

<b>Recommendation</b>	<b>BUY</b>
<b>Target (today's value)</b>	\$82
<b>Current Price</b>	\$52.95
<b>52-week range</b>	\$43.81 - \$56.77

Major American Airline

## Delta Airlines, Inc.

Share Data	
Ticker:	DAL
Market Cap. (Billion):	\$39.75
Inside Ownership	0.2%
Inst. Ownership	86.9%
Beta	1.39
Dividend Yield	2.19%
Payout Ratio	18.3%
Cons. Long-Term Growth Rate	4.1%

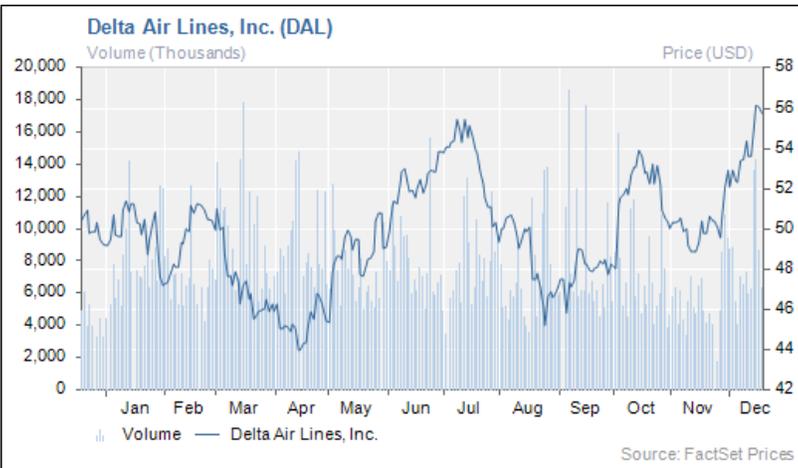
	'15	'16	'17E	'18E	'19E
Sales (billions)					
Year	\$40.70	\$39.60	\$40.44	\$42.47	\$44.33
Gr %	-	-2.7%	2.1%	5.0%	4.3%
Cons	-	-	-	\$410.6	\$431.2
EPS					
Year	\$6.28	\$6.02	\$4.35	\$7.02	\$8.14
Gr %	-	-4.1%	-27.7%	61.3%	15.8%
Cons	-	-	\$4.94	\$5.54	\$5.91

Ratio	'15	'16	'17	'18E	'19E
ROE (%)	46.0%	37.8%	37.8%	25.9%	24.2%
Industry	101.2%	37.2%	37.2%	30.2%	27.7%
NPM (%)	11.2%	11.0%	11.0%	8.7%	8.9%
Industry	15.0%	8.7%	8.7%	7.4%	7.6%
A. T/O	0.71	0.66	0.66	0.77	0.77
ROA (%)	7.3%	7.3%	7.3%	6.7%	6.8%
Industry	13.0%	6.7%	6.7%	6.0%	6.2%
A/E	14.8%	17.0%	17.0%	-	-

Valuation	'16	'17	'18E	'19E
P/E	7.8	10.5	11.3	10.1
Industry	7.1	12.5	12.8	11.3
P/S	0.91	0.93	0.97	0.92
P/B	3.0	2.7	2.7	2.2
P/CF	4.7	8.6	6.8	5.5
EV/EBITDA	5.2	5.6	7.4	6.9

Performance	Stock	Industry
1 Month	11.9%	-3.6%
3 Month	16.4%	-0.1%
YTD	13.3%	16.6%
52-week	10.6%	16.5%
3-year	17.7%	54.1%

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**Summary:** I recommend a buy rating with a target price of \$82. DAL has the opportunity to further increase revenues from current and future joint venture agreements. Revenue momentum from regional sales are expected to contribute \$4-5 billion in free cash flow in 2018. As the price of fuel stabilizes and DAL replaces its existing fleet with new aircraft, operational efficiencies will improve and result in significantly lower operating expenses.

### Key Drivers:

- Fleet Retirement:** Upgraded fleet initiatives will help to mitigate operational costs and reduce fleet age. Replacing 30% of its mainline fleet by 2020 will result in a fleet age of 14.1 and \$300 million savings in maintenance costs.
- Jet Fuel Prices:** The utilization of a hedging program allows for proactive measures against volatile fuel prices. DAL has less risk versus its competitors who do not hedge and expose themselves to sudden increases in fuel prices.
- International Expansion:** Increased globalization through joint venture agreements with foreign carriers allow for greater revenue potential. An expanding presence in global markets through agreements with Aeroméxico, GOL, Korean Air, and China Eastern help to offset pressures from low-cost carriers and offer a larger network of routes to improve overall travel experience.
- Competition:** DAL competes with low-cost carriers and is working towards improving offered routes and travel experience. DAL's success relies on maintaining high passenger revenue per available seat mile, low cost per available seat mile, and high passenger load factor.

**Valuation:** Using a relative valuation approach, Delta appears to be fairly valued in comparison to the airline industry. A combination of the approaches suggests that DAL is undervalued, as the stock's value is about \$87 and the shares trade at \$52.95.

**Risks:** Threats to the business include competition from low-cost carriers, economic downturns, labor issues, and volatile jet fuel price

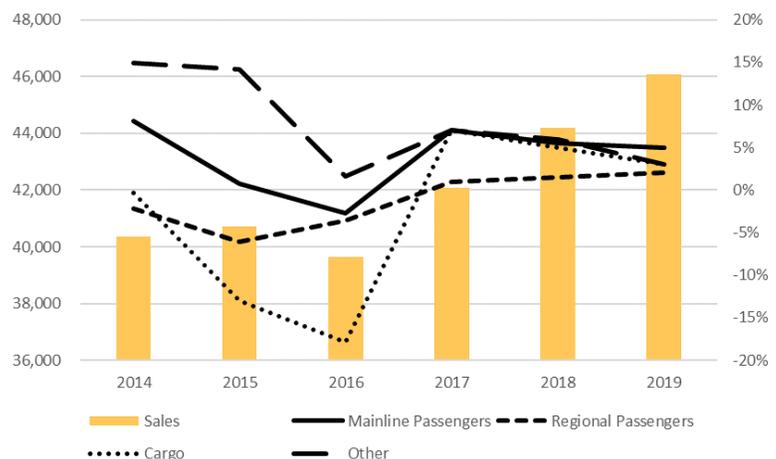
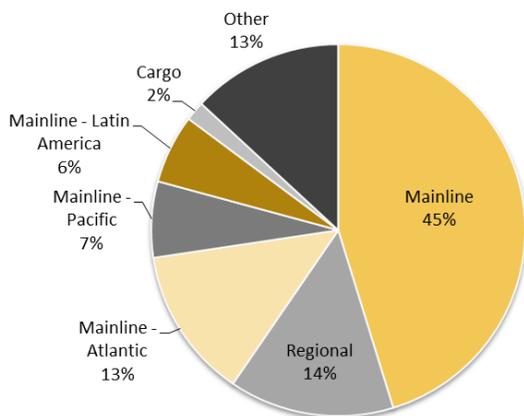
## Company Overview

Delta Airlines, Inc. (DAL) is a major American airline that provides scheduled air transportation for passengers and cargo in the United States and internationally. Delta’s global network allows for a presence in every major domestic and international market. Its network of international gateways and airports operate in Amsterdam, Atlanta, Boston, Detroit, London-Heathrow, Los Angeles, Minneapolis-St. Paul, New York-La Guardia, New York-JFK, Paris-Charles e Gaulle, Salt Lake City, Seattle, and Tokyo-Narita. This global network is supported by a fleet of aircrafts that vary in size and capabilities. Another key factor within its route network includes international joint ventures, alliances with other foreign airlines, its membership in Sky Team, and other agreements with a multitude of domestic regional carriers that operate as Delta Connection. Delta operates in two distinct segments: airline and refinery. The firm operates under the laws of the State of Delaware and headquartered in Atlanta, GA.

DAL generates its revenue from three different segments. This includes passenger revenues, cargo, and other sources of revenue as described below.

- **Passenger Revenues:** This segment is comprised of two parts that include both mainline and regional carrier’s passenger revenues. The mainline revenue includes domestic revenues and the regional carrier’s revenue accounts for the Atlantic, Pacific, and Latin America regions. Passenger revenues account for 85% of Delta’s total revenue; 14% of which is from regional passenger revenues. International revenues declined 7.2% year over year due to imbalances in supply and demand; primarily in the Atlantic region and China. Currency fluctuations have also had a significant impact on this sector. Mainline passenger growth rates are projected to be 7% in 2017 and 5.5% in 2018. Regional passenger growth rates are forecasted to be 1% in 2017 and 1.5% in 2018.
- **Cargo:** Cargo accounts for a total of 2% of operating revenues. This segment operates in both domestic and international markets that gains revenue through the use of cargo space on scheduled passenger aircrafts. Cargo revenue decreased 17.8% from 2015 to 2016. Projected cargo growth rates are 7% in 2017 and 5% in 2018.
- **Other:** Other revenues account for 13% of operating revenues. Airlines revenue is no longer generated solely from ticket sales and freight. They have diversified into ancillary businesses, refinery operations, administrative fees, club and on-board fees, baggage fees, and loyalty programs. Projected growth rates are 7% in 2017 and 6% in 2018.

**Figures 1 and 2: DAL Revenue Sources at Year-End 2016 (left) and Revenue History Since 2012 (right)**



Sources: Company Reports, Factset

**Business/Industry Drivers**

Though several factors may contribute to Delta’s future success, the following are the most important business drivers:

- 1) Fleet Retirement
- 2) Jet Fuel Prices
- 3) International Expansion
- 4) Competition
- 5) Macroeconomic Effects

Fleet Retirement

DAL is addressing upcoming fleet retirements and investing more in high net value opportunities. This includes an increase in aircraft technology and initiatives towards improving customer experience. It is replacing 30% of its mainline fleet from 2017-2020, including the retirement of the MD-88 fleet, which should improve operational reliability and fuel efficiency.

