M&A and Corporate Restructuring

Learning Problems

Answer Keys

**Problem: Identifying Take-over Defenses**

1. Employee stock ownership plan
2. White knight or white squire
3. Poison put
4. Reverse take-over or Pac-Man defense
5. Nationalist or security concerns
6. Anti-take-over amendment or shark repellant with supermajority voting
7. Anti-take-over amendment or shark repellant with a fair price amendment
8. Standstill agreement – Greenmail
9. Selling the crown jewels or scorched earth policy
10. Flip-in poison pill with a dead-hand provision
11. Golden and silver parachute
12. Anti-take-over amendment or shark repellant with staggered director elections
13. Dual-class shares
14. Just say no
15. Poison pill – flip-out
16. Fat man strategy
17. Management buyout
18. Anti-trust concerns

**Problem: Take-over Bid Calculation at Predator**

1. **Upper Limit**

= $\frac{18,000}{(.11 - .05)}$ + (15,000) (.4) = 306,000

306,000 / 50,000 = CAD 6.12

**Lower Limit**

= $\frac{15,000}{(.11 - .05)}$ = 250,000

250,000 / 50,000 = CAD 5.00

**Price range** - CAD 5.00 to CAD 6.12

The amount of the take-over premium that is realized by either Predator or Lamb will vary with their bargaining power and skill.

1. **Value of the Merged Firm**

= $\frac{100,000}{(.09- .04)}$ + 306,000 = 2,306,000

**Upper Limit**

($\frac{2,306,000}{(100,000+X)}$) (X) = (6.12) (50,000)

X = 15,300

Exchange ratio = $\frac{15,300}{50,000}$ = .31 or .31 Predator shares for 1.00 Lamb

**Lower Limit**

($\frac{2,306,000}{(100,000+X)}$) (X) = (5.00) (50,000)

X = 12,160

Exchange ratio = $\frac{12,160}{50,000}$ = .24 or .24 Predator shares for 1.00 Lamb

**Exchange Ratio Range** – .24 shares to .31 Predator shares for 1.00 Lamb

1. **Upper Limit**

Cash – 6.12 / 2 = CAD 3.06

Stock - .31 / 2 = .155 Predator shares for 1 Lamb

($\frac{2,306,000-\left(50,000\right)(3.06)}{(100,000+X)}$) (X) = (50,000) (3.06)

X = 7,650

= $\frac{7,650}{50,000}$ = .153

**Lower Limit**

Cash – 5.00 / 2 = CAD 2.50

Stock – .24 / 2 = .12 Predator shares for 1 Lamb

($\frac{2,306,000-\left(50,000\right)(2.50)}{(100,000+X)}$) (X) = (50,000) (2.50)

X = 6,079.77

= $\frac{6,079.77}{50,000}$ = .122

Problem: Take-over Bid Calculation at Vicious

1. **Value of Vicious Before**

= $\frac{85,000}{(.08- .04)}$ = CAD 2,125,000

**Value of Meek Before**

= $\frac{20,000}{(1+ .10)^{1}}$ + $\frac{20,000 (1+ .10)^{1}}{(1+ .10)^{2}}$ + $\frac{20,000 (1+ .10)^{2}}{(1+ .10)^{3}}$ + $\frac{\frac{20,000 \left(1+ .10\right)^{2}(1+ .04)}{(.10- .04)}}{(1+ .10)^{3}}$ = CAD 369,696.98

**Value of Meek After**

= $\frac{(20,000+5,000)}{(1+ .10)^{1}}$ + $\frac{(20,000+5,000) (1+ .10)^{1}}{(1+ .10)^{2}}$ + $\frac{(20,000+5,000) (1+ .10)^{2}}{(1+ .10)^{3}}$ + $\frac{\frac{(20,000+5,000) \left(1+ .10\right)^{2}(1+ .04)}{(.10- .04)}}{(1+ .10)^{3}}$ = CAD 462,121.20

