Rolls Royce (LON:RR): Long Industry: Aerospace & Defense



Investment Thesis

I am recommending a long position in Rolls Royce, with a target price of £10.34, representing a 56.8% total return on investment. Rolls Royce stock is down 47.1% since its 10-year high at the end of 2013, or more than 6x the drop in the broader equity market, as proxied by the FTSE 100, which is down only 7.5% during the same period. The stock has sold off following profit warnings, of which there have been five since the beginning of 2014. Needless to say, the stock has definitely come out of favor. In July 2015, Warren East was appointed CEO. He had a solid and quantifiable track record at ARM Holdings, and his compensation at RR is aligned with shareholders. I believe he has begun and will continue to take the necessary steps to turn this company around. The aircraft engine market is a fundamentally good business, but RR has been mismanaged by the former CEO and management team. While the former CEO divested the lower margin, lower return energy business, he was diversifying away from aerospace over his tenure at the firm, which is where RR has a competitive edge. There may be some difficulty with a turnaround, but the major focus should be on cost cutting, taking market share in the areas where RR has a core competency, and growing local economies of scale. With where the stock is trading today, it's a compelling buy, assuming East can successfully execute on all of these objectives.

Business Description

Rolls Royce is a holding company that provides power for aircraft, ships and land applications. Specifically, it designs, develops, manufactures and services engines for use in the air, on land or at sea. Based in the UK, and with sales of £13.7 billion during fiscal 2015, RR is one of the three largest suppliers of aircraft engines, along with GE Aviation and Pratt & Whitney. RR operations are split between aerospace and land & sea. Aerospace is further segmented between civil and defense, and together these account for roughly 65.3% of the business as a percent of total revenues as of December 2015. Land & sea is comprised of power systems, marine and nuclear, and these three units combined account for the other 34.7% of the business. The biggest markets for RR from a geographic perspective are the US, representing 26.2% of total sales during fiscal 2015, the UK, representing 13% and China, representing 9%. Within the aerospace market, aircraft can be segmented between widebody planes and narrowbody planes, and RR and GE share a duopoly in the widebody market. It is within this niche that RR has a sustainable competitive advantage. This advantage is driven not only by proprietary technology, but also customer captivity. A key contributor to revenues across RR's entire portfolio is in its aftermarket services. Within aerospace, original equipment, or OE, is often sold at a breakeven price or a loss early on, with the goal of entering into long-term agreements with customers to service these parts throughout their useful lives. Aftermarket services provide long-term visibility into the revenue stream, and generate, on average, roughly 4x the amount of revenues as the OE. Needless to say, these long-term contracts are very lucrative. Oil prices, and the need or desire for fuel efficient engines, is a major driver of demand in the broader aerospace market. A continued increase in passenger demand for air travel, particularly in emerging markets, is a key driver as well.

<u>Industry</u>

As previously alluded to, the aerospace engine manufacturing business is a good one. The three big players – RR, GE and Pratt & Whitney – have dominated the market for a number of years, and if you further segment between widebody planes and narrowbody planes, RR is one of two key players, GE Aviation being the other. There are high barriers to entry, as this is a very capital intensive business and requires highly sophisticated technology that is difficult to replicate. Customer relationships play a critical role given the importance of and focus on safety, and there is something to be said about the trust that has been established between the dominant players and their respective customers over time. The big three have pricing power, and there is strong, long-term demand for aircraft. These companies have long-term visibility into the revenue stream, particularly with aftermarket sales and services via long-term contracts. Margins are respectable, and returns on invested capital, or ROIC, after tax, have been attractive over the long-term.

Valuation / Rationale

I conducted an earnings power value analysis to arrive at my target price of £10.34. I used the EPV method for several reasons. First, while there is some cyclicality in the overall aerospace market, aerospace engine manufacturing is a more stable business given the trend towards securing long-term contracts with customers to perform aftermarket services throughout the useful life of the parts provided. Further, as you can see in the supporting analysis section, even though RR has been mismanaged in the past, they've still managed to achieve very attractive and more or less stable after-tax returns on invested capital. Margins have fluctuated within the aerospace segment, but have been more consistent across the business as a whole. Further, aerospace margins for best-in-class competitor GE Aviation have been much more stable over time, and my thesis is based on the argument that RR should be able to not only close the gap in margin differential, but to achieve more stable margins over the long-term.

