Airbus and Boeing Manufacturing Performance, Income and Earnings Per Share: A Comparative Analysis

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Abstract

This study examined the worth of investing in Airbus and Boeing to determine which company yields better investment prospect in the future. In order to do so, the study compares Airbus and Boeing in terms of net income, earnings per share, and performance in terms of order intake and delivery. The study was limited to only the two major aircraft manufacturers which are Airbus and Boeing. Also, the study uses secondary data from 1999-2013 from both Airbus and Boeing. All of the computations were derived using Minitab and MS excel. The study found that there is a significant difference between Boeing and Airbus's net income stability with Boeing being more stable than Airbus. Also, their earnings per share, when compared, found that Boeing provided their investors with larger earnings. Lastly, when the performance of both companies was compared, there was a significant difference between Boeing and Airbus's level of efficiency and it resulted in Boeing being more efficient. The findings indicate that Boeing is a wiser investment compared to Airbus. There has been a lot of arguments and literature comparing both Airbus and Boeing but none provides investors with information as to which company to choose. Because of the lack of research on this specific issue, this study aims to provide further information on Airbus and Boeing to investors.

Keywords: Earnings per share, Net income, manufacturing performance, airbus, boeing, Investment

1.0 Introduction

Airbus and Boeing's competition has been with dazzling extremes from research and development to cutthroat competition on market share. Airbus has been in competition with Boeing for over four decades. Boeing played a major role in World War II and has since been affiliated with the military. The same can be said about Airbus which also has a defense segment in their company. According to Weiss (2013), Boeing was founded in 1916. On the other hand, Airbus was founded in 1970 and was originally composed of Germany, France, UK, and Spain (Tong & Lee-Ing, 2003). Francis & Pevzner (2007) emphasize that for the last three decades Airbus has been the leading aircraft manufacturer. Although Boeing also has a strong lead over Airbus, this is slowly changing. Airbus here being the underdog is slowly catching up with Boeing who is much older in the business. There have been many arguments as to what company is the leading aircraft manufacturer. Some say that Boeing is still in the lead while others disagree on this matter. This dilemma is exactly what needs to be addressed, to know whether Boeing or Airbus is

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a better investment.

There have been lots of studies conducted concerning Airbus and Boeing but so far there are no studies conducted as to which company is the better investment. There have been studies pertaining to which company is leading or who has the larger market share but none have really addressed the concern for investors. These two are the largest aircraft manufacturers in the world and most would say that they are fairly even or that Airbus is leading.

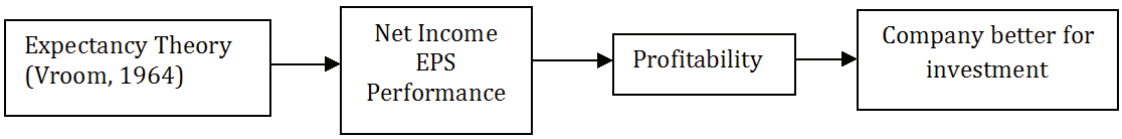

Figure 1. Theoretical and Conceptual Framework

Oliver(1974) emphasized that Victor Vroom's Expectancy Theory is about how an individual is motivated to act based on the perceived outcome. We can relate the Expectancy Theory on investors as to what company they would want to invest in. Now, Investors are usually motivated to buy a stock dependent on how they see a stock. Net income, EPS, and performance are three factors that would determine if an investor is likely to invest in a company or not. If they expect the company to be profitable then they will most likely invest in it.

In order to understand which company is a better investment, we first look at the earnings per share or EPS. As per Boyd & Cortese-Danile (2001), earnings per share is everywhere and most of the world's financial analysts use it as an important financial ratio to determine profitability. Earnings per share is a very important tool used by investors in order to aid them in their investment planning or enhance their investment portfolios. Understanding the EPS of both Airbus and Boeing will aid in further understanding the investment opportunities for both companies. Net income will also be discussed in this study for investors to be aware of the profitability of the company. Performance in terms of orders and deliveries will also be taken into account so as to determine which company will most likely be ahead.

This study focused on the comparative investment attractiveness of Boeing and Airbus companies. Specifically, it examined the companies' net income, earnings per share and manufacturing performance. Statistically, the study tested the hypotheses if there is a significant difference between Boeing and Airbus' net income stability. Second, it also tested the hypothesis if there is a significant difference between their level of efficiency. Lastly, the hypothesis if there is a significant differences in the level of earnings for investors between Airbus and Boeing was tested well.

