

CASE #2

**MARKING GUIDE
HOLODECK VENTURES INC.
ASSESSMENT OPPORTUNITIES**

Assessment Opportunity #1

The candidate develops a cash flow forecast for Holodeck and assesses its financing needs should it pursue its acquisition of Next.

The candidate demonstrates competence in Finance.

5.2.1 – Evaluates the entity’s cash flow and working capital (Core Level A)

5.2.3 – Evaluates sources of financing (Core Level B; moves to Level A in the Finance Elective)

Irrespective of the financing option to be retained (Blue Ocean private equity or IPO), a cash flow forecast needs to be performed for two main reasons. First, a cash flow forecast is needed to estimate Holodeck’s financing needs as well as its capacity to reimburse capital providers following its acquisition of Next. Second, a cash flow forecast is needed to perform a business valuation using discounted cash flows.

Cash Flow Projections Derived from the Investment Bank’s Earnings Projections

For the purpose of doing the cash flow projections that will serve as a foundation to the valuation analysis and the estimation of financing needs, we use the earnings forecasts’ numbers and assume that EBITDA less income taxes, capital expenditures, intangibles investments, and working capital investment is a reasonable first approximation of a firm’s free cash flow:

	2016	2017	2018	2019	2020
EBITDA	27.0	32.0	39.0	47.0	56.0
Income taxes	6.0	7.0	8.0	10.0	12.0
Capital expenditures and intangibles	4.4	5.3	6.4	7.7	9.2
Working capital investment	<u>3.7</u>	<u>4.4</u>	<u>5.3</u>	<u>6.4</u>	<u>7.7</u>
Estimated free cash flow	<u>12.9</u>	<u>15.3</u>	<u>19.3</u>	<u>22.9</u>	<u>27.1</u>

On the basis of the investment bank’s assumptions, the estimated free cash flows should allow Holodeck to repay any term loan obtained to purchase Next within the next three years. However, in light of the investment bank’s assumptions being somewhat optimistic, a longer time horizon is probably warranted, thus undermining the justification for the acquisition.

Assessment Opportunity #2

The candidate discusses the appropriateness of the underlying assumptions used by the investment bank.

The candidate demonstrates competence in Management Accounting.

3.2.1 – Develops or evaluates information inputs for operational plans, budgets and forecasts (Core Level A)

5.1.2 – Develops or evaluates financial proposals and financing plans (Core Level B; moves to Level A in the Finance Elective)

Underlying Assumptions Analysis

In preparing its forecasts, the investment bank relied on the following assumptions:

Growth	20%	per annum
Gross margin	80%	of sales
R&D expenses	10%	of sales
SG&A expenses	33%	of sales
Depreciation expense	20%	growth per annum
Income tax expense	30%	of income before tax
Capital expenditures and intangibles annual investment	6%	of sales
Working capital annual investment	30%	of change in sales

However, how realistic are these assumptions? One way to assess the soundness of the forecast is to compare these assumptions with recent trends in the firm’s financials.

Growth

In 2014, which was the firm’s highest-growth-rate year, growth was barely 15%, and the firm’s average annual growth rate during that period was around 14%. Hence, the investment bank’s growth assumption is fairly aggressive.

Gross Margin

The investment bank is projecting an 80% gross margin. During the past three years, Holodeck’s gross margin has averaged just under 80%. Therefore, the assumption appears realistic, but such a high margin could also attract competition.

Research and Development Expenses plus Capital Expenditures and Intangibles Investments

The investment bank is assuming that Holodeck’s investment in R&D will represent around 10% of sales. However, over the past three years, Holodeck has reduced its R&D expenses from 15% of sales to 11%, thus potentially undermining its future growth prospects. Raising the R&D investment to 18% of sales helps reaffirm the firm’s current sales prospects, but it may not be sufficient to reach a 20% growth rate and even a 15%

Finance Elective Sample Examination Question – SOLUTION

growth rate. Also, industry statistics indicate that firms in the industry typically devote 22% of their sales to R&D.

Selling, General and Administrative Expenses

The investment bank is forecasting that SG&A expenses will represent 33.3% of sales in the future. However, actual figures show that these expenses never represented less than 34% of sales in the past three years and fluctuated between 34% and 37%.

Taxation

The projected effective income tax rate used by the investment bank fluctuates between 25% (2015) and 31% (2018). However, in 2014, the effective income tax rate is 30%. Hence, it appears that the investment bank projections may be somewhat optimistic.