			Historical						
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenue	\$7,435	\$9 <i>,</i> 082	\$10,414	\$11,085	\$11,124	\$12,161	\$14,642	\$13,736	\$13,725
Operating profit	\$514	\$855	\$1,174	\$1,130	\$1,186	\$1,373	\$1,479	\$1,390	\$1,499
Operating margin	6.9%	9.4%	11.3%	10.2%	10.7%	11.3%	10.1%	10.1%	10.9%
	Normalized	nalized Normalized		NOPAT +	Adi Can Ev	Discount rate	Discount rato EDV	Net Debt	Adj. Net
	margin	EBIT	NOPAT	D&A	Ацј. Сар Ех	Discountrate		Net Debt	Debt
	10.1%	£1,386	£1,040	£1,850	£1,360	7.3%	£18,730	-£293	£19,023
Shares									1,839
Price / share									£10.34
Dividends / share									£0.16
Current price								-	£6.70
Total return									56.8%
Assumpti									
Tax rate	25%								
Cost of debt	3.3%								
Cost of equity	10%								
Weight of debt	£2,883	36.5%							
Weight of equity	£5,016	63.5%							
WACC	7.3%								
Cash	£3,176								
Excess depreciation & cap ex									
PPE / sales avg									
Change in sales (2014 to 2015)	-£11.0								
Growth cap ex	-£2.4								
Total cap ex	£487.0								
Maintenance cap ex	£489.4								
Depreciation	£378.0								
Amortization	£432.0								

I also conducted a multiple-based valuation as a sanity check, and the results were in-line with the results from my EPV analysis. Using a 14.5x forward earnings multiple, applied to 2019 earnings, I arrive at a target price of £10.43. This represents price appreciation of 55.7%, or an IRR of roughly 16% over the next three years. Since there aren't many apples-to-apples comparables for RR, given GE Aviation is part of a larger, diversified GE parent, and RR is involved in several other businesses outside of aerospace, I used its own history to come up with what I believe to be a fair multiple. 14.5x forward earnings is where the stock has traded, on average, over the last 10 years. Not to mention, a normalized broader market multiple is around 15x, and RR should arguably trade higher than the broader market given the more attractive long-term growth opportunities. Therefore, I believe my multiple-based valuation estimate, again, only used as a sanity check, is conservative.

<u>Risks</u>

- 1) The biggest risk to my thesis is that I am over-confident in East's ability to turn this company around. I have thoroughly evaluated his past performance at ARM Holdings, and while he has an excellent track record, the bears would argue that his area of expertise is in semiconductors, and that doesn't necessarily translate to the aerospace engine market. Further, while it appears that East's compensation is well-aligned with shareholders, it would give me a higher degree of confidence if I had more information on the specifics of his compensation package. If East isn't able to effectively cut costs, and ultimately deliver on his promises to clean up the business, the stock could trade down from its current, depressed levels. Key signposts or metrics to monitor are 1) further pressure on or deterioration in margins, 2) continued cuts in government spending for defense, negatively impacting top line, and 3) further cancellations in the order book, also negatively impacting top line. I would also keep an eye on capital allocation decisions as it relates to future acquisitions and / or divestments, share buybacks and dividends.
- 2) Another risk is that oil prices continue to decline, or remain at current levels for an extended period, incentivizing aerospace customers to delay or even cancel orders for more fuel efficient engines. Even if this is the case, the impact would be to the top line, and much of my thesis is based on cost-cutting and margin improvement rather than top line growth. Further, even if this is the case, customers can't delay the replacement of older fleet or ordering new fleet to meet increased market demand for more than a couple of years due to potential maintenance and capacity issues. Therefore, over the long-term, this risk is less of a concern.
- 3) Another risk that was alluded to earlier, but perhaps isn't as concerning as the first risk highlighted, relates to continued declines in government spending on defense. However, impact here would also be to the top line, and my thesis is based more around cost-cutting and margin improvement to better match best-in-class competitor, GE Aviation, rather than top line growth.