2.0 Literature Review

Francis and Pevzner (2007) argue that the European aircraft manufacturer, Airbus, has achieved an amazing trend of success. Evidence of this was that only three decades ago the American company has held manufacturing of large commercial aircraft as its territory and was without competition from outsiders (Francis & Pevzner 2007). Francis & Pevzner (2007) say that

Airbus is now gaining ground and is now one of two large commercial aircraft manufacturers in the world. Airbus seems to be having the upper hand recently but all these information should be verified. Now, in order to identify which company is a better investment, the factors chosen are net income, earnings per share, and orders and deliveries. Although there are a lot more attributes that would be considered in order to know which to invest in this study, the researcher only focused on those three as they have been deemed by the researcher as relevant to the study. The importance of those factors will be discussed hereunder.

According to Boyd and Cortese-Danile (2001), earnings per share is possibly the most popular financial ratio and is used by many companies throughout the world. They also emphasized that earnings per share is primarily used to calculate the profitability of a company. There are two types of earnings per share, the one used in the study is the diluted earnings per share. The reason behind this is because the diluted earnings per share is used whenever the capital structure of a company is very intricate (Boyd & Cortese-Danile 2001). Obviously, both Airbus and Boeing are very complex in its structure as they are international companies.

Net income have been used by investors in order to determine if a company is profitable or not. Basically, net income is what is left after all expenditures have been taken into account (Ozyasar, 2013). According to Ozyasar (2013), value is added to a company whenever it has a positive net income. Investors would prefer a company with a positive net income. Also, consistency in having a positive net income year after year is important for firms in order to thrive in a very competitive environment (Ozyasar 2013). Competition between Airbus and Boeing has been a series of ups and downs and so far no study has really examined which company is more stable.

Hayes and Wheelwright (1984) and Skinner (1969) say that one important factor for a company to reach its goal of better performance is manufacturing (as cited in Leachman, Pegels & Shin 2005). In order to be more competitive, a better manufacturing capability is a must (Leachman, Pegels & Shin 2005). Both Airbus and Boeing have an efficient way of manufacturing but there is still a lot more to understand before we know for sure which of the two is more efficient. The studies related to this have not been very concise and the researcher wishes to enhance this.

3.0 Research Methodology

This study utilized data mining technique to generate the needed secondary data from various valid online databases and from refereed online journals. The information gathered was pertaining to Airbus and Boeing and the various factors that were used to determine their performance. Lastly, the factors were chosen as to their relevance to future investors.

Procedures

Gathering of Data. The data were gathered from the websites of both Airbus and Boeing. Other secondary data used were sourced from online refereed journals. These data sources were on net income, profitability measures and other pertinent statistics. The researchers also accessed ProQuest 5000 and other references available valid online sources.

Treatment of Data. The gathered data were subjected to descriptive and inferential statistical analysis using MS Excel for Windows and Minitab softwares. T-Test for two independent samples were used in order to determine which company is more stable in terms of net income. In order to support the data for the net income, a comparison using a graph was also used. Next, Boeing and Airbus' levels of efficiency were calculated to determine the percent difference of their order and

deliveries. The resulting analysis were compared between the two companies under study. Line graphs were generated to further illustrate and validate the findings. Lastly, the T-Test of two independent samples was used to determine and compare the results of the earnings per share of both companies.

4.0 Discussion and Emprical Results

In Figure 2, it can be seen that Airbus had a fluctuating trend from 1999-2009. Airbus' profitability was a series of negative and positive net incomes. But during 2010 up until 2013, Airbus was able to maintain a stable growth. As shown in the graph, it can be seen that both Airbus and Boeing had a decline in net income from 2001-2002. According to Ito and lee, there was a 30 percent reduction in demand following the 9/11 disaster while Gittel et al. (as cited in Goll & Rasheed 2011) also emphasized that the losses were piling up amounting to billions of dollars. Both Boeing and Airbus had felt the pinch and profits decline accordingly. Although Airbus managed to increase its profit in 2001, it did not last following the disaster as demand decreased worldwide. There was a decline of 17.97 percent from 2001 to 2002 for Boeing and Airbus had a 125.83 percent decrease in their net income. Boeing had significantly lower reduction compared to Airbus which means that Boeing was able to cope better with the crisis compared to Airbus. In 2007-2009, Boeing's net income started to decline mainly due to the credit crisis in the US. Airbus was able to fight the crisis with the release of its much anticipated A380 aircraft which went into service in the 4th quarter of 2007. Although it was shortlived as net income declined significantly in 2009, Airbus has been maintaining a stable growth the following year. There were close fights in 2003-2005 and 2008 but the bottom line is that Boeing was able to consistently trump Airbus year after year with positive net incomes.

