REEBY SPORTS

Minicase solution, Chapter 4

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What is Reeby Sports worth per share? We will value the company using George Reeby's forecasts.

The spreadsheet accompanying this solution sets out a forecast in the same general format as Table 4.5. Historical results from 2014 to 2019 are also shown. Earnings per share (EPS) equals return on equity (ROE) times starting book value per share (BVPS). EPS is divided between dividends and retained earnings, depending on the dividend payout ratio. BVPS grows as retained earnings are reinvested.

The keys to Reeby Sports’ future value and growth are profitability (ROE) and the reinvestment of retained earnings. Retained earnings are determined by dividend payout. The spreadsheet sets ROE at 15% for the six years from 2021 to 2025. If Reeby Sports will lose its competitive edge by 2025, then it cannot continue earning more than its 10% cost of capital. Therefore ROE is reduced to 10% starting in 2026.[[1]](#footnote-1)

The payout ratio is set at .30 from 2021 onwards. Notice that the long-term growth rate, which settles in after 2026, is ROE × ( 1 – dividend payout ratio) = .10 × (1 - .30) = .07.

The spreadsheet allows you to vary ROE and the dividend payout ratio separately for 2021-2025 and for 2026-2027.[[2]](#footnote-2) But let’s start with the initial input values. To calculate share value, we have to estimate a horizon value at H = 2025 and add its PV to the PV of dividends from 2020 to 2025. Using the constant-growth DCF formula,



The PV of dividends from 2020 to 2025 is $3.43 at the start of 2020, so share value is:[[3]](#footnote-3)



The spreadsheet also calculates the PV of dividends through 2027 and the horizon value at 2027. Notice that the PV at the start of 2020 remains at $16.82. This makes sense, since the value of a firm should not depend on the investment horizon chosen to calculate PV. (If you calculate a value that does depend on the horizon, you have made a mistake.)

We have reduced ROE to the 10% cost of capital after 2025, assuming that Reeby Sports will have exhausted valuable growth opportunities by that date. With PVGO = 0, PV = EPS/r. [[4]](#footnote-4) So we could discard the constant-growth DCF formula and just divide EPS in 2026 by the cost of capital:



This PV is identical to the PV from the constant-growth DCF formula. It doesn’t matter how fast a company grows after the horizon date H if it only earns its cost of capital.

How much of Reeby Sports’ value is due to PVGO? You can check by setting ROE = .10 for 2021 and all later years. You should get PV = $13.82. Thus PVGO = 16.82 – 13.82 = $3.00 per share for investments made in 2020 onward.

George Reeby has also identified a "comparable," Molly Sports. We could use its P/E ratio of 13.1 to calculate horizon value in 2025 and PV at the start of 2020. Using the original inputs for ROE, EPS in 2026 is 2.37.[[5]](#footnote-5)



We could also use Molly’s P/E ratio to calculate Reeby Sports’ PV at the start of 2020 directly from 2020 EPS:

PV = 13.1 × 2.03 = $26.59

Both values based on Molly’s P/E are higher than our DCF calculations. Is Molly significantly more profitable than Reeby Sports, or does our spreadsheet understate Reeby Sports’ prospects?

What if Reeby Sports could continue to earn ROE = .15 for two extra years, until 2027? You can check by changing ROE for 2026-2027 from .10 to .15. (The ROE for 2028 and 2029 is hard-wired at .10.) You should get NPV of $18.04, somewhat higher than our original DCF calculations, but not enough for Reeby Sports to match Molly’s P/E. You may wish to experiment to find inputs that generate P/E = 13 for Reeby Sports at the start of 2020. Do you think these inputs are reasonable?

1. A more sophisticated spreadsheet could distinguish ROE on existing assets from ROE on new capital investment. For example, ROE on new investment could drop all the way to 10% in 2023, but ROE for existing assets could decline gradually. [↑](#footnote-ref-1)
2. You can vary these inputs, but be careful not to enter ROEs and dividend payout ratios that generate long-term growth rates close to or above the cost of capital. As the growth rate approaches the cost of capital, the DCF formula explodes. If the growth rate exceeds the cost of capital, the DCF formula says stock price is negative, which is impossible. The spreadsheet reports “Formula not applicable” in this case. [↑](#footnote-ref-2)
3. This DCF calculation assumes that the first dividend will be received after one year, at the end of 2020. Normally dividends are paid quarterly, so it would be more realistic to assume receipt at the middle of the year. This “mid-year convention” would move all cash flows 6 months closer and therefore increase PV by 1.1.5. (In finance, “mid-year convention” does *not* mean June in Las Vegas.) [↑](#footnote-ref-3)
4. See Section 4.5. [↑](#footnote-ref-4)
5. Notice that the P/E ratio applies to the next year’s forecasted earnings. Sometimes “trailing P/Es” are used instead. Trailing P/Es are based on earnings over the previous year. [↑](#footnote-ref-5)