The newer fleet will help to mitigate costs and have lower the average non-fuel costs. Maintenance savings and material savings will drive Delta’s maintenance costs to 15% below the industry average during next year. Total aircraft purchase commitments at the end of December 31, 2016 are \$12.5 billion. A contract with Airbus for the delivery of 37 A321-200 will start in November of 2017 and continue into 2019. The replacement of 747s, MD-88s, MD-90s, and other 50-seater aircrafts with more fuel efficient A350s, A321s, and 737-900s in 2018 is expected to deliver a 2% fuel efficiency gain that is equivalent to \$200 million or \$200mil

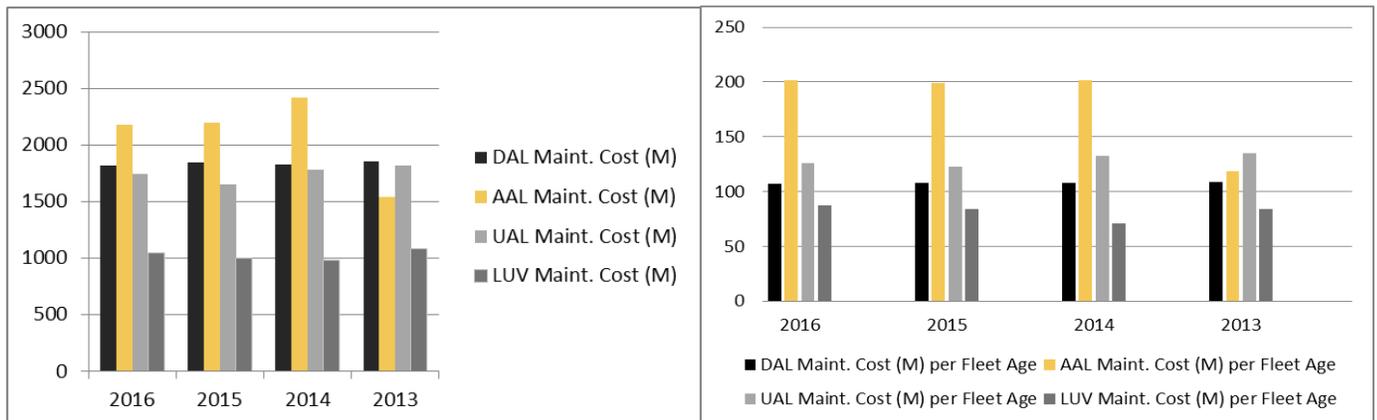
By lowering the average fleet age from 17.0 to an expected 15.7 in 2018, and 14.1 by 2020, maintenance costs are expected to decrease significantly. As depicted in Figures 3 and 4, Delta had the second lowest maintenance cost per year of fleet age in 2016 and with an expected decrease in 2018 that will result in a cost savings of approximately \$108 million per year of fleet age reduced. If Delta is successful in reducing its fleet age to 14.1 by 2020, the firm will realize a total savings of over \$300 million in maintenance costs.

Average Fleet Age  
 DAL: 17.0  
 AAL: 10.8  
 UAL: 14.3  
 LUV: 11.8

EPS:  $200\text{mil} * (1 - .35) / 667.1\text{mil} = 0.19$

DAL plans to replace 30% of its mainline fleet by 2020

**Figures 3 and 4: Total DAL v. Comps Maintenance Costs in Millions (left) and Maintenance Costs Per Year of Fleet Age (right)**

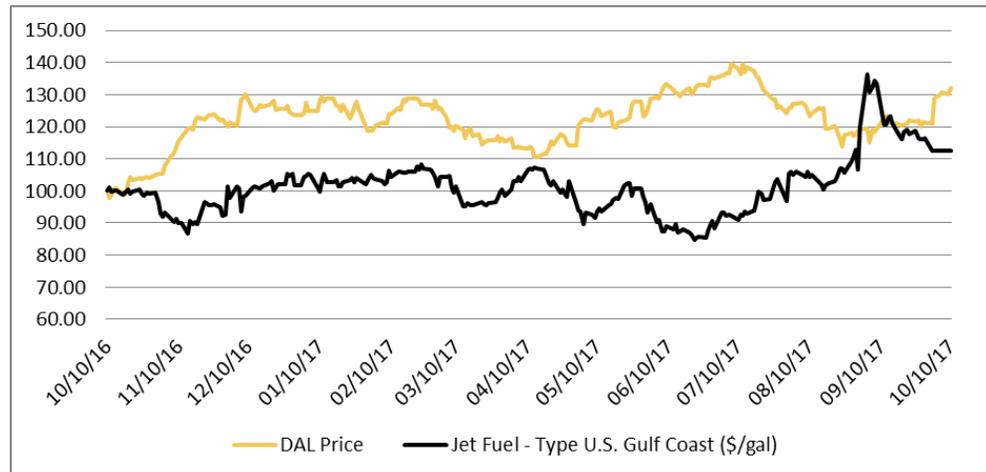


Sources: Factset, Company Reports

Jet Fuel Prices

The volatility in jet fuel prices directly affects airlines’ profitability and accounts for a large proportion of their total operating expenses. At the year-end of December 31, 2016, aircraft fuel and related taxes accounted for 18.3% of DAL’s total operating expense. Through the utilization of a hedging program, DAL effectively combats volatile fuel prices and costs are more stable than competing airlines when fuel prices rise.

**Figure 5: DAL Price v. Jet Fuel Price per Gallon**

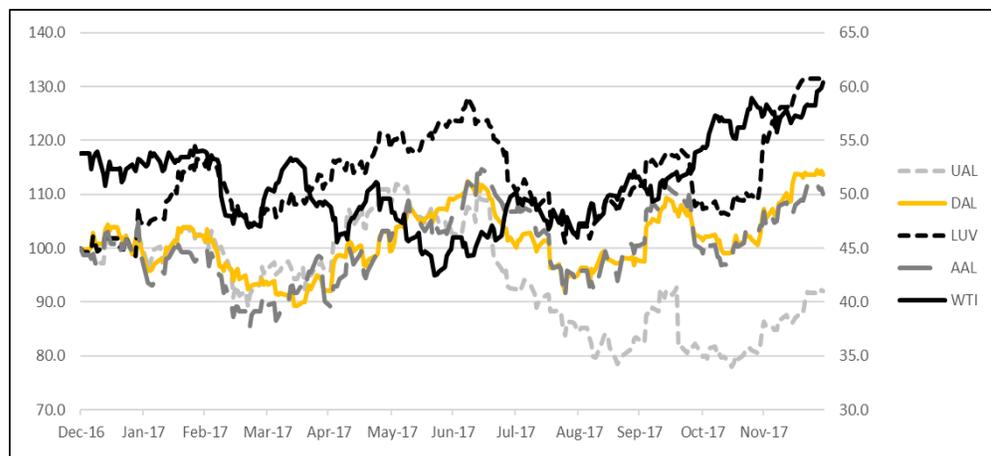


Sources: Company Reports, Factset

Over the last year, fuel prices declined drastically and resulted in an \$89 million hedging loss (\$455 million cost with hedging versus \$366 million without).

The average price per gallon was \$2.23 in 2015 compared to \$1.60 in 2016. DAL estimates fuel prices to rise to \$1.70-\$2.00 price per gallon in 2018-2020, so hedging will be beneficial if the time is right. Both United Airlines (UAL) and Southwest Airlines (LUV) also enter into derivatives contracts, but competitors like American Airlines (AAL) which do not hedge expose themselves to the risk of sudden increases in fuel prices. As depicted in Figure 6, AAL experienced a more significant loss than its competitors as WTI rose due to their lack of hedging program.

**Figure 6: DAL and Comps (left) vs WTI (right)**



Source: Factset

In addition to changes in aircraft fuel prices, interest rates and foreign currency exchange rates have a direct impact on revenue. Derivative contracts are also used to offset fluctuations in interest rates and currencies. \$300 million in cash payments is owed in 2017 for deferred hedging.

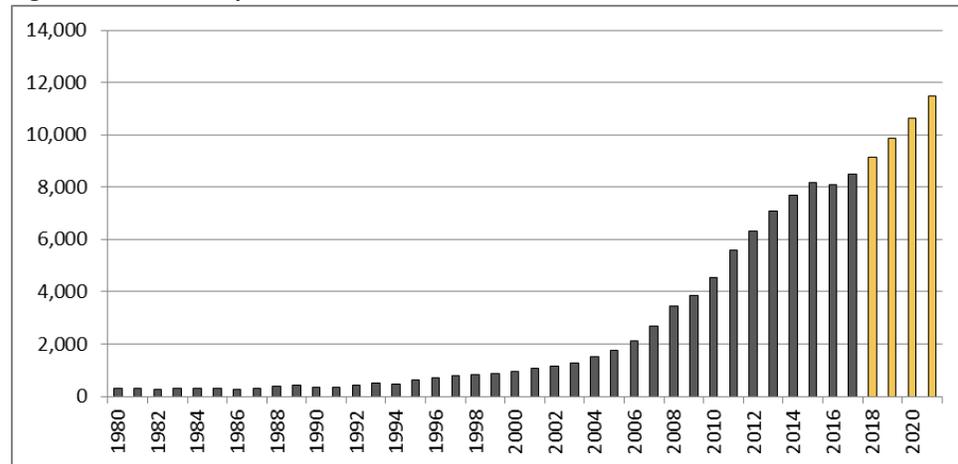
International Expansion

DAL currently operates under three international joint venture agreements with foreign carriers. The transatlantic joint venture with Air France, KLM, and Alitalia covers routes between North America and Europe. The transatlantic joint venture with Virgin Atlantic Airways offers non-stop routes between the United Kingdom and North America. Lastly, a transpacific joint venture with Virgin Australia Airlines and its affiliated carriers offer routes between North America and Australia/New Zealand.

These venture agreements allow for profit sharing, joint marketing and sales, scheduled network operations, coordinated revenue and pricing strategies. Ultimately, they allow DAL to provide more routes and services to customers.

Expansion into Latin America’s two largest markets, Mexico and Brazil, has led to foreign carrier agreements with Aeroméxico and GOL. DAL’s acquisition of a 49% stake in Aeroméxico in 2017, a 49% stake in Virgin Atlantic in 2012, a 3.2% stake in China Eastern in 2015, and a 9.5% stake in GOL’s outstanding capital have helped to drive up profits.

**Figure 7: GDP Per Capita In China**



Source: Bloomberg

To expand its Asian / Pacific business, DAL established a partnership with China Eastern. China Eastern is one of the largest airlines in China with over 200 locations in more than 25 countries. Growth in Asia helps offset pressures from low-cost carriers in the U.S. Expanding into high revenue and high growth global markets also allows for customers to seamlessly connect to a larger network of offered routes and improves the travel experience. A growing middle class in China will lead to sustained growth in Asia.

In 2017, DAL signed a joint venture agreement with Korean Air. This partnership allows for greater coverage in Asia with less aircraft commitments. In 2018, DAL will have eighty destinations beyond Seoul compared to ten in 2012. This agreement benefits customers by improving travel experience through a greater number of connecting hubs.

To better compete with low-cost carriers, DAL announced plans to pursue a joint venture agreement with WestJet in 2017. This low-cost Canadian airline will help DAL minimize its exposure to low-cost carriers while increasing its global footprint.

