

The boeing 777 case

Business



In October 1990 Boeing officially announced the launch of the latest addition to the Boeing family: The Boeing 777. The Boeing 777 is a long range, wide-body, twin jet engine jet. In this case study we are trying to evaluate the 777 project. This project seems a bit risky since R&D and design expense are very high for this project and the invasion of Kuwait by Iraq has increased the oil prices. 1. We know that there are two ways to increase return on equity RoE.

We either may increase the net income or decrease the total equity.

Boeing's latest project Boeing 777 is aimed to increase the company's net income. In 1988 and 1989 it is stated that Boeing's total equity is 5404 and 6131 million dollars. It is understood that Boeing has no intention of reducing its shareholders' equity. Therefore Shrontz's aim of increasing RoE simply means that increasing Boeing's net income with Boeing 777 project.

In Exhibit 6, it was shown that Boeing's forecasted pretax profit for 1990 is -142 million dollars but in 1996 forecasted pretax profit is 1,452.46 million dollars and it is increasing until 2024. Therefore, we can deduce that Boeing's RoE will increase between 1990 and 2024. 2. First step of calculating cost of capital for 777 project is calculating Boeing's levered beta.

To calculate Boeing's levered beta, we have to calculate unlevered betas of Grumman, Northrop, Lockheed and Lockheed then we have to take average of these betas. (0.369) Boeing's levered beta is calculated as 0.373. Then we calculate Boeing's commercial division beta which is 0.964.

Then we calculate cost of equity (14.3%) and cost of debt (9.67%). Then finally the cost of capital for this project is calculated using the formula:
 $rWACC = (E/V) * r_{equity} + (D/V) * r_{debt} * (1 - T)$ which is 14.16%.

(Detailed calculations are disclosed in Appendix) 3. As shown in Exhibit 8, Boeing 777 is attractive as long as cost of capital does not exceed 18 percent. By looking at Exhibit 8, we can deduce that as WACC increases 777 project becomes less attractive. Furthermore, Exhibit 8 demonstrates that when WACC is 18 percent, the breakeven happens roughly in 23rd year of project life but if WACC increases to 20 percent, breakeven will never happen. Therefore factors affecting WACC also affects the attractiveness of the project. From the calculations of WACC we can see that the major contributing factor to WACC is Boeing's cost of equity.

We know that cost of equity formula is sensitive to changes in beta therefore significant variations in company's financial structure and business risk will affect cost of equity and eventually the attractiveness of the project.

However, changes in cost of debt will have a little impact on WACC therefore the attractiveness of the project. Note that, changes in fuel prices and Boeing's market share also affect WACC. 4. My conclusion is Boeing should launch the 777 in October 1990 since its financial benefits. By launching 777 in Oct.

1990 Boeing will gain a head start against its competitors. Also note that 777 project is a long term project meaning contemporary events will have a little impact on the success of the project. Moreover, considering forecasts and sensitivity analysis we can conclude that the project is safe. Coworkers:

Didem TAMTUNALI, S? la KAHRAMAN, P? nar BOZKURTAPPENDIX Calculation of WACC Step 1: Calculating levered beta for Boeing (58 months S; P Index is used since Boeing's stock prices follow the Index trend. 58 month index is used since 777 project is a long term project.

) Grumman Beta (unlevered) = $0.8 / (1 + (1 - 0.34) * 1.756) = 0.3705$

Northrop Beta (unlevered) = 0.

$747(1 + (1 - 0.34) * 1.228) = 0.40$ Lockheed Beta (unlevered) = $0.87 / (1 + (1 - 0.34) * 1.182) = 0.4887$

M. Douglas Beta (unlevered) = $0.60 / (1 + (1 - 0.34) * 2.714) = 0.215$

Average Beta for these beta (unlevered beta for Boeing) = 0.36855 Levered Beta for Boeing = $0.36855 / (1 + (1 - 0.34) * 0.018) = 0.3729 = 0.373$

Step 2: Calculating Boeing's Commercial Division Beta We need to calculate Boeing's commercial division beta since 777 project belongs to Boeing's commercial division. Boeing's Beta = $(\% \text{Defense} * \text{Defense Beta}) + (\% \text{Commercial} * \text{Commercial Beta})$ Boeing's Beta = 0.81 (58 months S; P Index) 0.

$81 = (0.26 * 0.373) + (0.74 * \text{Commercial Beta})$ Commercial Beta = $0.9635 = 0.964$ Step 3: Calculating Cost of Equity Risk free rate is 8.

82% October 1990 yield on long term US Treasury Bonds Risk premium rate 5. % 64 Geometric average equity-market risk premium $\text{Requity} = R_f + \text{Commercial Beta} * (R_m - R_f)$ $\text{Requity} = 8.82\% + (5.4\% * 0.964)$ $\text{Requity} = 14.0256\% = 14.$

3% Step 4: Calculating cost of Debt Exhibit 2: \$37 million of long term notes payable @9.31% \$324.5 million bond @9.73% Total market value of the two debt issues was estimated to be \$ 271.5 million. $R_{debt} = (234.5/271.5)*9.73\% + (37/271.5)*9.31\%$

Step 5: Calculating rWACC $rWACC = (E/V)*R_{equity} + (D/V)*R_{debt}*(1-T)$ $rWACC = (14896.76/15168.26)*14.3\% + (271.5/14896.76)*9.67\%$

$rWACC = 14.16\%$

$14.16\% = 14.16\%$