Openbare versie

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Aerospace Industry Profitability

In relation to the Dutch JSF business case

Commissioned by NIFARP
Final Summary Data Set

Content of report

- A&D (aerospace & defense) industry structure, dynamic, trends relevant to Dutch players and JSF
- Benchmarks to characterize the competitive field and profitability of Dutch A&D industry
- Financial characteristics of healthy A&D players and implications
- Baseline of Dutch participation to JSF program, risks and royalty impact
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Note: This report is an excerpt / executive summary of the detailed results and background material reviewed earlier

Key characteristics and trends of the A&D sector

1. Historical stable markets with increasing uncertainty
   - Typically large backlog…
   - … however subject to cyclical demand patterns now likely entering a new downturn (particularly on the civil side) due to the impact of the global economic crisis
2. The typical business model is characterized by high upfront investment required and a long payback period with programmatic risks:
   - Advanced technology required to play in the game - with associated technical risks
   - Inherent schedule, costs, and supply chain challenges
3. In order to counterbalance markets cyclicality most companies have balanced their portfolio between military and civil
4. Relatively few large programs means that participation is required for ongoing business success and competition is intense
5. Typically significant government support for both military and commercial programs enables:
   - Spill over effect (industry competitiveness, technology leadership, security & defense, skilled employment)…
   - …and public benefits thanks to technology transfer from military to commercial products
6. The Aerospace and Defense industry is USD based

Since 1997 the Dutch Aerospace industry has moved from a prime to a Tier 2 role, with new challenges as a supplier

Aerostructures Supply Chain Trends

	Tier 2	Tier 1	OEM
Description	▪ Either specialist for complex components or low cost player ▪ Refines details of OEM design. Produces and assembles subsystems to customer specs	▪ Assumes responsibility for design, planning, assembly, and delivery of major aerostructures systems	▪ Takes responsibility for the specification, planning, execution and performance of the entire aircraft. Assumes and manages risks for finished assembly
Engineering Capability	▪ Specialist for complex components ▪ Limited for build to print ▪ High/ focused for design to build in particular manufacturing/processes	▪ Significant ▪ A core competency	▪ Very significant in multiple disciplines
Capital Investment Requirements	▪ Tooling and plant ▪ May partly be financed by OEM	▪ Commercial programs required significant risk sharing investments	▪ Significant internal ▪ Government launch assistance provided
Market Size	▪ ~$6B	▪ $13B	▪ ~$16B
Profitability (EBIT Margins)	▪ ~5%	▪ ~9%	▪ ~9%
Representative Companies	▪ Ducommon ▪ Triumph ▪ Magellan	▪ Spirit Aerosystems ▪ Vought ▪ GKN	▪ Boeing ▪ EADS ▪ Lockheed Martin

Today ← **Dutch Aerospace Industry Evolution** → **1997**

Global Trends and Implications

- Risk Sharing relationships are now required to gain positions on programs – also for tier 2s
- Super Tier 1 suppliers are responsible for design and supply of major subsystems
- Primes spun off their aerostructure production increasing competition in the supply chain
- Tier 2 players need to establish relationships with super tier 1s and maintain relationships with OEMs
- Increasing global competition from low cost countries in all segments of the value chain puts pressure in particular on Tier 2s
- In a USD-based industry, EUR-based companies are exposed to exchange rate erosion

Source: Counterpoint, Booz & Company analysis

In recent years several macro trends have changed the competitive landscape –with implications for the Dutch industry

	Description	Implication for Dutch Industry
Risk Sharing	▪ Risk sharing now required for tier 2 as well as tier 1 suppliers ▪ Tier 2 suppliers make investment in plant, tooling, and design without guaranteed volume	▪ Increased capital requirements ▪ Results likely to be more volatile as industry is captive to sales volumes
Super Tier 1s	▪ Primes look to Super Tier 1s to take responsibility for major subsystems ▪ Tier 1s responsible for design, supply chain, and coordination	▪ Dutch industry needs to establish relationships with super tier 1s and maintain relationships with OEMs ▪ Sales process is more complex
Spin-offs from Primes	▪ Boeing and Airbus have spun-off aerostructures plants formerly managed in-house ▪ New companies compete for both primes	▪ New companies represent both a threat and opportunity for Dutch industry ▪ Increased competition but potential customer for technology specialists as well
Globalization	▪ Emerging markets (e.g. China, India) are continuing building aerospace capabilities at competitive cost ▪ All tiers of the value chain are increasingly global driven by multiple factors: cost pressures, offsets, and government support	▪ Price competition with lower cost countries ▪ Need to optimize supply chain with new suppliers in new locations ▪ Potential new customers (MRJ, Chinese reg. jet)
Fewer, Larger, More Competitive Programs	▪ Cost of development is significant and military customers and commercial primes have rationalized R&D spending to develop fewer programs ▪ Military programs becoming best value, not offset, driven	▪ Every new program is a must win ▪ Companies not on board on a program may not get another chance for years ▪ Cost competitiveness a must on all programs
Composites	▪ Shift of aerostructures from primarily metal to primarily composites and other light weight materials ▪ Change in composite manufacturing from manual to automated	▪ New technology options – compete on performance or on price with old technology ▪ Price is not an option for the Dutch – industry must invest in automated composite capability
Weakness of USD	▪ All international aerospace contracts are in USD ▪ Since 2002 there has been a general weakening of the dollar	▪ All Euro based suppliers have a competitive disadvantage due to the currency development ▪ Dutch industry needs to cut cost or develop more dollar based supply chain and offshore production

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Benchmarks: As reported by KPMG, the recent years have shown mixed results for the Dutch Aerospace industry

Financials History and Forecast of Dutch Companies Participating in the JSF Program*

(€m)