Costs Generated by a Public Listing

The investment bank projections do not integrate the recurring costs generated by the decision to become a publicly listed entity (legal, accounting, regulatory, and control costs). The estimate mentioned in the case is around \$1.5 million.

Overall Assessment

Therefore, the investment bank's forecast assumptions are deemed to be somewhat aggressive.

Assessment Opportunity #3

The candidate calculates the weighted average cost of capital for Holodeck.

The candidate demonstrates competence in Finance.

5.2.5 – Evaluates the entity's cost of capital (Core Level B; moves to Level A in the Finance Elective)

To assess the value of a business beyond financial projections, one needs to determine its cost of capital, otherwise called the weighted average cost of capital (WACC). To estimate the WACC, one needs typically to determine a firm's target capital structure. The lack of tangible assets for securing financing, as well as the underlying uncertainty regarding market perspectives, implies that firms in the video and digital games industry do not rely much on debt financing to support their growth. In this case, we can make the logical assumption that the target capital structure is close to 100% equity.

The cost of equity is the opportunity cost of the returns that could be earned through investments with similar risk profiles. To assess Holodeck as a stand-alone entity with the perspective of a forthcoming IPO, we may rely on market inputs. The capital asset pricing model-derived cost of capital relies on the following equation:

Cost of capital = cost of equity = risk-free rate + beta × market risk premium

Finance Elective Sample Examination Question – SOLUTION

In Holodeck's case, that gives us an estimated cost of capital of 10.75%. Since Holodeck is not listed yet, we have to rely on an industry-based beta estimate. However, Holodeck is a fairly small firm competing against giants in a very volatile sector, so its cost of capital should arguably reflect firm size risk in addition to market risk. Taking into account this additional risk (which we have estimated at an additional 4%), Holodeck's cost of capital can be estimated to be the following:

Cost of capital reflecting market and size risks: $10.75\% + 4\% = 14.75\%$

While the estimation of the cost of capital gives us a very precise number, we must remember that it relies on numerous underlying assumptions and premises. Since stock market investors' return expectations are not formally known, it is unavoidable that we have to rely on such assumptions.

In contrast, should we view Holodeck solely as a private firm seeking capital from a private equity investment firm, then its cost of capital would reflect the investor's explicit return expectations. Blue Ocean seeks to double its investments within four years, so we can infer that its return expectation is around 19% per annum (an investment earning 19% a year doubles in four years).

Assessment Opportunity #4

The candidate estimates the value of Holodeck.

The candidate demonstrates competence in Finance.

5.4.2 – Applies appropriate methods to estimate the value of a business (Core Level B; moves to Level A in the Finance Elective)

You have asked us to provide an estimate of Holodeck's value as a stand-alone entity based on a discounted cash flow analysis (DCF). A DCF is appropriate when you have earnings levels that fluctuate from year to year, such as in a start-up or with a high growth firm, and would appear to be relevant for Holodeck. A discounted cash flow approach also makes sense if you have a limited time frame for an earnings stream.

A DCF valuation approach requires us to estimate a terminal value with a growth factor, which is usually set at a level close to long-term GDP growth trends.

In the current case, we use EBITDA as an approximation of the firm's cash flow from operations, a practice that is common in the high-tech sector. Under the DCF approach, we estimate the value of the enterprise (in other words, the summation value of all assets and liabilities that relate to the business operations). In that context, the firm's cash needs to be added to the enterprise value (with debt to be deducted, if any) to obtain the firm's equity value.

Finance Elective Sample Examination Question – SOLUTION

DCF Valuation Approach

Cost of capital (previously computed):	14.75%				
Terminal value growth factor:	2%				
	2015	2016	2017	2018	2019
EBITDA	27.1	32.5	39.0	46.8	56.1
Income taxes (30%)	(8.1)	(9.7)	(11.7)	(14.0)	(16.8)
Capital expenditures and intangibles (6%)	(4.4)	(5.3)	(6.4)	(7.7)	(9.2)
Working capital investment (30% of change)	(3.8)	(4.5)	(5.1)	(6.6)	(7.5)
Free cash flow	10.8	13.0	15.8	18.5	22.6
Terminal value (continuing value)*	0	0	0	0	177.3
Amount to be discounted	10.8	13.0	15.8	18.5	199.9
Discounted value (@ 14.75%)	9.4	9.9	10.5	10.7	100.5
Total enterprise value (DCF)					141.0
Net cash position					8.4
Estimated equity value					149.4

*The terminal value represents the discounted value of cash flows after 2019, assuming constant annual growth of 2%. The computation underlying the discounted value of \$177.3 million is as follows: $(\$22.6 \text{ million}) \div (0.1475 - 0.02)$.

