Case study of lyons document storage corporation

Business, Company

Introduction

The Lyons Company is currently a company providing storage of documents for other corporate customers. Lyons had operated conservatively without any long-term debt until it issued bonds in 1999. The bounds issued were $10 million in 20-year bonds, offering a coupon rate of 8% with interest paid semiannually, and sold to yield the 9% market rate of interest at the time. In the following essay, we take it as Alternative 1. These bonds were issued on July 2, 1999 and would be due July 2, 2019. But now, the investment bankers told the company’s owner, Mr. Lyons, that $10 million in new 6% bonds with semiannual interest payments could be issued to provide the company with exactly $10 million in principal at the end of 10 years. The new interest payments would be $200, 000 less each year than old bonds, which still had 12 years before they would be paid off. We take issuing these new bonds as Alternative 2. If it is selected, 11542K/1K= 11542 new bonds will Lyons have to issue to refund the old bonds. There is also a third alternative: Issuing $11. 54 million of 10-year 6% bonds to completely pay-off the existing bonds with no need for additional cash from the company.

Now, we are facing the problem that if Lyons should issue one of the new bonds with lower interest rate or keep the existing bonds. One Concept about Bond First I want to talk about the terms of “ premium” and “ discount”. Usually there will be difference between the face value of the bond and the actual amount ofmoneythat the borrower receives when the bond is originally issued. This difference is called premium or discount. If the amount received is larger than the face value, it is called premium. If it is

smaller than the face value, it is called discount. With this definition, we come to compute exactly how much the company eceived from its 8% bonds amount received by the borrower. The value, VN, is given by the following equation. VN= rZ(P/A, i%, N)+C(P/F, i%, N) Where: VN: bond value or balance sheet liability with N remaining periods r: bond interest rate Z: bond face value i: prevailing yield at time of issued C: redemption value at maturity For the old bonds, r= 8% with semiannual payments, i= 9%, Z= C=$10 million, N= 40(one period is half a year). VN= 0. 04*10(P/A, 4. 5%, 40)+10(P/F, 4. 5%, 40)= 9. 08 million. Thus, the company actually received $9. 08 million from the old bond, which is less than the face value $10 million. This is a discount bond.

We can also using this equation to recalculate the amount shown in the balance sheet at December 31, 2006: VN= 0. 04*10(P/A, 4. 5%, 25)+10(P/F, 4. 5%, 25)= 9. 26 million (number of remaining half-year period= 25) At December 31, 2007: VN= 0. 04*10(P/A, 4. 5%, 23)+10(P/F, 4. 5%, 23)= 9. 29 million The current market value of the bonds outstanding at the current interest rate of 6% equals to the actual amount of money the borrower will receive at that time. We can also use the above equation to do the calculation. This time r= 6% with semiannual payments, i= 6%, Z= C=$10 million, remaining number of period= 21. VN= 0. 03*10(P/A, 3%, 21)+10(P/F, 3%, 21)=$11. 54million

Comparison between three Alternatives

We can compare these three alternatives based on two aspects: cash flows and book earnings. First, let’s compare the cash flow. Here we use the differential PW method and set alternative 1 as the base. For Alternative 2,

there is $1. 54 million cash outflow in Jan. 2009, since $11. 54 million is paid to retire the old bonds. In the following years, alternative 2 will pay $100K less than alternative 1 semiannually, till July. 2019. But for alternative 3, as the new bonds' face value is $11. 4 million, we do not have to pay the $1. 54 million in Jan. 2009. And the differential annual cash flow is $53. 8K, which is $11. 54 million times 3% interest rate. Besides, we need to pay $1. 54 million more when it comes to maturity. This is because the redemption value equals to the face value, $11. 54million. The differential cash flow is listed in Exhibit 1. With the cash flow of every period, we can calculate the differential cumulative PW. The differential cumulative PW for alternative 2: PW2=-1542K+100K(P/A, 3%, 21)=-$0. 5K. The differential PW for alternative 3: PW3= 53. 8K(P/A, 3%, 21)-1542K(P/F, 3%, 21)=$0. K. The negative differential PW for alternative 2 means the company will eventually pay more money compared to alternative 1. The positive differential PW for alternative 3 means it will eventually receive more money. From the cash flow perspective, it seems the company may issue the $11. 54 million of 10-year 6% bonds. Another aspect is book earnings. Earnings will be affected by: (i) the $2. 2 million loss on refunding in 2009, (ii) differential interest payments in every period, and (iii) differential " amortized discount" expense in every period. The $2. 2 million is from $11. 4 million spent to retire bonds minus the $9. 3 million listed on the balance sheet at that time. The differential interest payments are the same as those in the cash flow perspective. The amortized discount of alternative 2 and 3 is zero for each period. This is because the interest expense is $10 million*3%=$300K semiannually. The actual payment is also $300K semiannually. There is no difference between

these two values. Therefore, the old amortized discount equals to the differential amortized discount. Old Amortized Discount= Interest Expense-Payment. (See Exhibit 2) For alternative 1, first we use $9079. K, which is calculated in " One Concept about Bond", as the liability at the beginning of the first period. The interest expense of every period equals to the liability at the beginning of that period times the interest rate. Liability at the end of the period before payment (column D) equals to column B plus column C. Finally, after deducting $400k from column D, we get the liability at the end of the period, which is $9088. 5K. Use this value as the liability at the beginning of period 2 and repeat the calculation above, we can finish the left side part Exhibit 2. This table shows how the liability increases with each period.

At the end of the 20 years it is exactly equal to $10 million face value. To compare the differential book earnings for alternative 2 and 3, we just add an extra part to the left side of the original table. There will be a $2. 2 million loss in the first period, and differential interest payments and amortized discount in the following periods. We add up these 3 differential values and get the New Earnings Effects. (See Exhibit 2 and 3) Conclusion From the book earning perspective, we can see that if the company issue any kind of new bond, there will be increases in future years' earnings and a loss in current year's earnings.

The loss will make Mr. Lyons unhappy. As a matter of fact, this perspective just gives us an implication of the company's financial status. It is more reasonable to use cash flow to compare these 3 alternatives, since it takes the time value into consideration. From the cash flow perspective, since PW3> 0 but PW2 < 0, which means Alternative 3 finally makes us pay less

money than Alternative 1 but Alternative 2 finally makes us pay more money than Alternative 1. Thus we should choose Alternative 3.