Financieel overzicht 2004-2013 gecombineerd

in €m	2004 Werkelijk	2005 Werkelijk	2006 Werkelijk	2007 Werkelijk	2008 Werkelijk
Omzet	317,3	440,8	438,9	427,4	471,9
EBITDA	32,0	39,6	14,2	(2,7)	48,1
EBIT	18,7	24,0	(11,7)	(36,4)	21,9
EBT	10,9	17,1	(21,8)	(48,9)	8,9
EAT [a]	7,8	12,6	(22,9)	(49,9)	6,7
Als % van omzet	2,5%	2,9%	(5,2)%	(11,7)%	1,4%
Investeringen	17,4	19,6	31,6	39,4	53,0
Operational Cash Flow	(68,8)	2,9	1,4	4,6	(28,2)
Capital Employed [b]	172,9	243,9	230,5	189,6	234,2
ROCE = EBIT/ Cap Employed	10,8%	9,8%	(5,1)%	(18,7)%	9,4%

EBIT Margin =4.6%

Noot: a) Stork heeft over de periode 2004-2009 geen EAT gerapporteerd. De berekening van EAT 2004-2030 is vervolgens dat de belastingdruk 25% bedraagt van een positieve EBT en 0% van een negatieve EBT
b) In capital employed 2004 ontbreekt Stork

Bron: KPMG analyse, Financiële overzichten 2004-2013

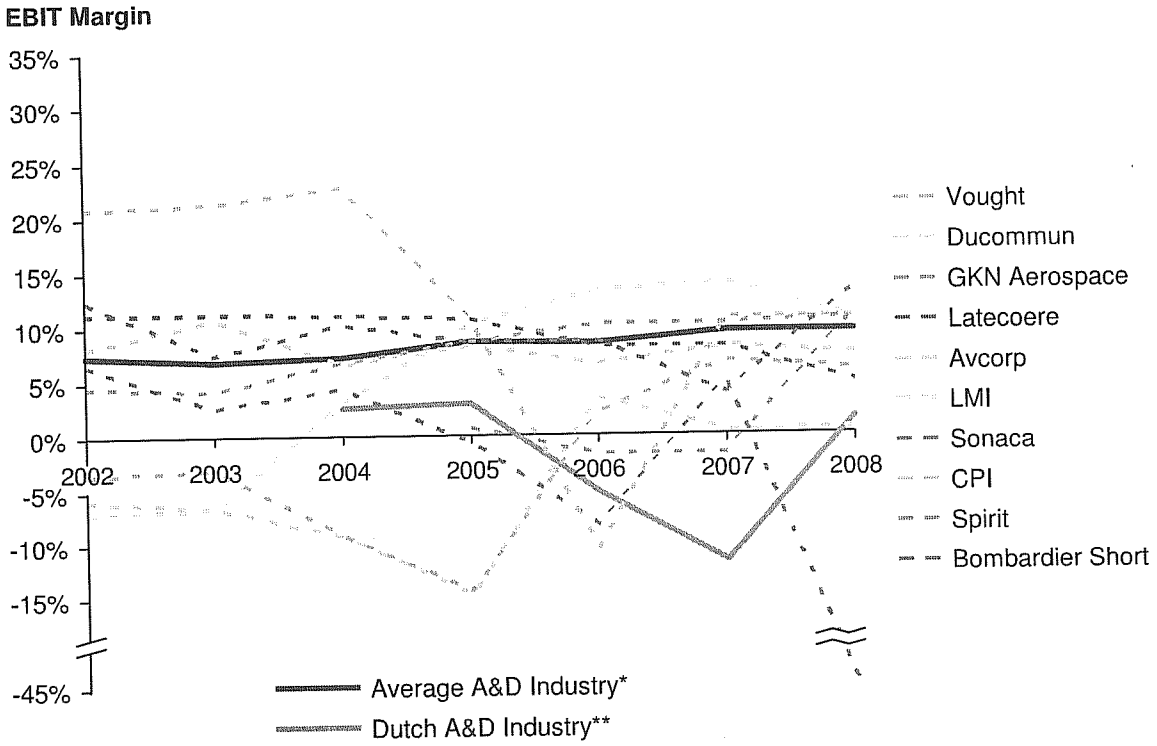
* Including data from about 95% of the JSF participating companies

Source: KPMG Data Reference Date: August 31, 2009

Due to different reasons, aerospace companies profitability is highly volatile, but 2008 is a representative year

EBIT Margins A&D Industry and Dutch A&D Industry

(EBIT % of Sales)

