Samiksha Sarda
Saito Solar Case Study

1. Why are projected free cash flows (FCFs) used instead of profit in the estimation of the firm's value using the DCF approach?

Projected free cash flows (FCFs) are used in the discounted cash flow (DCF) approach instead of profits because FCF represents the **actual cash available to investors** after accounting for capital expenditures and working capital needs. Profit, on the other hand, is an accounting measure that includes **non-cash expenses** like **depreciation and amortization**, which do not reflect the company's real cash-generating ability. Since valuation is based on **the cash that can be returned to investors**, FCF is a more accurate and reliable metric for estimating the intrinsic value of the firm.

2. What is the role of the cost of capital (or weighted average cost of capital - WACC) in firm valuation?

The **cost of capital**, specifically the **weighted average cost of capital (WACC)**, is crucial in firm valuation as it represents the **minimum return** required by both equity and debt investors to justify their investment in the firm. WACC is used as the discount rate to convert future free cash flows into their present value. If WACC is high, the firm's valuation decreases, reflecting higher investment risk. Conversely, a lower WACC increases the valuation since future cash flows are considered more valuable in present terms. In this case, **Saito Solar's owner requires a 10% return**, which is used as the discount rate for valuation.

3. Based on Mr. Suzuki's estimate of a 1-3% growth rate of Saito Solar's free cash flow over the next 20 years, how much should Saito Solar be valued at?

To estimate the value of Saito Solar, we project its future **free cash flows (FCFs)** using the **growth rate of 1-3%** over the next **20 years**. The explicit cash flows for the next twenty years are discounted individually, and the terminal value is calculated using the **Gordon Growth Model**:

$$\text{Terminal Value} = FCFF(n+1)/WACC - g$$

where:

- **FCFF(n+1)** is the projected cash flow in year 21
- **WACC** = 10%
- **g** = Terminal growth rate (3%)

Saito Solar DCF Valuation

(in millions of Yen, year ending June 30)

Calculation of PV of FCFF	Jun-12A	Jun-13F	Jun-14F	Jun-15F	Jun-16F	Jun-17F	Jun-18F	Jun-19F	Jun-20F	Jun-21F	Jun-22F	Jun-23F	Jun-24F	Jun-25F	Jun-26F	Jun-27F	Jun-28F	Jun-29F	Jun-30F	Jun-31F	Jun-32F
Free Cash Flow to Firm (FCFF)	250.10	396.40	465.20	538.90	607.10	628.40	647.25	666.67	686.67	707.27	728.49	750.34	772.85	796.04	819.92	844.52	869.85	895.95	922.83	950.51	979.03
Year Convention		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Discounting Factor		0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386	0.350	0.319	0.290	0.263	0.239	0.218	0.198	0.180	0.164	0.149
PV of FCFF	**250.10**	**360.36**	**384.46**	**404.88**	**414.66**	**390.19**	**365.36**	**342.11**	**320.34**	**299.95**	**280.86**	**262.99**	**246.25**	**230.58**	**215.91**	**202.17**	**189.31**	**177.26**	**165.98**	**155.42**	**145.53**

Expected Growth	3.00%
Terminal Growth	3.00%
WACC	10.00%

Calculation of Terminal Value	
FCFF (n+1)	1008.40
WACC	10.00%
Terminal Growth Rate	3.00%
Terminal Value	**14405.68**

Calculation of Equity Value	
PV of FCFF	5804.66
PV of Terminal value	2141.31
Value of Operating Assets	**7945.98**
Add: Cash	140.70
Less: Debt	1142.00
Value of Equity	**6944.68**

4. How do you estimate firm value when free cash flows are uneven for the first few years but stabilize afterward?

When free cash flows fluctuate in the **initial years** but become stable later, the valuation is done in two steps:

1. **Explicitly forecasting the uneven cash flows** and discounting them at different rates for each year.
2. **Applying a constant growth rate assumption** beyond the fluctuating period to calculate the terminal value.

This ensures that the valuation reflects both the short-term cash flow volatility and the expected long-term stability. The method used in this case follows this principle by discounting the first **five years of FCFs** individually and then using a **perpetual growth model** to estimate the firm's terminal value.

5. Based on the free cash flow forecast provided in Appendix 3, and assuming a range of 9-11% cost of capital and 1-3% terminal growth rate, what is the range of values for Saito Solar?

A **sensitivity analysis** has been conducted to examine the impact of changes in WACC (9-11%) and terminal growth rate (1-3%) on Saito Solar's valuation. The results are as follows:

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Sensitivity Analysis			
	9.00%	**10.00%**	**11.00%**
1.00%	7,678.3	7,470.1	7,303.6
2.00%	7,946.0	7,678.3	7,470.1
3.00%	8,302.9	7,946.0	7,678.3

From this analysis, the estimated **valuation range for Saito Solar** is **7,303.6M yen to 8,302.3M yen**, depending on WACC and growth rate assumptions.

6. Strategically, should Mr. Saito and his partners sell the firm at this time?

The decision to sell Saito Solar depends on **multiple factors** beyond financial valuation. If the market is **offering a price that exceeds the intrinsic valuation (6,944.68M yen to 8,302.3M yen)**, selling might be a good strategic move. However, if the company expects **higher growth, operational improvements, or industry expansion**, they might prefer to hold on to the firm and benefit from future gains.

Other external factors, such as **market conditions, industry trends, and interest rates**, should also be considered. If industry demand is strong and technological advancements favor solar energy growth, it may be beneficial to **wait and capitalize on future profitability**. However, if the industry is facing declining profitability or economic downturns, selling now could help them **lock in a favorable exit price**.

Ultimately, Mr. Saito and his partners should weigh the **DCF valuation, market conditions, and their long-term strategic goals** before making a final decision.