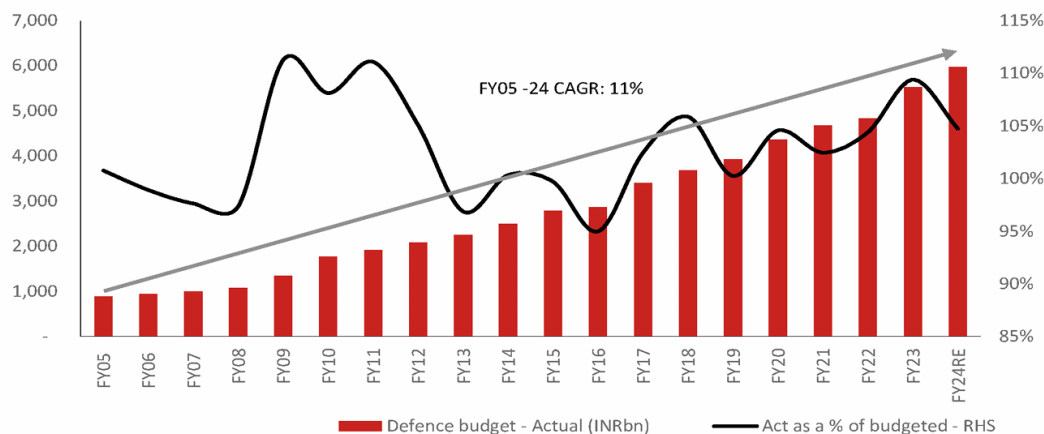


Figure 2.4: Indian Defence Budget (2005-2024) | Source- Namoura Research

The government's proactive measures to promote local manufacturing and technological advancements present significant opportunities for companies involved in defence production, technology development, and related services. Furthermore, India's defence sector is actively working to expand its global footprint through exports, technology transfers, and international collaborations.

The structural transformation in India's defence budget is evident, with increased allocation for modernization funds and the approval of a non-relapsable fund, which is expected to drive market growth. Projections indicate that the cumulative capital outlay for the period FY24-FY30 could reach approximately ₹15.5 trillion (\$186 billion), a substantial increase compared to ₹7.8 trillion (\$93 billion) during FY18-24 and ₹4.9 trillion (\$58 billion) in FY12-18 (Nomura, 2024).

2.6.3. Changing Indigenous Growth Drivers

Jefferies (2024) indicates that India's defence sector is undergoing a significant transformation, shifting away from its historical dependence on imports for a majority of its military equipment. This strategic pivot aims to bolster domestic production and foster greater involvement from the private sector within the country.

The following initiatives are being adopted to steer ahead in the endeavour to reduce this foreign dependence:

- The Ministry of Defence has introduced the Defence Acquisition Procedure 2020 (DAP-2020) as a cornerstone initiative to address existing challenges in the industry. This policy framework introduces new provisions and reinforces existing ones to stimulate indigenous defence manufacturing. By implementing a system that categorizes acquisitions based on local content and promotes strategic partnerships, the government seeks to incentivize domestic production, enhance self-sufficiency, and create opportunities for collaboration between Indian and international entities

- In parallel, the government has established a comprehensive indigenization policy. This initiative aims to cultivate a robust industry ecosystem capable of producing components and sub-assemblies for defence equipment and platforms that were previously imported. The ambitious target is to indigenize approximately 5,000 such items by 2025, significantly reducing reliance on foreign suppliers
- Additionally, the defence offset policy plays a crucial role in this transformation. It mandates that foreign vendors allocate a portion of the total contract value, typically around 30%, towards either sourcing defence equipment and components from India or facilitating technology transfer. This approach aims to balance the import bill while simultaneously boosting domestic capabilities and technological know-how

These initiatives collectively represent a concerted effort to reshape India's defence industry landscape, fostering innovation and self-reliance in this strategic sector (Jefferies, 2024).

2.6.4. Defence Exports on the Rise

According to Nomura (2024), the Indian defence sector registered remarkable growth in exports over the past decade, with a 31-fold increase between FY14 and FY24, reaching ₹211 billion according to the Department of Defence Production. This surge can be attributed to the government's concerted efforts to streamline processes and enhance the ease of doing business within the defence industry.

A key factor contributing to India's competitiveness in the global defence market is its significant cost advantage compared to its international competitors. This edge stems primarily from the country's large pool of skilled labour, which makes India an attractive base for global Original Equipment Manufacturers (OEMs) to establish production and export operations.

Indian defence exports have successfully penetrated diverse international markets. Notable destinations include European countries like Italy, France, Poland, and Spain; South Asian nations such as Maldives, Sri Lanka, and Nepal; Middle Eastern countries including the UAE and Saudi Arabia; as well as Russia, Israel, Egypt, Ethiopia, Mauritius, Philippines, and Chile, among others.

To boost defence exports and achieve the ambitious target of ₹500 billion by FY29, the Indian government has implemented various supportive measures. These initiatives aim to enhance the capabilities of prospective exporters and facilitate their entry into global markets. The estimated growth in India's defence exports is presented in Figure 2.5.