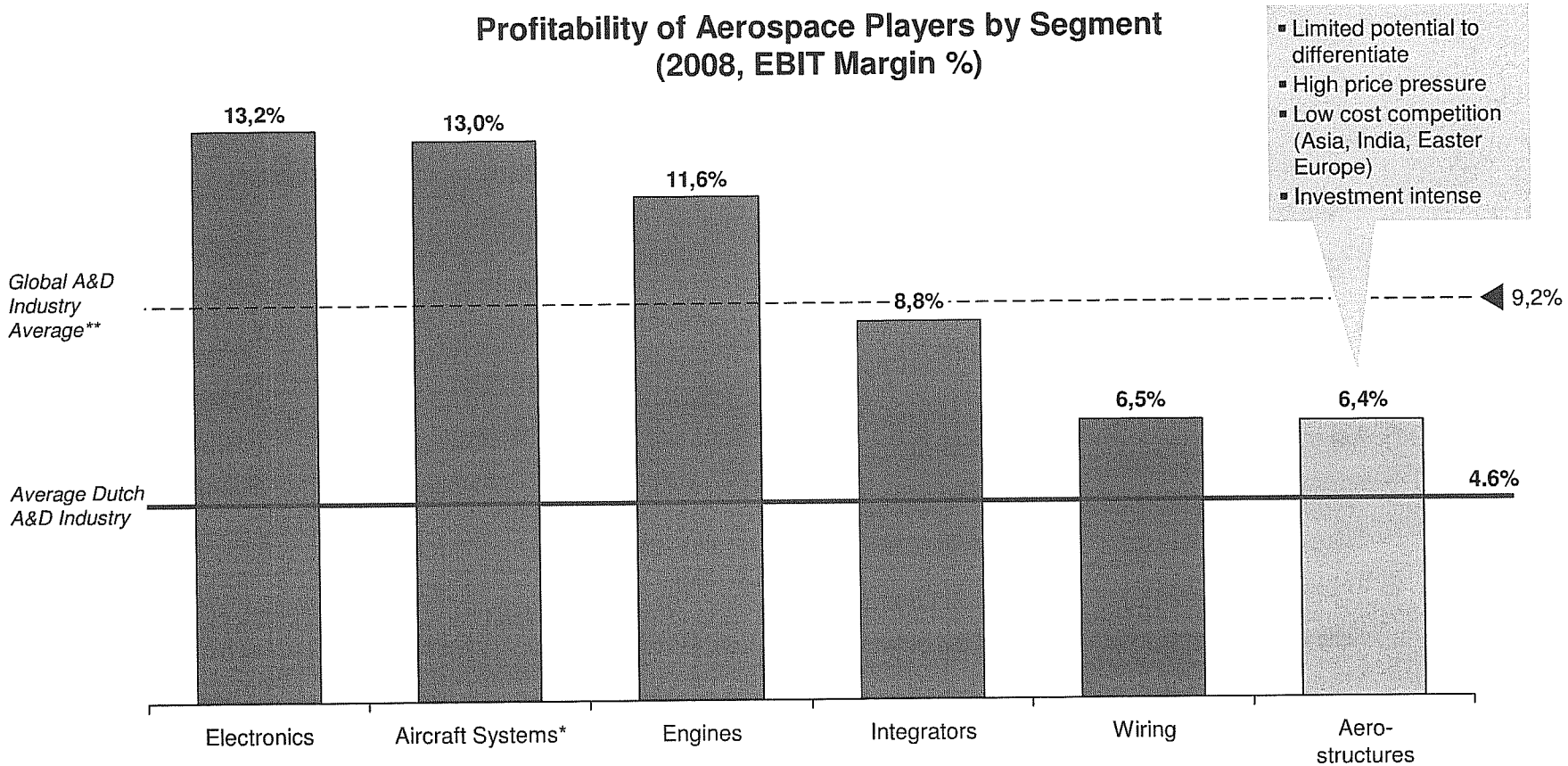


Comments

- While industry average EBIT is consistent, company returns are highly fluctuating
- Different factors drive the industry profitability like:
  - OEM production levels
  - Currency exchange rates variability
  - Ramp up or ramp down of different programs
  - Program cost overrun
  - Program portfolio mix
  - Industry consolidation or supply chain de-integration
- 2008 for the global A&D industry is a representative year at higher end of average returns
- 2008 is representative as a good average year for the Dutch A&D industry, given its position and emerging portfolio, resulting in a more actual basis to project the future than the average over the last years

(*): Including average data for all sectors of the A&D industry (e.g. engines, electronic systems, integration, aerostructures & wiring)
(**): KPMG figures Including data from about 95% of the JSF participating companies
Source: Flight international, Annual Reports, KPMG Study of Dutch industry (latest update as of 31.8.09), Booz & Company analysis

Players focusing on the aerostructures segment have a greater profitability challenge than the ones in other sectors

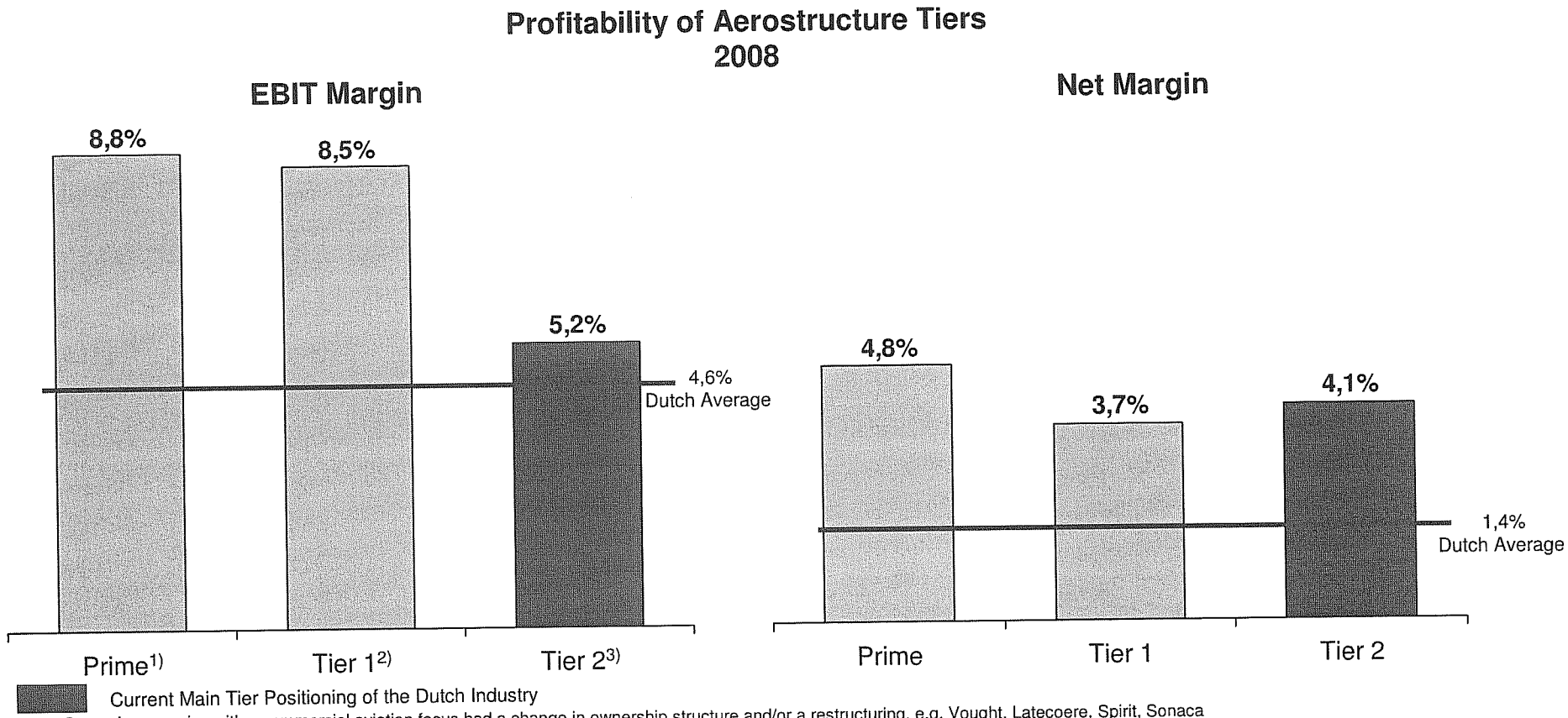


* e.g. Honeywell, Goodrich, Safran Equipment, Triumph, Zodiac

** Weighted average based on the number of companies in each category

Source: Counterpoint, Annual Reports, Bloomberg, Standard & Poor's, RBS, Teal Group, Thompson Reuters, BNP Paribas, Booz & Company analysis

