

Value Investment Based on Data Analysis with Comparison of Three Airline Corporations in the US

Peixuan Han

175 West Mark Street, Winona Minnesota, 55987, America

angela@cas-harbour.org

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Abstract. Value investment analysis is essential for all kinds of enterprises, especially those that are closely related to people's daily life. Analysis plays an important role in the development of an enterprise, even if the enterprise is in different stages. This can not only help enterprises to reduce the possibility of making wrong investment decisions, but also judge whether it is worth to continue to invest and how to invest through comprehensive factors, so as to guide enterprises to the right direction. This paper mainly uses certain data to analyze the value investment of the three aviation enterprises, and then selects the aviation enterprises with the largest investment value based on the operation situation of the companies.

1. Introduction

With the development of economic of the world, financial markets are maturing. More and more investors would like to use their money to invest some stocks or fund to make money, not save the money into the bank. When the investor does the investing, there are many factors impact the stock value's change. Therefore, some people start to use value investing technique when they do invest. If investors want to successful on the value investing. They should know the concept of the value investing. Value investing is looking for stocks whose prices are below their intrinsic value and holding them for a period until their prices exceed their intrinsic value. However, how does the investors know that which stocks price are lower than their intrinsic. Based on people's consideration and question, scholars' study assiduously, use financial tool or knowledge, then creative theories to help investor analyze stocks. When people use theories, it will become to many ratios, and ratios will be explained by lots of factors which will affect the stock value change such as market condition, corporations' executives and financial position (e.g. balance statement) of those corporations. In this paper will focus on whether it is good to invest in the future of the corporations by using a series of indexes, which are called PE, PB, PEG, PBG ratio separately. Those ratios will effectively help investors to explain a corporation's financial condition and performance. Also, the investors can use a same ratio to do the comparison with several similar kinds of companies by using ratio's summarizing and evaluating characteristic. In the meanwhile, it ratios reflects the potential value of stocks.

There are three airlines corporations will be discussed below of paper. They are American Airlines Group, Delta Airlines, Southwest Airlines. In modern life, flight is an important transportation of human life. Airline companies also are developing their service quality, and corporation preference for giving their consumers an impress experience. However, for an investor, it is very important for determining the direction of development of those corporations, corporations whether have a potential ability to successfully developing. Thus, the analysis about ratios of each corporation will be made in the following parts and will be combined with graphs when necessary.

2. Financial Status of the three corporations

This paper will mainly discuss the financial situation from several important indicators. Firstly, the P/E ratio [1] is a measure of the P/E ratio of a company's current stock price to its earnings per share. The P/E ratio is the ratio that investors and analysts use to determine the relative value of a

company's stock compared to apple. It can also be used to compare one company with its history, or to compare total markets with another or over time. The equation for it is showing below:

$$P/E \text{ Ratio} = \frac{\text{market value per share}}{\text{earnings per share}}$$

Equation 1. P/E Ratio

As for PEG [2], The price/earnings to growth ratio is a stock's price-to-earnings (P/E) ratio divided by the growth rate of its earnings for a specified time period. It can determine stock's value while taking into account differences in short-term earnings growth and provides a better ranking than P/E.

In terms of PB ratio [3], financial ratio is used to compare the company's current market price with its book value. It is sometimes called price-to-book ratio. A high P/E ratio means that investors expect management to create more value from a given set of assets, all else being equal (and/or the market value of the company's assets is significantly higher than the accounting value). However, P/E ratios do not provide any direct information about a company's ability to generate profits or cash for shareholders. The equation is as follows:

$$P/B \text{ Ratio} = \frac{\text{stock price}}{\text{book value per share}}$$

Equation 2. P/B Ratio

For P/S ratio [14], is a measurement which can explain how much investors are willing to pay per dollar of sales for a stock. P/S ratio does not consider whether the company profitable or not.

$$P/S \text{ Ratio} = \frac{\text{Market Value per Share}}{\text{Sales per share}}$$

