Boeing bond analysis

Business

BoeingBond Analysis Presented to Dr. —– Prepared by Filipe Ferro October 9, 2012 Table of Contents Boeing Company Boeing is a manufacturer of aircrafts and national defense equipment making it a member of the Aerospace & Defense industry.

It was founded in Seattle, Washington on July 15, 1916. It is headquartered in Chicago, Illinois, USA. Commercial aircraft include the 737, 747, 777, and very recently, the 787. Military products consist of high-dexterity and stealthy aircraft such as a the A-10 Thunderbolt II and highly-efficient and powerful satellites such as the Boeing 601. 1 Its biggest competitors are Northrop Grumman, General Dynamics, and Airbus.

According to Morningstar, Boeing employed 171, 700 people and revenue reached $69 billion in 2012. 2 Bond Issue The bond I have chosen to analyze is a debenture with a maturity date of August 15, 2021. Morningstar shows this bond issue consists of 400 million $1, 000 par value bonds with 398 of them outstanding. The bond is a semi-annual fixed coupon bond with an annual rate of 8. 75%.

The accrual start date was August 15, 1991. The original life of the bond was 30 years and the remaining life as of October 2012 is a little over 8 years and 10 months.

This bond issue is non-callable, non-putable, non-convertible, and it is not subject to Rule 144A. These bonds are currently selling at 135. 20% of par value as of September 29, 2012, making their price $1, 352. Standard & Poor's NetAdvantage rates this issue as an A.

Its current yield ratio is 6. 47. I have always been enthusiastic about airplanes. My first experiences in flight were in Boeing aircrafts. I also chose this bond issue because of Boeing's large size, reputation, and financial security.

Selecting a debenture is risky and requires strong financial security since the only security backing it is the issuing company's credit rating. With a current yield of 6. 47 resulting from the relatively high coupon rate of 8. 75%, this is a great bond for a fixed income (coupon pays $87. 50 annually). Unsystematic Risk Principal Repayment Debt to Invested Capital In recent years, Boeing's debt to capital ratios have been 42% for 2007, 112.

9% for 2008, 85. 2% for 2009, 80. 6% for 2010, and 74. 0% for the end of 2011. Boeing's total debt to invested capital ratio is 65. 3% (as of June 2012)3.

Standard ; Poor's calculates this as (total debt)/(total equity + total debt), 2, 466, 000+8, 735, 0005, 892, 000+11, 201, 000. This means that debt makes up about 65% of all invested capital. Boeing still has 35% of capital that is not tied to debt. This is good compared to the last few years. This ratio is on a downward trend.

Debt to Equity Boeing’s total debt to equity ratio is 1. 51 (as of June 2012) 3, meaning that for every $1 in equity there is $1. 51 of debt. This is calculated as 8, 735, 0005, 804, 000 on the balance sheet.

According to Standard ; Poor’s Industry Survey, Boeing’s debt to equity ratio at the end of 2011 was 2.

85. The Aerospace ; Defense industry average from 1981 to 2011 was 0. 90. 4 The industry survey states that Boeing’s high debt to equity ratio is due to its “ financial arms” since it has a large financing department. It is also probably due to its new model plane, the 787 Dreamliner, which requires a relatively expensive manufacturing processes – unibody parts made up of composite carbon fiber materials – and advanced electronics and sensors. These higher costs require raising more capital than the average model plane.

While debt has priority over equity in being repaid, debentures are at the bottom of the list, which is why this high ratio may be a concern for holders of Boeing’s bond issues. If bankruptcy occurs, debentures will be the last of debt holders to get paid. Although it is not exactly good to have this somewhat high ratio, knowing that Boeing has a brand new and appealing aircraft reassures that positive future cash flows will cover this financial leverage. S; P’s NetAdvantage highlights the potential sales to emerging airlines from China and airlines with old worn out planes in the U. S.

and Europe.

S&P's industry survey states " China, India, the Middle East, Eastern Europe, and Latin America, will drive growth in global air travel and demand for new aircraft. " 4 The market for aircraft purchases looks like it will grow in the coming years, thus Boeing will have greater opportunities for sales. Current ; Quick Ratios The current assets to current liabilities ratio was 1. 22 for the 4th quarter of 2011, which means every $1 in current liabilities is covered by $1.

22 in current assets. Boeing has enough current assets to pay off all its current liabilities if it needed to do so. The current ratio has been 0. for 2007, 0. 8 for 2008, 1.

1 for 2009, and 1. 1 for 2010. The current ratio has been on an upward trend since 2008 which would imply added financial security in forecasts. But the current ratio assumes that a company's current assets are highly liquid. This might not be the case with Boeing, whose inventory is made up of large and expensive aircraft and is not as highly traded as smaller inventory such as food in a grocery store.

