Hindustan Aeronautics Ltd. (HAL) is the **Largest Aerospace company of India**, one of the biggest Aerospace companies of Asia and amongst **Top 50 Aerospace companies of the world**. If we do a strict like-to-like comparison of companies that are present across the entire value chain and possess capability to offer end-to-end solutions starting from design of a flying platform to its manufacturing to its support – HAL is amongst the **Top 20 companies of the world**. Its worthwhile to note here the current and historical world ranking of HAL as mentioned by two leading industry publications viz., Defense News and Flight International. Here, we have also stated the ranking of Bharat Electronics Ltd. which is the only other company from India, apart from HAL, which finds mention in Top 100 global defense companies :

	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999
DefenseNews Magazine's Global Top 100 Rankings of Defense Companies																			
HAL's Ranking	35	35	38	39	37	36	37	41	48	34	45	57	56	56	54	45	48	62	55
BEL's Ranking	59	61	76	74	69	69	64	62	74	58	76	77	81	77	81	74	67	Not in Top 100	Not in Top 100
Flight International Magazine's Global Top 100 Rankings of Aerospace Companies																			
HAL's Ranking	39	38	36	38	33	35	36	38	38	40	40	43	44	53	57	63	59	63	n.a..

Will not go into much detail regarding the business of the company and its offerings as for that one can refer company's RHP – link of which is provided below :

http://www.cmlinks.com/pub/dp/dp12030.pdf

Usually I don't prefer investment in a PSU company as the biggest turn-off for me has always been the work culture followed and the government dictat overhang. However, despite these odds, why I got attracted towards this company as a good IO is because of the following reasons :

-- Today, India counts itself amongst **only seven countries in the world** that have the capability to manufacture a fighter aircraft right from scratch i.e., design, develop and manufacture a fighter aircraft --- HAL has been one of the major reason for this ;

-- HAL's positioning in Indian defense segment is indispensable and no competition can emerge for this company in forseeable future – any private player will need to spend decades and burn a huge amount of cash (even with support from a foreign player) to build even half of the vast infrastructure that HAL has built over last seven decades in terms of more than 2500 acres of land in possession in various parts of country, state-of-the-art machineries, experienced personnel with deep knowledge, huge library of flaws and shortcomings that are experienced by flying platforms during actual use in Indian conditions and ways to overcome them, etc.

-- Its therefore no surprise that :

75 % of all flying platforms in use today (fighter aircraft, trainer aircrafts, helicopters, transport fleet) **by Indian Air Force (IAF)** are supplied/supported by HAL,

66 % of all flying platforms in use today by Indian Navy are supplied/supported by HAL,

100 % of all flying platforms in use today by Indian Army are supplied/supported by HAL,

100 % of all flying platforms in use today by Indian Coast Guard are supplied/supported by HAL,

-- Company has so far produced 4090 aircraft and 5005 Engines

-- With such dominant positioning, there also exists exceptional financials' track-record with :

23 Years' CAGR in Revenues at 12.80 %,

24 Years' Average RoE of 19.82 %

24 Years' Average RoCE of 30.26 %,

24 Years' Average EBITDA Margin of 11.48 % (with consistent profitable growth achieved each year over last 24 years),

24 Years' Average PAT Margin of 12.68 % (with not a single loss posted in any fiscal over last 24 years),

13 Years' EBITDA to Operating Cash Conversion at 51.46 %

24 Years' cumulative total absolute R&D spend at whooping 13,902 cr.

24 Years' Average Spend on R&D as % of Sales at 7.65 % (one of the highest in the industry),

24 Years' Average Dividend Distribution as % of PAT at 24.65 % (with actual, as we can see from reported accounts, dividend payment track-record each year over last 24 years and management stated dividend payment track-record each year over last 40 years),

24 Years' Average Debt/Equity of 0.19 (with current FY17 gross D/E of 0.07 and on net level cash surplus),

And

-- Besides glorious past that we can see from above, future also looks promising with current FY18e order-book at 58,500 cr. (~3x FY18e Revenue) and **expected order booking worth 2,43,000 cr. (~13x FY18e Revenue)** over next four years,

-- Apart from all these, its also macros which also seem to favour this company currently --

-> with Capital Outlay on Defense hovering around 23-24 % of total Defense Budget since last five years with a dire need to increase it to enable our forces to effectively tackle provoking neighbours,

-> with 'Aircraft & Aero Engine' allocation, which constitutes major portion of Capital Outlay (average 35 %), requiring a significant uplift in near future to arrest the dwindling strength of Air Force (by 2025 with no new addition, fighter aircraft strength will fall to just 360 -- just slight ahead of Egypt and Pakistan and 1/4th that of China) ----[it is interesting to note that if we map a trend of past 20 years then **HAL revenue have remained at average 60 % of respective 'Aircraft & Aero Engine' allocation amount**]

-> DProP-2018, draft of which is recently released, calls for significant increase in HAL flying platforms' capacity, increasing level of indiginisation, exploring export opportunities as also overseas acquisition opportunities thereby making India amongst the top 5 countries in the world in Aerospace & Defense industries.

Link for DproP2018 :

http://ddpmod.gov.in/sites/default/files/Draft%20Defence%20Production%20Policy%202018%20-%20for%20website.pdf

Lastly,

-- despite glorious past, promising future and favourable macros, HAL – one of the largest Aerospace & Defense companies of Asia -- is trading at cheapest valuations as compared to global peers as well as Indian peers who are hardly 1/10th of its current scale of operations.

Let's discuss in slight detail with statistics below :

First **Macros**, -- refer following table :

	20 Years' CAGR	15 Years' CAGR	10 Years' CAGR	5 Years' CAGR
Revenue of Hindustan Aeronautics	12.17 %	13.11 %	8.51 %	4.39 %
'Aircraft & Aero Engine' Spending Allocation in Defence Budget **(*Absolute Amount*)**	10.86 %	11.76 %	7.32 %	- (1.84) %
Total CAPEX Spending in Defence Budget **(*Absolute Amount*)**	11,79 %	11.46 %	9.62 %	4.93 %
Total Defence Budget of India **(*Absolute Amount*)**	11.64 %	11.60 %	13.22 %	10.47 %

	20 Years' Average	15 Years' Average	10 Years' Average	5 Years' Average
CAPEX Allocation as % of Total Defence Budget	27.84 %	29.67 %	28.14 %	25.79 %
'Aircraft & Aero Engine' Spending Allocation as % of Total CAPEX Allocation	34.01 %	35.51 %	35.49 %	36.45 %
Revenue of Hindustan Aeronautics as % of 'Aircraft & Aero Engine' Spending Absolute Amount each year	60.61 %	60.30 %	63.66 %	57.67 %

As can be seen from above :

-- Overall Defence budget of India (including pensions) has grown at a healthy pace of 11.64 % (CAGR) over last 20 years as also 13.22 % and 10.47 % (CAGRs) over last 10 and 5 years respectively

-- However, CAPEX spending has lost pace over last 5 years by growing at just 4.93 % (CAGR) which has severly dented our defence forces' ability to effectively fight and win a two-front war (with Pakistan & China) in case war extends longer.