One such scheme allows exporters to have their defence products certified by the Government of India, providing potential buyers with assurance regarding product quality and reliability. Additionally, exporters gain access to the Ministry of Defence's testing infrastructure, enabling them to validate their products through initial testing and subsequent field trials. These measures are designed to bolster the competitiveness of Indian defence products in the international arena and support the country's growing presence in the global defence export market (Nomura, 2024).

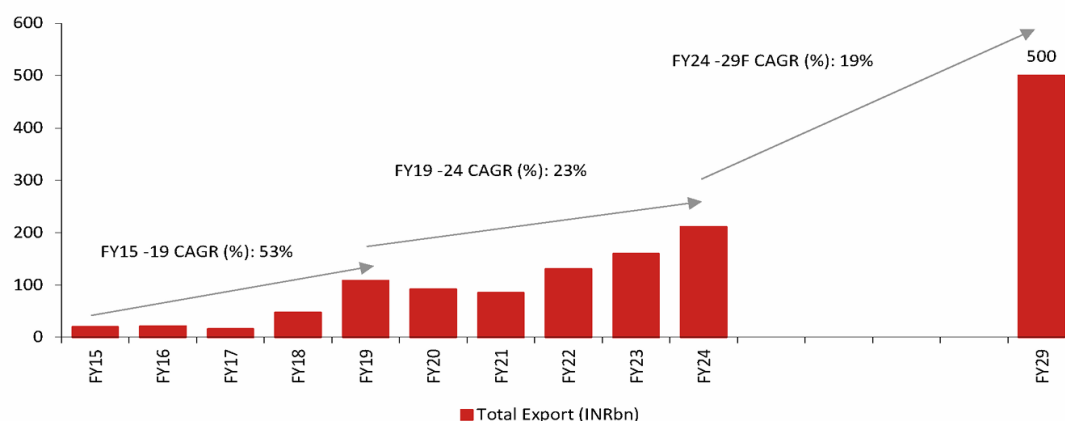


Figure 2.5: India's Defence Exports (2015-2029E) | Source- Department of Defence Production, Nomura Research

2.6.5. Upgradation of fleet to boost growth

One of the key issues that The Indian Air Force IAF is currently working on relates to its operational capacity. With only 31 active squadrons, the IAF falls considerably short of its targeted 42 squadrons, highlighting the urgent need for strategic fleet management. This situation requires a cautious approach to balancing the retirement of older aircraft with the extension of service life for crucial assets, alongside the acquisition of new ones.

Several key aircraft types in the IAF's inventory, including the MiG-21, MiG-29, Jaguar, and Mirage, have been in service for over three decades. This signifies the urgent need for modernization.

Table 2.8:*Indian Air Force Current Fleet*

Aircraft	Origin	Type	Variant	Aircraft #	Involvement	Retirement
MiG-21	Russia	Fighter	Bison	50	Yes	2025
MiG-29	Russia	Multirole	MiG-29UPG	66	Yes	2037
Sukhoi-30	Russia	Multirole	Su-30 MKI	270	Yes	
Mirage 2000	France	Multirole	2000 H/I	50	Yes (upgrade only)	2035
Jaguar	UK/France	Ground Attack	IM/IS	80	Yes (upgrade only)	2028
Rafale	France	Multirole		36	No	
Tjeas Mk1	India	Multirole	Mk1	40	Yes	
Total				592		
Ideal Fleet Strength				756		
Deficiency				-164		

Source- Nomura Research

Additionally, the IAF and Indian Army face a critical situation regarding their helicopter fleet. The Cheetah and Chetak helicopters, which have been the backbone of rotary-wing operations for more than four decades, are approaching the end of their operational life. These aircraft, initially introduced in the 1960s, are struggling to meet the demands of contemporary warfare and strategic missions such as patrolling, troop deployment, and rescue operations. Table 2.8 shows the current fleet of IAF.

It is estimated that the Indian defence forces currently operate approximately 187 Chetak and 200 Cheetah helicopters. The ageing nature of these rotorcraft presents a significant challenge for maintaining operational readiness and effectiveness in modern military scenarios.

As the IAF and Army navigate these challenges, the focus on fleet modernization and capacity enhancement becomes increasingly crucial for maintaining India's air defence capabilities and operational readiness (Nomura, 2024).

2.6.6. Robust Order Book

According to Nomura (2024) and insights from management discussions, show that HAL is positioned for significant growth over the next eight years, with an estimated \$46 billion worth of orders in its pipeline. This robust outlook is primarily driven by India's urgent need to address its depleting fighter squadron strength, which currently stands at 31 compared to the desired 42.

The imminent retirement of legacy aircraft like the MIG-21 by 2025-2026 necessitates their replacement with modern platforms such as the LCA Tejas. HAL has already secured an initial order for 83 LCA Mk1A aircraft and has obtained Approval of Necessity (AON) for an additional 97 aircraft, further bolstering its order book.