**Take-over Premium**

= $\frac{462,121.20-369,696.98}{2}$ = CAD 46,212.11

**All Cash**

= $\frac{369,696.98+46,212.11}{13,000}$ = CAD 31.99

**All Stock**

($\frac{2,125,000+462,121.20}{(55,000+X)}$) (X) = 369,696.98 + 46,212.11

X = 10,535.59

Exchange ratio = $\frac{10,535.59}{13,000}$ = .81 or .81 shares of Vicious for 1.00 share of Meek

Problem: Take-over Bid Calculation at Terrible

1. **Upper Limit**

= $\frac{(15,000+5,000)}{(1+ .11)^{1}}$ + $\frac{(15,000+5,000) (1+ .09)^{1}}{(1+ .11)^{2}}$ + $\frac{(15,000+5,000) (1+ .09)^{2}}{(1+ .11)^{3}}$ + $\frac{\frac{(15,000+5,000) \left(1+ .09\right)^{2}(1+ .04)}{(.09- .04)}}{(1+ .11)^{3}}$ + (20,000) (.4) = 422,477.01

422,477.01 / 5,000 = CAD 84.50

**Lower Limit**

= $\frac{15,000}{(1+ .11)^{1}}$ + $\frac{15,000 (1+ .09)^{1}}{(1+ .11)^{2}}$ + $\frac{15,000 (1+ .09)^{2}}{(1+ .11)^{3}}$ + $\frac{\frac{15,000 \left(1+ .09\right)^{2}(1+ .04)}{(.09- .04)}}{(1+ .11)^{3}}$ = 310,857.76

310,857.76 / 5,000 = CAD 62.17

**Price range** - CAD 62.17 to CAD 84.50

Some market participants may have received insider information about the potential takeover and have begun to bid up the price to reflect the synergies.

1. **Value of the Merged Firm**

= $\frac{95,000}{(.08- .04)}$ + 422,477.01 = 2,797,477.01

**Upper Limit**

($\frac{2,797,477.01}{(25,000+X)}$) (X) = 422,477.01

X = 4,447.13

Exchange ratio = $\frac{4,447.13}{5,000}$ = .89 or .89 Terrible shares for 1.00 Nice

**Lower Limit**

($\frac{2,797,477.01}{(25,000+X)}$) (X) = 310,857.76

X = 3,125.31

Exchange ratio = $\frac{3,125.31}{5,000}$ = .63 or .63 Terrible shares for 1.00 Nice

1. **Value of Terrible Pre-Merger**

= $\frac{95,000}{(.08- .04)}$ = 2,375,000

= $\frac{2,375,000}{25,000}$ = CAD 95

Terrible’s shares appear to be overvalued (CAD 95 intrinsic value versus CAD 120 market value) so Terrible would prefer to use this share in a stock deal. Terrible would attempt to calculate its exchange ratio using CAD 3,000,000 as the value of Terrible (CAD 120 X 25,000) and not the intrinsic value of CAD 2,375,000 as calculated above resulting in a lower number of shares in the merged firm being given to the shareholders of Nice.

Nice would prefer an all-cash deal to avoid the overvalued shares of Terrible.

**Value of the Merged Firm (Using Market Value of CAD 120)**

= (120) (25,000) + 422,477.01 = CAD 3,422,477.01

**Upper Limit**

($\frac{3,422,477.01}{(25,000+X)}$) (X) = 422,477.01

X = 3,520.64

Exchange ratio = $\frac{3.520.64}{5,000}$ = .70 or .70 Terrible shares for 1.00 Nice

**Lower Limit**

($\frac{3,422,477.01}{(25,000+X)}$) (X) = 310,857.76

X = 2,590.48

Exchange ratio = $\frac{2,590.48}{5,000}$ = .52 or .52 Terrible shares for 1.00 Nice

Problem: Take-over Bid Calculation at Tough Guy

1. **Tough Guy**

= $\frac{93,000}{(.07- .03)}$ = CAD 2,325,000

**Weakling**

= $\frac{\left(23,000+15,000\right)}{\left(1+ .09\right)^{1}}$ + $\frac{\left(23,000+ 15,000\right)\left(1+ .08\right)^{1}}{\left(1+ .09\right)^{2}}$ + $\frac{\left(23,000+ 15,000\right)\left(1+ .08\right)^{2}}{\left(1+ .09\right)^{3}}$ +