Equation 3. P/S Ratio

2.1 American Airlines Group (AAL)

American Airlines is the predecessor of Robertson Aircraft and Colonial Air Transport. The former was founded in 1921 in Missouri and merged as a holding company in 1929. In 1930, the company was converted into an operating company and renamed American Airlines. In 1934, new laws and the natural wastage of mail contracts forced many airlines to restructure. The company reorganized its routes into an interconnected system and renamed itself American Airlines. It grew into an international airline between 1970 and 2000 and acquired Trans World Airlines in 2001 [4]. In 2011, AMR, the parent company of American airlines, filed for bankruptcy protection as the industry faltered. In 2013, American airlines merged with airways, but retained the American airlines name because it is internationally recognized as a better brand. The merger of the two airlines created the largest airline in the United States and eventually the largest in the world [5].

In terms of its financial condition, since the stock price of each stock is not constant, to improve the accuracy for this paper, the data has been chosen from year 2018, part of year 2019 and forecasting of quarter 3 and 4.

To begin with, it can be told from Figure 1 how much the stock price and EPS were in different fiscal quarters in 2018 and 2019. According to Equation 1, it can be figured out that P/E ratio for 2018 and 2019 was 7.24 and 5.67 respectively and thus it decreased by 1.57, due to the lower P/E is the more valuable a stock, since the P/E ratio decrease, we consider this corporate is developing well in 2019.

In addition, the graph also depicted that the total stockholder's equity was 14,783 million, shares outstanding was 449,055,548 in total, the market value of common shares was \$-169 and BV per

share was -0.38 in 2018. According to Equation 2, the value of P/B was calculated to be -87.47. Because P/B ratio is a negative number, before the investor makes decision, they need to pay attention to this value's meaning.

P/E ratios					
FQ1 '18	FQ2 '18	FQ3 '18	FQ4 '18		P/E
0.75	1.63	1.13	1.04	4.55	7.24
FQ1 '19	FQ2 '19	FQ3 '19	FQ4 '19	Next year's EPS	
0.51	2.03	1.77	1.50	5.81	5.67
P/B ratios					
Total stockholder's equity	Shares outstanding	Market Value of common shares	BV per share	P/B	
14,783	449,055,548	-169	-0.38	-87.47	
PEG ratios					
P/E	Earnings growth	PEG	P/B	P/S-to-growth ratio	
7.24	0.28	25.86	-87.47	7.27	

Fig.1. Financial Indicators of AAL

2.2 Delta Airlines (DAL)

At the beginning of Delta Air Lines, it is a crop-dusting operation which named is Huff Daland Dusters. As time goes by, the Huff-Daland Duster was purchased by Collett E. Woolman in September 1928 and changed the name to Delta Air Service [6]. Delta Air Lines keep improving their service, until 1997, Delta created their first flag which is first airline to board more than 100 million passengers in a calendar year and start their international business [7].

Although Delta keeps developing, they still experienced some serious events. On September 14, 2005, Delta claimed because of rising fuel costs, they filed bankruptcy [8]. However, Delta overcame difficulties and made their shares re-listed on the New York Stock Exchange [9]. After that bankruptcy event, Delta develops with a steady pace. On April 14, 2008, Delta Air Lines announced that they takeover Northwest Airlines. Northwest Airlines operate as a wholly owned subsidiary of Delta. On January 31, 2010, the Northwest Airlines brand retired officially, and it helped Delta expand the scale of the company [10].

When it comes to the financial condition of American Airline's, the price was chosen for the same reason as AAL. Using the same method as computing the financial indicators above, each value was calculated and shown in Figure 2. It can be told from this graph that P/E ratio was 10.18 in 2018 and 8.58 in 2019, which decreased by 1.60 in total. On the other hand, the PB ratio can be figured out by using Equation 2 and the result is 2.81. Thus, from this perspective, the stock of Delta is a better choice since Delta Air Lines and American Airlines has decreased similar value of P/E ratio, but AAL has a negative number of PB ratio.

