19-3 a. If 100 shares are outstanding, then we have the following for Edelman:

1999 2004

Earnings per share $8,160 $12,000

Dividends per share 4,200 6,000

Book value per share 90,000

b. Using the following two equations, the growth rate for EPS and DPS can be determined.

(1 + gEPS)5 EPS99 = EPS04.

(1 + gDPS)5 DPS99 = DPS04.

gEPS gDPS

Kennedy 8.4% 8.4%

Strasburg 6.4 6.4

Edelman 8.0 7.4

c. Based on the figures in Part a, it is obvious that Edelman’s stock would not sell in the range of $25 to $100 per share. The small number of shares outstanding has greatly inflated EPS, DPS, and book value per share. Should Edelman attempt to sell its stock based on the EPS and DPS above, it would have difficulty finding investors at the economically justified price.

d. Edelman’s management would probably be wise to split the stock so that EPS, DPS, and book value were closer to those of Kennedy and Strasburg. This would bring the price of the stock into a more reasonable range.

e. A 4,000-for-1 split would result in 400,000 shares outstanding. If Edelman has 400,000 shares outstanding, then we would have the following:

1999 2004

Earnings per share $2.04 $ 3.00

Dividends per share 1.05 1.50

Book value per share 22.50

f. ROE

Kennedy 15.00%

Strasburg 13.64

Edelman 13.33

g. Payout Ratio

1999 2004

Kennedy 50% 50%

Strasburg 50 50

Edelman 51 50

All three companies seem to be following similar divi­dend policies, paying out about 50 percent of their earn­ings.

h. D/A is 43 percent for Kennedy, 37 percent for Strasburg, and 55 percent for Edelman. This suggests that Edelman is more risky, hence should sell at relatively low multiples.

i. P/E

Kennedy $36/$4.50 = 8.00×

Strasburg $65/$7.50 = 8.67

These ratios are not consistent with g and ROE; based on gs and ROEs, Kennedy should have the higher P/E. Probably size, listing status, and debt ratios are offsetting g and ROE.

j. The market prices of Kennedy and Strasburg yield the following multiples:

Multiple of Multiple of Multiple of Book

EPS, 2004 DPS, 2004 Value per Share, 2004

Kennedy 8.00× 16.00× 1.20×

Strasburg 8.67 17.33 1.18

Applying these multiples to the data in Part e, we obtain the following market prices:

Indicated Market Price

for Edelman Stock

Based on Data of:

Kennedy Strasburg

Based on earnings, 2003 $24.00 $26.01

Based on dividends, 2003 24.00 26.00

Based on book value per share 27.00 26.55

k.  =  + g.

*Kennedy* =  + 8.4% = 15.18.

*Strasburg*  =  + 6.4% = 12.54%.

*Edelman*  = .

*Based on Kennedy:*  =  = $21.54.

*Based on Strasburg:*  =  = $33.66.

l. The potential range, based on these data, is between $21.54 and $33.66 a share. The data suggest that the price would be set toward the low end of the range: (1) Edelman has a high debt ratio, (2) Edelman is relatively small, and (3) Edelman is new and will not be traded on an exchange. The actual price would be based on negotiations between the underwriter and Edelman; we cannot say what the exact price would be, but the price would probably be set below $21.54, with $20 being a reasonable guess.

19-4

a. Since the call premium is 11 percent, the total premium is 0.11($40,000,000) = $4,400,000. However, this is a tax deductible expense, so the relevant after‑tax cost is $4,400,000(1 - T) = $4,400,000(0.60) = $2,640,000.

b. The dollar flotation cost on the new issue is 0.04($40,000,000) = $1,600,000. This cost is not immediately tax deductible, and hence the after‑tax cost is also $1,600,000. (Note that the flotation cost can be amortized and expensed over the life of the issue. The value of this tax savings will be calculated in Part e.)

c. The flotation costs on the old issue were 0.06($40,000,000) = $2,400,000. These costs were deferred and are being amortized over the 25-year life of the issue, and hence $2,400,000/25 = $96,000 are being expensed each year, or $48,000 each 6 months. Since the bonds were issued 5 years ago, (5/25)($2,400,000) = $480,000 of the flotation costs have already been expensed, and (20/25)($2,400,000) = $1,920,000 remain unexpensed.