Stake Ownerships:  
 Grupo  
 Aeroméxico: 49%  
 GOL: 9.5%  
 Virgin Atlantic:  
 49%  
 China Eastern:  
 3.2%

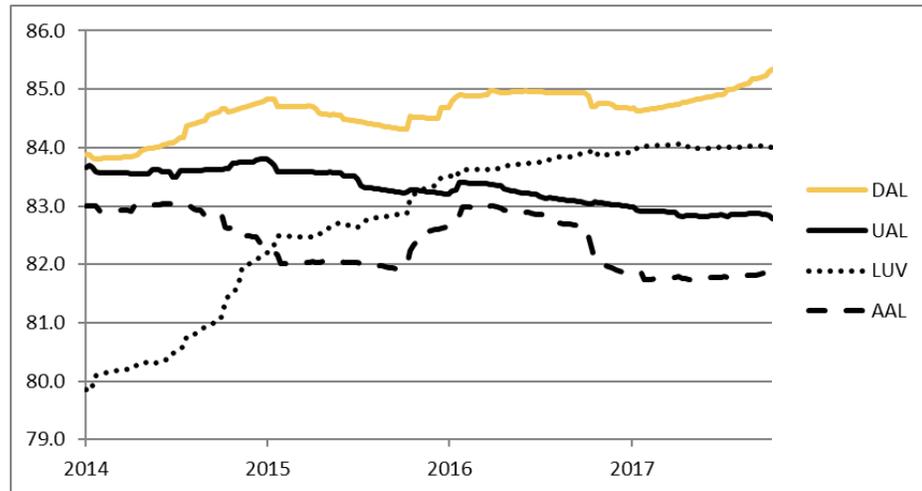
DAL combats the competitive pressure from low cost carriers through its global network and an increase in the number of routes offered

Competition

PLF= Revenue Per Mile / Available Seat Mile

Passenger load factor (PLF) is a key indicator of an airline’s ability to fill its aircrafts with passengers. Airlines have high fixed costs associated with each flight; therefore, if an airline is unable to maximize its revenue by increasing occupancy, it’s likely that it may prove to be unprofitable. DAL had the highest PLF of its competitors in 2017; however, it still is threatened by low-cost carriers, such as Southwest Airlines (LUV). In that sense, it comes as no surprise that LUV is expected to outperform DAL in the next 5 years in terms of its passenger load factor. However, DAL remains the top domestic and international airline and is expected to have the highest continued PLF growth rate.

**Figure 8: DAL vs Competitors – Passenger Load Factor (PLF%)**



Source: Company Reports

Calculated Data:  
5-Year CAGR DAL v.  
Comps

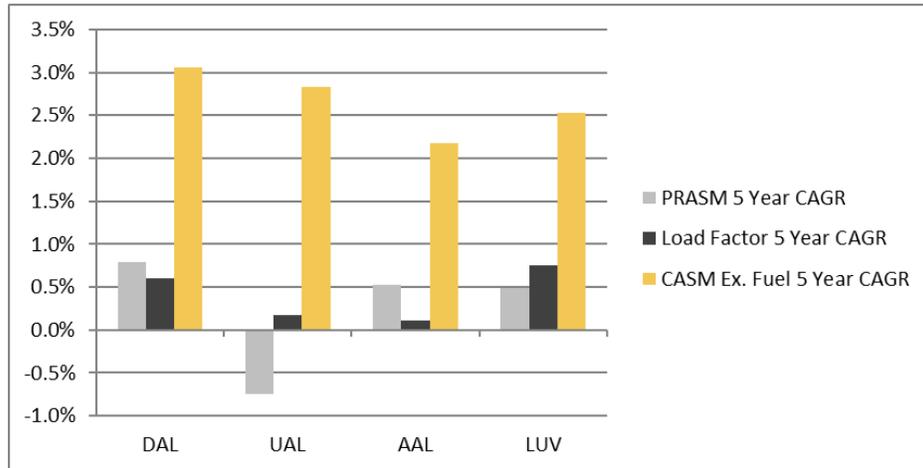
PRASM  
DAL: 0.79%  
UAL: -0.74%  
AAL: 0.53%  
LUV: 0.49%

CASM Ex. Fuel  
DAL: 3.05%  
UAL: 2.83%  
AAL: 2.17%

Passenger revenue per available seat mile (PRASM) and cost per available seat mile (CASM) is a measure of an airline’s profitability. Through this measure, it’s possible to analyze how much weight an airline must dedicate towards alternative forms of revenue based on how high its PRASM to CASM ratios are. Due to the highly competitive nature of the industry, this ratio is generally a negative number. Airlines are no longer able to operate solely on ticket sales, therefore they must generate revenue from other sources to be profitable. As depicted in Figure 8, Delta has the second highest growth of passenger revenue per available seat mile and lowest growth of cost per available seat mile versus its competitors.

Based on a 5-year compounded growth rate, growth in DAL performed significantly better than it’s competitors. While DAL has a higher growth in cost per available seat mile, it also has a 0.79% 5-year compounded PRASM growth rate compared to UAL with -0.74% and LUV with 0.49%.

Figure 9: 5-Year CAGR for PRASM, CASM, & Load Factor %

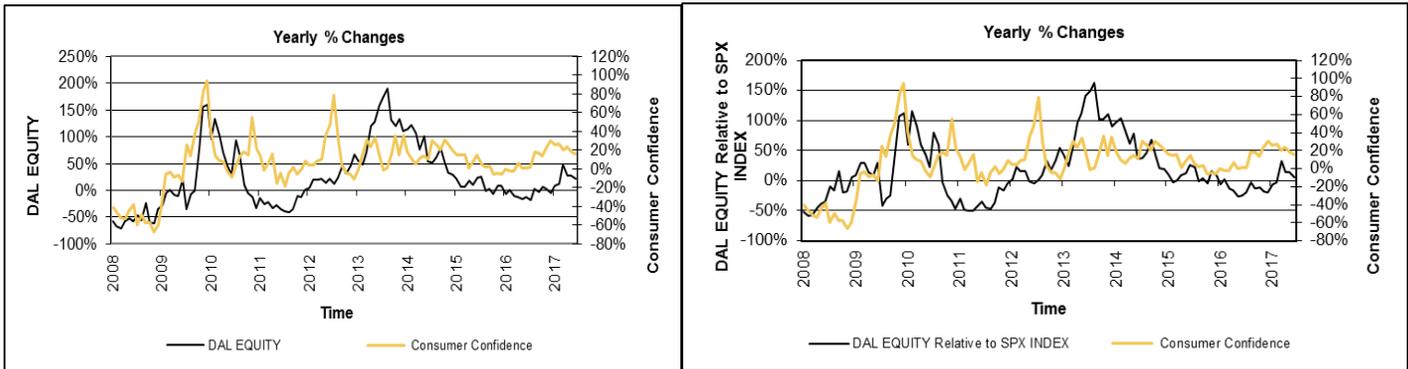


Source: Factset

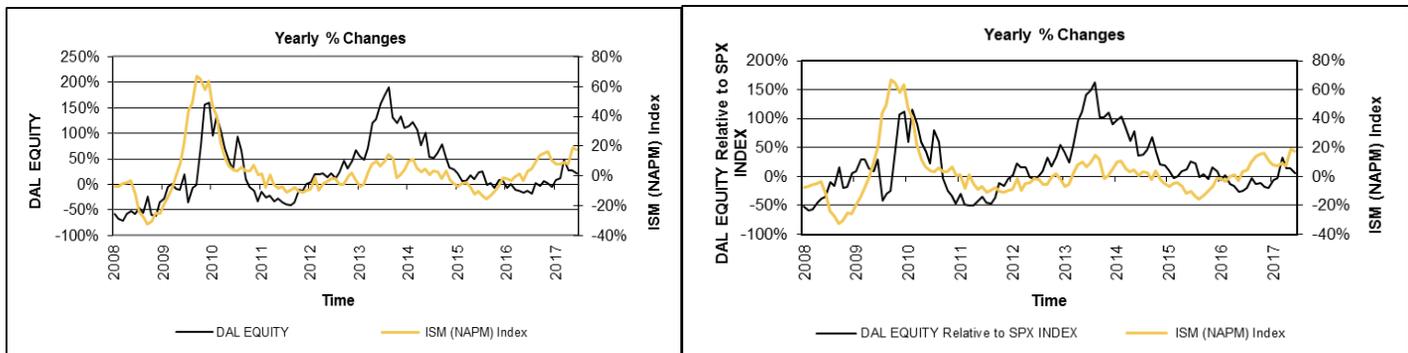
Macroeconomic effects

Since it is highly leveraged, capital intensive, and sales are impacted by consumer and business trends, the airline industry is a naturally cyclical industry that fluctuates significantly with changes in the economy. These impacts are reflected in the consumer confidence index, as well as the ISM. Consumer confidence has a positive correlation of 0.364 with DAL’s outperformance relative to the S&P500. In addition, the correlation between ISM and DAL’s outperformance versus the SPX is 0.327.

Figures 10 and 11: Consumer Confidence v. DAL (left) and Consumer Confidence v. DAL relative to SPX



Figures 12 and 13: ISM (NAPM) v. DAL (left) v. DAL Relative to S&P500 Index



Source: Bloomberg, IMCP

### Financial Analysis

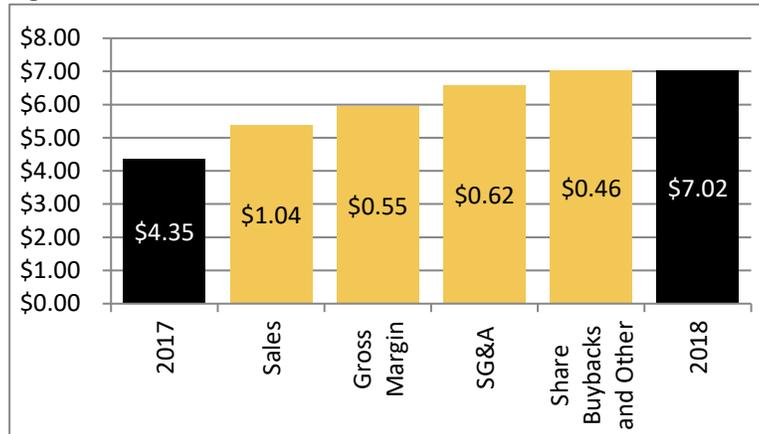
Reported Total Unfunded Pension:

2016: \$10.6B

2017E: \$6.8B

I anticipate EPS to grow from \$4.35 in FY 2017 to \$7.02 in FY 2018. Increases in mainline and regional passenger sales should boost earnings by \$1.04. I anticipate a \$0.55 increase from a rise in gross margin due to joint venture profit sharing programs with Aeroméxico and GOL in the Latin America segment and stabilization of fuel prices. Additionally, I project a \$0.62 increase due to lower SG&A as a percent of sales from the investment in technology for further operational efficiencies. Finally, I forecast a \$0.46 increase in share buybacks and pension funding. This cash utilization assumption is in line with historical cash reserves and the decreasing of liabilities for future refinancing rates and maintaining an investment grade balance sheet.