HAL's prospects are further enhanced by ongoing development programs for the LCA Mk2 and the Advanced Medium Combat Aircraft (AMCA), which are expected to generate additional orders in the fighter aircraft segment.

In the rotary-wing domain, HAL has a clear line of sight for orders related to the Light Combat Helicopter (LCH) and the Light Utility Helicopter (LUH). The growing demand for helicopters in India, particularly in the 3 and 5-tonne categories, presents a significant opportunity for HAL. With over 1,300 helicopters required to meet India's operational needs, the company is well-positioned to capitalize on this market demand. Table 2.9 presents the value of the current order book of HAL.

Additionally, the Indian Multi-Role Helicopter (IMRH) program, pending approval from the Cabinet Committee on Security (CCS) for development, represents another potential avenue for HAL to expand its helicopter portfolio and secure future orders (Nomura, 2024).

Table 2.9:

HAL's Orderbook

Platforms	Units	Value (₹ bn)
Aircrafts		
LCA Mk1A	97	650
LCA Mk2	120	720
Su-30 MKI	12	107
Hindustan Turbo Trainer- 40 (HTT-40)	38	40
Advanced Medium Combat Aircraft	40	360
Helicopter		
Light Combat Helicopter (LCH)	162	421
Light Utility Helicopter (LUH)	187	234
Indian Multi-role Helicopter (IMRH)	314	758
Advanced Light Helicopter (ALH)	50	120
Naval Utility Helicopter (NUH)	111	217
Engine		
AL-31 FP	240	240
Total opportunity	₹ bn	3,867
Total opportunity	\$ bn	46

Source- Annual Reports & Nomura Research

2.7. Macroeconomic Outlook

India's macroeconomic outlook appears robust and propitious, with several key indicators pointing towards sustained growth in the coming years. The data show that GDP grew 8.2% in fiscal year 2023-24 compared to 7% in 2022-23. Looking ahead, the International Monetary Fund (IMF) has revised its growth forecast for India upward to 7% and 6.5% for 2024-25 and 2025-26, respectively. With this, India continues to maintain its position as the fastest-growing economy among emerging markets and developing economies (Ministry of Finance, 2024).

This robust performance can be accredited to several factors, with domestic demand playing a critical role in sustaining growth. The continuous government efforts on infrastructure development and reforms aimed at ease of doing business have created a conducive environment for investment.

The 2023-24 Economic Survey highlighted that gross fixed capital formation (GFCF) is emerging as a key driver of growth, evidenced by its rising share in nominal GDP. FCF by private non-financial corporations increased by 19.8 percent in FY23 (Ministry of Finance, 2024).

Further, the industrial sector, led by manufacturing, achieved a robust growth of 9.5%, which has been a key highlight of India's economic performance. The strength of the manufacturing sector was further evidenced by the HSBC India Purchasing Managers' Index (PMI) for manufacturing, which consistently remained well above the threshold value of 50 in all months of FY2024. This sustained performance above the 50 mark indicates ongoing expansion and stability in India's manufacturing sector. The Indian macroeconomic environment is steadily showing signs of a paradigm shift, offering the needed grounds to foster sustained growth for the coming decades.

CHAPTER 3

Valuation

The share value of Hindustan Aeronautics on 31st March 2024 is performed with the support of two valuation methods: the Discounted Cash Flow approach and the Relative Valuation, using the multiples method.

3.1 Discounted Cash Flow Assumptions

This section specifies the core assumptions taken to facilitate the valuation process of HAL. Many of these assumptions are based on consistent historical trends observed. To identify such trends, a historical period of 5 years, starting from the financial year ending on 31st March 2020 has been taken into account. To ensure the accuracy and reliability of the valuation process, a forecasting period of 5 years was adopted encompassing the years 2025F-2029F.

The management of the company has provided several insights on how it envisions the upcoming 5 years in terms of year-on-year operational performance. This report leverages some of the operational guidance provided by the management, as this ensures necessary prudence is deployed while making financial forecasts to aid the valuation process. The guidance provided by the management is based on the company's current order book and the upcoming orders that the management believes they will receive. (See Annex A)

3.1.1 Revenue

Revenue, or the top line, acts as the preliminary and potentially one of the most important factors in the forecasting process, based on its impact on the following line items. This report leverages the growth estimates provided by the management for both of its core operating segments.

Cumulatively, for both divisions, i.e. manufacturing and services, the expected per-year growth in revenue is around 15%-18% (HAL, 2024b). To avoid overestimation, the report assumes a 15% annual growth rate to forecast the revenue in the following years. Given the large corpus of order books, this growth rate is consistently achievable for the forecasted years.

Table 3.1:

HAL's Revenue Projections (2025-2029)

Revenue Forecast					
In ₹ Lakhs	FY2025	FY2026	FY2027	FY2028	FY2029
Revenue	34,93,824	40,17,898	46,20,583	53,13,670	61,10,720

Source-Own Estimates

3.1.2 EBITDA

According to the guidance provided regarding the targeted margins by the management in the FY24 earnings call, the company is confident in its ability to achieve an EBITDA margin of 32% for the coming years (HAL, 2024b).