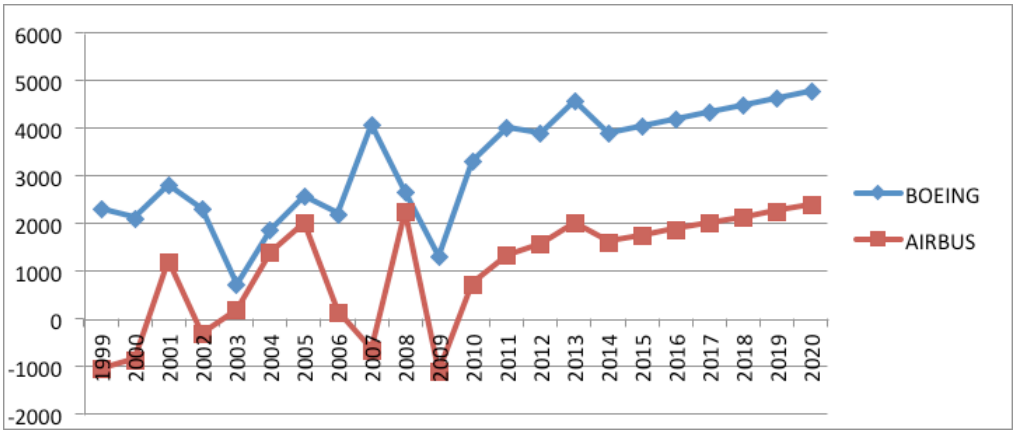

Figure 2. Airbus and Boeing net income comparison

The results were in favor of Boeing as Boeing's net income was consistently above Airbus' net income. The graph also revealed that Airbus' net income was very sporadic, having both positive and negative net incomes throughout 1999-2013. Not only was Boeing's net income more stable, it also delivered consistent positive net incomes. The results coincided with the hypothesis and there is a significant difference in the stability of net income between Airbus and Boeing and because of this, Boeing is decidedly more stable.

Table 1. Mean difference in the net income, expressed in millions of dollars, between Boeing and Airbus 1999-2020. In millions of dollars.

Company	Mean	SD	T-Value	P-Value
Boeing	3238	1187	6.11**	0.000
Airbus	1047	1191		

**- highly significant at α = 0.01

In Table 1, it can be seen that the net income of both Boeing and Airbus for the span of 15 years was used. As a result, Boeing's average net income is US$2,721.73 billion, while Airbus' average net income is only US$596.13 billion dollars. Also, it can be observed that there is a standard deviation of US$1,082.28 and US$ 1,187.79 from Boeing and Airbus, respectively. The standard deviation indicates Boeing is much more consistent in its net income as compared to Airbus. Lastly, the P-value that was computed revealed to be less than that of the alpha of 0.01 that was used which means that the hypothesis is to be accepted. The finding suggests that Boeing is more stable as to their profitability compared to Airbus.