The quick-ratio would be more accurate for Boeing, which is 0. 39. Boeing – using only its instantly liquid assets – would not be able to pay off all of its short-term liabilities if it was required to.

Interest Repayment Times Interest Earned As of December 31, 2011, Boeing had a net income of $4 billion and an interest expense of $498 million. Its times interest earned for the year of 2011 was 4, 011+498498= 9.

05. From 2006 to 2010, times interest earned has been 4. 72, 21. 7, 6. 12, 4.

94, and 7. 42 respectively. From these figures, it seems that Boeing's TIE ratio has been on an upward trend since the 2009 ratio of 4. 94. The most recent ratio of 9. 05 suggests that Boeing is capable of paying its interest expense since its profit is over 9 times greater than its interest expense.

Credit Position

According to Mergent Online, Boeing has never had a bankruptcy proceeding of any type (chapter 11 restructuring, etc), which implies that it has never defaulted on any of its debts. Mergent also states Boeing " had $4, 600, 000, 000 available under credit line agreements" 5. Considering Boeing already has $12, 371, 000, 000 in long-term debt, $4, 600, 000, 000 is still considerable amount. Boeing is still within reasonably comfortable limits within its credit line usage. In addition, Standard ; Poor's Bond Guides shows that it has rated this issue of Boeing's bonds in the A range for the last 4 years.

Overall, Boeing seems to have good character. Many of Boeing's bond issues have been rated as A+ over the last 4 years. Competitor Analysis General Dynamics General Dynamics currently has 2 outstanding bond issues, both rated A by Standard & Poor's. Its debt to invested capital ratio in the 4th quarter of 2011 was 22. 6% compared to 74% for Boeing6.

General Dynamics' assets are tied to a much lower amount of debt than Boeing. The current ratio for General Dynamics is 1. 4 as of 2011 while Boeing's was 1. 2. In addition to its low debt to capital ratio, its debt to equity ratio is also low at 3, 930, 00013, 232, 000= 0. 0.

Boeing’s debt to equity ratio is a little higher at 1. 51. With a higher debt to equity ratio, Boeing’s leverage is slightly larger. Boeing’s bond issue may have a little more risk of being subordinated by other bonds. A low debt to equity ratio reflects a financial healthy company because it means that it needs a relatively small amount of financial leverage. Times interest earned for the year of 2011 was 2, 252+155155= 15.

53. Again, this makes General Dynamics’ bonds less risky. In contrast, Boeing has more liquidity in its stock at an average trading volume of 4, 344, 230.

General Dynamics’ average trading volume is only 1, 642, 0007 which means General Dynamics’ ratios are subject to more volatility. With a higher trading volume and a new, cutting edge plane, this may offset Boeing’s higher risk compared to General Dynamics. Northrop Grumman The current ratio as of the 4th quarter of 2011 for Northrop Grumman was 1.

4. Its debt to equity ratio was 3, 948, 00010, 715, 000= 0. 37. Times interest earned was 2, 086+221221= 10. 44.

8 Like General Dynamics, Northrop Grumman’s ratios also suggest lower unsystematic risk compared to Boeing.

Although the bonds may also be more volatile because just like General Dynamics, Northrop Grumman has a much lower average trading volume (at 1, 533, 070) than Boeing does. Systematic Risk Market Responsiveness Date| YTM-Boeing| YTM-Avg. A Rated Market| Mar-08| 5. 28%| 6. 24%| Jun-08| 6.

09%| 6. 43%| Sep-08| 6. 01%| 6. 55%| Dec-08| 7. 16%| 6.

70%| Mar-09| 6. 50%| 6. 66%| Jun-09| 5. 92%| 6. 39%| Sep-09| 4. 96%| 5.

56%| Dec-09| 4. 69%| 5. 77%| Mar-10| 5. 13%| 5. 80%| Jun-10| 4. 69%| 5.

44%| Sep-10| 3. 67%| 5. 01%| Dec-10| 3. 89%| 5. 52%| Mar-11| 4. 56%| 5.

52%| Jun-11| 3. 93%| 5. 26%| Sep-11| 3. 66%| 4. 54%| Dec-11| 3.

0%| 4. 40%| Mar-12| 3. 32%| 4. 51%| Jun-12| 2. 63%| 4. 14%| Sep-12| 2.

56%| –. –| Below is a list of Boeing's yields to maturity and the AA-rated bond market yields to maturity according to the S&P Bond Guide: Yield to maturity has been on a downward trend since December 2008 for both Boeing and the rest of the AA-rated bond market. It seems like the YTMs for Boeing and the rest of the market move together. The null hypothesis for this situation would be that the market movement has no correlation to Boeing's movement in YTMs; therefore the slope would be 0 for a linear regression of the scatter plot below.