Figure 14: Quantification of 2018 EPS drivers

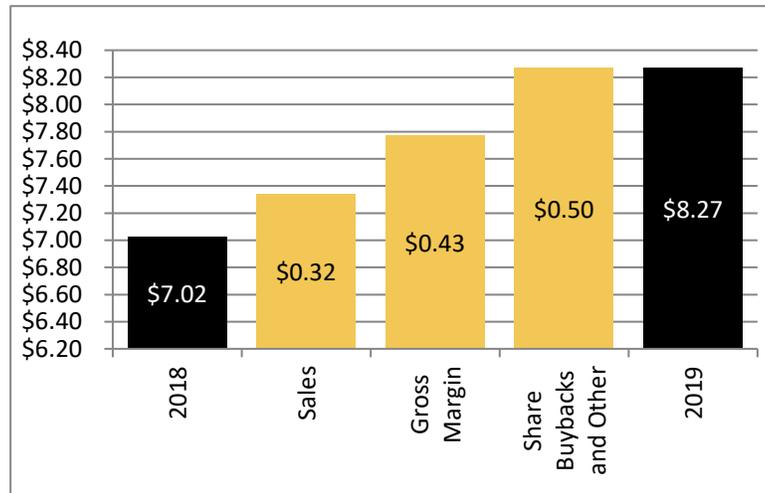


Sources: Company Reports, IMCP

DAL plans to replace 30% of its fleet by 2020. This will improve operational efficiencies by reduction of overall fleet age

I anticipate EPS to grow from \$7.02 in FY 2018 to \$8.14 in 2019. I predict a \$0.32 increase in EPS from sales due to further realized growth in the Latin America and Pacific segments. This gain is offset by an expected decrease of 0.5% in the growth rate of mainline passenger sales from the threat of domestic low-cost carriers. I anticipate an increase of \$0.43 in EPS from gross margin gains from the delivery of 60 new aircrafts in 2018 and further fleet efficiency. I expect SG&A to remain unchanged. Finally, I forecast share buyback programs, the reduction of debt, and pension funding to increase the EPS by \$0.50. Management intends for 80% of the pension to be funded by 2020 and 70% of free cash flow to be returned to shareholders by the end of 2018.

Figure 15: Quantification of 2019 EPS drivers



Sources: Company Reports, IMCP

I am slightly more optimistic than consensus estimates for 2018 due to expectations of excelling joint venture agreements and an aggressive reduction of debt. I anticipate stronger growth in 2019 driven primarily through fleet replacement, further pension reduction, and an increased number of global partners which creates a sustainable competitive advantage.

**Figure 16: EPS and YoY growth estimates**

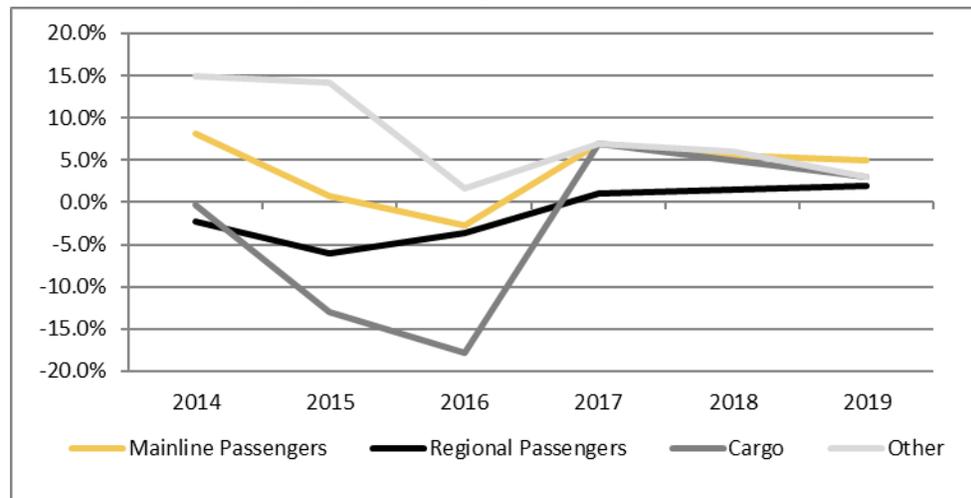
	2018E	2019E
Revenue - Estimate	\$42,470	\$44,299
YoY Growth	5.0%	4.3%
Revenue - Consensus	\$43,121	\$44,074
YoY Growth	5.0%	2.2%
EPS - Estimate	\$7.02	\$8.14
YoY Growth	61.3%	15.8%
EPS - Consensus	\$6.24	\$7.16
YoY Growth	26.6%	14.7%

Sources: Factset, IMCP

Revenues

Delta’s revenue declined in 2016 due to numerous technological malfunctions and system outages. Revenues from 2016 to 2017 were primarily driven by an increased operational reliability and joint venture agreements. I expect mainline passenger revenue to decrease slightly in 2018 and 2019 due to increased pressures from low-cost carriers and regional passenger sales to slightly increase due to a stronger global presence through joint venture agreements.

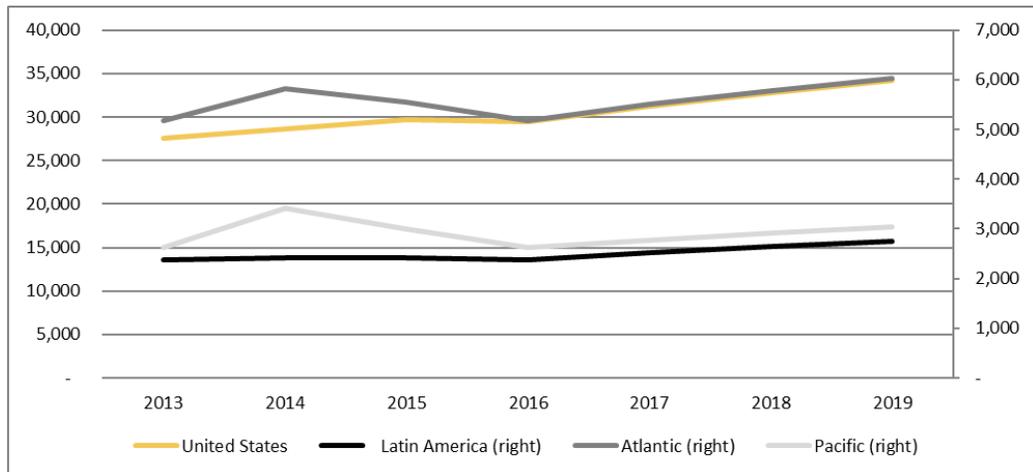
**Figure 17: Delta Airlines segment revenues, 2014 – 2019E**



Sources: Company Reports, IMCP

Passenger revenue should continue to improve as regional carriers experience growth in Q4 2017 for the first time in five years. International travel in the Pacific segment will significantly increase due to continued growth in China and the joint venture partnership with Korean Air. Additionally, the Latin America segment will continue to increase revenues due to DAL’s ownership of 49% outstanding shares in Aeroméxico and GOL. Joint ventures and global alliances will be the primary driver for revenue growth as demand for international travels grows.

Figure 18: Revenue Growth, 2013 – 2019E

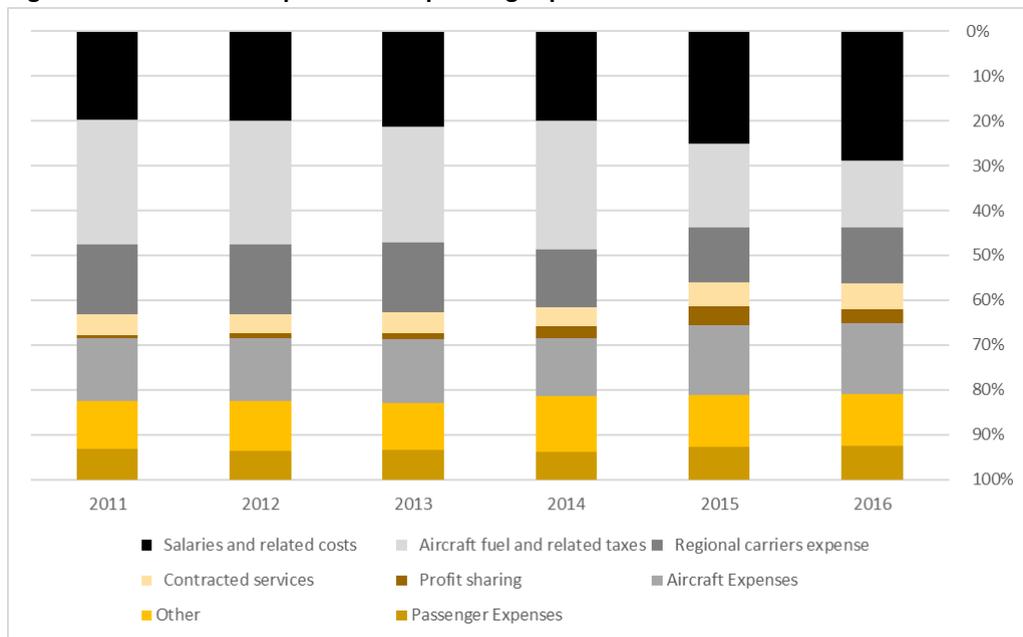


Source: Company Reports

Operating Income and Margins

Operating expenses are composed primarily of labor and fuel costs. Other expenses include profit sharing programs, contracted services, and passenger related costs. Total fuel costs have declined in recent years due to efficient hedging and the declining price of jet fuel and I forecast this to continue. I forecast the price of fuel to remain stable and for labor costs to continue accounting for a majority of operating expenses. I predict aircraft expenses to decline in 2018 and 2019 due to increased operational efficiencies from a lowered fleet age due to fleet retirement. Investment in aircraft technology and fleet retirement will also continue to drive fuel costs down. The delivery of 60 new aircrafts in 2018 will increase fuel efficiency, lower maintenance costs, and result in dramatic cost savings in overall aircraft and fuel expenses.