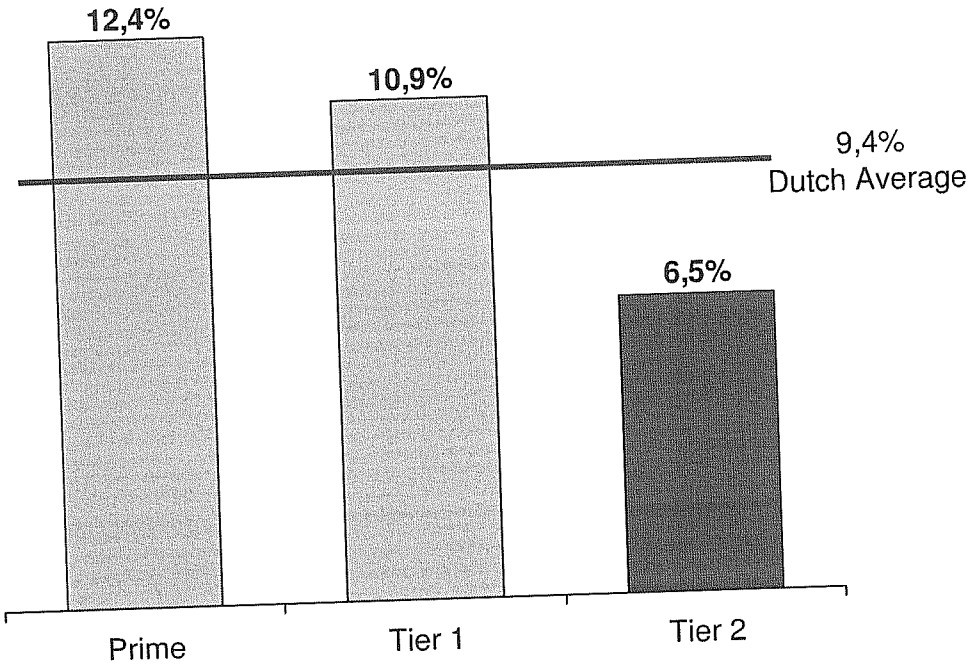
The profitability of the Dutch aerospace industry is below its relevant peer group average - on EBIT but also net margin



Notes: Several companies with a commercial aviation focus had a change in ownership structure and/or a restructuring, e.g. Vought, Latecoere, Spirit, Sonaca
2008 net margin largely impacted by financial crisis and the corresponding write-offs
1) Primes include integrators BAE System, Boeing, Bombardier, EADS, Finmeccanica, General Dynamics, Lockheed Martin, Northrop Grumman
2) Tier 1 include Alenia, Bombardier Shorts, GKN Aerospace, Latecoere, Spirit AeroSystems, Vought, as well as Labinal and Latelec for the sake of inclusion of the relatively small wiring sector
3) Tier 2 include Avcorp, CPI Aero, Ducommon, FACC, Fokker AESP, Hampson, Heroux Devtek, Kaman Aerostructures, LMI, Magellan Aerospace, MT Aerospace, SABCA, SLCA
Source: Counterpoint, Annual Reports, Bloomberg, Standard & Poor's, RBS, Teal Group, Thompson Reuters, BNP Paribas, Booz & Company analysis

On Return on Capital Employed the Dutch industry is below overall aerostructure industry but ahead of Tier 2 segment

Return on Capital Employed of Aerostructure Tiers
2008



Source: Annual Reports, Bloomberg, RBS, BNP Paribas, KPMG Study of Dutch industry (latest update as of 31.8.09), Booz & Company analysis

Conclusions - Benchmarks and Dutch A&D sector in global comparison

- On key financials, the Dutch A&D sector is lagging any of the relevant A&D benchmarks
  - Aggregate global A&D sector, and Dutch A&D sector vs. other countries' A&D sector
  - Global A&D players in aerostructures, both tier 1&2 players
- There are several reasons for the lag
  - Scale, level of direct spend on defense relative to others (US, UK, Italy, ...)
  - Dutch industry's A&D program portfolio is unbalanced across lifecycle (some in mature stage and many in pre-scale up such as JSF)
  - Given the portfolio, the Dutch cluster risks to fall into a spot of low ROCE & EBIT at the bottom-end of the A&D benchmarks
- The current performance level will limit access to competitive financing and inhibit investments in leading technology, and threaten the ability to maintain the advanced skill set required for A&D design and manufacturing
- To address this, the Dutch cluster has to work hard to improve profitability and strategically position in specialist areas - but it is also clear that actions disadvantaging them further financially and tilting the level playing field in favor of global competitors will threaten the health and future success