The alternative hypothesis is that the market does have some influence. The null hypothesis can be tested with some calculations.

The test statistic is calculated by taking the value of the beta 0. 96 and dividing it by the standard error of 0. 11132, we get 8. 62. Using the test statistic and a level of significance of 10%, the corresponding P-Value is 0.

0000000007. Anything to the left of the 10% level of significance is a rejection of the null hypothesis. The P-Value is well below the level of significance of 10% and therefore the null hypothesis should be rejected.

This means that the population coefficient of determination is not equal to 0 according to our sample of 18 periods. The sample yields a coefficient of determination of 0. 91.

Boeing’s movement in YTM can be explained by a movement in market YTM 91% of the time. Boeing’s YTMs have a strong positive correlation with the market’s YTMs and makes its bond issues just slightly less volatile to movements in the market. Duration This bond issue has a par value of $1, 000 and a coupon payment of 8. 75% semi-annually. The coupon payment is $87.

50 and the latest rate for the AA bond class, according to the Wall Street Journal, is 1. 3%9 as of October 2, 2012. The present value of this bond is $1, 569. 44. The weighted present value of this bond is $11, 157. 82.

The current duration for this bond issue is 7. 11 years. It will take a little over 7 years for this bond to cover the initial investment. Modified Duration The modified current duration is calculated as the current duration divided by 1 + (bond class interest rate). In this case it is 7.

111+0. 0183= 6. 98. This means that for every 1% increase in market interest rates, this bond issue will go down 6. 98% in value. Accuracy of Rating

Standard & Poor’s definition for an A rating is defined as a “ strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances.

With a beta of 0. 63 and a current duration of 6. 98%, it seems like the rating of A is accurate according to the “ somewhat susceptible to adverse economic conditions” part of the definition. For the “ strong capacity to meet financial commitments”, I also feel like this fits Boeing since it has a times interest earned ratio of 9. 05 and a current ratio of 1.

22. Interest Rate Expectations

According to the Federal Reserve Board press release of September 13, 2012, the announced quantitative easing program will keep bond prices high and interest rates low, at least for the short-term (next year). Also, the economy has expanded somewhat in recent months, but still at a lower than expected rate10. This suggests that interest rates will remain mostly unchanged since there is not a lot of spending. The Washington Post’s front-page article on October 2, 2012, stated that Americans “ do not want to take any risks with their money – even as the government is encouraging risk-taking” 11.

According to the Fisher Effect, when expected inflation rises, interest rates will rise12. With low inflation expectations, we can expect a continuation of low interest rates. Instead of trending they will be “ ranging”. As of October 2, 2012, a 10-year Treasury bond had a yield of 1. 64% while AA-Rated bonds had a yield of 1.

83%. The spread is 0. 19. The present value of a single bond from this issue is $1, 569. 44.

With interest rates rising only 10 basis points by the end of this year and with a modified duration of 6. 98, the present value will drop by 0. 698%. $1, 569. 44(1 – 0. 00698) = $1, 558.

9. The estimated yield to maturity for Boeing one year from now with a 20 basis point increase is YTM-BA = -3. 2949 + 1. 4426(4. 34) + 0.

001 = 2. 97% for Boeing, up from 2. 63%. 4. 34% is 20 basis points above the last market YTM data point of 4. 14%.

This small rise in interest rates means Boeing’s bond issue is going to drop slightly in price. Summary I would definitely buy this bond despite some of its shortcomings. Boeing may be heavily leveraged at the moment, but it still has other ratios that show its financial health, such as market capitalization, the debt to equity ratio of 1. 1 and the current ratio of 1. 22. Additionally, Boeing’s new model airplane, the 787 Dreamliner, is a positive prospect for future financial health.

According to Mergent’s records, Boeing has never defaulted on its loans before and with 96 years of history I wouldn’t expect a default any time soon. Appendix Descriptive Statistics YTM-BA%| | YTM-A%| | | | | | Mean| 4. 755| Mean| 5. 58| Standard Error| 0. 291509762| Standard Error| 0.

193077925| Median| 4. 69| Median| 5. 54| Mode| 4. 69| Mode| 5. 52| Standard Deviation| 1. 236771176| Standard Deviation| 0.

19160259| Sample Variance| 1. 529602941| Sample Variance| 0. 671023529| Kurtosis| -0. 700358347| Kurtosis| -1. 043305373| Skewness| 0.

246024371| Skewness| -0. 261513425| Range| 4. 53| Range| 2. 56| Minimum| 2. 63| Minimum| 4. 14| Maximum| 7.

16| Maximum| 6. 7| Sum| 85. 59| Sum| 100. 44| Count| 18| Count| 18| Regression Analysis Duration & Modified Duration References 1Boeing. (1995).

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