Supporting Analysis

Historical company trends





Source: Company filings, S&P Capital IQ

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	Historical								
	2007	2008	2009	2010	2011	2012	2013	2014	2015
Revenue	\$7,435	\$9 <i>,</i> 082	\$10,414	\$11,085	\$11,124	\$12,161	\$14,642	\$13,736	\$13,725
Cost of sales	-\$6,003	-\$7,311	-\$8,303	-\$8,885	-\$8,676	-\$9,416	-\$11,482	-\$10,533	-\$10,459
Gross profit	\$1,432	\$1,771	\$2,111	\$2,200	\$2,448	\$2,745	\$3,160	\$3,203	\$3,266
Gross margin	19.3%	19.5%	20.3%	19.8%	22.0%	22.6%	21.6%	23.3%	23.8%
Other operating income	\$50	\$79	\$89	\$95	\$69	\$33	\$65	\$10	\$10
Commercial & administrative costs	-\$653	-\$666	-\$740	-\$836	-\$984	-\$989	-\$1,237	-\$1,124	-\$1,059
Research & development costs	-\$381	-\$403	-\$379	-\$422	-\$463	-\$589	-\$658	-\$793	-\$818
Share of results of JVs & associates	\$66	\$74	\$93	\$93	\$116	\$173	\$149	\$94	\$100
Operating profit	\$514	\$855	\$1,174	\$1,130	\$1,186	\$1,373	\$1,479	\$1,390	\$1,499
Operating margin	6.9%	9.4%	11.3%	10.2%	10.7%	11.3%	10.1%	10.1%	10.9%
Financing income	\$718	\$432	\$2,276	\$453	\$456	\$1,112	\$327	\$121	\$115
Financing costs	-\$497	-\$3,186	-\$491	-\$885	-\$540	-\$479	-\$441	-\$1,452	-\$1,456
Net financing	\$221	-\$2,754	\$1,785	-\$432	-\$84	\$633	-\$114	-\$1,331	-\$1,341
Profit before taxation	\$733	-\$1,892	\$2,957	\$702	\$1,105	\$2,705	\$1,700	\$67	\$160
Taxation	-\$133	\$547	-\$740	-\$159	-\$257	-\$410	-\$377	-\$151	-\$76
Tax rate	18.1%	28.9%	25.0%	22.6%	23.3%	15.2%	22.2%	225.4%	47.5%
Profit for the year	\$600	-\$1,345	\$2,217	\$543	\$848	\$2,295	\$1,379	\$58	\$84
Attributable to ordinary shareholders	\$606	-\$1,340	\$2,221	\$539	\$850	\$2,281	\$1,367	\$69	\$83
Attributable to non-controlling interests	-\$6	-\$5	-\$4	\$4	-\$2	\$14	\$12	-\$11	\$1
Profit for the year	\$600	-\$1,345	\$2,217	\$543	\$848	\$2,295	\$1,379	\$58	\$84
Basic EPS from continuing operations	\$33.67	-\$73.63	\$120.38	\$29.20	\$45.95	\$123.23	\$70.26	-\$3.90	\$4.51
Diluted EPS from continuing operations	\$32.97	-\$73.63	\$119.09	\$28.82	\$45.33	\$121.59	\$69.48	-\$3.90	\$4.48
Dividend per share			\$15.00	\$16.00	\$17.50	\$19.50	\$22.00	\$23.10	\$16.37
Total dividends	\$237	\$263	\$278	\$299	\$328	\$365	\$414	\$435	\$301
Underlying profit before taxation	\$800	\$880	\$915	\$955	\$1,157	\$1,429	\$1,759	\$1,617	\$1,432

Market share trends

Changes in market share have been relatively stable over the last five years, but there have been apparent fluctuations dating back to 1985. Part of this is driven by the fact that many of these firms have formed alliances and / or partnerships in order to win business. It is also driven by, but to a lesser extent, decisions by key players to enter and / or exit specific niches within the aerospace engine market. For instance, as is the case with RR, the company focuses almost exclusively on widebody planes rather than dabbling in both widebody and narrowbody.