-- **'Aircraft & Aeroengine' allocation which deals with purchase and support of flying platforms like fighter and trainer aircrafts, helicopters, etc. which has always been a major beneficiary of CAPEX spending (with 35 % + allocation) has infact exhibited negative CAGR over last 5 years.** Because of this, today, our IAF stands at a critical juncture wherein if no steps are taken immediately, within 7 years, its stregth will dwindle by almost 40 % which will make it unfit to fight a two-front war effectively. Just refer the table below :

	Current Strength	To be phased out by 2025	Sanctioned Strength critical to achieve for India to fight a two-front war	Orders Already Placed	Shortfall by 2025 vis-a-vis Requirement
Squadrons	32	12	42	6	16
Fighter Aircraft	576	216	756	112	288

-- Each Squadron consists of 18-20 fighter aircraft. Because of ageing fleet, 12 squadrons are up for retirement over coming 5-6 years (already IAF is using majority of these aircraft beyond their certified life). **This effectively means a shortfall of 288 fighter aircraft (by 2025) projected as of today** when Pakistan is increasing its AF fighter fleet substantially with support from China. Any substantial increase in any of the neighbours' current projected strength (by 2025) will necessitate more addition.

-- Do refer the first table again – as we can see, if we calculate HAL's reported annual revenue with that respective fiscal's Indian defence budget spending on 'Aircraft & Aeroengines', then, **HAL revenue has on an average been 60 % of that.**

-- Also, although HAL is a direct beneficiary of increase in 'Aircraft & Aeroengine' spending, its revenue CAGR has outperformed 'Aircraft & Aeroengine' spending consistently over last 20 years.

Company- Specific financials & order-book :

After discussing Macros, let's shift our focus to company-specific discussion. First let's refer financials over last 24 years in table below :

	FY17	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	FY07	FY06	FY05	FY04	FY03	FY02	FY01	FY00	FY99	FY98	FY97	FY96	FY95	FY94
Revenue (in INR cr.)	17605	16586	15621	15128	14324	14204	13115	11456	10373	8625	7783	5341	4533	3799	3120	2774	2446	2400	2047	1869	1770	1566	1388	1102
Revenue Growth YoY	6.14 %	6.18 %	3.26 %	5.61 %	0.84 %	8.30 %	14.48 %	10.44 %	20.27 %	10.82 %	45.72 %	17.82 %	19.32 %	21.76 %	12.47 %	13.41 %	1.92 %	17.24 %	9.52 %	5.59 %	13.03 %	12.82 %	25.95 %	
EBITDA Margin	16.85 %	11.88 %	11.59 %	11.13 %	9.53 %	9.84 %	12.71 %	11.60 %	7.18 %	7.16 %	12.89 %	14.06 %	12.59 %	10.76 %	5.45 %	5.55 %	1.35 %	14.62 %	12.65 %	14.07 %	12.88 %	14.62 %	14.76 %	19.69 %
PBT Margin	20.34 %	19.33 %	20.30 %	23.65 %	24.41 %	23.43 %	21.64 %	23.46 %	22.50 %	25.08 %	22.39 %	21.08 %	16.69 %	15.76 %	13.87 %	13.44 %	10.83 %	17.29 %	9.67 %	8.82 %	6.83 %	5.42 %	4.97 %	5.89 %
PAT margin	14.09 %	11.64 %	15.27 %	17.79 %	20.91 %	17.86 %	16.10 %	17.17 %	16.77 %	18.92 %	14.76 %	14.43 %	11.05 %	10.79 %	12.50 %	12.43 %	9.97 %	15.33 %	8.69 %	7.86 %	5.93 %	4.53 %	5.04 %	4.54 %
RoCE	15.53 %	14.07 %	13.77 %	19.57 %	29.86 %	27.24 %	26.50 %	36.97 %	39.48 %	48.55 %	58.56 %	53.26 %	53.09 %	46.69 %	34.77 %	23.92 %	27.44 %	32.08 %	23.61 %	22.99 %	21.99 %	23.34 %	17.46 %	15.43 %
RoE	20.85 %	18.13 %	16.03 %	17.93 %	22.40 %	22.39 %	21.69 %	24.21 %	26.29 %	30.88 %	28.48 %	24.31 %	19.05 %	18.28 %	20.19 %	19.59 %	16.26 %	27.83 %	18.01 %	17.45 %	14.15 %	10.74 %	11.53 %	9.04 %

Debt-to-Equity	0.07	0	0	0.04	0	0	0	0	0	0	0	0.11	0.14	0.17	0.19	0.36	0.15	0.14	0.20	0.32	0.44	0.40	0.64	1.17
Dividend Distribution as % PAT (including Tax)	42.21 %	30.73 %	24.12 %	38.65 %	31.93 %	37.26 %	23.32 %	23.38 %	23.39 %	23.47 %	24.80 %	29.70 %	22.75 %	22.44 %	22.56 %	20.01 %	22.13 %	7.34 %	15.17 %	17.68 %	24.76 %	19.71 %	20.00 %	24.01 %
R&D Expenditure as % Sales	6.92 %	6.94 %	6.67 %	7.16 %	13.60 %	6.81 %	7.52 %	7.26 %	6.51 %	7.68 %	8.20 %	8.13 %	6.77 %	8.26 %	8.49 %	7.35 %	8.34 %	7.17 %	7.13 %	6.95 %	4.63 %	8.04 %	6.92 %	10.07 %
Employees (Absolute Count)	29526	30300	31144	32108	32644	32659	33681	33990	34822	34323	31666	29668	29807	30450	31138	31652	32642	34448	34828	33967	34183	35245	35545	36946
Sales per Employee (in INR lakh)	59.62	54.73	50.15	47.11	43.88	43.49	38.93	33.70	29.79	25.12	24.58	18.00	15.21	12.47	10.02	8.76	7.49	6.96	5.88	5.50	5.17	4.44	3.90	2.98

As we can see from above,

-- **HAL has grown its revenues each year over last 24 years** although growth has been lumpy with some fiscals turning low single digit growth and some fiscals turning extremely healthy double digit growth. This is the nature of business and is consistent across most of the global peers we observe. This is because the product manufacture cycle is so long (around 6-10 years) and regulations for actual approval and delivery of products are so stringent that it takes time. Also, **company follows an accounting policy wherein revenues are booked only when actual delivery of the product happens and not on percentage-work-completion basis.**

-- **Company has been EBITDA positive each fiscal over last 24 years** although margins vary from low single digit to low double digits with average coming at around 11 % on long-term-basis. Product-mix as well as delivery execution plays part in this as contracts stipulate penalty for delayed delivery and so provisions in a particular year can dent margins.

-- HAL has been PBT & PAT level positive each fiscal over last 24 fiscals with last **12 years' PBT margin consistently at 20 % + and last 12 years' PAT margin consistently at 14 % + barring one odd fiscal.** This is because of the huge cash company holds (and other income it derives from it) because of advances given by customers (primarily defence forces) and milestone payments. This is a trend across all DPSUs which are involved in complex long-term projects and customer calculates product pricing while taking into acccount 'Other Income' that will be generated by HAL (or for that matter any DPSU) from the cash given as advance. Hence, this trend is likely to continue in future too although in short-term over coming one or two fiscals, if there is no fresh large order booking, level of 'Other Income' might come down as current order-book is approaching delivery dates.

-- R&D expenditure as % of sales has been almost consistent over last 24 years' averaging out at around 7 % which is one of the highest in the industry.

Now, let's turn our attention to order-book in table below :

Order Book as at 31st December 2017
= 68,461 cr.

FY18e (31/03/18) expected Order-Book
= 58,500 cr.

+

Order Pipeline
= 2,43,000 cr.