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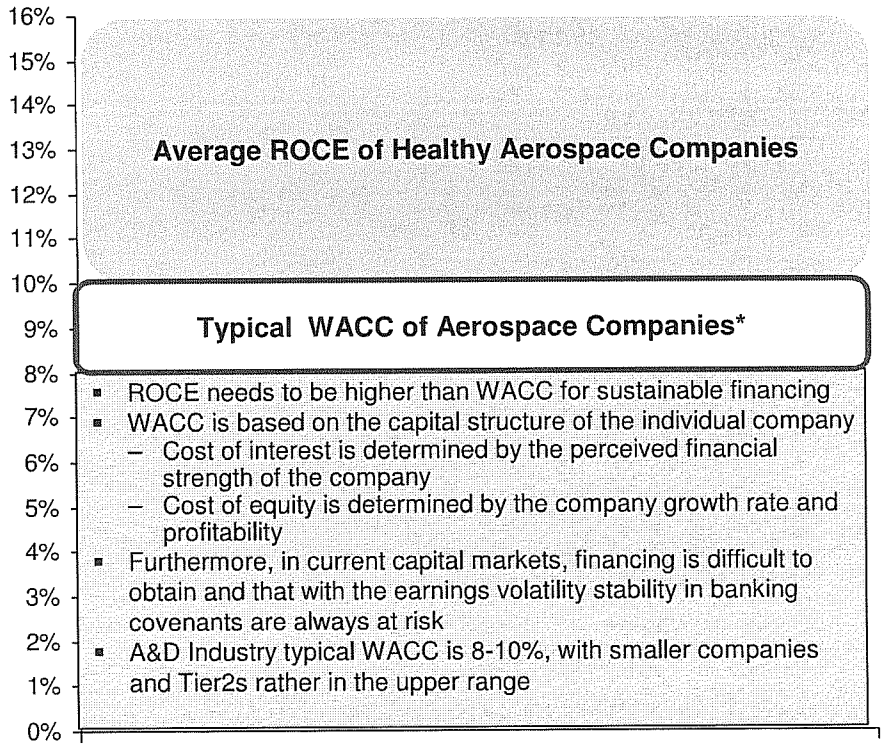
EBIT and ROCE are operating measures –ROCE needs to exceed WACC for sustainable financing

Operating vs. Financial Measurements

Type of Measurement	Operational	Financial
▪ Margin	▪ EBIT Earning before Interest and Taxes	▪ Net Margin
	▪ Allows comparison between companies eliminating difference in financial and tax structure ▪ Allows comparison at divisional level	▪ Includes financial and tax structures ▪ Increases volatility – particularly in a downturn year with financial write-offs and restructuring costs
▪ Return	▪ ROCE Return on Capital Employed =EBIT/Capital Employed	▪ ROE Return on Equity =Net Margin/Equity
	▪ Measures capital employed regardless of financial strategy	▪ Shows differences in financial structure between companies – Highly leveraged companies can show better results

Relationship of ROCE and WACC

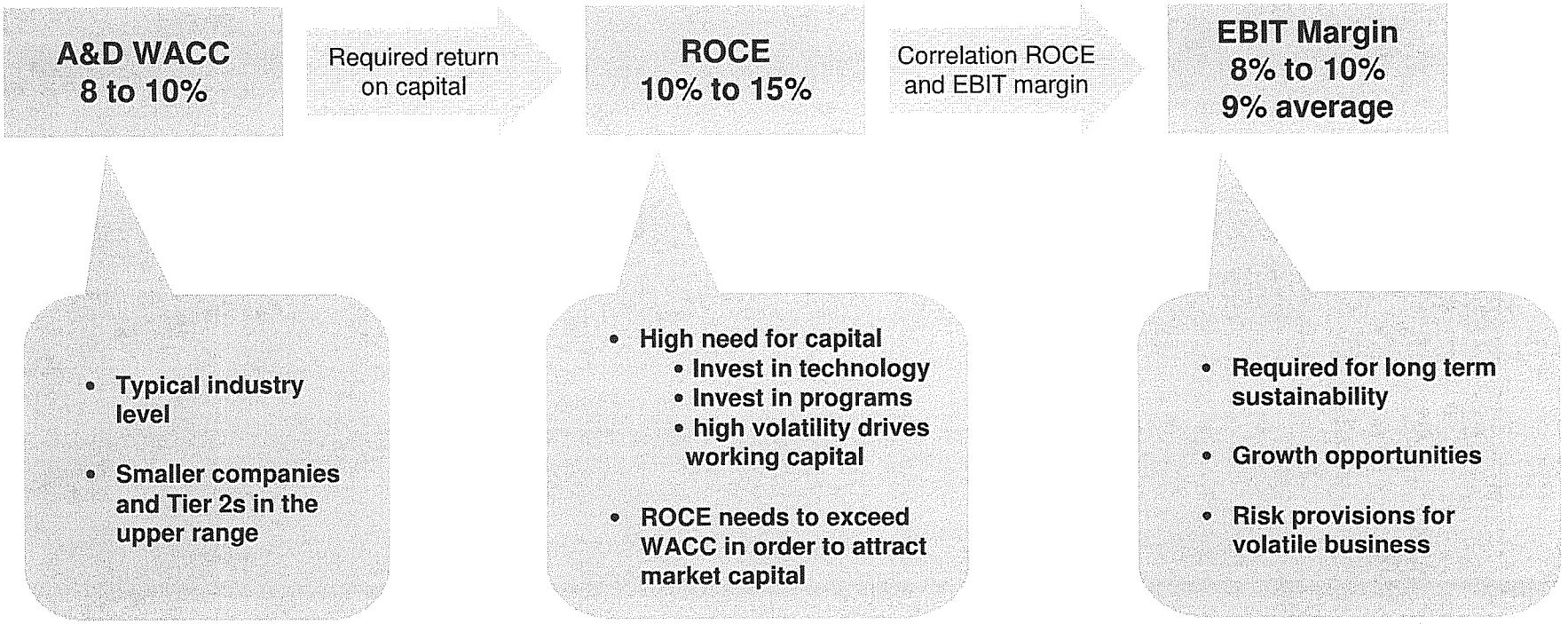


WACC: Weighted Average Cost of Capital

* Financial analyses 2007 and 2008 for BAE Systems 8.2%, Rolls-Royce 8%, Finmeccanica 8.4%, EADS 7.9%, Dassault Aviation 9.8%, Safran 9.3%, Thales 8.4%