Source: BofA Merrill Lynch Global Research, Airline Monitor

Industry trends & outlook

Regardless of where we are in the aerospace "cycle", demand for new aircraft is in-tact over the long-term, particularly given the continued strong growth in emerging markets. And while there are differences in forecasts between Boeing and Airbus, both of which provide extensive analysis for the industry on a regular basis, the differences are not that significant when you consider long-term impact. In a duopolistic market like widebody airplanes, or even the broader aerospace engine market in general, as long as the key players are not engaging in "bad" behavior – for example, attempting to undercut the others on price – industry trends are very favorable for the companies that dominate the market, including RR.



Competitive dynamics

To reiterate, the aerospace engine manufacturing business is a good one. Returns on invested capital, after tax, have averaged 9.5% for RR over the latest cycle. I would also highlight that returns were slightly higher, not to mention stable, during the years leading up to management's decision to diversify the business away from civil and defense aerospace, and into the marine, nuclear and energy markets. In recent years, RR and peers have placed more of an emphasis on locking in long-term contracts with customers, so that the aftermarket services piece of the business provides greater visibility into the revenue stream. For these manufacturers, it is more important to make the sale of original equipment

at a breakeven price, or sometimes even a loss, in order to secure multi-year contracts to perform services over the useful life of the parts, rather than to make a one-time, potentially nonrecurring profit, on the sale of any given engine.



Source: Company filings with independent adjustments

Source: Company filings

RR has a competitive edge in the aerospace engine manufacturing market. As previously discussed, aerospace engine manufacturing can be further segmented between widebody planes and narrowbody planes, and RR competes almost exclusively in the widebody market. The widebody aircraft engine market operates as a duopoly, where GE Aviation and RR dominate. Within this product niche, RR has local economies of scale. The company has sole source contracts on several of the more popular aircraft types manufactured by Airbus. With a sole source contract, you basically operate as a monopoly. Specifically, RR is the sole engine provider on the Airbus A350 XWB family, where 775 aircraft have been ordered to date. They are well positioned to compete on all Airbus widebody airliner programs, and they compete with GE on the Boeing 787 family.

Prior management team missteps

As shown in the chart below, 10 years ago, aerospace represented 75% of total revenues for RR. However, over time, the company has diversified into other businesses in which they do not seem to have a competitive edge. While they did recently sell out of their energy business, it was a drag on the overall portfolio until the sale was completed. The prior management team was forced to issue four profit warnings within an 18-month window, from February 2014 to July of 2015. Warren East, new CEO as of last summer, has since had to issue a fifth. While there is some cyclicality in the overall aerospace market, RR has suffered from company-specific issues rather than industry-specific, and in my view, it is evident that the company has been mismanaged.





Source: Company filings

Promising new leadership

Under Warren East's leadership, ARM outperformed the broader equity market, as proxied by the FTSE 100, by a wide margin. He was an effective capital allocator at ARM – he initiated a dividend in 2003 and repurchased shares over a three-year period when the stock seemed to be trading at a significant discount to intrinsic value.



Over the entire 10-year period that East led the company, he raised ARM's dividend each year, achieving an impressive 25% compound annual growth rate in the return of capital to shareholders. Over his last five years before leaving the firm, he managed to grow earnings by almost 10% a year.