↓

Product	Quantity	Value (in INR cr.)	Expected to be signed in FY
LCA Mk1A	83	33,000	FY19
LCH Helicopter	15	2,000	FY19
Kamov 226T	100	4000	FY19, early-FY20
LCH Helicopter	100	13,000	FY20
ALH Helicopters	500	85,000	In phases from FY20
LUH Helicopter	400	16,000	In phases from FY20
LCA/MCA Mk2	201	90,000	FY22
Total		2,43,000	

As can be seen from above, company is sitting on a huge opportunity in terms of order bookings.

Valuation :

This is the most interesting aspect with regards to this company. Despite it being the largest defence PSU of India and one of the largest defence companies of Asia with many of its global as well as Indian peers inferior on varied and almost most of the financial parameters than HAL ; still, HAL today trades at relatively low valuations than most of them. Refer following table which gives an overview of almost all the l-t-l global peers of HAL :

		Valuation				Operational Efficiency							
							Past 10 Years			Trailing Twelve Months			
	Revenue (in INR cr.)	P/E	EV/Sales	EV/EBITDA	P/BV	D/E	10 Years' Revenue CAGR	10 Years' Average EBITDA %	10 Years' Average PAT %	EBITDA Margin TTM	PAT Margin TTM	RoE	RoCE
Boeing	6,07,268	25.29	2.14	15.99	552.01	31.32	4.37 %	8.42 %	5.27 %	12.98 %	8.77 %	1397.78 %	27.45 %
Airbus	5,36,443	27.83	1.12	14.52	5.52	0.84	4.44 %	5.24 %	2.37 %	6.98 %	4.30 %	33.79 %	14.86 %
Lockheed Martin	3,31,888	27.78	2.12	15.09	42.64	2.5	2.13 %	11.28 %	6.96 %	12.92 %	3.78 %	133.87 %	13.13 %
Mitsubushi Heavy	2,43,055	11.12	0.57	11.11	0.74	0.66	2.03 %	9.81 %	2.86 %	8.71 %	3.52 %	5.06 %	3.21 %
General Dynamics	2,01,382	21.85	2.16	14.63	5.67	0.35	0.56 %	13.98 %	7.98 %	14.91 %	9.79 %	25.99 %	19.23 %
BAE Sys	1,68,409	23.66	1.20	9.75	3.99	0.86	0.95 %	9.48 %	4.28 %	10.70 %	4.66 %	20.88 %	10.24 %
Northrop Grumman	1,67,764	29.52	2.52	16.69	8.56	2.04	- (2.22) %	12.23 %	6.49 %	14.63 %	7.81 %	32.75 %	11.64 %

Raytheon	1,64,838	30.32	2.51	16.1	6.16	0.51	0.90 %	14.89 %	8.10 %	15.26 %	7.98 %	20.19 %	13.30 %
Bombardier	1,06,126	Loss	0.89	41.20	Negative	2.19	- (0.76) %	4.86 %	- (1.43) %	5.08 %	- (3.41) %	Negative	Negative
Leonardo	96,424	19.83	0.71	9.27	1.76	0.65	- (2.62) %	8.36 %	0.84 %	12.61 %	4.21 %	6.16 %	2.90 %
Kawasaki Heavy Ind	94,317	21.11	0.71	11.08	1.29	1.12	0.12 %	6.46 %	2.35 %	7.83 %	1.60 %	6.03 %	3.14 %
Textron	92,335	26.92	1.29	12.95	2.67	0.69	0.14 %	10.08 %	4.18 %	10.66 %	4.03 %	5.45 %	3.25 %
United Aircraft	47,361	Loss	1.02	14.19	1.72	2.89	14.90 %	5.44 %	- (10.08) %	8.0 %	Loss	Negative	Negative
Dassault Aviation	38,810	21.40	2.75	30.26	3.27	0.28	- (0.14) %	10.98 %	9.96 %	6.15 %	9.42 %	19.63 %	14.92 %
Embraer	36,734	19.63	0.96	10.01	1.16	1.12	- (0.81) %	11.89 %	3.68 %	13.65 %	4.53 %	6.12 %	3.06 %
Avichina Industry	35,470	20.68	5.82	11.10	1.72	0.73	7.81 %	10.66 %	3.40 %	11.82 %	6.71 %	8.64 %	4.93 %
Avic Aircraft	31,932	95.54	1.42	44.08	2.98	0.57	12.75 %	3.89 %	1.78 %	3.22 %	1.52 %	3.03 %	1.97 %
Saab	24,797	27.44	1.31	15.69	2.91	0.46	2.88 %	9.48 %	4.63 %	9.61 %	4.48 %	10.29 %	7.11 %
Hindustan Aero	**18,555**	**14.05**	**1.45**	**8.27**	**3.07**	**0.07**	**8.51 %**	**10.95 %**	**16.65 %**	**16.85 %**	**14.09 %**	**20.85 %**	**15.53 %**

Korea Aerospace Ind	12,236	Loss	2.26	Loss	4.50	0.39	8.58 %	9.13 %	4.98 %	- (6.04) %	- (11.35) %	Negative	Negative

-- Revenues of all companies are stated in INR cr. with INR conversion rate of respective reported currency taken as at 31st March 2018.

-- Many of the peers mentiioned above like Mitsubushi, Kawasaki, etc. have revenue streams other than defence/aircraft which contribute majorly to their financials ; however, we have sorted the companies based on the size of their overall operations and not by actual revenues coming from Aerospace & Defense segment.

-- **On 10 Years' Revenue CAGR basis, only 3 companies have outperformed HAL** and they are United Aircraft of Russia, Avic Aircraft of China and Korea Aerospace of South Korea. However, in terms of operational parameters, **all these three companies are far more inferior than HAL whether we compare 10 Years' Average EBITDA & PAT margin or RoE & RoCE.**

-- Another company that comes close to HAL's 10 years' revenue CAGR is Avichina Industry, again from China, but, here too, if we check operational paramters then its 10 Years' EBITDA margin are almost similar but all other parameters inferior.

-- Overall, evenif we leave aside consistent superior RoE & RoCE of HAL and only concentrate on business specific matrix like 10 Years' Average EBITDA margin achieved and D/E aspect then HAL ,on the whole, turns out to be one of the best company amongst all peers except Raytheon who also has a portion of revenues coming from high-margin defence/commercial electronics segment.

Now, after looking at global l-t-l peers, let's turn our attention to Indian peers --- one fact here we need to note is that **there are no listed (or for that matter unlisted) peers** that can be compared to HAL since HAL is currently enjoying an almost monopoly in Aerospace segment related to defence and it only competes with global peers mentioned in above table for most of its contracts. Hence, what we did is we **compared all prominent Indian listed entities which have some or major revenues coming from defence segment.** We have divided our comparison in two parts – one **Indian Private Sector** companies and other **Indian DPSUs** for ease in reference. Refer following table :

		Valuation					Operational Efficiency								
							Past 10 Years					Trailing Twelve Months			
	Revenue (in INR cr.)	P/E	EV/Sales	EV/EBITDA	P/BV	Gross D/E	10 Years' Revenue CAGR	10 Years' Average EBITDA %	10 Years' Average PAT %	10 Years' Average RoE	10 Years' Average RoCE	EBITDA Margin TTM	PAT Margin TTM	RoE TTM	RoCE TTM
Private Sector															
Dynamatic Technologies	1508	42.75	1.08	9.78	4.40	2.40	20.18 %	10.87 %	1.57 %	9.54 %	3.31 %	11.01 %	1.63 %	10.06 %	13.02 %
Reliance Naval	563	Loss	13.10	216.11	1.73	6.20	- (1.57) % [7 Years]	6.91 % [8 Years]	- (41.54) % [8 Years]	- (10.83) %	0.91 %	6.11 %	Loss	Negative	Negative
Astra Microwave	425	12.52	1.81	7.07	2.13	0.30	12.84 %	24.20 %	12.55 %	16.61 %	13.57 %	23.40 %	13.30 %	12.66 %	10.18 %
Taneja Aerospace	37	211.08	4.13	20.08	1.41	0.36	8.09 %	15.36 %	- (0.28) %	0.62 %	0.54 %	20.56 %	1.55 %	0.67 %	5.47 %
Sika Interplant	34	32.99	2.30	30.09	1.89	0.04	18.94 %	14.35 %	8.98 %	3.68 %	6.04 %	7.66 %	5.44 %	4.33 %	7.03 %