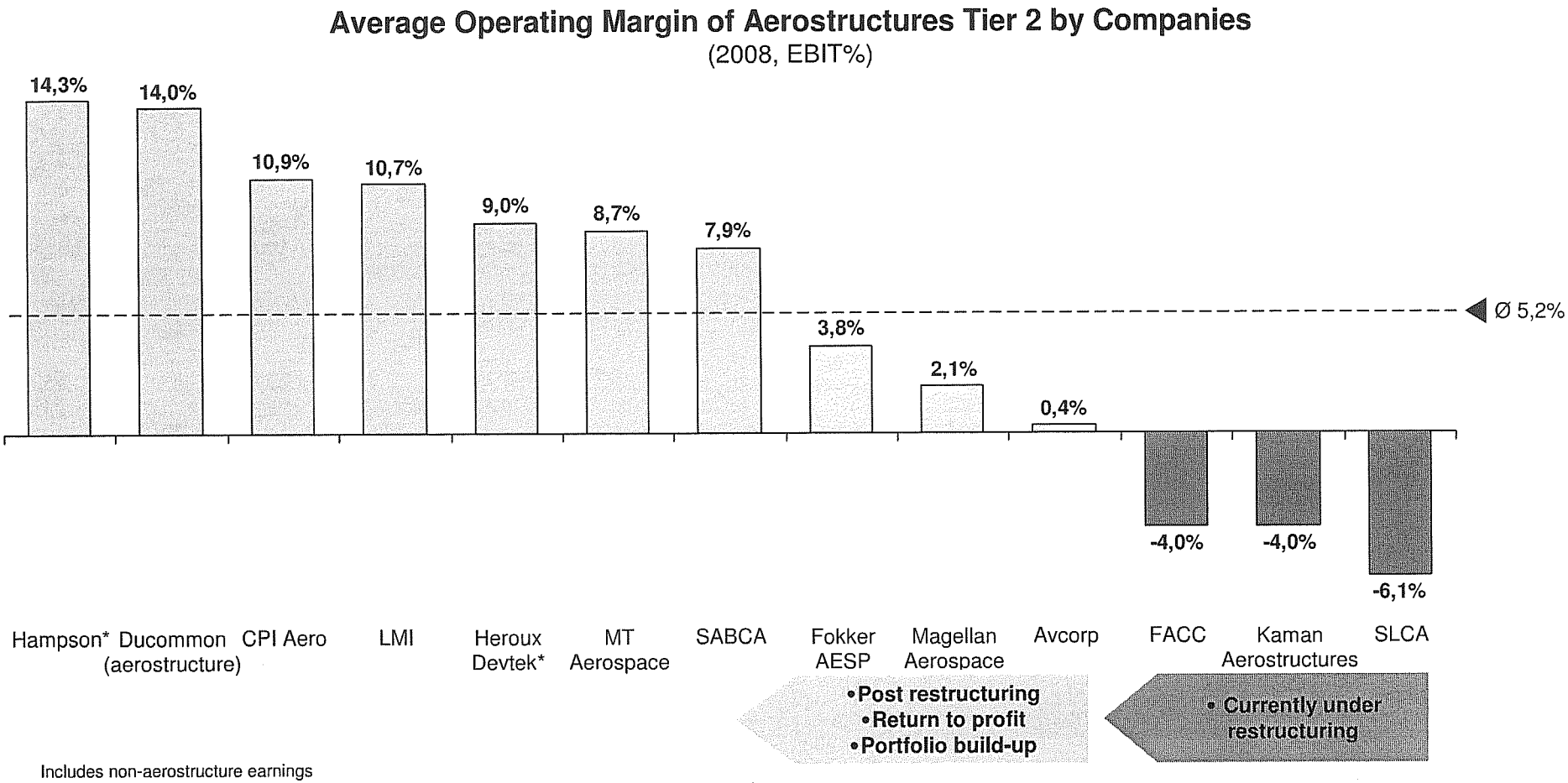
Source: BNP Paribas, Crédit Mutuel-CIC, Booz & Company analysis

Given the high capital intensity of the industry, A&D players need to outperform a WACC of 8-10% targeting 8-10% EBIT



Note: ROCE to EBIT ratio resulting from analysis of real correlation in industry (available)

Aerostructure Tier 2s can make healthy returns; average performance is dragged down by several companies under restructuring



* Includes non-aerostructure earnings

Source: Annual Reports, Thompson Reuters, Bloomberg, RBS, BNP Paribas, Booz & Company analysis

A&D players need "healthy" results to get competitive financing, sustain cash flows to re-invest in technology & maintain skills

Healthy Results Necessary for Operations

- Ensure operations produce consistent quality during scale-up
- Absorb inherent volatility of results / multiple risks to programs
- Manage characteristic negative cash flow profile until far into the full rate production
- Access to competitive financing to continue winning business
- Maintain technology at industry standards
- Maintain core skills over program lifecycles

+

Investment For Sustained Success

- Invest in differentiating technology capabilities (e.g. new materials, new process capabilities) …
- … and ensure ability to train or attract corresponding differentiating skill sets
- Evolve product portfolio to mitigate technology and market risks (e.g. civil vs. military, geography, lifecycle phase, etc.)
- Continue to improve cost model i.e. footprint enables competitive pricing

Conclusions - results of healthy A&D financials & implications

- Healthy A&D financials can be considered at the higher end of benchmarks: EBIT 8-10%, ROCE 10-15%
- Although the most relevant industry segment - aerostructures tier 2s - is challenged and not reaching healthy performance on average, several companies do reach the desired performance envelope
- Those who are below the healthy performance levels are in / need to be in restructuring to raise their performance
- Implications of not reaching "healthy results" for A&D companies include:
  - Lose competitiveness due to disadvantaged cost of financing
  - Do not compete for / take on projects that do not deliver the required WACC
  - Seek higher share of cost advantaged, USD denominated supply base
  - "Milk" existing programs, reduce re-investment levels and do not sustain skills over lifecycles
  - Seek positioning in profitable niches over longer period of time, or sell-out
- The above has serious impacts on the level/ scope of the participation to the JSF program, work share executed in The Netherlands, health and sustainability of Dutch A&D sector

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The JSF program provides a significant opportunity for the Dutch industry – but is not without risks and issues

1. The JSF program is strategically very important to the Dutch aerospace industry
   - Leading international manned fighter program – only 5th generation program
   - An international cooperation enhancing the technical, system and strategic knowledge of participating companies
   - Largest new international aircraft program until the development of the new single-aisle jets (likely up to 10 years away)
2. The Netherlands, along with 7 other nations, is contributing to the system design and development phase
3. Netherlands has introduced a unique financing model, where its contribution to the program is repaid by the industry in the form of a share of the resulting revenues (royalty payment)
4. JSF gives the Dutch aerospace industry a profitability with long-term predictability and experience with a high volume program
5. Although JSF margins (without risk absorption) are forecasted to be healthy and above current Dutch industry average, there is very limited room for risk absorption (e.g. USD devaluation effect)