Based on these estimates, the report assumes an EBITDA margin of 32% for all the forecasted years. Considering that the company generated an EBITDA margin of 31% for FY2024, on account of the efficiency improvement measure adopted, this estimation is consistently achievable for the years in consideration (HAL, 2024).

Table 3.2:

HAL's EBITDA Projections (2025-2029)

EBITDA Forecast					
In ₹ Lakhs	FY2025	FY2026	FY2027	FY2028	FY2029
EBITDA	11,18,024	12,85,727	14,78,586	17,00,374	19,55,431

Source-Own Estimates

3.1.3 Capital Expenditure

Capital Expenditure (CAPEX) is the money a company spends to buy, upgrade, or maintain long-lasting assets. These assets include things like buildings, machinery, and equipment. CAPEX over the historical period (2020-2024) on average has been 6% of HAL's total revenue. (See Annex B).

To estimate the future CAPEX needs, the report assumes the same average rate as a percentage of revenue for all the forecasted years. These estimates are presented in Table 3.3.

Table 3.3:

HAL's CAPEX Projections (2025-2029)

CAPEX Forecast					
In ₹ Lakhs	FY2025	FY2026	FY2027	FY2028	FY2029
CAPEX	2,11,077	2,42,739	2,79,149	3,21,022	3,69,175

Source-Own Estimates

3.1.4 Depreciation and Amortization

Depreciation and Amortization (D&A) are accounting methods used to allocate the costs of long-term assets over their useful lives. Depreciation applies to tangible assets, such as property, plant, and equipment, whereas amortization is used for intangible assets.

The company calculates D&A using the straight-line method, which spreads the asset's cost evenly over its expected useful life. The average historical value for HAL's D&A as a percentage of total revenue has been 5% (HAL, 2024).

Based on this historical average, the report applies this average percentage to the projected revenues and has derived future D&A estimates. These estimates are presented in Table 3.4.

Table 3.4:

HAL's D&A Projections (2025-2029)

Depreciation and Amortization					
In ₹ Lakhs	FY2025	FY2026	FY2027	FY2028	FY2029
Total Revenue	34,93,824	40,17,898	46,20,583	53,13,670	61,10,720
D&A	1,78,090	2,04,804	2,35,525	2,70,853	3,11,481

Source-Own Estimate

3.1.5 Changes in Net Operating Working Capital

To forecast the values for HAL's changes in Net Working Capital in the future, we considered the changes in current operating assets and liabilities. Over the historic period of (2020-2024), the value of current assets as a proportion of total revenue has reduced from 182% in 2020 to 112% in 2024, registering a CAGR rate of negative 9.2% (See Annex C). Keeping this trend in mind, the same rate of decrease in the percentage of revenue has been applied to estimate future values.

For Operating Liabilities, based on the average of 14% observed during the historical period, the report applies this average percentage to the projected revenues and has derived future estimates for current operating liabilities. These estimates are presented in Table 3.5.

Table 3.5:

HAL's Changes in Working Capital (2025-2029)

Change in Working Capital					
In ₹ Lakhs	FY2025	FY2026	FY2027	FY2028	FY2029
Revenue	34,93,824	40,17,898	46,20,583	53,13,670	61,10,720
Current Operating Assets	35,86,618	37,54,964	38,93,115	39,88,224	40,24,272
% of Revenue	103%	93%	84%	75%	66%
Current Operating Liabilities	5,02,987	5,78,435	6,65,201	7,64,981	8,79,728
% of Revenue	14%	14%	14%	14%	14%
Working Capital	30,83,631	31,76,529	32,27,914	32,23,244	31,44,544
Change in Working Capital	56,581	92,898	51,386	-4,670	-78,700

Source-Own Estimates

3.1.6 Terminal Growth Rate

According to data released by Gol, India's real GDP is expected to grow by 7% in FY25 (Ministry of Finance, 2024). Considering the point that the bulk of HAL's revenue currently is from Indian markets, it is expected that the company's growth will mirror that of the economy.

Further, given the details of its current order books (provided in previous chapters) and analysis of the expected upgradation in the IAF Fleet (See Annex D), the report assumes a terminal growth rate of 7%.

3.2 Discounted Cash Flow Valuation

This chapter enlists the steps involved in the DCF valuation process. Each sub-section explains the computation behind all the variable parameters that will be used to derive the intrinsic value of equity for HAL.

3.2.1 Free Cash Flow to Firm (FCFF)

After establishing the assumptions and estimating the core inputs for the model, we can use equation (2) to compute the FCFF.