P/E ratios					
FQ1 '18	FQ2 '18	FQ3 '18	FQ4 '18		P/E
0.74	1.77	1.8	1.3	5.61	10.18
FQ1 '19	FQ2 '19	FQ3 '19	FQ4 '19	Next year's EPS	
0.9	2.15	2.07	1.53	6.65	8.58
P/B ratios					
Total stockholder's equity	Shares outstanding	Market Value of common shares	BV per share	P/B	
38,761	678,950,098	13,787	20.31	2.81	
PEG ratios					
P/E	Earnings growth	PEG	P/B	P/S-to-growth ratio	
10.18	0.19	54.89	2.81	20.26	

Fig.2. Financial Indicators of DAL

2.3 Southwest Airlines (LUV)

Southwest Airlines is a major U.S. airline, headquartered in Dallas, Texas, and the world's largest low-cost airline. Herb Kelleher founded Air Southwest Co. on March 15, 1967 and renamed it Southwest Airlines Co. in 1971. In 1971, Southwest Airlines began operating as an in-state airline, operating entirely within Texas, flying for the first time between Dallas, Houston and San Antonio. As of March 2019, the airline has more than 59,000 employees and operates about 4,000 flights a day during the peak tourist season [11].

However, when we analyze the stock price tendency of history, as shown in Figure 3, the lowest price point was shown in 2009. Because in 2009, there was an airline crash. According to the NTSB, there were fifty people who died in the crash. This accident caused a negative impact on airline companies.

In 2018, there was a drop due to one person killed by Southwest Airlines crash [12]. And in Figure 4, it shows the same needed indicators as above. The P/E ratios for 2018 and 2019 are 12.51 and 11.22, decreased by 1.29. And the P/B ratio was 2.81.

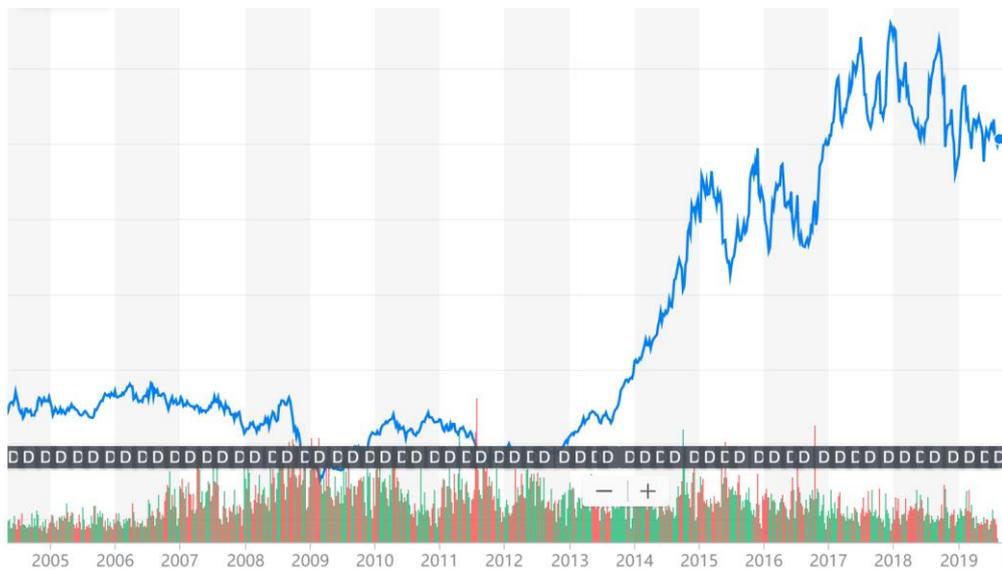


Fig.3. Stock price tendency of LUV

P/E ratios					
FQ1 '18	FQ2 '18	FQ3 '18	FQ4 '18		P/E
0.75	1.26	1.08	1.17	4.26	12.51
FQ1 '19	FQ2 '19	FQ3 '19	FQ4 '19	Next year's EPS	
0.61	1.47	1.34	1.33	4.75	11.22
P/B ratios					
Total stockholder's equity	Shares outstanding	Market Value of common shares	BV per share	P/B	
29,453	552,668,849	13,787	20.31	2.81	
PEG ratios					
P/E	Earnings growth	PEG	P/B	P/S-to-growth ratio	
12.51	-0.1	-121.27	2.81	22.13	