Public Sector

	Revenue (in INR cr.)	P/E	EV/Sales	EV/EBITDA	P/BV	Gross D/E	10 Years' Revenue CAGR	10 Years' Average EBITDA %	10 Years' Average PAT %	10 Years' Average RoE	10 Years' Average RoCE	EBITDA Margin TTM	PAT Margin TTM	RoE TTM	RoCE TTM
Hindustan Aeronautics	**18,555**	**14.05**	**1.45**	**8.27**	**3.07**	**0.07**	**8.51 %**	**10.95 %**	**16.65 %**	**22.08 %**	**27.15 %**	**16.85 %**	**14.09 %**	**20.85 %**	**15.53 %**
Bharat Electronics	8825	22.70	3.63	18.20	4.51	0.01	8.36 %	16.53 %	16.24 %	17.15 %	21.53 %	19.95 %	17.54 %	20.61 %	18.80 %
Bharat Dynamics	4886	13.79	1.10	9.49	3.25	0	27.39 %	0.14 %	14.21 %	20.77 %	27.14 %	11.62 %	10.72 %	23.87 %	31.82 %
BEML	2829	55.81	2.01	34.59	2.15	0.19	1.56 %	5.60 %	3.63 %	5.07 %	4.69 %	5.17 %	2.99 %	3.88 %	5.61 %
Cochin Shipyard	2059	18.43	2.66	14.20	3.51	0.06	11.08 %	16.89 %	13.53 %	19.87 %	21.84 %	18.41 %	15.64 %	15.86 %	16.41 %
MIDHANI	810	13.33	1.85	8.08	2.40	0.02	15.98 %	18.61 %	14.29 %	17.99 %	25.65 %	22.84 %	15.68 %	18.07 %	23.69 %

-- As can be seen from above, **HAL enjoys consistently highest PAT margins and therefore highest RoE amongst all the companies** – whether its Private sector or Public sector.

-- Also, HAL is trading at one of the lowest valuations (on varied valuation multiples) as compared to both , private and public sector entities.

-- **Its only Bharat Electronics Ltd (BEL) , another defence PSU, which is as or more efficient than HAL** and has the size of operations which are meaningful for comparison. Also, BEL is the only other entity which finds place amongst Top 100 defence companies of the world apart from HAL. So, what we did is we ran a detailed comparison of both, HAL & BEL on varied operational and business parameters across last 24 years to check whether BEL has outperformed HAL in any or many aspects. Refer following table where we have detailed 23, 20 ,15, 10 & 5 years' CAGR of varied financial/operational parameters as also 24,20,15,10 & 5 years' Average of varied paramters :

	23 Years' CAGR	20 Years' CAGR	15 Years' CAGR	10 Years' CAGR	5 Years' CAGR
Revenue					
HAL	12.80 %	12.17 %	13.11 %	8.51 %	4.39 %
BEL	10.70 %	10.37 %	10.62 %	8.36 %	9.12 %
EBITDA					
HAL	12.05 %	13.69 %	21.80 %	11.45 %	16.25 %
BEL	12.65 %	12.71 %	11.95 %	6.49 %	28.99 %
PBT					
HAL	19.04 %	18.46 %	16.28 %	7.47 %	1.48 %
BEL	18.62 %	16.48 %	13.98 %	6.79 %	13.55 %
PAT					
HAL	18.77 %	17.44 %	14.46 %	8.57 %	0.59 %
BEL	18.06 %	18.61 %	14.62 %	7.99 %	13.28 %

R&D Expenditure (absolute amount)					
HAL	11.23 %	14.75 %	13.05 %	7.24 %	5.81 %
BEL	12.87 %	15.18 %	15.46 %	18.69 %	10.67 %
Sales per Employee					
HAL	13.91 %	13.01 %	13.64 %	9.26 %	6.51 %
BEL	13.84 %	13.25 %	13.11 %	11.01 %	11.44 %

	24 Years' Average	20 Years' Average	15 Years' Average	10 Years' Average	5 Years' Average
RoE					
HAL	19.82 %	21.51 %	22.07 %	22.08 %	19.07 %
BEL	18.24 %	20.11 %	20.52 %	17.15 %	15.47 %
RoCE					
HAL	30.26 %	32.40 %	34.53 %	27.15 %	18.56 %
BEL	29.40 %	30.93 %	29.25 %	21.53 %	15.80 %
EBITDA Margin					
HAL	11.48 %	10.67 %	11.01 %	10.95 %	12.20 %
BEL	15.74 %	16.80 %	17.65 %	16.53 %	16.04 %

PBT Margin

HAL	16.54 %	18.70 %	20.93 %	22.41 %	21.61 %
BEL	16.28 %	18.72 %	21.45 %	21.75 %	21.08 %

PAT Margin

HAL	12.68 %	14.22 %	15.34 %	16.65 %	15.94 %
BEL	11.65 %	13.39 %	15.51 %	16.24 %	16.43 %

Dividend Payout as % to PAT

HAL	24.65 %	25.15 %	28.05 %	29.85 %	33.53 %
BEL	30.99 %	26.35 %	26.28 %	27.05 %	30.43 %

R&D Expenditure as % to Sales

HAL	7.65 %	7.69 %	7.79 %	7.71 %	8.26 %
BEL	5.70 %	5.86 %	6.22 %	7.37 %	8.41 %

Employees
(abosolute number)

HAL	32807	32273	31861	32519	31144
BEL	13108	12254	11411	10737	9904

Debt-to-Equity

HAL	0.19	0.09	0.05	0.01	0.02
BEL	0.21	0.07	0.01	0	0

As can be seen from above,

-- if we look at Revenue CAGR, BEL has outperformed HAL in last 5 years, however, on a long term basis, HAL has been an outperformer (this aspect will be more clearer in single-single 24 years' YoY comparison detailed afterwards in next table).

-- On absolute EBITDA CAGR front, again BEL & HAL are neck-to-neck on long term basis but in last 5 years BEL is a clear winner. However, here, if we look closely then, in two time-periods, viz., **15 Years CAGR & 10 Years' CAGR, HAL outperformance has been significant, almost double that of BEL** ; two things play part in this, first – its the actual period and its base which matters and second --- the segment both the companies cater to, viz., defence, wherein once contract is booked its of larger value and has multi-year execution cycle and when major delivery periods of your order-book is there you wiill get operational efficiences and your EBITDA will get a boost and in other periods when the order is under execution it will be dull.

-- Hence, **these companies are best compared on a long-term basis and it is to be checked whether they are faltering on their traditional operational parameters like margins and all and here, both HAL and BEL are spot on as if we look at 24, 20, 15, 10 & 5 Years' Average EBITDA margin of each, they are same with just a difference of 50-100 basis points here and there.**

-- Thus, what we here need to note is HAL's business gives it an EBITDA margin of 11 % on a steady-state basis over long term whereas BEL is in a business which gives it an EBITDA margin of 16 % on a steady-state basis over long term --- in some fiscal periods HAL & BEL's margins will shoot up 200-500 basis points from steady-state and in some periods it will shoot down to a similar extent based on the delivery of the orders but on a steady-state if we will look in hindsight, it will not deviate from steady-state.