The business case of the JSF - pre-risk - can lift the Dutch performance, but already shows long term pay-back

JSF Case Example - Pre-Risk Baseline

PROFIT AND LOSS ACCOUNT	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Net revenue (orders booked off)										
Cost of sales										
Gross Margin										
Gross Margin										
-4.0% Variations										
Gross Profit										
Gross Profit										
0.0% USD rate impact on affordabillity										
0.0% MFO Payment JSF										
Gross Profit after impact USD & MFO										
Gross Profit after impact USD & MFO										
Distribution Cost + R&D										
EBIT										
-6.0% Interest Paid										
Earnings Before Tax (EBT)										
-25.0% Taxes (normalized at 25%)										
Net earnings										
ROS *										
Operational Cash Flow										
Operational Cash Flow (cumulatief)										

A real JSF case example, representative for the Netherlands Industry, was used to illustrate the effects of MFO payments on profitability. In addition to that, the sensitivity to USD exchange rates to show the further effect ofUSD fluctuations.

The figures have been blanked because of commercial reasons.

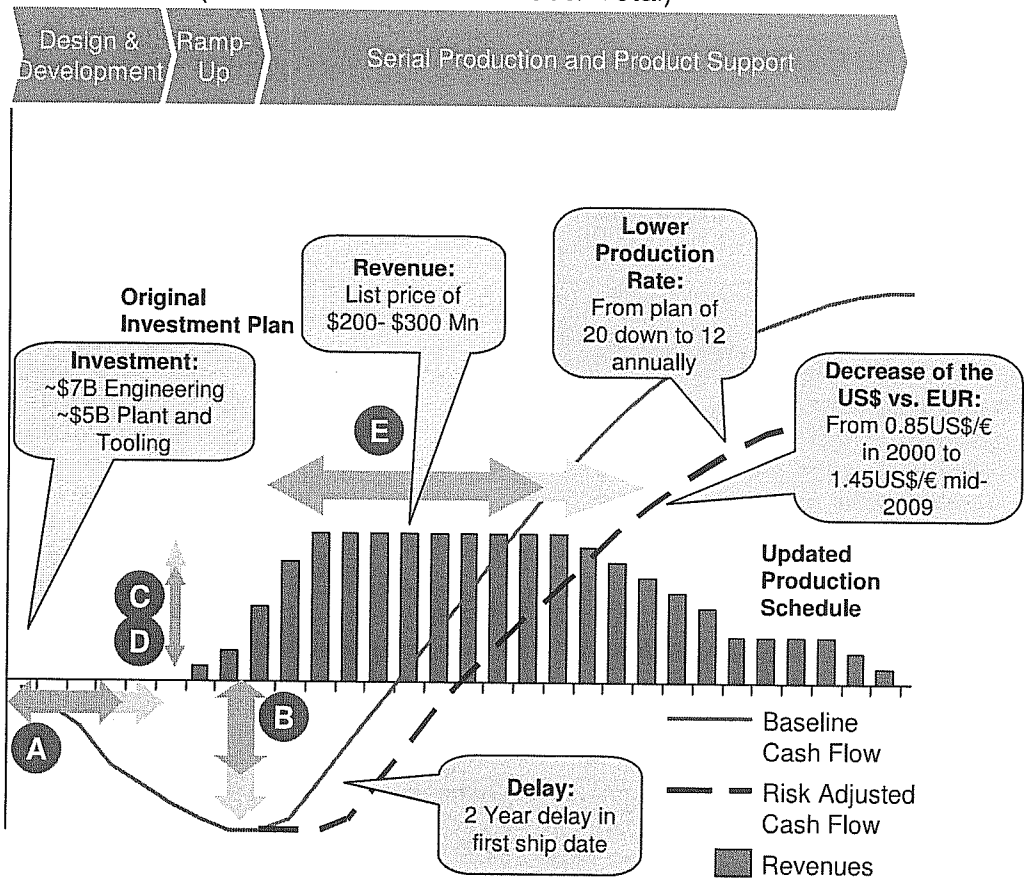
Comments

- This baseline is not including any royalty payment or risk provisions
- Example related to Stork Fokker AESP - representing about 65% of total Dutch JSF participation
- External typical A&D risks (USD, delays, volume changes, etc. - see next page) will likely impact the current JSF business plan
- In the following pages a sensitivity analysis to USD exchange risks as well as to royalty payments impact is presented

* ROS is equivalent to net margin
Note: investment concerns only those investments for JSF after deduction of local government subsidies
Source: Stork analysis

However, as all A&D programs the pre-risk JSF business case has to cover inherent program risks

Typical A&D Program Cash Flow
(Numbers Indicative of A380/ Total)



Payback Risk Factors

- **A** D&D Phase Duration
  - Launch date of the product will delay the revenues influx
- **B** Total Investment Cost
  - High non recurring costs for developing new technologies/ new facilities and tools
  - Drifting D&D and production investment costs reduce the total program margin and delay the payback period
  - High lock-up working capital due to long lead times
- **C** Production Margin
  - Lower revenue levels due to price pressure or to lower production numbers reduce the revenue influx
- **D** US$ Exchange rate
  - In a US$-based industry, decreasing US$ exchange rate reduces revenues and affects competitiveness
- **E** Production Plateau Duration
  - A reduced production duration reduces the total revenue influx

Royalties on the JSF in addition to inherent program risks affect the level playing field and the ability to invest in future growth

