
Question: Equity Valuation and Analysis / Corporate Finance**(28 points)**

XYZ Co. has no interest-bearing liabilities, 100 million issued and outstanding shares, and a book value per share (BPS) of 1,000 yen. Michael Taylor, a securities analyst covering XYZ Co., forecasts for XYZ Co. a return on equity (ROE) of 10% and a payout ratio of 60%. Retained earnings are reinvested and expected to earn the same rate of return as ROE.

The risk-free rate is 2%, the market risk premium is 5%, and the corporate income tax rate is 35%. XYZ Co.'s historical equity beta is 1.2. Company A is in the same sector and of similar size to XYZ Co. Company A has interest-bearing liabilities, a debt-to-equity ratio (D/E ratio) of 0.25 at market value, a debt beta of zero, and an equity beta (levered beta) of 1.4.

- a) Answer the following questions about the corporate cost of capital.
- a1) Calculate Company A's weighted average cost of capital (WACC). (4 points)
 - a2) Calculate Company A's unlevered beta, assuming the tax shield discount rate to be equivalent to the debt cost. (2 points)
 - a3) When there are interest-bearing liabilities, levered beta is larger than unlevered beta. Describe the reasons for this. (3 points)
 - a4) Michael Taylor estimated XYZ Co.'s equity capital cost at 8.0%. Provide two approaches that would yield such an estimate. (3 points)
- b) Michael Taylor uses a dividend discount model to value XYZ Co.'s stock. XYZ Co.'s equity capital cost is 8%. It is currently the beginning of a new fiscal year, and dividends are paid once a year at the end of the respective fiscal year. The clean surplus relationship holds true.
- b1) Assuming XYZ Co.'s ROE and payout ratio are constant, calculate net worth at the end of this term (1 year from now) and at the end of next term (2 years from now). (4 points)
 - b2) Assuming XYZ Co.'s ROE and payout ratio to be perpetually constant, calculate the theoretical stock price and price-to-book ratio (PBR) at the current point in time. Calculate the theoretical stock price for 1 year from now (immediately after dividend payment) expected at the current point in time. (8 points)
 - b3) Michael Taylor also analyses a scenario that is based on more prudent growth expectations. In this scenario, ROE will remain unchanged at 10%, but growth opportunities will dry up after 3 years, and at that point in time, XYZ Co. will cease to reinvest and start to pay out the entire amount of profit as dividends. This will for the first time apply to the dividends paid at the end of year 3. Calculate XYZ Co.'s current theoretical stock price under this scenario. (4 points)