Fig.4. Financial Indicators of LUV

3. Financial Indicator Comparison

The background information of the three companies has been discussed above. In order to have a more comprehensive understanding of them, this part compares them from different views. An analysis of these details, such as how much their ratios have changed relative to each other, whether

this is a positive trend in value investing, can help predict which companies are most worth investing company.

3.1 Analysis of PE

As mentioned above, the price/earnings ratio is the ratio of a company's share price to the company's earnings per share. a high P/E ratio indicates that investors expect higher earnings. A higher P/E ratio shows that investors are willing to pay a higher share price today because of growth expectations in the future.

Based on the data is shown below, the investor has high expectation on DAL stock. However, a stock with a high P/E ratio is not necessarily a better investment than one with a lower P/E ratio, as a high P/E ratio can indicate that the stock is being overvalued. So, by now we cannot say that which stock is better.

Current P/E ratios							
	Price	EPS				FY 2018	P/E
		FQ1 '18	FQ2 '18	FQ3 '18	FQ4 '18		
AAL	32.92	0.75	1.63	1.13	1.04	4.55	7.24
DAL	57.09	0.74	1.77	1.80	1.30	5.61	10.18
LUV	53.29	0.75	1.26	1.08	1.17	4.26	12.51
Forward P/E ratios							
	Price	EPS				FY 2019	P/E
		FQ1 '19	FQ2 '19	FQ3 '19	FQ4 '19		
AAL	32.92	0.51	2.03	1.77	1.50	5.81	5.67
DAL	57.09	0.9	2.15	2.07	1.53	6.65	8.58
LUV	53.29	0.61	1.47	1.34	1.33	4.75	11.22

Fig.5. Ratio comparison of P/E

3.2 Analysis of PEG

The price/earnings to growth ratio (PEG ratio) is a stock's price-to-earnings (P/E) ratio divided by the growth rate of its earnings for a specified time period. Normally PEG ratio equal 1 implies that the stock is fairly valued given the expected growth rate [13]. In the figure 6, Since the AAL, DAL' s PEG ratios higher than 1, in generally we considered those stocks which higher than 1 is unfavorable, and those stocks are overvalued. Conversely, ratios lower than 1 are considered better, indicating a stock is undervalued. As we can see here, the LUV is undervalue, it means maybe this stock has more room space to increase. However, since LUV' s PEG ratio is lower than 1, the investor need to consider this value from the other different way this could be the case where the current earnings are negative, or the future earnings are going to decline.

PEG				
	Price	Current P/E	EPS growth	PEG
AAL	32.92	7.24	0.28	26.126984
DAL	57.09	10.18	0.19	54.894231
LUV	53.29	12.51	-0.10	-121.2704

Fig.6. Ratio comparison of PEG

3.3 Analysis of PS

The ratio of share price to sales is the value of a stock relative to its historical performance, market competitors, or the general market. In general, a lower price-to-sales ratio means a good investment because investors pay a lower price per unit of sales [14]. A ratio of less than 1 indicates that investors are paying less than \$1 per \$1 of the company's sales. A higher ratio means that the market is willing

to pay for each dollar of annual sales. In general, the lower the P/S, the better the value is. In this case, the figure 7 shows that AAL could be a better choice, DAL is second, Luv is the last choice.