For this, we start with the Operating profit figure (EBIT) and adjust it for tax expenses. Based on HAL's annual report, the tax rate has been assumed to be 30% for all the forecasted years (HAL, 2024). The results generated are presented in Table 3.6

Table 3.6:

HAL's FCFF Forecasts

DCF - Free Cash Flow to the Firm					
In ₹ Lakhs	FY2025	FY2026	FY2027	FY2028	FY2029
EBIT	8,93,831	10,27,906	11,82,092	13,59,405	15,63,316
Tax Rate	2,68,149	3,08,372	3,54,627	4,07,822	4,68,995
NOPAT	6,25,682	7,19,534	8,27,464	9,51,584	10,94,321
Depreciation/Amortization	1,78,090	2,04,804	2,35,525	2,70,853	3,11,481
Changes in NWC	56,581	92,898	51,386	-4,670	-78,700
CAPEX	2,11,077	2,42,739	2,79,149	3,21,022	3,69,175
FCFF	5,36,114	5,88,701	7,32,454	9,06,086	11,15,327

Source-Own Estimates

3.2.2 Cost of Debt

To calculate HAL's cost of debt, we used the steps shown in the literature review chapter of this thesis. For this, we first compute the pre-tax cost of debt. To do this, the report uses the adjusted default spread of 2.39% by taking into account the country of HAL's core operations i.e. India (Damodaran, 2024). (See Annex E)

For the risk-free rate, the report uses as a proxy the yield of the 10-year government bond due to its market acceptability. As of March 31, 2024, the 10-year bond yield was 7.05% (Refinitiv, 2024). By adding both the components we get a pre-tax cost of debt of 9.44%. Substituting the pre-tax cost of debt in equation (7), with a tax rate of 30%, yields an after-tax cost of debt of 6.61%.

Table 3.7:

HAL's Cost of Debt

Cost of Debt	
Risk free interest rate	7.05%
Default Spread	2.39%
Pre-tax cost of debt	9.44%
Tax rate	30.00%
Cost of Debt (after tax)	6.61%

Source-Own Estimates

3.2.3 Cost of Equity

To compute HAL's cost of equity, we used the CAPM model, presented in the literature review section. For the risk-free rate, the report uses the value 7.05%, as done in the previous section.

The beta value for HAL was 0.66 as of March 31, 2024 (The Economic Times, 2024). Lastly, according to Damodaran (2024), the market risk premium stood at 7.81% at the end of January 2024.

Using equation (8) and the calculated inputs, we derived the cost of equity of 12.20% as shown in Table 3.8.

Table 3.8:

HAL's Cost of Equity

Cost of Equity	
Risk free interest rate	7.05%
Beta	0.66
Equity Risk Premium	7.81%
Cost of Equity	12.20%

Source-Own Estimates, Economic Times

3.2.4 Weighted Average Cost of Capital (WACC)

To calculate the WACC, we need to access HAL's capital structure. For this, we need the market value of debt and the market value of equity. For simplicity, the report uses the book value of debt for this calculation.

Upon reviewing HAL's annual report, it is observed that the company has negligible amounts of interest-bearing debt on its books in comparison to its equity (HAL, 2024). (See Annex F)

For this reason, the weight of debt in the computation of WACC will be zero. Substituting all the computed values in equation (6) computes the value of WACC as 12.20%.

Table 3.9:

HAL's WACC

WACC	
Cost of Equity	12.20%
Weight of Equity	100.00%
Cost of Debt	6.61%
Weight of Debt	0.00%
WACC	12.20%

Source-Own Estimates

3.2.5 Enterprise Value

To calculate HAL's Enterprise Value, we start by discounting each of the estimated future FCFF, using the WACC to compute its present value.

For the period beyond 2029, when the company is assumed to grow indefinitely, we use the terminal growth rate to compute its terminal value before discounting it to its present value, using the WACC. Post this, we add both these present values to compute the Enterprise Value.

Table 3.10:

HAL's Enterprise Value

Enterprise Value							
In ₹ Lakhs	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029	2030 & Beyond
FCFF		5,36,114	5,88,701	7,32,454	9,06,086	11,15,327	
PVFCFF		4,77,801	4,67,599	5,18,499	5,71,645	6,27,118	
Terminal Cash Flow							11,93,400
Terminal Growth Rate							7%
Terminal Value							2,29,29,715
Cumulative PV of FCFF	26,62,662						
PV of Terminal Value	1,28,92,744						
Enterprise Value	1,55,55,405						

Source-Own Estimates

3.2.6 Equity Value

To compute the intrinsic value of HAL's share price, we will first compute the implied Equity Value from the enterprise value and then divide the same by the shares outstanding to get the final share price.

HAL's non-operating assets include investments and intangible assets (See Annex F). As done previously, the book value of debt has been used instead of market value. The results of this exercise are illustrated in Table 3.11.

Table 3.11:*HAL's Equity Value*

Equity Value In (₹) Lakhs	
EV	1,55,55,405
NOA	15,21,811
Net Debt	-22,17,582
EQV	1,92,94,798
Shares Outstanding	6,687.75
Share Price	2,885.10

Source-Own Estimates

HAL's implied share as computed from the DCF valuation method comes out to ₹2,885 as of 31st March 2024.

The result implies that the share is currently trading over its intrinsic value and, thus is overpriced. The difference in the fair price and market price points towards a downside potential of 13.33% from its market price of ₹3,327.