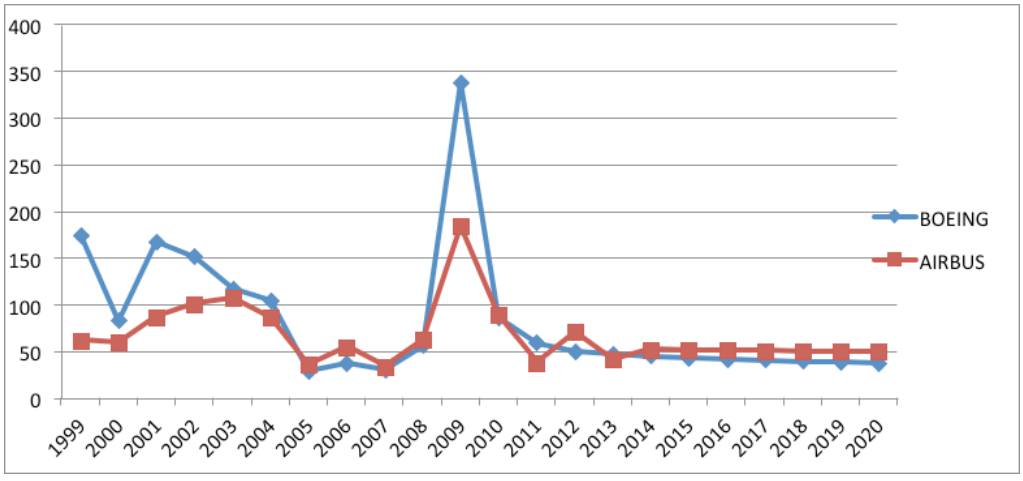

Figure 3. Boeing and Airbus's level of efficiency

Figure 3 shows that in 2009, Boeing had a spike in efficiency and this is mainly due to lack of new orders because of the recession and focused more on production. Also, another contributory factor to the 2009 spike was the end of the 2007 strike that Boeing experienced which slowed the manufacturing of aircraft.

In 2010, the economy started to recover and efficiency also started to stabilize which meant new orders coming in stretched its production. Boeing had a problem in the 1990s because it was taking in too many orders but failed to deliver enough in relation to the orders taken. Because of this, Boeing suffered losses and was losing its market share to Airbus because many investors felt that Boeing was not up to the job of making on time deliveries. In other words, it was not efficient. Based on statistics, Boeing now exercises a more humble approach taking in only orders that they know would lead to higher delivery efficiency. Now, since Boeing's efficiency is 83.06% which is higher than Airbus' 66.65%, the hypothesis is accepted. Thus, Boeing

is more efficient than Airbus.

Table 2. Mean efficiency rate for orders and deliveries of Airbus and Boeing.

Company	Mean efficiency
Boeing	83.06%
Airbus	66.65%

In Table 2 Boeing is 83.06% efficient and Airbus is 66.65% efficient. The researchers believe that this is mainly due to the sudden increase of deliveries that Boeing made in 2009.

The level of efficiency for Airbus and Boeing showed that on average Boeing is more efficient than Airbus. The calculations have also taken into account the total number of order per year and total orders delivered to determin its efficiency. Although there were instances where Airbus was more efficient than Boeing, those were not enough to overtake Boeing's efficiency. Hence, the hypothesis mentioned is therefore accepted which means that there is indeed a significant difference in the level of efficiency between Airbus and Boeing. Based on these findings, Boeing is more efficient.

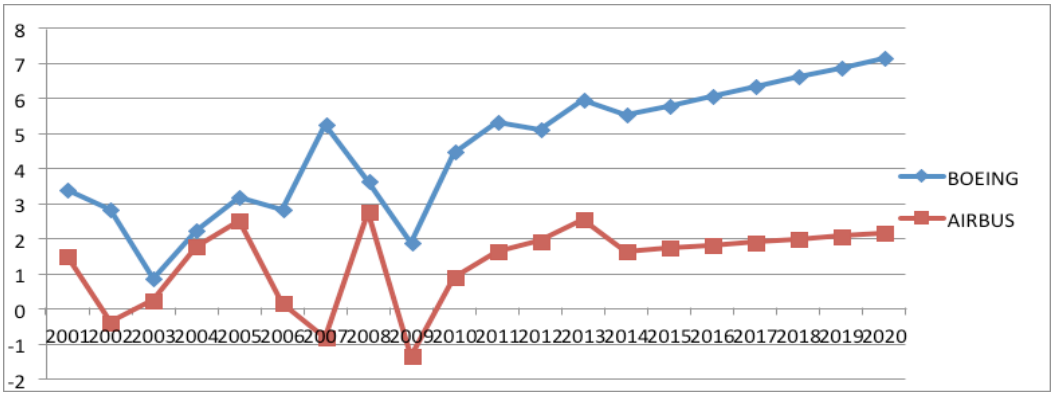

Figure 4. Earnings per share provided by Airbus and Boeing

In Figure 4, it can be seen that in 2009, 2007, and 2002 Airbus had negative earnings per share which coincides to the negative net income that they experienced (Appendix A). In 2002, there was the 9/11 disaster and in 2007-2009 was the credit crisis. Demand was declining during these periods. Boeing on the other hand, although affected by these events, was able to cope better with those disasters and maintain positive earnings per share. This means that Boeing is able to provide its investors with better and more consistent earning as compared to Airbus.