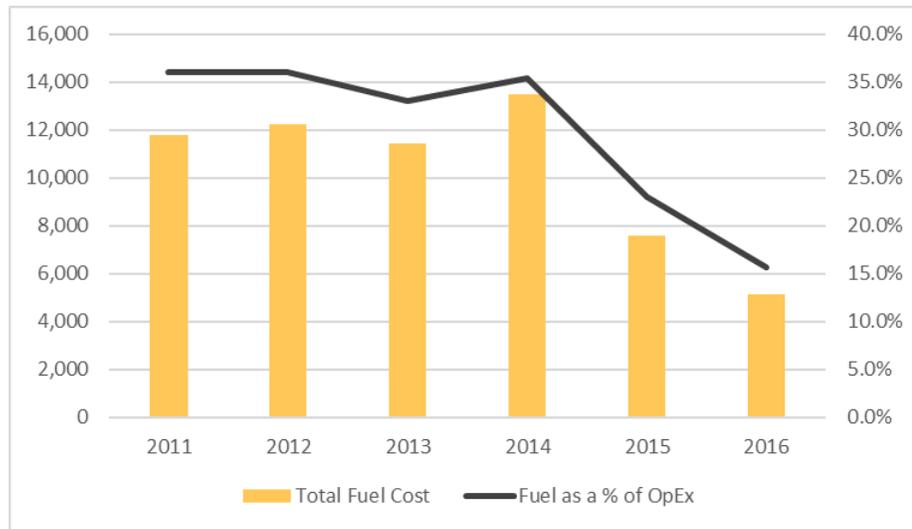
Figure 19: Historical Composition of Operating Expenses



Source: Company Reports

Fuel costs have historically accounted for a large portion of operating expenses

Figure 20: Total Fuel Cost (left) vs Fuel as a % of Operating Expenses (right)



Source: Company Reports

Return on Equity

Delta Airline’s ROE has been volatile over the past few years. Profit margins have decreased due to competitive pressures from low-cost carriers. Consistent reductions in debt has lowered the leverage ratio even as share buybacks limit equity growth. As sales growth outpaces asset growth, asset turnover should rise in 2017-2019. At the same time, profit margins are forecasted to rise. Thus, ROE will rise despite lower forecasted leverage.

Figure 21: ROE breakdown, 2014 – 2019E

Return on Equity						
	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
<b>3-stage</b>						
Net income / sales	9.2%	12.9%	11.0%	7.6%	11.0%	11.5%
Sales / avg assets	0.76	0.76	0.76	0.77	0.78	0.79
ROA	7.0%	9.8%	8.4%	5.9%	8.6%	9.1%
Avg assets / avg equity	5.20	5.45	4.51	3.85	3.49	3.30
ROE	36.5%	53.6%	37.8%	22.7%	30.0%	29.9%

Source: Company Reports

I expect ROE and ROA to increase in future terms. Sales to average assets are beginning to flatline, because of a significant increase in their asset base from fleet replacement that will erase any gains from sales growth. Average assets to equity is decreasing due to debt paydown initiatives. Share buyback programs will continue to lower equity.

Free Cash Flow**Figure 22: Free cash flows 2013 – 2019E**

Free Cash Flow							
	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
NOPAT	\$14,127	\$4,289	\$5,589	\$4,798	\$3,887	\$4,914	\$5,327
<i>Growth</i>		-69.6%	30.3%	-14.1%	-19.0%	26.4%	8.4%
NWC*	(5,798)	(5,286)	(8,879)	(9,419)	(10,043)	(10,547)	(11,001)
Net fixed assets	42,601	41,656	44,078	43,810	45,670	47,959	50,024
Total net operating capital*	\$36,803	\$36,370	\$35,199	\$34,391	\$35,627	\$37,412	\$39,023
<i>Growth</i>		-1.2%	-3.2%	-2.3%	3.6%	5.0%	4.3%
- Change in NWC*		512	(3,593)	(540)	(624)	(503)	(454)
- Change in NFA		(945)	2,422	(268)	1,860	2,289	2,064
FCFF*		\$4,722	\$6,760	\$5,606	2,651	\$3,128	\$3,716
<i>Growth</i>			43.1%	-17.1%	-52.7%	18.0%	18.8%
- After-tax interest expense	3,792	557	321	256	252	228	217
FCFE**		\$4,165	\$6,439	\$5,350	\$2,399	\$2,900	\$3,499
<i>Growth</i>			54.6%	-16.9%	-55.2%	20.9%	20.7%

Sources: Company Reports, IMCP

DAL's free cash flow has been fairly volatile over the last several years due to large changes in NOPAT. Increased investment in net fixed assets in 2017 and beyond will have caused a decline in FCF. As seen in Figure 22, an additional \$4.3B in aircrafts and other fixed assets will be purchased in the next two years. Excluding change in debt, DAL has \$2.5-\$3.5B in FCFE for share buybacks, pension reduction, and other uses.

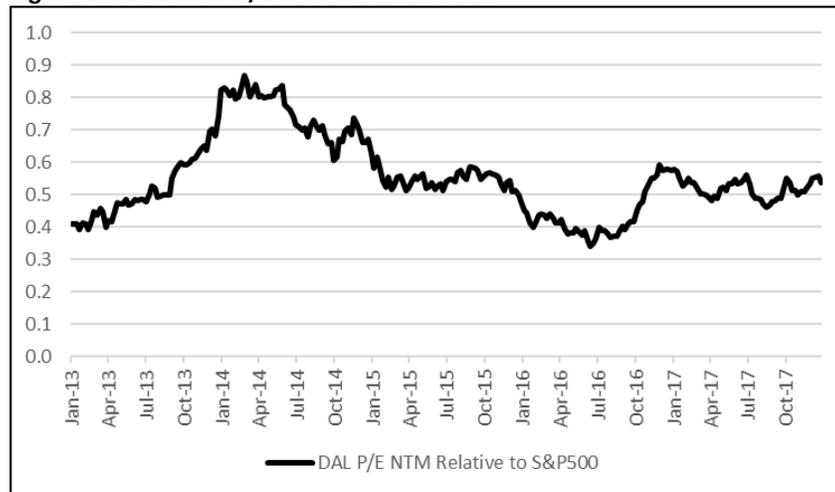
## Valuation

DAL was valued using multiples and a 3-stage discounted cash flow model. A relative evaluation between DAL's NTM P/E and the S&P500 shows that with a sustainable P/E of 9.0 the price at the end of 2018 would be \$73.26. A strong R-squared of 0.80 between DAL's P/B and ROE shows that the stock is worth \$87.26.

## Trading History

DAL is currently trading near its five-year average to the S&P 500. This is the result of DAL trading approximately 40% below the S&P 500. DAL's current NTM P/E is 9.0 compared to its five-year average of 8.7. I expect DAL's P/E to remain the same throughout 2018 which is why I used a ratio of 9.0 in the valuation below.

Figure 23: DAL NTM P/E Relative to S&amp;P 500



Source: Factset

Assuming the firm maintains a 9.0 NTM P/E at the end of 2018, it should trade at \$73 by the end of the year.

- Price = 2018E P/E x EPS = 9.0 x \$8.14 = \$73.26

Discounting \$73.26 back to today at a 10.91% cost of equity (explained in Discounted Cash Flow section) yields a price of \$65.27. Given DAL's potential profitability through joint ventures and global alliances, this valuation seems low. DAL's current price is \$52.95, which means that it's trading at a 23% discount.

#### Relative Valuation

Delta Airlines is currently trading at a P/E much lower than AAL and LUV with a P/E TTM of 12.1. The only competitor that has a lower P/E TTM is UAL at 11.1. DAL has a lower P/E compared to most of its competitors because of its disadvantage to ultra-discount carriers, such as LUV. Investors are more willing to pay a premium for low cost carriers because of their greater potential to capture profits from increasing demand for discounted tickets. DAL has the second highest P/S of 1.04, leading me to believe that the market highly values its sales; the firm also has the second highest net profit margin.

Figure 24: DAL Comparable Companies

Ticker	Name	Current Price	Market Value	Price Change						Earnings Growth						LT Debt/ S&P			LTM Dividend		
				1 day	1 Mo	3 Mo	6 Mo	52 Wk	YTD	LTG	NTM	2016	2017	2018	2019	Pst 5yr	Beta	Equity	Rating	Yield	Payout
DAL	DELTA AIR LINES INC	\$52.95	\$37,752	1.4	(11.5)	7.3	6.1	3.5	(5.4)	12.2	25.4%	621.8%	2.8%	-37.3%	4.1%	32.9%	0.80	47.5%	B	1.79%	20.5%
AAL	AMERICAN AIRLINES GROUP INC	\$51.67	\$24,724	1.2	(11.6)	9.5	6.5	8.7	(0.7)	6.5	48.3%	181.7%	-56.5%	-12.7%	-1.4%	1.11	573.4%		0.74%	10.3%	
UAL	UNITED CONTINENTAL HLDGS INC	\$66.74	\$19,772	1.6	(14.9)	16.1	(0.3)	(11.9)	(1.0)	5.4	5.8%	564.5%	-64.8%	-43.8%	8.6%	1.03		B-	0.00%	0.0%	
LUV	SOUTHWEST AIRLINES	\$58.18	\$34,207	0.8	(11.0)	6.5	5.4	1.6	(11.1)	14.2	-13.8%	99.4%	8.6%	-87.9%	2.3%	59.7%	1.05	31.8%	A-	0.78%	8.2%
<b>Average</b>			\$29,114	1.3	-12.2	9.9	4.4	0.5	-4.6	9.6	16.4%	366.8%	-27.5%	-45.4%	3.4%	46.3%	1.00	217.6%		0.8%	9.7%
<b>Median</b>			\$29,466	1.3	-11.6	8.4	5.7	2.5	-3.2	9.4	15.6%	373.1%	-26.9%	-40.6%	3.2%	46.3%	1.04	47.5%		0.8%	9.2%
SPX	S&P 500 INDEX	\$2,731		1.2	-2.0	6.5	10.8	16.3	2.2			-0.1%	0.5%	10.3%	11.7%						