-- If we look at PBT & PAT CAGRs the story is almost similar as explained above wherein BEL has outperformed HAL in last 5 years but both are neck-to-neck in Average PBT & PAT Margins achieved. Here, one intersting thing to note is the **disappearance of margin difference of 500 basis points that is otherwise existent in EBITDA, with HAL PBT & PAT margins being similar to BEL in all periods** whether you look at 24, 20, 15, 10 or 5 Years' Average. This is because **customer counts in its product pricing the benefits that HAL or BEL are going to derive from the cash advance they give at the time of placing the order**.

-- R&D Expenditure – if we look at 'absolute amount spent' CAGR then BEL seems to be outperforming HAL in almost all periods but, here again if we look at **average of 'R&D expenditure as % of Sales' HAL seems to be more consistent** with BEL only increasing its spend over last 5 years to come close to HAL but HAL consistently spending higher amount w.r.t. Revenues.

-- HAL RoE and RoCE have consistently been superior to BEL whether you compare any period.

Now, after having looked at overall CAGRs and Averages of time periods combine, let's have a look at each year's actual numbers singularly of both the companies to get a better picture and correct ourselves if we are wrong somewhere. Refer table below :

	FY17	FY16	FY15	FY14	FY13	FY12	FY11	FY10	FY09	FY08	FY07	FY06	FY05	FY04	FY03	FY02	FY01	FY00	FY99	FY98	FY97	FY96	FY95	FY94
Revenue Growth YoY																								
HAL	6.14 %	6.18 %	3.26 %	5.61 %	0.84 %	8.30 %	14.48 %	10.44 %	20.27 %	10.82 %	45.72 %	17.82 %	19.32 %	21.76 %	12.47 %	13.41 %	1.92 %	17.24 %	9.52 %	5.59 %	13.03 %	12.82 %	25.95 %	
BEL	17.03 %	12.63 %	8.44 %	2.69 %	5.40 %	3.15 %	5.94 %	12.89 %	12.70 %	3.79 %	11.79 %	10.09 %	14.75 %	11.60 %	29.14 %	13.24 %	14.79 %	24.60 %	- (4.91) %	2.85 %	14.69 %	14.33 %	9.87 %	
EBITDA Margin																								
HAL	16.85 %	11.88 %	11.59 %	11.13 %	9.53 %	9.84 %	12.71 %	11.60 %	7.18 %	7.16 %	12.89 %	14.06 %	12.59 %	10.76 %	5.45 %	5.55 %	1.35 %	14.62 %	12.65 %	14.07 %	12.88 %	14.62 %	14.76 %	19.69 %
BEL	19.95 %	18.18 %	17.07 %	14.44 %	10.56 %	8.64 %	16.16 %	15.03 %	21.28 %	24.03 %	23.76 %	23.81 %	20.05 %	15.88 %	15.91 %	16.71 %	14.73 %	14.44 %	11.92 %	13.48 %	13.14 %	6.43 %	8.72 %	13.37 %
PBT Margin																								
HAL	20.34 %	19.33 %	20.30 %	23.65 %	24.41 %	23.43 %	21.64 %	23.46 %	22.50 %	25.08 %	22.39 %	21.08 %	16.69 %	15.76 %	13.87 %	13.44 %	10.83 %	17.29 %	9.67 %	8.82 %	6.83 %	5.42 %	4.97 %	5.89 %
BEL	22.99 %	22.96 %	21.91 %	19.03 %	18.53 %	18.84 %	20.99 %	20.01 %	23.72 %	28.54 %	26.61 %	24.17 %	21.35 %	16.75 %	15.39 %	14.67 %	12.83 %	11.11 %	5.84 %	8.08 %	7.83 %	2.24 %	1.71 %	4.70 %
PAT Margin																								
HAL	14.09 %	11.64 %	15.27 %	17.79 %	20.91 %	17.86 %	16.10 %	17.17 %	16.77 %	18.92 %	14.76 %	14.43 %	11.05 %	10.79 %	12.50 %	12.43 %	9.97 %	15.33 %	8.69 %	7.86 %	5.93 %	4.53 %	5.04 %	4.54 %
BEL	17.54 %	17.33 %	17.43 %	15.07 %	14.80 %	14.55 %	15.57 %	13.81 %	16.13 %	20.15 %	18.16 %	16.48 %	13.88 %	11.29 %	10.41 %	10.29 %	9.04 %	7.22 %	4.50 %	4.20 %	4.16 %	1.96 %	1.71 %	3.99 %

RoCE																								
HAL	15.53 %	14.07 %	13.77 %	19.57 %	29.86 %	27.24 %	26.50 %	36.97 %	39.48 %	48.55 %	58.56 %	53.26 %	53.09 %	46.69 %	34.77 %	23.92 %	27.44 %	32.08 %	23.61 %	22.99 %	21.99 %	23.34 %	17.46 %	15.43 %
BEL	18.80 %	15.54 %	15..62 %	14.01 %	15.03 %	19.12 %	22.80 %	25.20 %	30.72 %	38.46 %	43.92 %	46.66 %	48.67 %	41.68 %	42.47 %	38.36 %	37.98 %	37.69 %	30.85 %	35.01 %	31.09 %	17.18 %	17.39 %	21.42 %
ROE																								
HAL	20.85 %	18.13 %	16.03 %	17.93 %	22.40 %	22.39 %	21.69 %	24.21 %	26.29 %	30.88 %	28.48 %	24.31 %	19.05 %	18.28 %	20.19 %	19.59 %	16.26 %	27.83 %	18.01 %	17.45 %	14.15 %	10.74 %	11.53 %	9.04 %
BEL	20.61 %	14.54 %	14.80 %	13.28 %	14.12 %	14.76 %	17.27 %	16.67 %	19.72 %	25.74 %	27.91 %	28.73 %	28.23 %	25.58 %	25.84 %	24.42 %	24.03 %	20.57 %	12.24 %	13.08 %	13.82 %	6.30 %	4.94 %	10.63 %
R&D Expenditure as % of Sales																								
HAL	6.92 %	6.94 %	6.67 %	7.16 %	13.60 %	6.81 %	7.52 %	7.26 %	6.51 %	7.68 %	8.20 %	8.13 %	6.77 %	8.26 %	8.49 %	7.35 %	8.34 %	7.17 %	7.13 %	6.95 %	4.63 %	8.04 %	6.92 %	10.07 %
BEL	8.80 %	9.33 %	8.20 %	7.56 %	8.15 %	8.20 %	7.02 %	6.05 %	5.25 %	5.09 %	3.54 %	3.13 %	3.89 %	4.68 %	4.34 %	4.63 %	5.19 %	5.15 %	5.09 %	3.89 %	3.75 %	4.49 %	4.62 %	3.38 %
Dividend Distribution as % of PAT																								
HAL	42.21 %	30.73 %	24.12 %	38.65 %	31.93 %	37.26 %	23.32 %	23.38 %	23.39 %	23.47 %	24.80 %	29.70 %	22.75 %	22.44 %	22.56 %	20.01 %	22.13 %	7.34 %	15.17 %	17.68 %	24.76 %	19.71 %	20.00 %	24.01 %
BEL	43.73 %	37.56 %	24.07 %	23.41 %	23.37 %	23.25 %	23.34 %	24.96 %	23.32 %	23.46 %	23.26 %	22.81 %	25.11 %	28.48 %	24.13 %	20.01 %	23.23 %	22.23 %	33.33 %	33.96 %	35.29 %	61.90 %	81.25 %	38.23 %