3.2.7 Sensitivity Analysis

This section highlights the need to perform a sensitivity analysis in the valuation exercise to ensure the comprehensiveness of the analysis.

The importance of this analysis stems from the significance of two key valuation parameters, primarily the WACC and the Terminal growth rate. As previously presented in the literature review, small variations in these two variables, lead to significant variations in the final result. Given that these two parameters are based on assumptions and projections, it is prudent to examine how changes in these variables impact the overall valuation.

A sensitivity analysis allows for the exploration of multiple scenarios, providing a range of potential valuations rather than a single-point estimate.

Table 3.12:*Sensitivity Analysis for HAL*

		WACC						
		10.70%	11.20%	11.70%	12.20%	12.7%	13.2%	13.7%
Growth Rate	5.5%	3007.71	2782.28	2593.37	2432.81	2294.69	2174.63	2069.34
	6.0%	3234.44	2965.93	2744.69	2559.28	2401.68	2266.10	2148.26
	6.5%	3515.10	3188.62	2925.07	2707.91	2525.91	2371.21	2238.13
	7.0%	3871.52	3464.26	3143.79	2885.10	2671.92	2493.27	2341.40
	7.5%	4339.17	3814.32	3414.54	3099.95	2845.99	2636.72	2461.32
	8.0%	4979.72	4273.61	3758.37	3365.90	3057.05	2807.73	2602.26
	8.5%	5910.82	4902.71	4209.49	3703.64	3318.32	3015.09	2770.29

Source-Own Estimates

The data presented in Table 3.12 show the wide spectrum of values that can be computed by altering the two critical components. Based on the combination of WACC and growth rate assumed for the analysis, the fair value ranges from ₹2,069 in the worst case, to as high as ₹5,910 assuming a growth rate of 8.5%. Thus, highlighting the significance of the underlying assumptions of the model.

3.3 Relative Valuation

This chapter delves into the alternative valuation technique previously presented in the Literature Review section – Relative Valuation. Indicative by its name, this process seeks to establish the value of, in this case, the fair value of the share price of HAL, relative to similar assets available in the market.

For this, the first step entails selecting an appropriate peer group, based on similar characteristics in the business domain, area of operation, and company size. Our initial peer group was derived from companies listed under the same industry classification as Hindustan Aeronautics Limited (HAL) within the Refinitiv database.

This preliminary list served as our starting point. Subsequently, we applied a filtering process to refine this list, focusing on domestic and international companies that closely align with HAL's core operations. To carry out this analysis, we chose three multiples, namely: P/E ratio, EV/EBITDA ratio, and EV/EBIT.

The group comprises of 9 companies, out of which 3 are from India and the remaining are international companies. The primary peer group along with their respective multiple and industry average is presented in Table 3.13.

Table 3.13:*HAL's Relative Valuation*

Name	P/E	EV/EBITDA	EV/EBIT
Bharat Electronics	36.97	26.50	29.00
Mazagon Dock Shipbuilders	19.41	16.57	17.61
BAESystems	18.37	11.75	15.71
Rolls-Royce Holdings	10.44	9.33	14.37
Leonardo	13.06	7.28	11.17
Saab	24.15	11.28	16.90
Elbit Systems	44.61	16.98	23.22
RTX Corp	37.80	11.54	17.04
General Dynamics Corp	21.60	15.43	18.57
Mean	25.16	14.07	18.18
SD	11.90	5.69	5.19
Lower Bound	16.23	9.80	14.28
Upper Bound	34.08	18.34	22.07

Source- Refinitiv

To exclude outliers from our analysis, we establish a value range for the multiples. Any multiple that lies outside this range will be excluded from the analysis. The report computes the upper limits of this range by multiplying the SD of the group with 0.75 and adding it to the range mean. Similarly, the lower limit is computed by subtracting the product of 0.75 and the range SD from the mean. After screening for outliers, using the computed range we get a more accurate representation of the average industry multiple.

Table 3.14:*HAL's Relative Valuation Results*

Results	P/E	EV/EBITDA	EV/EBIT
Mean	18.79	13.92	16.70
Implied EV		1,32,33,011	1,27,84,924
Implied EQ	1,43,23,088	1,69,72,404	1,65,24,317
Shares Outstanding	6,687.8	6,687.8	6,687.8
Share Price 31st March	3,327.0		
Implied Share Price	2141.7	2537.8	2470.8
Overvalued	-35.63%	-23.72%	-25.73%

Source- Own Estimates

3.4 Valuation Results

In this section, we present the results obtained from estimating HAL's implied share price using the DCF and relative valuation approaches.

The derived fair value from both the adopted methods is presented in Table 3.15.

Table 3.15:

HAL's Valuation Results

Method	Share Price (₹)	Potential
Market Price	3,327.00	
DCF Approach	2,885.00	-13.29%
Relative Valuation P/E	2,141.70	-35.63%
Relative Valuation	2,537.00	-23.75%
Relative Valuation	2,470.80	-25.73%

Source- Own Estimates

We observe that both valuation techniques provide an overall similar picture in regards to the market value being significantly overpriced in comparison to the intrinsic value.