$\frac{\frac{\left(23,000+ 15,000\right)\left(1+ .08\right)^{2}\left(1+ .03\right)}{\left(.09- .03\right)}}{\left(1+ .09\right)^{3}}$ $+ \left(120,000\right)\left(.4\right)-\left(18,000\right)\left(1-.4\right)$ = CAD 728,370.77

**Cash Deal**

= $\frac{728,370.77}{20,000}$ = CAD 36.42

**Stock Deal**

($\frac{(2,325,000+728,370.77)}{(60,000+X)}$) (X) = 728,370.77

X = 18,797

Exchange ratio = $\frac{18,797}{20,000}$ = .94 or .94 Tough Guy shares for 1.00 Weakling

1. Tough Guy’s shares are currently overvalued:

= $\frac{2,325,000}{60,000}$ = CAD 38.75 intrinsic value (market value CAD 48.75)

Tough Guy will try to calculate its exchange ratio with this higher value. Weakling will try to prevent it or negotiate an all-cash deal.

Problem: Take-over Bid Calculation at Hastings

1. **Value of Normandy**

= $\frac{1,200,000}{(1+.1286)^{1}}$ + $\frac{1,400,000}{(1+ .1286)^{2}}$ + $\frac{1,650,000}{(1+ .1286)^{3}}$ + $\frac{1,900,000}{(1+ .1286)^{4}}$ + $\frac{\frac{(1,900,000) (1+ .05)}{(.1286 - .05)}}{(1+ .1286)^{4}}$

- (550,000) (1 - .35) = 19,768,228

= 19,768,228 / 845,000 = CAD 23.39

**Take-over premium per share** - CAD 23.39 - CAD 17.21 = CAD 6.18

**Cost of Equity Capital**

1.35 = Bu (1 + (1 - .20) ($\frac{.20}{.80}$$\frac{.25}{.75}$)) Bu = 1.12

BL = 1.12 (1 + (1 - .35) ($\frac{.40}{.60}$)) BL = 1.61

Ke = .04 + 1.61 (.055) = .1286 or 12.86%

Note: The current share price of CAD 17.21 was used instead of calculating a lower limit using the FCFE approach.

1. Normandy should be valued using its current beta after adjusting for the change in the debt ratio expected after the M&A. This beta is appropriate as it represents the riskiness of the cash flows being valued. The consolidated tax rate should be used as this will be the tax rate for the future cash flows.

Problem: Using Comparable Companies and Transactions

1. **Comparable Company Approach**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Passchendaele** | **Vimy** | **Juno** | **Mean** | **Rideau Inputs** | **Intrinsic Value** |
| P/E | 13.24 | 14.72 | 15.81 | 14.59 | 2.25 | 32.83 |
| P/S | 2.07 | 1.74 | 2.06 | 1.96 | 18.05 | 35.29 |
| P/BV | 2.53 | 2.91 | 3.20 | 2.88 | 10.21 | 29.39 |
| **Average** |  |  |  |  |  | **32.50** |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Pre-Takeover** | **Acquisition** | **% Takeover Premium** |
| Transaction No. 1 | 23.10 | 29.56 | 27.97% |
| Transaction No. 2 | 40.78 | 51.85 | 27.15% |
| Transaction No. 3 | 27.32 | 35.10 | 28.48% |
| **Average** |  |  | **27.86%** |