Debt-to-Equity																								
HAL	0.07	0	0	0.04	0	0	0	0	0	0	0	0.11	0.14	0.17	0.19	0.36	0.15	0.14	0.20	0.32	0.44	0.40	0.64	1.17
BEL	0.01	0	0	0	0	0	0	0	0	0	0	0.01	0.01	0.03	0.04	0.10	0.13	0.21	0.33	0.55	0.96	0.65	0.77	1.34

Sales per Employee (in INR Lakh)																								
HAL	59.62	54.73	50.15	47.11	43.88	43.49	38.93	33.70	29.79	25.12	24.58	18.00	15.21	12.47	10.02	8.76	7.49	6.96	5.88	5.50	5.17	4.44	3.90	2.98
BEL	90.83	76.57	68.99	62.03	58.34	52.85	49.46	45.21	38.65	33.16	31.98	28.83	25.92	21.46	18.24	14.31	12.09	10.08	7.67	8.01	7.54	6.27	5.25	4.61

As can be seen from above table,

-- If we look at pure YoY Revenue growth achieved each year by respective companies then **HAL has outperformed BEL in 13 out of past 23 years** – its last 3 years where BEL has consistently outperformed HAL . Also, both the companies have registered a double digit YoY revenue growth in 14 fiscals out of 23 fiscals with HAL achieving single digit growth in 9 fiscals whereas BEL achieveing single digit growth in 8 fiscals and negative YoY growth in one fiscal.

-- Both the companies have experienced high volatility in EBITDA margins, however, PBT & PAT margins of both the companies has been relatively more stable and has shown gradual improvement.

-- HAL's RoCE has been better than BEL in 13 years out of past 24 years – with BEL's RoCE better in last 3 fiscals viz., FY15, FY16 & FY17.

-- HAL's RoE has been better than BEL in 17 years out of past 24 years – with HAL's RoE consistently better in last 11 fiscals from FY07 to FY17.

So, now, to conclude our discussion, let's have a look at the valuations at which HAL is trading at present and then move on to discuss negative aspects. Refer following table :

	P/E	EV/Sales	EV/EBITDA	P/BV
Hindustan Aeronautics [@CMP = 1105] (TTM)	14.05	1.45	8.27	3.07
Hindustan Aeronautics [@CMP = 1105] (Steady State)	14.15	1.45	13.60	3.07

-- Here, we have arrived at valuation multiples by taking two base figures – one TTM (FY17) figures and second steady-state figures as the business is such that its better to value it on a steady-state basis.

-- On steady-state basis EBITDA margin is assumed at 11 % whereas PAT is assumed at 14.50 %.

-- Key thing to note here is that although current order-book and its delivery schedules ensure steady ~20,000 cr. revenue p.a. for next three fiscals but, benefits of expansions of capacities that are undertaken on LCA and Helicopter divisions to be commissioned in coming two fiscals as well as robust future order pipeline are not taken into consideration while assuming steady-state figures.

Lastly, now, since we have already arrived at HAL valuation both on TTM and steady-state basis, its better to see where HAL is pitched against Top 50 Defence & Aerospace companies of the world in terms of valuations. In addition to l-t-l global peers given in table before, below we have covered almost all the other prominent publicly traded Defence & Aerospace companies that find mention in world's Top 50. Many companies' scale of operations is smaller than HAL since HAL is amongst Top 40 in the world :

		Valuation				Operational Efficiency		
	Revenue (in INR cr.)	P/E	EV/Sales	EV/EBITDA	P/BV	D/E	EBITDA margin	PAT Margin
General Electric	7,83,356	21.32	1.64	16.44	1.85	2.09	5.94 %	- 4.55 %
United Tech	3,88,850	22.31	2.09	11.31	3.40	0.83	16.17 %	7.61 %
Honeywell	2,63,481	34.35	3.02	14.50	6.38	1.04	22.57 %	8.30 %
Rolls Royce	1,49,932	20.90	1.05	9.75	5.20	0.57	12.45 %	- 4.23
Safran	1,36,119	11.64	2.29	13.21	4.52	0.58	20.64 %	9.68 %
Thales	1,26,959	25.11	1.12	10.13	3.85	0.33	11.53 %	5.62 %
IHI	92,299	20.47	0.49	12.59	1.51	1.10	8.75 %	1.84 %
Gkn Aerospace	88,892	14.77	0.85	9.94	2.91	0.46	9.80 %	5.26 %
Arconic	84,272	69.43	1.26	10.96	2.31	1.40	13.59 %	1.53 %
Parker Hannifin	78,225	28.29	2.20	16.32	4.39	1.09	15.95 %	8.70 %
l-3 tech	62,228	23.63	1.92	15.50	3.07	0.66	13.91 %	7.21 %
Spirit Aero	45,387	25.51	1.62	13.51	5.30	0.64	11.50 %	5.49 %

Rockwell Collins	44,347	27.63	3.81	17.76	3.48	1.16	22.80 %	9.93 %
Zodiac	41,221	101.76	1.52	24.62	2.18	0.48	6.24 %	1.43 %
Mtu Aero engines	40,498	19.33	1.57	11.50	3.51	0.61	13.08 %	7.58 %
Harris	38,365	29.10	3.65	16.10	6.23	1.31	22.68 %	11.07 %
St Engineering	32,722	22.80	1.68	14.42	4.91	0.43	10.55 %	7.12 %
Orbital ATK	30,952	24.70	1.83	12.72	3.73	0.69	13.52 %	6.51 %
Allegheny Tech	22,954	Loss	1.43	20.45	1.75	0.88	10.08 %	- (2.38) %
Transdigm	22,758	30.27	7.55	16.17	Negative	4.52	46.53 %	13.39 %
Triumph group	22,173	Loss	0.83	7.59	1.67	1.84	14.67 %	- (1.26) %
Cobham	18,844	36.14	1.61	12.07	2.84	0.94	14.38 %	3.26 %
Meggit	18,661	13.89	2.24	11.91	1.35	0.49	25.57 %	11.22 %
Moog	16,256	26.86	1.48	11.97	2.58	0.78	12.63 %	5.14 %
CAE	13,612	20.16	2.58	13.97	3.01	0.60	19.83 %	11.57 %
Esterline	13,200	23.20	1.57	9.86	1.47	0.42	13.08 %	5.89 %

Hexcel	12,939	21.65	3.44	14.83	3.71	0.54	21.60 %	13.10 %
Aerojet Rocketdyne	12,224	32.44	1.12	12.13	19.07	4.08	9.85 %	2.95 %
Maxar Tech	10,688	18.53	3.43	19.15	1.26	1.51	13.58 %	5.43 %

Having covered above (in two tables) the world's Top 50, let's summarise the valuation multiples and arrive at a median and see where HAL is placed at in the matrix. Here, we have chosen not to just arrive at plain averages of valuation multiples since averages can give wrong picture in such comparison as if only 5 out of the 50 companies are trading at extremely exuberant valuations, then averages will move up. Refer following data :

P/E Ratio

HAL is trading at this Valuation	Below 14.05 P/E ratio	----->	3 companies	
	Between 14.05 to 20 P/E ratio	----->	5 companies	
	Above 20 P/E ratio	----->	**40 companies**	**Median is here**