When considering the results from the DCF valuation, we see that it provides a fair value of ₹2,885, which means that the stock is currently overpriced by 13%. The relative valuation also yields a similar conclusion regarding the share being overpriced. These show a potential downside ranging from 23.7% to 35.6% compared to the current market price.

While HAL remains a significant player in India's defence sector with strong order books and government backing, our analysis suggests that the current market price may not offer a sufficient margin of safety for investors.

This overvaluation can potentially be attributed to several factors including market optimism in the defence sector due to government initiatives along with overly optimistic growth expectations priced into the current valuation.

Conclusion

This comprehensive valuation study of Hindustan Aeronautics Limited (HAL) aimed to assess the company's intrinsic value as of March 31, 2024, and identify any potential discrepancies between this value and the prevailing market price. To ensure a reliable estimate, we employed two distinct valuation methodologies: the Discounted Cash Flow (DCF) model and relative valuation techniques.

The primary approach utilized was the Discounted Cash Flow (DCF) model, which yielded an intrinsic value of ₹2,885 per share. This result suggests a potential overvaluation of approximately 13.3% compared to the market price of ₹3,327. To further validate these findings, a relative valuation approach was applied as a secondary method.

The relative valuation, using multiple metrics, supported the DCF analysis. The Price-to-Earnings (P/E) ratio implied a value of ₹2,141, while the Enterprise Value to EBITDA (EV/EBITDA) and Enterprise Value to EBIT (EV/EBIT) multiples suggested values of ₹2,537 and ₹2,470 respectively. These results consistently indicate an overvaluation ranging from 23.7% to 35.6% compared to the current market price.

The convergence of results from both valuation techniques strengthens the conclusion that HAL's stock was overvalued during the period under review.

However, it is crucial to note that these conclusions are subject to the inherent limitations of the valuation techniques employed and the assumptions applied. While this assessment provides valuable insights into HAL's current market valuation, future performance is subject to changing market conditions, policy shifts, or technological advancements in the defence sector.

In conclusion, while HAL remains a significant player in India's defence sector with a strong order book and government support, our analysis suggests that the current market price may not offer a sufficient margin of safety for investors.

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Annexes

Annex A:

HAL's DCF Assumptions

DCF Assumptions	
Revenue	Yearly growth projected at 15% for all 5 Years
EBITDA	Projected at 33% of Revenue
Depreciation	Forecasted as average % of Revenue for last 5 years ~5%
Direct input to WIP; Expenses Capitalised	Forecasted as average % of Revenue for last 5 years ~1%
Financial Income/ Expenses	Forecasted as average % of Revenue for last 5 years ~1%
Expenses related to Capital and Other Accounts	Forecasted as average % of Revenue for last 5 years ~4%
Other non operating expenses	Forecasted as average % of Revenue for last 5 years ~1%
Other Income	Forecasted as average % of Revenue for last 5 years ~4%
Share of Profit of JV	Forecasted as average % of Revenue for last 5 years ~0.3%
CAPEX	Forecasted as average % of Revenue for last 5 years ~6%
Change in working Capital	Computed as the difference in Current Assets and Current Liabilities, taking CA & CL as % of Revenue
Current Operating Assets	Reduced at 6% of Revenue based on CAGR trend of last 5 years
Current Operating Liabilities	Forecasted as average % of Revenue for last 5 years ~14%
Capital Structure	Assumed constant at average of 5 years

Source-Own Estimates

Annex B:

HAL's Historical Capex as a % of Revenue

CAPEX					
In ₹ Lakhs	FY2020	FY2021	FY2022	FY2023	FY2024
Purchase of Property, Plant & Equipment	89,023	65,430	79,929	78,242	91,642
Purchase of Intangible Assets	49,049	55,430	70,128	99,880	83,875
Total CAPEX	1,38,072	1,20,860	1,50,057	1,78,122	1,75,517
CAPEX as % of revenue	6.4%	5.3%	6.1%	6.6%	5.8%
Average CAPEX	6.0%				

Source-Own Estimates

Annex C:

HAL's Historical Changes in Net Working Capital

Change in Working Capital										
In ₹ Lakhs	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	FY2028	FY2029
Revenue	21,44,516	22,88,232	24,62,002	26,92,746	30,38,108	34,93,824	40,17,898	46,20,583	53,13,670	61,10,720
Current Operating Assets	38,96,417	37,93,488	29,86,783	30,68,504	33,98,304	35,86,618	37,54,964	38,93,115	39,88,224	40,24,272
% of Revenue	182%	166%	121%	114%	112%	103%	93%	84%	75%	66%
Current Operating Liabilities	4,67,276	2,67,814	3,35,675	3,40,225	3,71,254	5,02,987	5,78,435	6,65,201	7,64,981	8,79,728
% of Revenue	182%	166%	121%	114%	112%	14%	14%	14%	14%	14%
Working Capital	34,29,141	35,25,674	26,51,108	27,28,279	30,27,050	30,83,631	31,76,529	32,27,914	32,23,244	31,44,544
Change in Working Capital						56,581	92,898	51,386	-4,670	-78,700