**Take-over bid (upper limit)** - (32.50) (1.2786) = CAD 41.55

**Take-over bid range** - CAD 32.50 to CAD 41.55

1. **Comparable Transaction Approach**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Transaction No. 1** | **Transaction No. 2** | **Transaction No. 3** | **Mean** | **Rideau Inputs** | **Intrinsic Value** |
| P/E | 16.74 | 18.45 | 15.79 | 16.99 | 2.25 | 38.24 |
| P/S | 2.28 | 2.05 | 1.96 | 2.10 | 18.05 | 37.87 |
| P/BV | 2.78 | 3.03 | 2.86 | 2.89 | 10.21 | 29.51 |
| **Average** |  |  |  |  |  | **35.21** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Transaction No. 1** | **Transaction No. 2** | **Transaction No. 3** | **Mean** | **Rideau****Inputs** | **Intrinsic Value** |
| P/E | 21.42 | 23.46 | 20.29 | 21.72 | 2.25 | 48.88 |
| P/S | 2.92 | 2.61 | 2.52 | 2.68 | 18.05 | 48.42 |
| P/BV | 3.55 | 3.86 | 3.68 | 3.70 | 10.21 | 37.73 |
| **Average** |  |  |  |  |  | **45.01** |

**Take-over bid range** - CAD 35.21 to CAD 45.01

Problem: Appropriate Corporate Restructuring Measures

1. Horizontal merger. Hard Rock should acquire several smaller producers and close their inefficient facilities to reduce industry overcapacity and raise prices. The remaining production should be concentrated in Hard Rock’s larger, more efficient plants. The government will scrutinize these transactions to ensure they do not substantially lessen competition.
2. Divestiture. Hanson does not likely have the financial resources to develop this product further, so it should sell it to another business that has the technical and financial resources.
3. Backward vertical integration. Fast Chip should acquire a domestic producer of rare earth elements to guarantee it has the necessary inputs given recent trade tensions.
4. Split-up. Horizon’s three operating segments are unrelated and it is unlikely that the CEO has sufficient knowledge to manage them effectively. The conglomerate should be split-up into three independent companies to improve efficiency. Current shareholders will own the same proportionate share of each company but the value of their overall investment will rise. Equity analysts will also pay a premium as the companies are now pure plays and easier to analyze.
5. Buy-out. Black Duck is poorly managed. A buy-out firm may decide to purchase the company at a low price and take it private. It will then replace its complacent management, expand product distribution, raise the debt ratio to the optimal level, and reduce low-returning cash balances. These actions will likely cause the share price to rise which will allow the buy-out firm to take the company public again and realize a large profit.
6. Horizontal merger. Highland should acquire a parts producer in Mexico to speed up its expansion into Mexico and reduce the risk of establishing new operations in that country. Purchasing an existing producer may also be cheaper than building a new plant and may limit industry overcapacity leading to higher prices. Given that Mexico is a developing economy, a suitable company may not be available.
7. Backward vertical integration. Superior Aviation should acquire its main supplier to address serious problems in production scheduling and product quality.
8. Split-out. Rilla’s poorly performing unit should be split out into a new company. Family members can exchange a portion of their shares in Rilla for the shares in the new firm.
9. Congeneric merger. Everlast’s competencies in plastic injection molding are being applied to related product areas.
10. Horizontal merger. Perth Pharma should acquire Life Force to reduce risk by growing externally. Life Force provides strong R&D skills and can be purchased at a low price due to temporary product setbacks. Perth Pharma can also help Life Force better market their patented medicines to doctors and hospitals.
11. Divestiture. Harrison should sell its concrete products unit due to low profitability and weak growth prospects. The funds raised can be used to pay down debt and further expand its more profitable transit bus and farm equipment units. Given the recent upturn in the stock market, it is a good time to sell the unit directly to another company or to take it public using an equity carve-out.
12. Forward vertical integration. Delta Fitness should acquire the retail chain to provide better customer service, develop a better understanding of its customer needs, and build greater customer commitment to its products. This chain’s upscale mall locations are suitable for a high-end clothing designer like Delta Fitness.
13. Tracking shares or spin-off. Bracken Industries should create separate tracking shares for each of its business units so any rewards received under the stock option plan are linked to the performance of the business unit and not the overall company. This will provide a greater personal incentive for managers but will also allow the company to remain together and benefit from any operational, financial, and taxation synergies. If these synergies are not significant then spinning off each business unit is also an option.