EV/Sales

	Below 1	----->	7 coompanies	
	Between 1 to 1.30	----->	8 companies	
HAL is trading at this Valuation	Between 1.30 to 1.45	----->	3 companies	
	Between 1.45 to 1.75	----->	8 companies	**Median is here**
	Between 1.75 to 2.00	----->	2 compamnies	
	Above 2.00	----->	20 companies	

EV/EBITDA

HAL is trading at this Valuation	Below 8.27	----->	1 company	
	Between 8.27 to 9	----->	0 company	
	Between 9 to 10	----->	5 companies	
On Steady State basis HAL is trading at this Valuation	Between 10 to 13.60	----->	17 companies	**Median is inbetween**
	Between 13.60 to 15	----->	7 companies	
	Between 15 to 20	----->	12 companies	
	Above 20	----->	6 companies	

Price/BookValue

	Below 2	----->	13 companies	
HAL is trading at this Valuation	Between 2 to 3.07	----->	9 companies	**Median is inbetween**
	Between 3.07 to 5	----->	12 companies	
	Between 5 to 9	----->	8 companies	
	Above 9	----->	6 companies	

Negatives :

Without paying proper heed to negatives, no discussion on a company could be complete ; so let's now turn our attention to negatives :

PSU Work Culture & Government Dictat :

HAL being a PSU follows similar work culture as is followed by other PSUs like defined working hours for majority days of the year, specific allocated work, sub-par manpower utilisation, in last three months of a fiscal a rush in execution to meet stated targets, etc. In addition, because of significant Government holding, it also has to obey government dictat and gets affected by governments' shortcomings or compulsions on fiscal front (– a case in point here is recent 2nd interim dividend announcement which was declared on 31st March 2018 post listing and RD fixed at one day before i.e., 30th March 2018 so that it can be paid to Government on 31st March itself). These are the issues that will remain with this company like any other PSUs, although, efficiency might improve post listing as has significantly improved in case of BEL.

However, it is also to be noted that being a PSU, it also enjoys certain advantages like preference in order awards, significant cash advances and tremendous support on long-term R&D projects. Another key thing to note here is, so far over last seven decades, the same issues were present but still company has turned out to be one of the extremely efficient and globally competitive enterprise. Also, it is to be noted that logically speaking, any Government, whether its NDA or UPA or some other – can't afford a company like HAL to fail as its survival is crucial from national security point of view.

Product Quality Issues :

There has been quality issues in some of the products supplied by HAL. Major has been Ecuador issue wherein out of seven Dhruv helicopters supplied by HAL, four crashed ; no data was supplied by Ecuador on reason for crash citing confidentiality issue ; whereas there could be quality issue in this said case but, logically speaking, no company will supply and that too export such products where majority or all of them are faulty ; as also, before actual delivery of such flying platforms, stringent tests are done by the purchaser and only after satisfaction, actual delivery happens. However, there can be no denying of the fact that this thing has happened in past –-- It is also to be noted here **that these same Dhruv helicopters were used by India for recent surgical strikes done on neighbour's territory in 2016** – this is after the said crashes happened in Ecuador --- if there would have been doubt on quality of this product Indian Armed Forces would have never used this for such crucial mission.

There were also some unconfirmed reports in 2015 that Boeing has ended contract with HAL for supply of structures and components to its military aircrafts citing quality issues. However, if we look at recent statement by Boeing in November 2017, it has said **"HAL has been a key partner of Boeing for over two decades and today manufactures components for our commercial and defense platforms, including for the F/A-18 Super Hornet. We are continually exploring ways to expand that relationship."**

IAF and Navy has also reported some quality issues in products supplied or ROH done by HAL; although such reports are not many.

If we look in hindsight, then, if we look at the number of reports of products involved in such quality issues vis-a-vis number or quantum of products actually manufactured by HAL – they don't look large as out of 4090 aircraft produced so far or 5005 engines produced how many quality issues have come up ?? Such 1-3 % of total products manufactured having some or other quality issue is not uncommon in the industry as a whole (if we look at well established global peers) and since the product is crucial and even a single failure could be fatal such issues amplify more in media. However, there could be no denying of the fact that such issues can come up any time.

Delayed Delivery Issues :

Another aspect because of which HAL has always been in news is the delay in product manufacture and delivery issue, especially with regards to India's only indigenous fighter aircraft 'Tejas'. The said project which started in 1980s is still going on with only 9 aircrafts delivered till date even after almost 35 years. As per industry experts, **such projects are extremely complex and to build a flying platform like Tejas from scratch without any developed country's support is next to impossible**. This is the reason why only few countries in the world (only 7) have this capability today. To complicate the matters further, there came sanctions on India inbetween post which the specifications and requirements of IAF changed as it suggested multiple modifications to have a fighter aircraft which can compete with the best in the world. To add, India was simultaneously developing Kaveri Engine with a goal to use it in Tejas to make Tejas a pure indigenous product; however this project also failed.

Past is past and today finally Tejas deliveries are picking up with 6 Tejas getting delivered in FY18 (against a target of 8 – full capacity). Also, as per industry sources who are close to vendors (whom HAL has outsourced major components of Tejas), HAL might be able to deliver more Tejas from FY19 itself as all the orders of components/structures are placed and production started at vendors' facilities.

<u>Private Segment & Foreign Competition :</u>

This prima-facie seems to be a major threat as in draft DProP-2018, government has proposed 74 % FDI in defence and with this many JVs might get established. However, if we look slightly deep then even after such opening up of defence sector to Foreign players, there might not be mad rush to establish facilities here – yes, for making it a sourcing base for their global products there could be interest amongst MNCs but with a goal to manufacture and supply end product (like flying platforms) to Indian Defence sector there might not be much interest. This is because for this, like investing billions to make fighter jets in India, a company needs certainty which is absent in India because of its political system. Today NDA government will frame one policy and tomorrow some other government, say third front will come and quash such policy and again will go indigenous. Because of this no Global company will come and invest in India with an aim to be a long term manufacturer and supplier of long gestation end products to defence forces.

Also, all the hype aside, **its impossible for a country like India which is surrounded by two hostile neighbours and one of them being relatively more capable, to trust and look for a foreign player** as a significant supplier of defence requirement be it any. Once you do that and let foreign company dominate the supply, then comes the foreign company's home country in picture which usually dictates its terms in adversities like war. Leave aside such adverisities, but, even in normal situations these countries extract every juice out of their support to you – a case in point here is recent integration of Brahmos missile onto SU-30 MKI fighter aircrafts which are produced via ToT by HAL with Russia – when Russia was asked to enable such integration it offered its willingness to do so **at a cost of INR 1300 cr.** which was too large amount vis-a-vis the benefits that will accrue from such integration. On the other hand, **HAL did this succesfully at a cost of just INR 80 cr.**. Ofcourse, no profit was earned by HAL on this project but key notable here is a country needs to have a robust and capable domestic supplier and partner for its defence forces to protect its sovereignty.