Source-Own Estimates

Annex D:

Indian Air Force Fleet Upgradation

Aircraft	Origin	Type	Variant	Aircraft (no's)	HAL's involvement
Sukhoi-30	Russia	Multirole	Su-30 MKI	270	Yes
Rafael	France	Multirole		36	No
Tejas Mk1	India	Multirole	MK1	40	Yes
Tejas Mk1A	India	Multirole	MK1A	180	Yes
Tejas Mk2	India	Multirole	Mk2	120	Yes
AMCA	India	Multirole		140	Yes
Total				786	
Indigenously developed				480	61%

Source- Nomura Research

Annex E:

Country Default Risk and Equity Risk Premium

Country	Adj. Default Spread	Equity Risk Premium	Country Risk Premium	Corporate Tax Rate	Moody's rating	Sovereign CDS Spread
Iceland	0.92%	5.84%	1.24%	20.0%	A2	0.88%
India	2.39%	7.81%	3.21%	30.0%	Baa3	0.99%
Indonesia	2.07%	7.38%	2.78%	22.0%	Baa2	1.32%
Iran	7.08%	14.11%	9.51%	20.2%	NR	NA

Source- Adapted from Damodaran (2024)

Annex F:

HAL's Historical Balance Sheet (2020-2024)

Balance Sheet					
In Rs. Lakhs	FY2020	FY2021	FY2022	FY2023	FY2024
ASSETS					
Non Current Assets					
Property, Plant and Equipment	6,11,336	6,22,178	5,92,758	5,79,862	5,78,023
Capital work-in-progress	73,727	66,333	94,910	63,690	93,688
Investment Property	4	4	3	3	2
Goodwill	-	-	-	-	-
Other Intangible Assets	1,00,687	94,407	83,827	1,03,575	95,664
Intangible Assets under Development	1,18,269	1,28,627	1,52,384	1,24,810	1,55,655
Investments accounted for using the Equity Method	15,754	16,096	16,779	16,833	20,164
Financial Assets	1,28,679	1,35,125	1,61,214	1,70,878	1,79,077
Deferred tax Assets (Net)	47,011	5,235	56,557	1,12,571	1,45,433
Other Non-Current Assets	62,784	70,635	1,81,464	3,59,654	2,40,063
Total Non Current Assets	11,58,251	11,38,640	13,39,896	15,31,876	15,07,769
Current Assets					
Inventories	19,55,863	16,67,300	14,34,728	12,14,869	13,21,754
Financial Assets	20,62,594	22,30,870	27,82,864	35,53,911	44,46,738
Current Tax Assets (Net)	3,531	-	-	-	-
Other Currents Assets	1,29,267	1,39,592	2,80,899	4,15,913	5,33,257
Total current assets	41,51,255	40,37,762	44,98,491	51,84,693	63,01,749
Assets held for Sale	-	-	811	811	-
Total Assets	53,09,506	51,76,402	58,38,387	67,16,569	78,09,518
EQUITY AND LIABILITIES					
Equity					
Equity/Share capital	33,439	33,439	33,439	33,439	33,439
Other Equity	12,91,926	15,08,951	18,97,874	23,23,776	28,80,378
Equity attributable to owners of the parent	13,25,365	15,42,390	19,31,313	23,57,215	29,13,817
Non-controlling interest	431	391	375	374	364
Total Equity	13,25,796	15,42,781	19,31,688	23,57,589	29,14,181
LIABILITIES					
Non-current liabilities					
Financial Liabilities					
Borrowings	-	-	-	-	-
Lease Liabilities	221	231	241	251	108
Trade payables	-	-	-	-	-
Other Financial Liabilities	54,986	49,329	52,470	52,503	50,586
Provisions	1,28,875	1,25,604	1,26,301	1,34,710	1,57,834
Deferred Tax Liabilities (Net)	-	-	-	-	-
Other Non-Current Liabilities	6,91,278	9,17,130	12,26,244	10,92,600	10,54,376
Total non-current liabilities	8,75,360	10,92,294	14,05,256	12,80,064	12,62,904
Current Liabilities					
Financial liabilities					
Borrowings	5,88,650	907	-	-	-
Lease Liabilities	8	8	8	14	2
Trade payables	4,09,200	2,25,560	2,55,761	3,13,497	3,41,287
Other Financial Liabilities	2,49,705	1,95,282	1,85,360	2,10,943	2,45,138
Other Current Liabilities	12,98,518	16,83,709	14,75,515	18,53,714	22,54,968
Provisions	5,04,192	3,93,606	5,05,696	6,77,831	7,61,071
Current tax liabilities (Net)	58,076	42,254	79,914	26,728	29,967
Total current liabilities	31,08,349	25,41,326	25,02,254	30,82,727	36,32,433
Total Equity and Liabilities	53,09,505	51,76,401	58,39,198	67,20,380	78,09,518

Source- HAL Annual Report (2024), HAL Annual Report (2023)