Ticker	Website	2017 ROE	P/B	P/E							2017			EV/		P/CF		Sales Growth			Book
				2015	2016	2017	TTM	NTM	2018	2019	NPM	P/S	OM	ROIC	EBIT	Current	5-yr	NTM	STM	Pst 5yr	Equity
DAL	http://www.delta.com	29.5%	2.70	63.1	9.0	8.5	10.7	8.5	14.6	14.0	10.0%	0.92	14.8%	18.4%	7.6	5.7	6.0	5.8%	3.9%	2.4%	\$19.64
AAL	http://www.aa.com	58.5%	6.28	13.6	3.8	9.7	13.2	8.9	12.3	12.5	5.7%	0.62	11.3%	7.3%	9.5	4.7	4.9	6.7%	4.0%	11.2%	\$8.23
UAL	http://www.unitedcontinentalholdings.com	22.6%	2.20	22.8	2.9	10.6	9.5	9.0	17.3	16.0	5.6%	0.54	24.7%			3.2	4.5	6.2%	4.9%	0.3%	\$30.28
LUV	http://www.southwest.com	20.0%	3.28	25.8	13.2	14.0	10.0	11.7	135.3	132.2	10.2%	1.67	19.2%	27.9%	9.8	9.5	9.6	6.5%	4.1%	4.4%	\$17.72
<b>Average</b>		32.7%	3.62	31.3	7.2	10.7	10.9	9.5	44.9	43.7	7.9%	0.94	17.5%	17.8%	9.0	5.8	6.2	6.3%	4.2%	4.6%	\$18.97
<b>Median</b>		26.1%	2.99	24.3	6.4	10.2	10.4	9.0	16.0	15.0	7.9%	0.77	17.0%	18.4%	9.5	5.2	5.4	6.3%	4.0%	3.4%	\$18.68
SPX	S&P 500 INDEX			17.3	17.2	18.8			20.8	18.6											

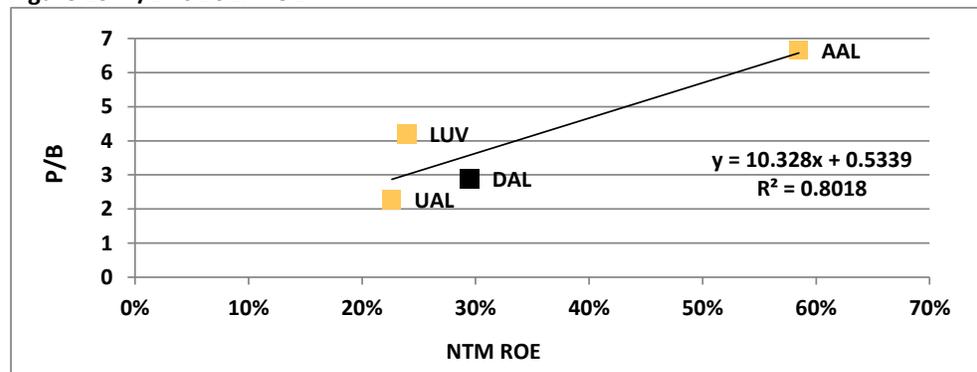
Sources: IMCP,Factset

A more thorough analysis of P/B and ROE is shown in Figure 24. The calculated R-squared of the regression indicates that over 80% of a sampled firm's P/B is explained by its 2017 ROE. DAL has the second lowest P/B and ROE compared to its peers. DAL is below the trend line, meaning that their price is undervalued as a function of ROE. Given the increasing profitability from foreign alliances and joint ventures, I believe that ROE will be more highly valued by investors in the coming months.

- Estimated P/B = Estimated 2018 ROE (30%) x 10.328 + 0.5339 = 3.63
- Target Price = Estimated P/B (3.63) x 2018E BVPS (\$24.37) = \$88.46

Discounting back to the present at a 10.91% cost of equity leads to a target price of \$88.46 using this metric.

Figure 25: P/B vs 2017 ROE



Source: Factset

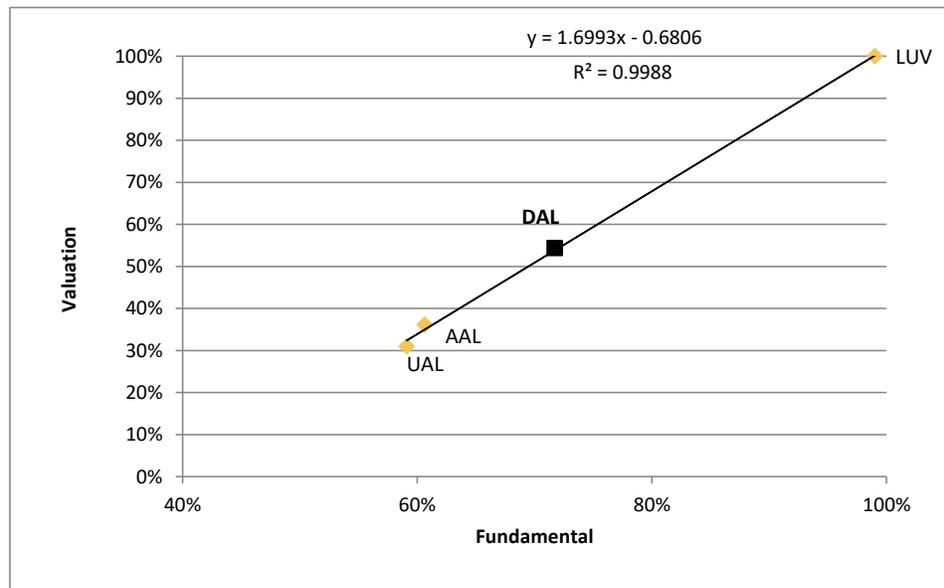
For a final comparison, I created a composite ranking of several valuation and fundamental metrics. Since the variables have different scales, each was converted to a percentile before calculating the composite score. I applied the greatest fundamental value to the past five years of earnings growth and long-term growth rates because the airline industry is highly levered and cyclical and these measures consider the entire cycle. A 100% weight was placed into P/S because it is good for normalized valuation analysts (P/E is erratic). One can see that DAL is on the line (R-squared is nearly 100%), so it is fairly valued based on its fundamentals.

Figure 26: Composite Valuation, % of Range

Ticker	Name	Weight		Fundamental		Valuation
		Fund	Value	37.0%	63.0%	100.0%
				Earnings Growth	P/S	
				LTG	Pst 5yr	
DAL	DELTA AIR LINES INC	67%	55%	87%	55%	55%
AAL	AMERICAN AIRLINES GROUP INC	66%	37%	46%	78%	37%
UAL	UNITED CONTINENTAL HLDGS INC	63%	32%	38%	78%	32%
LUV	SOUTHWEST AIRLINES	100%	100%	100%	100%	100%

Sources: IMCP, Factset

Figure 27: Composite Relative Valuation



Sources: IMCP, Factset

Discounted Cash Flow Analysis

A three stage discounted cash flow model was also used to value DAL.

For the purpose of this analysis, the company’s cost of equity was calculated to be 10.91% using the Capital Asset Pricing Model. The underlying assumptions used in calculating this rate are as follows:

- The risk-free rate, as represented by the ten-year Treasury bond yield, is 2.63%.
- A five-year beta of 1.30 was utilized since the company has higher risk than the market.
- A long-term market rate of return of 9% was assumed, since historically, the market has generated an annual return of about 9%.

Given the above assumptions, the cost of equity is 10.91% = (2.63 + 1.30 (9.0 – 2.63)).

*Stage One* - The model’s first stage simply discounts fiscal years 2018 and 2019 free cash flow to equity (FCFE). These per share cash flows are forecasted to be \$3.60 and \$5.41, respectively. Discounting these cash flows, using the cost of equity calculated above, results in a value of \$7.49 per share. Thus, stage one of this discounted cash flow analysis contributes \$7.49 to value.

*Stage Two* - Stage two of the model focuses on fiscal years 2020 to 2024. During this period, FCFE is calculated based on revenue growth, NOPAT margin and capital growth assumptions. The resulting cash flows are then discounted using the company's 10.91% cost of equity. I assume a 3.0% sales growth rate in 2020, remaining the same through 2024. I expect a 100-basis point increase in NOPAT/S due to a rising amount of global alliances and joint ventures in 2021 and 2022. An aggressive share buyback program in 2018 and 2019 will begin to flatline share growth by 2020, continuing through 2024. Debt reduction in 2018 and 2019 will continue but will be offset by costs associated with mainline fleet replacement and other fleet upgrades in 2020 to 2024.

**Figure 28: FCFE and Discounted FCFE, 2018-2024**

	2018	2019	2020	2021	2022	2023	2024
FCFE	\$3.60	\$5.41	\$7.66	\$7.87	\$8.91	\$9.18	\$9.45
Discounted FCFE	\$3.20	\$4.29	\$5.41	\$4.95	\$4.99	\$4.58	\$4.20

Added together, these discounted cash flows total \$24.13

*Stage Three* – Net income for the years 2018 – 2024 is calculated based upon the same margin and growth assumptions used to determine FCFE in stage two. EPS is expected to grow from \$7.02 in 2018 to \$11.27 in 2024.

**Figure 29: EPS Estimates for 2018 - 2024**

	2018	2019	2020	2021	2022	2023	2024
EPS	\$7.02	\$8.14	\$9.27	\$9.55	\$10.62	\$10.94	\$11.27

The third stage of the model requires the company's terminal price-to-earnings ratio to find its terminal value. DAL's current NTM P/E is 9.0 and is expected to have a terminal P/E value of 13.50 by the end of 2024. As sales growth continues to rise from joint ventures and foreign partnerships, I expect the P/E to shift closer to the market P/E.

Assuming terminal earnings per share of \$11.27 and a price to earnings ratio of 13.50, a terminal value of \$152.16 per share is calculated. Using the 10.91% cost of equity, this number is discounted back to a present value of \$67.61.

*Total Present Value* – Utilizing the three-stage method above, I reached a total present value of \$99.24.

#### Scenario Analysis

Delta Airlines is difficult to value with certainty because of the numerous variables required to quantify what effect each new and strengthened joint venture and alliance will have on the firm's operations. Furthermore, changes in the economic cycle and future prices of oil are difficult to predict and contribute to significant volatility in the airline industry.

*Sales Growth* – Scenario one assumes an increase in sales growth from 5.0% to 6.3% in 2018 and an 4.3% to 6.5% in 2019. A steady increase in sales would lead to a 1.3% increase in EPS for 2018 and a 3.6% increase in 2019. The valuation of the stock would be \$53.90. Scenario two assumes a decrease in sales growth in 2018 from 5.0% to 4.0% and 4.3% to 3.5% in 2019. These changes would result in a decrease to the EPS by 1.0% in 2018 and 1.7% in 2019. The valuation of the stock would be \$52.76.

I expect sales growth to increase over the next two years from new joint ventures and strengthened foreign alliances. Expansion into new business segments allows for further growth opportunities and contributes to a rising percentage in sales growth. An increase in the number of offered routes from

these partnerships allows DAL to effectively manage competition from low-cost carriers and increase its sales.