Sensitivity of Net Margin to Royalty Payments and USD/EUR Variation

Impact on JSF Case Net Margins

NET Royalty Payment	@0%	@ 1.0%	@3.3%
JSF Case: Representative Net Margins			
▪ @0% USD/EUR	6%*	5%	2.7%
▪ @-5% USD/EUR	3%	2%	-0.3%
Considerations by scenario	▪ Keeps the JSF program itself still profitable ▪ Lifts up the Dutch industry margin by between 0.6% and 1.6% and leaves room for future investments	▪ JSF program still more profitable than Dutch industry average, with limited room to react to future risks provisions… ▪ … and no impact on increasing overall industry profitability with margin impact of between 0.2% and 1.3%	▪ Impairs and puts at high risk even the JSF business case ▪ Potentially penalizes the Dutch industry with a margin impact between -0.6% and 0.5%
In general: Any further decrease of the US$/€ exchange rate can jeopardize JFS business case and impact the competitiveness of the Dutch participation severely while potential strengthening of the USD will be mainly absorbed by customer			

* JSF Net Margin: 6% used as it represents the planned profitability until 2014 - higher number for outer years discounted for risk mitigation

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Conclusions - overall

- The global A&D benchmark shows, that the Dutch A&D sector lags behind average financial returns against any group in the sample - given the actual balance of the Dutch industry's programs portfolio across the lifecycle (maturing portfolio with few high volume programs)
- The Dutch A&D sector is further lagging comparable A&D healthy returns, which allow to re-invest in new technologies and growth and competitive access to capital
- Although A&D is a sector with interesting long term potential and financial results, volatility, unforeseeable risks, and a capital intensity over very long program lifecycles mean healthy financial returns and cheap access to capital are a competitive advantage in and by themselves
- The JSF program is a unique opportunity and has the inherent financial parameters to bring the industry much closer to healthy levels and ensure a long term success
- Without setting any "right level" for a potential royalty payment on the JSF revenue from the Dutch A&D sector, its impact can be characterized
  - Any royalty payment: Tips the level playing field vs. competitors from other participating countries and competitors from future JSF purchasers looking for off-set in their local industry
  - A level deemed "affordable" on the JSF program, e.g. 1%: As above, plus limits ability to re-invest in growth, limits competitiveness on work share that does not meet WACC, disables companies to weather larger risks inherent to the A&D sector (currency, delays, volume change)
  - A level of 4.4% gross/ ~3.3% net: As above, plus exposes Dutch companies to normal risks on a program (operational, demand smoothness, cheap access to capital, USD competition and supply base), introduces very serious competitive disadvantage to fund work share and keep manufacturing base

Backup

WACC and ROCE are key indicators for investors

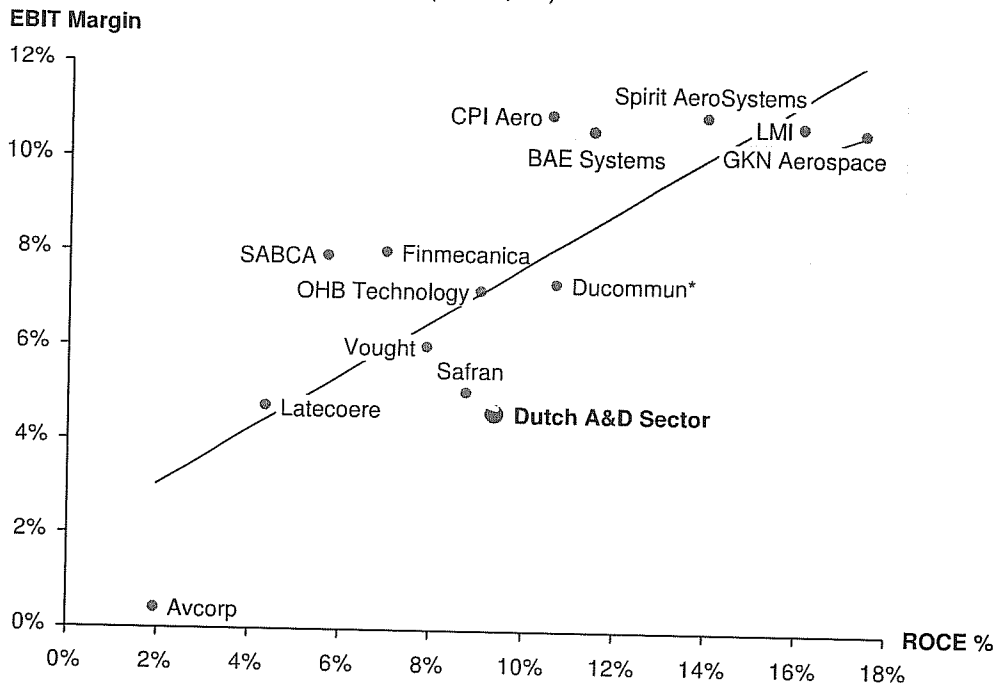
Definition of WACC and ROCE

	Full Name	Formula	Description	Usage
WACC	Weighted Average Cost of Capital	WACC = $w_d(1 - T)r_d + w_e r_e$	▪ The WACC is based on the capital structure of the company, w_d being the debt and w_e the equity portions ▪ Cost of debt r_d is determined by the perceived financial strength of the company ▪ Cost of equity r_e is determined by the company potential growth and profitability, and the risk premium associated ▪ Taxes T are taken into account since interest payments on debt are tax deductible	▪ WACC is the minimum return that a company must earn on existing asset base to satisfy its creditors, owners, and other providers of capital, or they will invest elsewhere ▪ WACC is used to discount future cash flows taking into account cost of capital, expected returns and risks
ROCE	Return on Capital Employed	ROCE = EBIT / Capital Employed	▪ EBIT (Earnings Before Interest and Taxes), measures the profit of the company from its on-going operations ▪ Capital Employed is usually calculated as total assets minus current liabilities or fixed assets plus working capital- It represents the capital investment necessary for a business to function	▪ ROCE is commonly used for assessing whether a business generates enough returns to pay for its cost of capital ▪ It basically shows how much a business is gaining for its assets ▪ If ROCE>WACC investors will deem it being worth financing

Source: Booz & Company analysis

There is a clear correlation between profitability (EBIT) and Return on Capital (ROCE) in the Aerospace industry

EBIT Margin and Return on Capital Employed Of Aerospace Companies
(2008, %)



* Ducommun includes business units other than aerostructure
Source: Annual Reports, Bloomberg, RBS, BNP Paribas, Booz & Company analysis