Table 3. Mean difference in the earnings per share between Boeing and Airbus, 2001-2020.

Company	Mean	SD	T-Value	P-Value
Boeing	4.57	1.83	6.69**	0.000
Airbus	1.33	1.16		

**- highly significant at α = 0.01

To further validate Table 3, we can see in it that Boeing's mean earnings per share is $3.62 which is $2.59 higher than what Airbus is able to provide its investors. This means that on average, investors of Boeing earn more than Airbus. Consistently, Airbus is better but Boeing is not far off with a difference of

0.18. Although Boeing's earnings per share is better than Airbus's but Airbus's consistency is better than Boeing. We can see that the alpha of 0.01 is greater than the P-value of 0.000 which means that there is a significant difference in the earnings per share between Boeing and Airbus.

Comparing the earnings per share of Boeing and Airbus, the results revealed that Boeing had higher average earnings per share than Airbus. The t-test also revealed that there is a significant difference in the level of earnings for investors between Airbus and Boeing. It can then be concluded for this hypothesis that Boeing has higher earnings per share than Airbus

5.0 Conclusion

In the light of the of the findings of the study, it is concluded that Boeing's net income is more stable than Airbus' net income. On average, from 1999-2013, Boeing is more efficient than Airbus when it comes to deliveries taking into account the total number of orders per year. Lastly, Boeing provides a higher earnings per share compared to Airbus.

Apparently, investing in Boeing is better than in the Airbus Company. A stable net income is very important because stability means predictability and that is what most investors would want. Also, higher earnings per share means that investors would earn a higher amount considering what Airbus can provide. Lastly, the better performance of Boeing means that higher earnings can be attained in the near future. Investors today would prefer a more predictable investment and higher yield taking into account risk.

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APPENDICES

Appendix Table A. Airbus

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**
Net Income	-1050	-856	1212	-313	191	1406	2024	151
Earnings per share			1.5	-0.39	0.24	1.76	2.5	0.16
Deliveries	294	311	325	303	305	320	378	434
Orders	476	520	375	300	284	370	1055	790
Efficiency	61.76%	59.81%	86.67%	101%	107.39%	86.49%	35.83%	54.94%
	2007	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
	-643	2250	-1094	735	1334	1582	2013	1626
	-0.82	2.75	-1.35	0.9	1.64	1.93	2.54	1.63
	453	483	498	510	534	588	626	620
	1341	777	271	574	1419	833	1503	1196
	33.78%	62.16%	183.76%	88.85%	37.63%	70.59%	41.65%	51.84%
	2015	2016	2017	2018	2019	2020		
	1754	1883	2012	2141	2269	2398		
	1.72	1.81	1.89	1.98	2.07	2.15		
	644	668	693	717	742	766		
	1254	1313	1372	1431	1489	1548		
	51.36%	50.88%	50.51%	50.1%	49.83%	49.48%		

Note* in millions of dollars except orders and deliveries, efficiency, and EPS

Appendix Table 2. Boeing

Year	1999	2000	2001	2002	2003	2004	2005	2006
Net Income	2309	2128	2827	2319	718	1872	2572	2215
Earnings per share			3.4	2.84	0.85	2.24	3.19	2.84
Deliveries	620	491	527	381	281	285	290	398
Orders	355	588	314	251	239	272	1002	1044
Efficiency	174.65%	83.5%	167.83%	151.79%	117.57%	104.78%	28.94%	38.21%
	2007	2008	2009	2010	2011	2012	2013	2014
	4074	2672	1312	3310	4018	3900	4580	3904
	5.26	3.65	1.87	4.46	5.33	5.11	5.96	5.52
	441	375	481	462	477	601	648	504
	1413	662	142	530	805	1203	1355	1112
	31.21%	56.65%	338.73%	87.17%	59.25%	49.96%	47.82%	45.32%
	2015	2016	2017	2018	2019	2020		
	4050	4198	4345	4493	4641	4788		
	5.79	6.06	6.33	6.60	6.88	7		
	510	517	524	530	537	544		
	1166	1220	1274	1328	1382	1436		
	43.74%	42.38%	41.13%	39.90%	38.86%	37.88%		