Margin improvement opportunity

RR does compete in industries outside of aerospace, but when you compare their cost structure to best-in-class competitor GE Aviation apples to apples, the spread is too wide to be justified. Margins at GE Aviation are likely to remain slightly higher than RR given the advantages of operating under the larger GE parent portfolio, but there is certainly "fat" that can be cut from the RR portfolio to start to narrow that gap. While at ARM, East not only grew the business, he also focused on margin expansion and improvement which is exactly what RR needs today. As you can see from the charts below, provided by BofA Merrill Lynch Global Research, GE Aviation has achieved consistently higher margins than RR over time, when compared to their aerospace and defense segment in particular. Over the last 15 years, GE has managed to keep operating margins at an impressive 18% to 21%, while RR margins have ranged from as low as 6% to as high as 14%, well below the low end of the range for GE. This provides further evidence that under prior leadership, the company was mismanaged, and I think that with the right leadership in place, new management can begin to close that gap.

Chart 32: GE Aviation historical sales (\$mn)



Chart 36: Rolls-Royce Aerospace Revenues (Civil + Defence)



VAR contact log

Company: GE Aviation	"We live and die by the services and spare engines"
Function: Audit	 There's a tradeoff when thinking about the price of oil. On the one hand, GE likes the price of fuel to be down, because they don't want customers to switch (which will hurt backlog if they cancel orders). On the other hand, they want to fill orders with products that are more fuel efficient because they tend to be higher price. GE tends to be more expensive than competitors like Rolls Royce Cancellations tend to happen for number of reasons: 1) you miss certification, 2) your supply chain is bad, you delay for a long period of time, customers get frustrated, and 3) new, more fuel efficient products are introduced to the market GE has a huge presence with Boeing – with sole source contracts, you "pretty much have a monopoly within the market" With bigger planes (widebody versus narrowbody), fuel efficiency matters more Re: competing for business, what matters most is fuel efficiency, but relationships and track records go a long way Re: building scale, GE has corporate. With mom and pop shops, they can easily buy their IP and/or their company. They don't have to grow organically. Name brand matters; "GE is the BMW, Rolls Royce is the Honda" in the world of aircraft engines
Company: New Ravenna Mosaics Function: Operations	 Former manufacturing manager, managing director and plant manager at Precision Castparts From a supplier perspective: "Rolls Royce is probably the most challenging client they are always changing their design they change order after order after order it's difficult to deal with them, they're very bureaucratic" "Rolls Royce hasn't been successful in selling their engine they're the minority share on every platform they always end up being last in line" They don't have the same fuel economy that clients are interested in; the engines aren't as good, they have offshore plants but most engineering is done in the UK, and there's a lot of engineer turnover – they can't attract/retain talent like GE They have "kind of a dysfunctional construct", "they're great people but they won't be a major long-term player [in aerospace]"
Company: GE Aviation <i>Function: Business</i> <i>Development, M&A</i>	 It's all about the services – when asked about OE versus aftermarket, the response was "we're giving it away basically to get aftermarket revenues on the back-end" Since RR is sole source on the Airbus A350, they "have the farm riding on that one, that's their golden child" GE has done well recently because of decisions made 20 years ago – they are generating a ton of profit today based on leadership back then. When asked about competitive advantages, this contact really honed in on the fact that "it's a little bit of luck". You have to make a bet on what you think is