If the issue is refunded, the unexpensed portion of the flotation costs can be immediately expensed, and this would result in a tax savings of T($1,920,000) = 0.40($1,920,000) = $768,000.

d. The net after‑tax cash outlay is $3,472,000, as shown below:

Old issue call premium $2,640,000

New issue flotation cost 1,600,000

Tax savings on old issue

flotation costs (768,000)

Net cash outlay $3,472,000

e. The new issue flotation costs of $1,600,000 would be amortized over the 20‑year life of the issue. Thus, $1,600,000/20 = $80,000 would be expensed each year, or $40,000 each 6 months. The tax savings from this tax deduction is (0.40)$40,000 = $16,000 per semiannual period.

By refunding the old issue and immediately expensing the remaining old issue flotation costs, the firm forgoes the opportunity to continue to expense the old flotation costs over time. Specifically, $2,400,000/25 = $96,000 each year, or $48,000 semiannually. The value of each $48,000 deduction forgone is 0.40($48,000) = $19,200.

f. The interest on the old issue is 0.11($40,000,000) = $4,400,000 annually, or $2,200,000 semiannually. Since interest payments are tax deductible, the after‑tax semiannual amount is 0.6($2,200,000) = $1,320,000.

The new issue carries an 8 percent coupon rate. Therefore, the annual interest would be 0.08($40,000,000) = $3,200,000, or $1,600,000 semiannually. The after‑tax cost is thus 0.6($1,600,000) = $960,000. Thus, the after‑tax net interest savings if refunding takes place would be $1,320,000 ─ $960,000 = $360,000 semiannually.

g. The net amortization tax effects are ─$3,200 per year for 20 years, while the net interest savings are $360,000 per year for 20 years. Thus, the net semiannual cash flow is $356,800, as shown below.

Semiannual Flotation Cost Tax Effects:

Semiannual tax savings on new flotation: $16,000

Tax benefits lost on old flotation: (19,200)

Net amortization tax effects ($ 3,200)

Semiannual Interest Savings Due To Refunding:

Semiannual interest on old bond: $1,320,000

Semiannual interest on new bond: (960,000)

Net interest savings $ 360,000

Semiannual cash flow: $ 356,800

The cash flows are based on contractual obligations, and hence have about the same amount of risk as the firm's debt. Further, the cash flows are already net of taxes. Thus, the appropriate interest rate is GST's after‑tax cost of debt. (The source of the cash to fund the net investment outlay also influences the discount rate, but most firms use debt to finance this outlay, and, in this case, the discount rate should be the after‑tax cost of debt.) Finally, since we are valuing future flows, the appropriate debt cost is today's cost, or the cost of the new issue, and not the cost of debt floated 5 years ago. Thus, the appropriate discount rate is 0.6(8%) = 4.8% annually, or 2.4 percent per semiannual period.

At this discount rate, the present value of the semiannual net cash flows is $9,109,425:

PV = $356,800(PVIFA2.4%,40) = $9,109,425.

Alternatively, using a financial calculator, input N = 40, I = 2.4, PMT = -356800, FV = 0, PV = ? PV = $9,109,413.

h. The bond refunding would require a $3,472,000 net cash outlay, but it would produce $9,109,413 in net savings on a present value basis. Thus, the NPV of refunding is $5,637,413:

PV of net benefits $9,109,413

Cost (3,472,000)

Refunding NPV $5,637,413

The decision to refund now rather than wait till later is much more difficult than finding the NPV of refunding now. If interest rates were expected to fall, and hence GST would be able to issue debt in the future below today's 8 percent rate, then it might pay to wait. However, interest rate movements are very difficult, if not impossible, to forecast, and hence most financial managers would probably take the "bird-in-the-hand" and refund now with such a large NPV. Note, though, that if the NPV had been quite small, say $1,000, management would have undoubtedly waited, hoping that interest rates would fall further, and the cost of waiting ($1,000) would not have been high enough to worry about.