	Price	Sales per share				Sales per share	P/S
		FQ1 '19	FQ2 '19	FQ3 '19	FQ4 '19		
AAL	32.92	10,584	12,192	12,185	11,613	103.72	0.32
DAL	57.09	10,472	12,322	12,309	11,248	68.27	0.84
LUV	53.29	5,149	6,121	5,973	6,053	42.15	1.26

Fig.7. Ratio comparison of P/B

3.4 Analysis of PB

When it comes to PB ratios, this ratio measures a company's market valuation relative to its book value. A high PB ratio indicates that investors will create a lot of value from a company. In other words, if the PB ratio is low before investors step in, a company can be considered a good investment. That because low lead levels could mean high growth potential in the future.

P/E ratios are also useful when evaluating stocks that are about to make a profit. Investors can buy shares of a company that trades at a lower price-to-earnings ratio than its rivals. PSG works in the same way as PEG. For investors, PSG's decline is a good sign.

In this case, DAL, LUV has a little higher overvalue of there book value. However, The P/B ratio also indicates whether you're paying too much for what would remain if the company went bankrupt immediately. So, here is a important point need to pay attention is that AAL has negative Book Value of equity. It means they lose money in the past year. So, we need to be careful for this company. Due to a negative P/B ratio, this ratio means that there stock is undervalue or there price will decline in the future. Or consider as the company will keep losing money in the future.

	Price	P/B			MV equity	M/B ratio
		BV of equity	BV per share	P/B		
AAL	32.92	-169	-0.38	-87.47	14,783	-87.47
DAL	57.09	13,787	20.31	2.81	38,761	2.81
LUV	53.29	26,243	47.48	1.12	29,453	1.12

Fig.8. Ratio comparison of P/B

3.5 Comparison

According to the data in the paper, although the LUV has lower PEG, it has higher P/E Ratio, P/S, P/B ratio, Southwest Airlines is riskier. There lower PEG could be considered as their future earnings are going to decline. So, it is better to stay away from the LUV. For American Airlines Group, if investor do not like to take more risks, the AAL is relatively stable since it has lower ratios. However, while choosing AAL because P/E Ratio is lower, it means some investors who do not have high expect return on the AAL. So, people need to consider that whether or not the company has a great development in the future. For Delta, compare to the other two company, it always stay on the middle level. So, it still has some risks when people invest it. Because different people has different risk tolerance. So, if investors have ability to take higher risk. Then, choose Delta. Because investors should know that higher risk gain high return. On the other hand, based on the portfolio risk theory, people also can split their money, use part of it to invest AAL, the other part to invest DAL, it also could help investors decrease the risk.

	P/E		P/E change	P/B	PEG	P/S	Sales per share	PSG
	2018	2019						
AAL	7.24	5.67	1.57	-87.47	26.13	0.32	32.92	7.27
DAL	10.18	8.58	1.6	2.81	54.89	0.84	57.09	20.26
LUV	12.51	11.22	1.29	1.12	-121.27	1.26	53.29	22.13

Fig.9. Indicators Comparison

4. Conclusion

As we all know, the economic develop faster, more and more people have money to do the invest. In the meantime, more and more company would like to rise their capital by listing on the New York Stock. Because there are many similar corporations which operate in the same filed, it causes many competitions. The competition between each company help consumers get high quality services. But sometimes, some company do not good at operate their products or even some company has fake products. As a result, company's operates skill will be factors impact the stock price. To achieve the goal of investors making money, people need to use some indicators to help them determine stocks. Value investing is a sensitive tool to help investor finding potential value of that stock which can find a great advantage among its company's competitors. In addition, as we are now living in a diversified world, it could be somehow risky if an investor uses all money to invest one company, so expanding its investing among which will help investors decline the risk. On the other hand, when people do the calculation of value investing, they find that some company has problem on their operation. These companies can fix problems in time. To sum up, by properly applying various ratios, investors can choose good stocks, have a good investment experience, and create a safe stock market.

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