F h	Rolls Royce (LON:RR): Lon ndustry: Aerospace & Def	g Lauren Harmon
		 the right platform – GE placed big bets on Boeing's 737 and 777, they "went all inand the 737 is one of the best-selling commercial airplanes ever invented". Another competitive advantage is the "ability to have a balance sheetthe wherewithal to invest in something, sell the board on investing in something that pays you back in 10-15 years". GE parent is a big factor here. This also ties into the significant barriers to entry in this industry – there's a huge upfront cost of capital to get into the business, it costs \$1-2 billion to develop a new engine and you're not making money for a number of years (until aftermarket revenues kick in). Consistent with what a former contact told me, this GE employee believes what matters most is technology when it comes to competing for business. Where their views diverged is on price – the latter believes that when it comes to competing for business, pricing is a close second to technology. He gave the example of Pratt & Whitney coming back to narrowbody – when they reintroduced their narrowbody product, they "priced incredibly low to get customers to take a chance on them". Re: keeping costs down, it's all about manufacturing / value engineering. They tell their supply chain guys to "beat the hell out of your suppliers". One final point on regulation: years ago, investors were concerned that generic parts suppliers would be a disruptor in the market, but generics have been "pushed out by regulators". Per this contact, the regulators told airlines "don't fly in the US if you're going to do that [use generic parts]".
	Company: GE Aviation <i>Function: Risk</i>	 Consistent with conversations with two other GE employees, what matters most is fuel efficiency [technology] when it comes to competing for business. "Getting an ounce of weight off of an enginebuilds up very quickly as it relates to cost savings". "Because of the size of GE, we're able to take opportunities to invest in products for the long term. If something doesn't work out, okif some deals or investments don't work out, having a cushion with other GE businesses is definitely beneficial". "Looking at market share, knowing GE has such a large installed base, people feel better about investing long term" One interesting comment that relates to how GE competes was "Price is important but what else are you bringing to the table?" Regarding costs, this contact mentioned that "scale is so importantvolume play is so important" "One of the most important things is supply chainyou're only as strong as the weakest link". Here, he was referring to the importance of quality. He further goes on to say "How precise everything is in the industry is very impressiveI'm never nervous flying on a plane now". Regarding order cancelations, "For a customer to cancel an order is a pretty big dealit's not like an iPhone where in three months a new iPhone comes outthese are not fleeting decisions". This gives me pause on the Emirates order cancelation during the summer of last year (that impacted Airbus and RR). Playing devil's advocate against the argument that lower fuel prices are bad for business, this contact took a different perspective: "Right now US airlines are doing fantastic with oil prices so lowthey're able to invest a lot in things right now that they had to hold off in the pastbuying spare parts".
	Company: Fortress Investment Group Function: Management	 When asked about the aerospace cycle, this contact responded rather bluntly "we're at the top, it's going to turn soon". He thinks there is "a lot of deliveries coming but not enough demand for capacity2016 will be a testing yearinterest rates, fuel is also detrimental to aircraft". Because he is in the aircraft leasing business, I think he's slightly biased. After speaking with three folks from GE Aviation, it's not clear to me that there is a set "cycle". It's dependent on product offerings for new aircraft, new engines and therefore very company specific. "Market has changed dramatically from 10-15 years ago, then, only major airlines could afford new aircraftnow, any airlines can afford brand new aircraftevery airline and leasing company has an order book". While this is bad for the aircraft leasing business, this is actually good news for aircraft suppliers like Rolls Royce. "RR controls the market very stronglythey have lots of pricing powerFTAI (Fortress Transportation and Infrastructure) doesn't buy RR planes anymore". According to Thomas, "people aren't buying RR planes anymore because of their long term contractsplanes where RR is the sole source engine. aircraft are getting retired after 10 years of

Rolls Royce (LON:RR): Lon	g	Lauren Harmon				
Industry: Aerospace & Def	fense	LHarmon16@gsb.columbia.edu				
Company: Triad National Group Function: Management	 service even though the average life is 20-25 performance but because of the control they to their head". Thomas even went as far as to say that a ser because "they [RR] don't like you". "RR missed narrowbody, it's too latethey conarrowbody but won't make the whole engine When asked about savings from fuel efficien expensive so even if you have 15% fuel savin taking time value of money into account her five years out? On RR culture: "don't want to acknowledge the service of the save of the	yearspeople shy away from RR products not because of / havenobody wants to make an investment with a gun vice that should cost \$5 million may cost \$7.5 million just ould make [parts] for new engines coming out for ne". t engines, this contact stated that "Aircraft is 15% more gs, it's bullshitsavings are really 0". I don't think he's e – there may not be cost savings today, but what about they have a problem, but \$6B+ of net income is missing" erent – perspective of GE and Rolls Royce than others. y and the other former PCP contact works in operations. e more than others, he laughed and said "yes, GE is a pain vith GE, the expectation was that they would continue to t only "70% as hard as GE" . From a supplier perspective, he call from RR than GEwhen [he heard] sales guys not as worried about the financial impact or outcomeGE, ions with Rolls Royce, stating that they took a "mature GE it was a "bare knuckles fight all the time, RR was onts, it was more of a partnership ".				