*EBIT Margin* – Scenario one assumes an increase in EBIT margin from 17.8% to 18.0% in 2018 and 18.5% to 19.0% in 2019. An increase to the EBIT margin in both years would cause EPS to experience a 1.28% increase in 2018 and 2.8% in 2019. The valuation of the stock would be \$55.67. This scenario is possible through significant contribution from international segments, increased domestic ticket sales, and the lowering of fleet age and maintenance costs. Scenario two assumes a decrease in EBIT margin from 17.8% to 15.0% in 2018 and 18.5% to 14.0% in 2019. This change would significantly impact the EPS by causing a decrease of 16.5% in 2018 and 25.3% in 2019. The valuation of the stock would be \$48.54.

*Share Buybacks* – DAL has a strong share buyback program and if increased from \$2.5 billion to \$3.0 billion in 2018, would cause the EPS to increase by 1.28%. Additionally, an increase from \$2.5 billion to \$3.5 billion in 2019 would cause a 3.06% increase. The valuation of the stock would be \$56.01. If DAL lowered the number of shares it buys back to \$2.0 billion, this would cause a 1.28% decrease in EPS in 2018. If share buybacks decreased in 2019 from \$2.0 billion to \$1.5 billion, then EPS would fall 5.41%. The valuation of the stock would be \$51.02.

I predict share buybacks to continue over the next couple of years and to steadily decrease before stabilizing in 2020. The current aggressive share buyback programs leads me to believe that the firm's excess capital will shift from share repurchases to investing in fleet upgrades and maintenance moving forward.

## Business Risks

Although I have many reasons to be optimistic about Delta Airlines, there are still a few reasons to be cautious

### Competition:

Domestic operations are threatened by discount and ultra-low-cost carriers. Costs must be kept at a competitive level to avoid financial duress.

Increased competition in domestic and foreign markets from government-owned and funded carriers, such as Emirates and Qatar Airways, have an adverse effect on operations. Expanding fleets and an increasing global presence in routes offered from the U.S. to the Middle East, China, India, and Southeast Asia may have a negative effect on the U.S. airline industry.

### Labor Issues:

DAL is labor intensive with approximately 19% of its workforce (mainly pilots) unionized. If the collective bargaining process required by the Railway Labor Act between the airline and labor union fails or if additional segments of the airline become unionized, then it may be subject to strikes or other labor disputes.

Third-party regional carriers fall under the same terms and any current or future collective bargaining on their union's behalf would result in a negative impact on DAL's operations.

### Currency Headwinds:

Periods of volatility in exchange rates between the U.S. dollar and other currencies have an adverse effect on liquidity, financial condition, and results of operations.

### Economic Downturns:

An airlines profitability is greatly influenced by the economy. Unfavorable or volatile economic conditions in the U.S. or in partnering economies affects profitability by lowering passenger revenue and passenger load factor. Approximately 30% of DAL's revenue comes from international operations. Joint ventures and partnerships could prove unfavorable if their related economies slow or enter a recessionary period.

### Fuel Prices:

Jet fuel accounts for a majority of Delta's operating expenses. The volatility in fuel prices affects profitability and performance in a highly competitive industry. Increases in fuel prices may result in the inability to increase fares to offset fuel prices to manage the threat from low-cost carriers. Hedging programs and derivative contracts are used to help manage the effects of volatile fuel prices. Unsuccessful hedging programs caused by changes in market conditions may result in losses from the rebalancing of hedging portfolios and mark-to-market adjustments (MTM adjustments).

Weather related events, political issues in oil producing countries, and any other unforeseen circumstances could significantly affect the supply of jet fuel. This pertains directly to DAL's main supplier of jet fuel and refinery, Monroe. Ownership of Monroe could have an adverse effect on operations and impact the ability to acquire fuel. The refinery's loss of production and repair costs would result in a worsened financial condition, one that is unrecoverable by insurance.

**Appendix 1: Porter's 5 Forces**Threat of New Entrants - Low

The barriers to enter the airline industry are extensive. These include government regulation, low margins, and high start-up costs. Additionally, major airlines have larger economies of scale and established partnerships to increase the number of routes offered and create a more seamless travel experience.

Threat of Substitutes - Very High

Delta Airlines relies heavily on brand loyalty and recognition to convince consumers to pay for its services over lower-cost substitutes. Loyalty programs and the enhancement of onboard services help to differentiate major airlines from low-cost carriers.

Supplier Power - Very High

Airline manufacturers have extensive leverage over their customers. Limited quantities of suppliers allow for more pricing power and expensive delivery contracts.

Buyer Power - Very High

Consumers have a great degree of power over the airline industry. Low switching costs and increased technology allow for easier comparisons on flight times, ticket prices, and ancillary expenses.

Intensity of Competition - Very High

Passenger revenue accounts for the majority of airline profit, therefore, pricing must remain competitive to increase passenger load factors. Competition from discounted carriers caused major airlines to reduce ticket prices and increase cargo and ancillary revenues to offset losses.

**Appendix 2: SWOT Analysis**

<b>Strengths</b>	<b>Weaknesses</b>
Strong Brand Recognition Hedging Program Debt Reduction	High Fleet Age Economic Downturns Jet Fuel Price Volatility
<b>Opportunities</b>	<b>Threats</b>
Broader Coverage in Asia Fleet Cost Reductions International Partnerships	Currency Headwinds Low-cost Carriers Labor Strikes

## Appendix 3: Income Statement

Income Statement							
	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
<b>Sales</b>	<b>\$37,773</b>	<b>\$40,362</b>	<b>\$40,704</b>	<b>\$39,602</b>	<b>\$40,443</b>	<b>\$42,470</b>	<b>\$44,299</b>
Direct costs	31,476	32,101	28,654	28,625	30,093	31,003	31,895
Gross Margin	6,297	8,261	12,050	10,977	10,350	11,467	12,404
SG&A and other	3,123	3,497	3,670	3,696	4,370	3,907	4,208
EBIT	3,174	4,764	8,380	7,281	5,980	7,560	8,195
Interest	852	619	481	388	388	351	334
EBT	2,322	4,145	7,899	6,636	5,592	7,209	7,861
Taxes	(8,013)	413	2,631	2,263	2,500	2,523	2,751
<b>Net income</b>	<b>10,335</b>	<b>3,732</b>	<b>5,268</b>	<b>4,373</b>	<b>3,092</b>	<b>4,686</b>	<b>5,110</b>
Basic Shares	851.0	836.0	797.0	755.0	710.0	667.1	628.1
<b>EPS</b>	<b>\$12.21</b>	<b>\$3.36</b>	<b>\$6.28</b>	<b>\$6.02</b>	<b>\$4.35</b>	<b>\$7.02</b>	<b>\$8.14</b>
DPS	\$0.12	\$0.30	\$0.45	\$0.67	\$1.08	\$1.35	\$1.51

## Appendix 4: Balance Sheet

Balance Sheet							
	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
Cash	2,844	2,088	1,972	2,762	2,971	1,971	1,921
Operating assets ex cash	6,807	10,377	7,084	4,689	5,045	5,297	5,525
Operating assets	9,651	12,465	9,056	7,451	8,016	7,269	7,446
Operating liabilities	12,605	15,663	15,963	14,108	15,088	15,844	16,526
NOWC	(2,954)	(3,198)	(6,907)	(6,657)	(7,072)	(8,575)	(9,080)
NOWC ex cash (NWC)	(5,798)	(5,286)	(8,879)	(9,419)	(10,043)	(10,547)	(11,001)
NFA	42,601	41,656	44,078	43,810	45,670	47,959	50,024
<i>Invested capital</i>	<i>\$39,647</i>	<i>\$38,458</i>	<i>\$37,171</i>	<i>\$37,153</i>	<i>\$38,598</i>	<i>\$39,384</i>	<i>\$40,944</i>
Marketable securities	-	-	-	-	-	-	-
<b>Total assets</b>	<b>\$52,252</b>	<b>\$54,121</b>	<b>\$53,134</b>	<b>\$51,261</b>	<b>\$53,686</b>	<b>\$55,228</b>	<b>\$57,470</b>
Short-term and long-term debt	\$11,342	\$9,777	\$8,329	\$7,332	\$6,500	\$6,000	\$5,900
Other liabilities	16,662	19,868	17,992	17,534	17,127	17,127	17,127
Debt/equity-like securities	-	-	-	-	-	-	-
Equity	11,643	8,813	10,850	12,287	14,971	16,257	17,917
<i>Total supplied capital</i>	<i>\$39,647</i>	<i>\$38,458</i>	<i>\$37,171</i>	<i>\$37,153</i>	<i>\$38,598</i>	<i>\$39,384</i>	<i>\$40,944</i>
<b>Total liabilities and equity</b>	<b>\$52,252</b>	<b>\$54,121</b>	<b>\$53,134</b>	<b>\$51,261</b>	<b>\$53,686</b>	<b>\$55,228</b>	<b>\$57,470</b>

## Appendix 5: Sales Forecast

Sales Forecast	Base Case					Bull Case		Bear Case			
	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19	Dec-18	Dec-19		
<b>Sales</b>	<b>37,773</b>	<b>40,362</b>	<b>40,704</b>	<b>39,639</b>	<b>42,073</b>	<b>44,183</b>	<b>\$46,084</b>	<b>44,277</b>	<b>\$46,517</b>	<b>43,458</b>	<b>\$44,534</b>
<i>Growth</i>		6.9%	0.8%	-2.6%	6.1%	5.0%	4.3%	5.2%	5.1%	3.3%	2.5%
<b>Mainline Passengers</b>	<b>26,534</b>	<b>28,688</b>	<b>28,898</b>	<b>28,105</b>	<b>30,072</b>	<b>31,726</b>	<b>33,313</b>	<b>32,027</b>	<b>33,949</b>	<b>31,426</b>	<b>32,526</b>
<i>Growth</i>		8.1%	0.7%	-2.7%	7.0%	5.5%	5.0%	6.5%	6.0%	4.5%	3.5%
<i>% of sales</i>	70.2%	71.1%	71.0%	70.9%	71.5%	71.8%	72.3%	72.3%	73.0%	72.3%	73.0%
<b>Regional Passengers</b>	<b>6,408</b>	<b>6,266</b>	<b>5,884</b>	<b>5,672</b>	<b>5,729</b>	<b>5,815</b>	<b>5,931</b>	<b>5,901</b>	<b>6,137</b>	<b>5,843</b>	<b>5,902</b>
<i>Growth</i>		-2.2%	-6.1%	-3.6%	1.0%	1.5%	2.0%	3.0%	4.0%	2.0%	1.0%
<i>% of sales</i>	17.0%	15.5%	14.5%	14.3%	13.6%	2.0%	12.9%	13.3%	13.2%	13.4%	13.3%
<b>Cargo</b>	<b>937</b>	<b>934</b>	<b>813</b>	<b>668</b>	<b>715</b>	<b>750</b>	<b>773</b>	<b>736</b>	<b>762</b>	<b>715</b>	<b>715</b>
<i>Growth</i>		-0.3%	-13.0%	-17.8%	7.0%	5.0%	3.0%	3.0%	3.5%	0.0%	0.0%
<i>% of sales</i>	2.5%	2.3%	2.0%	1.7%	1.7%	1.7%	6.0%	1.7%	1.6%	1.6%	1.6%
<b>Other</b>	<b>3,894</b>	<b>4,474</b>	<b>5,109</b>	<b>5,194</b>	<b>5,558</b>	<b>5,891</b>	<b>6,068</b>	<b>5,613</b>	<b>5,669</b>	<b>5,474</b>	<b>5,392</b>
<i>Growth</i>		14.9%	14.2%	1.7%	7.0%	6.0%	3.0%	1.0%	1.0%	-1.5%	-1.5%
<i>% of sales</i>	10.3%	11.1%	12.6%	13.1%	13.2%	13.3%	13.2%	12.7%	12.2%	12.6%	12.1%

