Arundel case study

Roundel Senior Management: After a thorough investigation into the venture you are considering, we have the following data and analysis for your review. In order for you to make a more informed decision, we have also provided recommendations for this endeavor based off our findings. Throughout the entirety of this report, we have taken many different approaches to better survey this idea so you can make a more informed decision. We have formatted this formal report to be easy to understand, as well as, impressive.

Analysis Methods Net Present Value Decision Tree Analysis Black-Schools Model Nee used the above methods to determine the appropriate value of the option for the sequel rights under each scenario. This value can be looked at as the maximum price to pay, given that it is the highest value you can expect to earn. If the agreed upon per-film price exceeded the derived values, you will be out-of-the-money. Conclusion After carrying out each valuation approach, we found maximum price to pay per film Nas around the same under each method. Method Maximum Per-Film Price (in millions) $4.

88 54. 96 jack-Schools Model Nee recommend not paying above $4. 56 million per film as given by the Black-Schools model. This figure is the most conservative value we found throughout our real options analysis. Problem Statement ere investment group, Roundel Partners, is seeking to create an innovative business Inhere the ability to create and produce movie sequels is transformed into an option market.

This will be achieved in two ways: buying the sequel rights too film prior to the first movie being released, and purchasing an entire portfolio of films from major movie companies to achieve information symmetry.

It is imperative that Roundel agrees on the sequel rights price prior to any movie being created. If they waited, the ' arioso production studios would have more information on hand about the possible success or failure of each film, causing the negotiated price to fluctuate unfairly. With the sequel rights and complete movie revenue data, Roundel can decide which movies will contribute to a profitable sequel and which will not. Successfully forming this business brings a number of problems to the surface.

Roundel Partners must figure out how much money they should spend on each film in order to make a profit.

In determining this figure, hypothesized sequel revenues are estimated based on the first film data. This is risky because they are Just projected revenues, but they are being used to make multi-million dollar business decisions. Analysis of the Problem Nee set out to determine the Net Present Value per film for the hypothetical sequels. This figure could be viewed as the revenue (in millions) Roundel could expect to receive from the sequel of each of the 99 films purchased. It is important to note that they would not create a sequel for every movie; they would only create a sequel if it Nerve profitable to do so.

Exhibit 7 shows the expected present values and one-year holding period returns. First, we discounted the hypothetical sequel net inflows back to year three to match the period of the hypothetical sequel negative cost. We used an effective annual rate of 12. 36% to discount, derived from the given 6% semi-annual discount rate. Then we subtracted the year three negative costs from the year three net inflows, leaving us Ninth the NAP in year three. There

were 26 films with a positive NAP, which are shown in Table 1 of the Appendix.

We then discounted the year three NAP back to year zero, Nee Roundel would be purchasing the portfolio to movies.

This gave us a total N of $483. 2 million, which we divided by 99 (the total number of films being purchased) to find a NAP per film of $4. 88 million. Although this value is only made up of 26 films, they will be purchasing all 99 sequel rights. Using the Net Present Value analysis, Roundel should not pay more than $4.

88 million for each movie. Additionally, if they pay the suggested studio price of $2 million per film, they would make an estimated $2. 88 million per film? a very profitable venture. Nee also used the binomial model to construct a decision tree to find the Max value Roundel should pay for the sequel rights per movie.

Using this method, the highest ' alee they should pay is $4.

896 million. Or set up the tree, we used the average net inflow of hypothetical sequels in year 4 taken from Exhibit 7) of $21. 60 million and discounted it back to year O (1989) when the films were released. We discounted using 12. 36% again, the effective annual rate derived from the given 6% semi-annual discount rate.

This gives us a value of $13. 53 million to start the net inflow tree (Appendix: Table 3). For our time variable, we are using 12 periods symbolizing the 12

months between the distribution of the first movie and the hypothetical sequel.

We used a standard deviation of 1. 21, taken from the one-year return of the hypothetical sequel in Exhibit 7.

We then found the U and D values to construct a 12 period binomial tree. L After creating this tree, we worked backwards to create a new tree illustrating the payoffs in each state to find the per film option price. We took the negative cost for the hypothetical sequel and discounted it back to year 2, the time that Roundel could iced to exercise the right to produce the sequel. We discounted it using the average 10-year risk free rate in 1992 (7. 03%).

This cost is $21. 12.

By subtracting the cost at exercise (effectively the strike price) from the present value of the net inflow at [ear O, we determine the payoffs. 2 We continue to move backwards throughout the tree using risk neutral valuation (Table 4). Additionally, we ran the Black-Schools model to determine the price of the sequel options.

We used $13. 55 as the present value of cash flows, taken from the average net inflows from year four and discounted back to year zero. This will symbolize the ' arable S in our real option analysis. The next variable, X, which is the cost of the project can be taken from of Exhibit 7.

Since it is the investment, it is a fixed variable and does not need to be discounted, so the value to $22. 6 is used as the variable X ere volatility (o)

is also derived from Exhibit 7, as the standard deviation of the one- Hear return.

We are using a time period of 1 year (T= l), which is the window of time the option can be exercised. We used the same risk free rate as in the binomial model of 7. 03%. Based off these variables, we ran the Black-Schools model yielding a exult of $4. 56 million per film. This is the fair price at which the studio should be Milling to purchase the rights to a sequel of a film.

Sensitivity Analysis Our scenario analysis (Table 5) reveals the effect that the risk free rate and the Laterality have on the price of the call option of the sequels. By isolating the risk free rate we can see that a 10% increase in volatility leads to a $0. 5 million Jump in the call price. However, when isolating the volatility, a 1% increase in the risk free rate leads to a $0. 03 million Jump in the call price. Finally, our scenario analysis tells us that when valuing the call option one has to be aware of the impact of the risk free rate and volatility.

Potential Problems & Feasible Solutions Morning with major movie studios, there are a number of problems Roundel faces in attempt to maintain positive relationships: It could be challenging to agree upon a payment structure due to conflicting interest amongst the studios and Roundel. " hen drafting the contract, a provision should be included regarding the payment structure. If the movie rights no longer belong to the movie studios they may put Roth a lack-luster effort, because the financial success of this movie is no longer beneficial to them, creating a principal-agent problem.

To avoid this problem, Roundel could add a bonus incentive paid to high grossing films. As stated earlier, the possibility of creating asymmetric information is a huge problem to Roundel. The longer they wait to buy the sequel rights, the more the production studio knows about the prospective success of this original movie.

As they see interest grow for a particular movie, it may cause the studio to raise the price for the sequel rights. This Mould significantly affect Roundel returns.

To combat this issue, it is imperative that Roundel buy these rights as early as possible to prevent the studios from having a means to charge higher prices. Recommendations Nee have determined that Roundel should not purchase the portfolio of sequel rights if it is more than $4. 56 million per film.

Technically, the price could be as high as $4. 89 million, given by the binomial model; however, we will err on the side of caution to ensure the highest return possible. Paying any amount higher would cause Roundel to lose money on these options.