[Note : The above income taxes of 30% are calculated based on EBITDA and really should be based on EBIT. As well, the FCF numbers should come directly from AO#1 and are slightly different, and technically there should be a 2020 column to calculate the TV because the WC investment would be slightly different, leading to a different TV. However, all these adjustments are not “concept” errors and, therefore, anything close to the above would be acceptable.]

The estimated equity value is highly sensitive to changes in assumptions. For instance, reducing the expected growth rate from 20% to 15% translates into a reduction in estimated equity value of 15% to around \$116 million.

Hence, the estimated value of Holodeck, based on the DCF calculation, is approximately \$149.4 million if we assume that the company intends to pursue the IPO plan. This number is significantly less than the \$197.5 million value estimated by the investment bank based on a multiple of forward EBITDA. However, this number is close to the \$150 million minimum stock market capitalization mentioned by the investment banker and indicates that an IPO is feasible because Holodeck has a sufficiently large potential stock market value.

The above estimated value was completed within the perspective that Holodeck intends to pursue an IPO. However, within the perspective of financing from a private equity investor, Holodeck would remain a privately held entity. In this context, investors in Holodeck face a liquidity risk because their investment is not easily tradable. Therefore,

Finance Elective Sample Examination Question – SOLUTION

the valuation of private entities typically entails a “private company discount” or “liquidity discount” that is typically between 20% and 30%. Assuming a discount of 25%, that would imply that the valuation range for Holodeck as a private entity seeking private capital should be between \$111.4 million and \$148.1 million.

Assessment Opportunity #5

The candidate discusses the financing options for Holodeck.

The candidate demonstrates competence in Finance.

5.1.2 – Develops or evaluates financial proposals and financing plans (Core Level B; moves to Level A in the Finance Elective)

5.2.3 – Evaluates sources of financing (Core Level B; moves to Level A in the Finance Elective)

Blue Ocean either takes an equity stake of between 20% and 50% in its investee firms or subscribes to a subordinated debenture that is convertible into a comparable equity stake. Blue Ocean’s investment goal is to double the value of an investment within four years.

Keeping in line with Blue Ocean’s strategy, I suggest we consider an investment in Holodeck through a convertible subordinated debenture. The firm is currently generating positive cash flows from operations, so it has the capacity to pay interest. Holding a debenture does provide some minimal downside protection in case Holodeck’s financial situation deteriorates. As well, the conversion feature provides us with a way to participate in any upside.

The interest rate should reflect the firm’s relative risk as well as the absence of explicit collateral. A starting point is the risk-free rate (2%), to which we could add the market and firm-size risk premiums (5% + 2%), for a total rate of 9%. This expected yield compares with the range of 5% to 9% mentioned in the case, which is for publicly held entities (companies that are typically larger and more mature and whose securities are more liquid).

We need to agree upon a valuation formula that relies on mutually observable inputs and that can be used in a forward manner for conversion or buyback purposes. The easiest way to proceed is probably to set the firm value as a multiple of the firm’s audited last 12 months’ EBITDA (\$20.8 million), consistent with current practice in the private equity market. Using a multiple of 6 (which could be supported through the use of industry comparators, if available, or the multiple of 7 mentioned by the investment bank reduced by 1 as a result of the liquidity discount), we can estimate the current firm value to be around \$125 million. Assuming Blue Ocean provides enough funds to finance the Next acquisition as well as the development of its product line, including funding any working capital requirements, we are looking at an investment of around \$35 million. This implies that the debenture could be converted into a 21.9% equity interest in Holodeck:

Finance Elective Sample Examination Question – SOLUTION

Debenture	= \$35.0 million (21.9%)
Current firm value estimate	= \$125.0 million (78.3%)
Total firm value	= \$156.8 million

The debenture should have a term of four or five years, which more or less matches Blue Ocean's investment horizon. No capital repayment should be required until maturity. The conversion feature should be such that it can be exercised at any time.

[Note: Candidates could also discuss the pros and cons of a pure equity position and be rewarded appropriately. Most candidates will discuss this issue from a viewpoint of pros and cons. The key concepts are that they understand the differences and they use the case facts to support their analysis.]

Assessment Opportunity #6

The candidate discusses the advantages and disadvantages in Holodeck seeking private equity financing from Blue Ocean rather than undertaking an IPO.