## Appendix 6: Ratios

Ratios	Dec-13	Dec-14	Dec-15	Dec-16	Dec-17	Dec-18	Dec-19
<b>Profitability</b>							
Gross margin	16.7%	20.5%	29.6%	27.7%	25.6%	27.0%	28.0%
Operating (EBIT) margin	8.4%	11.8%	20.6%	18.4%	14.8%	17.8%	18.5%
Net profit margin	27.4%	9.2%	12.9%	11.0%	7.6%	11.0%	11.5%
<b>Activity</b>							
NFA (gross) turnover		0.96	0.95	0.90	0.90	0.91	0.90
Total asset turnover		0.76	0.76	0.76	0.77	0.78	0.79
<b>Liquidity</b>							
Op asset / op liab	0.77	0.80	0.57	0.53	0.53	0.46	0.45
NOWC Percent of sales		-7.6%	-12.4%	-17.1%	-17.0%	-18.4%	-19.9%
<b>Solvency</b>							
Debt to assets	21.7%	18.1%	15.7%	14.3%	12.1%	10.9%	10.3%
Debt to equity	97.4%	110.9%	76.8%	59.7%	43.4%	36.9%	32.9%
Other liab to assets	31.9%	36.7%	33.9%	34.2%	31.9%	31.0%	29.8%
Total debt to assets	53.6%	54.8%	49.5%	48.5%	44.0%	41.9%	40.1%
Total liabilities to assets	77.7%	83.7%	79.6%	76.0%	72.1%	70.6%	68.8%
Debt to EBIT	3.57	2.05	0.99	1.01	1.09	0.79	0.72
EBIT/interest	3.73	7.70	17.42	18.77	15.41	21.56	24.55
Debt to total net op capital	28.6%	25.4%	22.4%	19.7%	16.8%	15.2%	14.4%
<b>ROIC</b>							
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to NWC		(7.28)	(5.75)	(4.33)	(4.16)	(4.13)	(4.11)
Sales to NFA		0.96	0.95	0.90	0.90	0.91	0.90
Sales to IC ex cash		1.10	1.14	1.14	1.16	1.16	1.16
Total ROIC ex cash		11.7%	15.6%	13.8%	11.1%	13.5%	13.9%
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to NOWC		(13.12)	(8.06)	(5.84)	(5.89)	(5.43)	(5.02)
Sales to NFA		0.96	0.95	0.90	0.90	0.91	0.90
Sales to IC		1.03	1.08	1.07	1.07	1.09	1.10
Total ROIC		11.0%	14.8%	12.9%	10.3%	12.6%	13.3%
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to EOY NWC		(6.51)	(7.64)	(4.58)	(4.20)	(4.03)	(4.03)
Sales to EOY NFA		0.89	0.97	0.92	0.90	0.89	0.89
Sales to EOY IC ex cash		1.03	1.11	1.16	1.15	1.14	1.14
Total ROIC using EOY IC ex cash		38.4%	11.8%	15.9%	14.0%	10.9%	13.7%
NOPAT to sales	37.4%	10.6%	13.7%	12.1%	9.6%	11.6%	12.0%
Sales to EOY NOWC		(12.79)	(12.62)	(5.89)	(5.95)	(5.72)	(4.88)
Sales to EOY NFA		0.89	0.97	0.92	0.90	0.89	0.89
Sales to EOY IC		0.95	1.05	1.10	1.07	1.05	1.08
Total ROIC using EOY IC		35.6%	11.2%	15.0%	12.9%	10.1%	13.0%
<b>ROE</b>							
<b>5-stage</b>							
EBIT / sales		11.8%	20.6%	18.4%	14.8%	17.8%	18.5%
Sales / avg assets		0.76	0.76	0.76	0.77	0.78	0.79
EBT / EBIT		87.0%	94.3%	91.1%	93.5%	95.4%	95.9%
Net income / EBT		90.0%	66.7%	65.9%	55.3%	65.0%	65.0%
ROA		7.0%	9.8%	8.4%	5.9%	8.6%	9.1%
Avg assets / avg equity		5.20	5.45	4.51	3.85	3.49	3.30
ROE		36.5%	53.6%	37.8%	22.7%	30.0%	29.9%
<b>3-stage</b>							
Net income / sales		9.2%	12.9%	11.0%	7.6%	11.0%	11.5%
Sales / avg assets		0.76	0.76	0.76	0.77	0.78	0.79
ROA		7.0%	9.8%	8.4%	5.9%	8.6%	9.1%
Avg assets / avg equity		5.20	5.45	4.51	3.85	3.49	3.30
ROE		36.5%	53.6%	37.8%	22.7%	30.0%	29.9%
Payout Ratio		6.7%	6.8%	11.6%	24.7%	19.2%	18.6%
Retention Ratio		93.3%	93.2%	88.4%	75.3%	80.8%	81.4%
Sustainable Growth Rate		34.0%	49.9%	33.4%	17.1%	24.2%	24.3%

Appendix 7: 3-stage DCF Model

3-Stage Free Cash Flow							
	Year						
	1	2	3	4	5	6	7
First Stage			Second Stage				
Cash Flows	2018	2019	2020	2021	2022	2023	2024
Sales Growth	5.0%	4.3%	3.0%	3.0%	3.0%	3.0%	3.0%
NOPAT / S	11.6%	12.0%	13.0%	13.0%	14.0%	14.0%	14.0%
S / NWC	(4.03)	(4.03)	(4.03)	(4.03)	(4.03)	(4.03)	(4.03)
S / NFA (EOY)	0.89	0.89	0.89	0.89	0.89	0.89	0.89
S / IC (EOY)	1.14	1.14	1.14	1.13	1.13	1.13	1.13
ROIC (EOY)	13.1%	13.7%	14.8%	14.8%	15.9%	15.9%	15.9%
ROIC (BOY)		14.2%	15.2%	15.2%	16.4%	16.4%	16.4%
Share Growth		-5.8%	-2.0%	0.0%	0.0%	0.0%	0.0%
Sales	\$42,470	\$44,299	\$45,627	\$46,996	\$48,406	\$49,858	\$51,354
NOPAT	\$4,914	\$5,327	\$5,932	\$6,110	\$6,777	\$6,980	\$7,190
Growth		8.4%	11.4%	3.0%	10.9%	3.0%	3.0%
- Change in NWC	-503	-454	-330	-331	-350	-360	-371
NWC EOY	-10547	-11001	-11331	-11662	-12011	-12372	-12743
Growth NWC		4.3%	3.0%	2.9%	3.0%	3.0%	3.0%
- Chg NFA	2289	2064	1501	1546	1592	1640	1689
NFA EOY	47,959	50,024	51,525	53,070	54,662	56,302	57,991
Growth NFA		4.3%	3.0%	3.0%	3.0%	3.0%	3.0%
Total inv in op cap	1786	1610	1171	1215	1242	1280	1318
Total net op cap	37412	39023	40194	41409	42651	43930	45248
FCFF	\$3,128	\$3,716	\$4,761	\$4,894	\$5,535	\$5,701	\$5,872
% of sales	7.4%	8.4%	10.4%	10.4%	11.4%	11.4%	11.4%
Growth		18.8%	28.1%	2.8%	13.1%	3.0%	3.0%
- Interest (1-tax rate)	228	217	223	230	237	244	252
Growth		-4.8%	3.0%	3.0%	3.0%	3.0%	3.0%
+ Net new debt	-500	-100	177	182	188	193	199
Debt	6000	5900	6077	6259	6447	6641	6840
Debt / tot net op capital	16.0%	15.1%	15.1%	15.1%	15.1%	15.1%	15.1%
FCFE w debt	\$2,400	\$3,399	\$4,714	\$4,847	\$5,485	\$5,650	\$5,819
% of sales	5.7%	7.7%	10.3%	10.3%	11.3%	11.3%	11.3%
Growth		41.6%	38.7%	2.8%	13.2%	3.0%	3.0%
/ No Shares	667.1	628.1	615.6	615.6	615.6	615.6	615.6
FCFE	\$3.60	\$5.41	\$7.66	\$7.87	\$8.91	\$9.18	\$9.45
Growth		50.4%	41.5%	2.8%	13.2%	3.0%	3.0%
* Discount factor	0.89	0.79	0.71	0.63	0.56	0.50	0.44
Discounted FCFE	\$3.20	\$4.29	\$5.41	\$4.95	\$4.99	\$4.58	\$4.20
Third Stage							
Terminal value P/E							
Net income	\$4,686	\$5,110	\$5,708	\$5,879	\$6,540	\$6,736	\$6,938
% of sales	11.0%	11.5%	12.5%	12.5%	13.5%	13.5%	13.5%
EPS	\$7.02	\$8.14	\$9.27	\$9.55	\$10.62	\$10.94	\$11.27
Growth		15.8%	14.0%	3.0%	11.2%	3.0%	3.0%
Terminal P/E							13.50
* Terminal EPS							11.27
Terminal value							\$152.16
* Discount factor							0.44
Discounted terminal value							\$67.61
Summary							
First stage	\$7.50	Present value of first 2 year cash flow					
Second stage	\$24.13	Present value of year 3-7 cash flow					
Third stage	\$67.61	Present value of terminal value P/E					
Value (P/E)	\$99.24	= value at beg of fiscal yr 2018					