What can actually happen is a **significant compeition can emerge in terms of ToT manufacturing** with many new players like Reliance Defense (ADAG), Adani as well as other corporate houses with experience like Mahindra, Tata, etc., having established JVs with global companies for pitching for around INR 1 Lakh cr. order that is going to come from IAF for supply of fighter jets to arrest its dwindling fleet strength. If current government opens up significantly and gives such huge contract by not letting HAL benefit in anyway out of that and let Indian private sector take the lead, it could kill the cash cow of HAL – the fighter aircraft manufacturing via ToT. However, possibility of this happening after the huge hue and cry experienced in political system with Rafale deal (where HAL was bypassed and relatively new player Reliance Defense was preferred) seems unlikely. Also, there are two problems on taking such ToT route in isolation --- first, its relatively expensive as its not only fighter aircraft which comes in the deal but the deal is packaged in such a way that you need to purchase warheads alongwith that – and second --- unless the local partner achieves the competency on end-to-end manufacturing as well as future servicing/upgrades of the aircraft, a country remains dependent on foreign partner and foreign partner reserves the right to deny any upgrade/integration citing its home country regulations/dictat. Here, foreign partner never transfers critical technology know-how to local partner and ensures that local partner remains dependent on foreign partner for entire lifecycle.

Hence, ToT could be a short term solution to arrest the fall in IAF strength but what is rational is **to have a mix of fighter aircrafts in portfolio wherein pure local projects are preferred and are more in numbers and ToT projects in collaboration with foreign partners are enacted to give IAF an edge as well as let local companies gain know-how in the process.** To ditch promising local project like 'Tejas' (and that too when indiginisation upto the level of **<u>60 % by value and 76 % by quantity</u>** is already achieved) and prefer ToT route for long term fulfilment of needs of armed forces could be a disaster and thankfully, leave corruption and other issues aside, no political party of India seems risking national security interests.

Thus, what could eventually happen is by keeping HAL at centre, entire aerospace industry ecosystem could develop.

Heavy Concentration on one Customer – Defence Forces :

In normal circumstances, when we evaluate a company, when 90 % + of its revenues are coming from a single customer, it could be a major risk. In case of HAL too this oculd be a major risk as average 92-94 % revenues of HAL are coming from defence forces only --- but, **its an interdependent relationship wherein HAL can't survive without support of defence forces and defence forces also can't afford to let HAL weaken as HAL's existence is crucial for defence forces.** Its like good natured truly loving and completely dependent (on each other) husband-wife relationship wherein they can quarrel with each other, scold each other but will never divorce with each other. Also, **HAL is enjoying monopoly** as far as manufacture and supply of flying platforms and their major components/structures/accessories as well as servicing, upgrade overhaul of flying platforms is concerned and flying platforms are extremely critical tools for defence forces to gain strength and survive. In addition, no private sector player could service defence forces as effectively as HAL does and just for an ex., evenif any private sector player with ToT from foreign partner initiates process for manufacture of fighter aircraft in India today, it will take atleast 6-8 years for first aircraft to fly forget here the stringent tests it will have to go through before induction into defence forces.

Possibility of Failure of R&D Projects :

As is the case of all R&D projects, failure chances are equally high here as these projects involve breaking through source codes of critical technologies required for flying platforms. However, **these R&D projects are important strategically to a country like India and therefore government is compelled to extend its full support to such projects**. One will ask why a project like 'Tejas' which has still not gone into full production even after 34 long years and still IOC (initial operational clearance) standard aircraft are manufactured with FOC still a year away – why this project is still lively and active – it is because experience that is gained in the process could eventually give rise to design and manufacture from scratch a fighter aircraft that could be extremely efficient and more importantly, your enemies will not have complete knowledge of its strength and weakness in hostile situations. Hence, although failures might be encountered, and in such failures government support will be assured but when successes happen it will catapult company as well as country into next orbit.

Su-30MKI production coming to an end -- ~35-40 % revenue contribution coming from this product :

Su-30MKI contributes ~35-40 % to company's revenues atpresent and its committed deliveries will end by FY21 post which there will be no production of this product. If this product is not compensated by a similar long-tenure large order then it could affect company's financials adversely. However, logically speaking, this might not happen as order for 83 LCA Tejas MK1A worth INR 33,000 cr. is almost finalised and once Tejas MK2 is ready there is a willingness to procure 201 aircraft worth INR 80,000 + cr.. Also, if government decides to go ahead with Boeing's F/A-18 Super Hornet in recently floated around INR ~1 lakh cr. contract then HAL is likely to be a partner who will manufacture the said aircrafts here via ToT. All these are still assumptions and unless some contract(s) are finalised the overhang of a large product going off-production will remain with HAL.

<u>Conclusion :</u>

Interestingly, in the case of HAL, conclusion of this discussion is in the form of certain critical questions :

-- With India being the **fifth largest defense spender of the world**, for how long can it afford to keep CAPEX at such a low level vis-a-vis overall defense spend ?? With our defence forces already using age-old weaponary and equipments which are well past their cerified date of retirement and our neighbours equipping themselves of more cutting-edge weaponary, for how long can we ignore requirement of our defense forces in national interest ??

-- With India being the **largest importer of defence products in the world** (13 % of the world defense products meant for exports are imported by India) and one of our neighbour achieving self-reliance in many strategically important areas of defense manufacture, for how long can India ignore the dire need for indiginisation and large scale local production of defense products ?? For how long can India remain extremely dependent on foreign countries to satisfy its national security needs ??

-- With a stated vision in recently released Draft DproP-2018 of **making India among the Top 5 countries in the world in Aerospace & Defense industries**, is this vision realisable by ignoring HAL and BEL – **the only two companies of India currently finding place in Top 50 and Top 100 (respectively) world ranking of Aerospace & Defence companies** ?? Wouldn't these two companies play a major role in any strategy of the government towards realisation of its stated vision ??

-- Can the projected statistics of almost **3x increase in defense manufacturing and almost 10x increase in defense exports by 2025** be achieved wthout significant growth in HAL and BEL production and exports ??

-- Can HAL, which has served Indian defense forces since last seven decades and currently enjoys the largest defense PSU status, falter at this crucial stage of next level scale-up ??

-- Can **HAL's spend on CAPEX & R&D worth INR 19,138 cr.** (cumulative) over past 13 years go in vain and can't give it an edge to scale-up effectively to next stage vis-a-vis private sector competition ??

-- Will HAL pay price for supporting local project 'Tejas' in its crucial development and build stage by not finding support from defense forces in future lucrative contract awards ??

-- Will all lucrative high margin fighter aircraft ToT projects move on to private sector and HAL will not be made beneficiary of any them in future ?? Can Indian defense forces heavily rely on only private sector where in **majority cases, still even infrastructure for manufacture is not built and JVs are on paper ??**

-- **How many players can co-exist profitably in capital intensive long gestation/maturity Indian Defense & Aerospace industry** on a long-term basis if we talk strictly of HAL's area of offerings – end-to-end manufacture and servicing of flying platforms ??

-- Is there any new development (which has not existed over last 3 decades) that makes us to believe that HAL will deviate from its medium-to-long-term steady-state Profitability margins that it has maintained over last 3 decades ??

-- Wouldn't competition in terms of if recent INR 1 Lakh cr. IAF contract being awarded to private sector JV, increase efficiency of HAL and make it even more responsible to serve defense forces relatively more accurately ??

-- Is government foolish enough to let robust cash generation at HAL stop in favour of private sector and thereby plugging one of its effective revenue streams in terms of generous dividends and buybacks every year ??

-- Is HAL's PSU status such an overhang for its commanded valuations that even with relatively more efficient financial and operational matrix vis-a-vis peers, it deserves to trade at relatively inferior valuations ??

Note :

This is part of a general discussion on Indian Aerospace & Defense industry in broad sense and key domestic companies operating in the industry specifically. This is not a Buy/Sell/Hold recommendation or any sort of recommendation on any company whether listed or unlisted. Here, statistics are mentioned and statistical presentations are made based on the publicly available information. This is part of a broad discussion and should not be construed in any way as any sort of advice or recommendation.