The candidate demonstrates competence in Finance.

5.2.3 – Evaluates sources of financing (Core Level B; moves to Level A in the Finance Elective)

The two options on the table for Holodeck are either to become a publicly listed entity through an IPO or to raise capital from private equity firm Blue Ocean, thus remaining a privately held entity. Both options carry advantages as well as disadvantages for Holodeck and its current controlling shareholder.

Option #1 – IPO

Advantages:

- Under normal market conditions, a public listing through an IPO assigns a higher value to a firm (higher valuation multiple; no liquidity discount). This higher valuation allows 1) a firm to raise more capital without compromising the entrepreneur's control; and 2) the entrepreneur to garner more cash if he or she does a secondary offering.
- A public listing allows the entrepreneur to monetize the investment because it provides him or her with liquidity (i.e., the firm's shares can be traded on the market).
- A public listing provides a firm with a "currency" for acquisitions because it can offer its own shares to the shareholders of the target firm as a means of exchange.
- The higher valuation multiple, as well as the enhanced liquidity, imply the cost of capital of a listed entity is typically lower than for a privately held entity.

Finance Elective Sample Examination Question – SOLUTION

Disadvantages:

- The valuation advantages mentioned above are mitigated by the incremental costs incurred by a publicly listed entity. In addition to upfront costs to update control and financial reporting systems, annual recurring costs will be incurred for compliance purposes.
- The entrepreneur and its firm face public scrutiny, must adhere to a quarterly reporting system, and face legal obligations and responsibilities to a wide audience.
- The entrepreneur loses some control over the strategic and operational aspects of the firm because he or she has to defer to a board of directors and an audit committee comprised solely of independent directors. Since these directors face their own legal responsibilities and obligations, the entrepreneur's views may not be as dominant.
- If the firm does not attract sufficient attention from analysts and institutional investors, its stock price may languish, thus undermining the initial intent.
- The upfront cost of an IPO is extremely high (6% of the amount raised, plus additional legal and accounting fees as well as internal costs).

Option #2 – Private Equity Investment

Advantages:

- Compared with a public listing, remaining private allows a firm to avoid the incremental upfront costs to update control and financial reporting systems and the annual recurring costs required for compliance purposes.
- In contrast to a public listing, the entrepreneur and the firm do not face public scrutiny, thus limiting their legal obligations and responsibilities.
- The entrepreneur potentially retains more control within a private firm versus a publicly listed entity. A board of directors with representatives from the private equity investor will be set up, but its mandate will typically be more focused.
- The entrepreneur does not have to direct time and energy in efforts to please or attract the attention of the investment community. He or she can thus focus more time on the strategy and operations of the firm.
- The upfront cost for a private financing is much lower than for an IPO and the transaction can be done more quickly. Hence, a greater proportion of the funds can be applied to projects.
- With a private equity investor, the entrepreneur gets access to financial, strategic, and operational expertise and knowledge. Through its investments, the private equity investor is exposed to several other firms that face comparable challenges and gathers intelligence from its interactions with these firms. The investor also has a team of financial experts on hand and a medium- to long-term horizon with respect to its investment (versus stock market investors).
- A private investment would allow Holodeck to retain its CCPC status for tax purposes, which would allow it to continue benefiting from the small business deduction. With an IPO, Holodeck would lose this CCPC status.

Finance Elective Sample Examination Question – SOLUTION

Disadvantages:

- By remaining private, the entrepreneur does not monetize his or her investment and, as a result, does not gain liquidity.
- By remaining private, with a private equity investor, the firm loses flexibility in terms of using its own shares to pursue acquisitions.
- The cost of capital is fairly high because the private equity investor seeks a 19% rate of return (versus an implicit cost of equity of 14.75% if Holodeck chooses to become a publicly listed entity).

Financing Requirement

The acquisition of Next may cost around \$27 million. In addition to the initial purchase price, the additional R&D funding needed to make the firm's product portfolio marketable implies that the firm will report losses for the next three years. Last year's EBITDA was \$(4 million). Assuming that the next three years' EBITDA numbers are \$(3 million), \$(1.5 million), and nil, an additional investment of at least \$4.5 million will be required, thus bringing the overall investment in Next to \$31.5 million.

On the basis of the numbers presented in the case (valuation, investment bank tentative number, and private equity interest), it does appear that the firm can easily raise these funds under either funding scenario.

Additional sensitivity analyses would be needed to assess funding requirements under different economic and market scenarios.