

## DRAGON BEER

Early in the morning on December 18, 2001, Dino Warner received the much anticipated proposal to build a greenfield beer operation in China, code-named Dragon Beer. He sat down in his comfortable chair with a mug of coffee and started to read the proposal. Dino was the CEO of International Beer Group (IBG), a U.S.-based beer producer and distributor. He had been in the beer business for over 30 years. China's huge population and booming economy had been attracting his attention for a long time. Viewing China as the world's largest potential beer market, Dino asked TomGrag, executive vice president for IBG's international operations, to do a feasibility study about entering China's beer market in 2002, the year that would mark China's entry into the WTO.

Confirming his own observations, the proposal showed that China's beer market had been growing rapidly in the past ten years. It further revealed that China's beer market was highly segmented, and producers appeared to earn very low margins due to intense price competition. The main impediments to market integration appeared to be strong local protectionism and the lack of efficient and effective distribution channels. If these market conditions were to persist in the near future, the proposal warned, IBG would have a hard time establishing a profitable operation in China. But there were reasons to be optimistic. China, by joining the WTO, was committed to leveling the playing field to all competitors in the beer market, whether local, regional (in China), or international. Local protectionism in China was expected to diminish as China lowered trade barriers. In addition, China was committed to allowing foreign firms to establish their own distribution channels. Dino understood that getting into the market today might lead to much bigger opportunities in the future. He was also keenly aware that the window of opportunity for IBG to grab a share of the Chinese market was narrowing. IBG's main competitor, Anheuser-Busch, had invested aggressively in China since the mid-1990s and had established its brands in China. Dino knew that he must act now or face the possibility of losing the Chinese market permanently.

Dino examined the projections that Tom and his team prepared. In order to begin its operation in China, IBG would need to invest \$60 million in the first year (2002). IBG had the cash to finance this investment internally. This investment would enable Dragon Beer—IBG's China subsidiary—to achieve a production capacity to support a U.S. dollar-denominated sales growth of 10-15 percent initially and 5 percent in steady state, while the consensus forecast for China's beer market growth was 30 percent. However, being unfamiliar with the Chinese beer market, Dino preferred to take a more cautious approach.

**Exhibit 1a** shows what he expected to earn through the 10-year operation in China. To get a sense of the volatility in China's beer market, Tom had also given Dino data on the total return index of Tsingtao Brewer Company, Ltd, a large local player (**Exhibit 2**). For comparison, Tom also included the MSCI World Total Return Index in **Exhibit 2**. Looking at the high volatility exhibited in the Tsingtao's stock returns, Dino wondered if the 15 percent required rate of return on equity that IBG used for its U.S. and European investments would be too low. The U.S. dollar risk-free rate was 5 percent at the time and the global market risk premium was assumed to be 6 percent.

The proposal noted that, by launching the project in 2002, IBG would have the opportunity to expand its China operation at the end of 2005 when China's beer market became more mature and the distribution channels were ready for large-scale beer production and sales. Also by then, IBG would have a better understanding of China's beer market. Given the expectations about future costs, this opportunity would require \$80 million in additional capital investment in 2005. **Exhibit 1b** shows the projected incremental cash flow from the second-stage investment. Tom was confident that the expansion would allow IBG to lower production costs and SG&A by reaping the benefit of economies of scale. He included the expected cost savings in the cash flow projection in **Exhibit 1b**.

The proposal also included a brief summary of Tom's analysis of the recent merger and acquisition deals in China's beer industry. Based on the analysis, Tom was confident that IBG could sell its China subsidiary for \$30 million at the end of 2005 if demand for Dragon beer turned out to be far lower than expected.

Examining the projected cash flows, Dino wondered if the expected incremental value from the second-stage investment would be sufficiently high to justify investing in the proposed project in the first place. How should he value this expansion opportunity?

He also wondered what the value of the first-stage investment would be if he could count on selling the plant in 2005 for \$30 million in the event that demand for Dragon beer turned out to be far lower than expected. Would the option to sell Dragon Beer at the end of 2005 make the first-stage investment worth taking, even if there were no follow-on project? He wondered how to proceed with his analysis.

Exhibit 1

**DRAGON BEER**

Pro Forma Cash Flow Projections for Dragon Beer

**1a. Cash Flow Projection for Stage I Investment (million US\$)**

Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Net Sales	0.0	105.0	120.8	138.9	152.7	168.0	184.8	194.1	203.8	214.0	224.7
COGS	0.0	80.9	93.0	106.9	117.6	129.4	142.3	139.4	146.9	154.7	163.0
Gross Profit	0.0	24.2	27.8	31.9	35.1	38.6	42.5	54.6	56.9	59.2	61.7
SG&A	4.0	9.5	10.9	12.5	13.7	15.1	16.6	17.5	18.3	19.3	20.2
R&D	4.0	4.0	4.0	4.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0
EBIT	-8.0	10.7	12.9	15.4	17.4	19.5	25.9	37.2	38.5	40.0	41.5
Income Tax @ 33%	0.0	0.9	4.3	5.1	5.7	6.4	8.5	12.3	12.7	13.2	13.7
Net earnings	-8.0	9.8	8.6	10.3	11.6	13.1	17.3	24.9	25.8	26.8	27.8
Capital Expenditure	60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Depreciation	0.0	10.0	10.0	10.0	10.0	10.0	10.0	0.0	0.0	0.0	0.0
Investment in Net Working Capital	7.0	15.0	2.6	3.0	2.3	2.5	2.8	1.5	1.6	1.7	1.8
Free Cash Flow	-75.0	4.8	16.0	17.3	19.3	20.5	24.5	23.4	24.2	25.1	26.0

**1b. Incremental Cash Flow Projection for Stage II Investment - (million US\$)**

	0	1	2	3	4	5	6	7	8	9	10
Year	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Net Sales (incremental)					150.0	187.5	215.6	248.0	272.8	300.0	315.0
COGS (incremental)					114.0	142.5	163.9	188.5	207.3	228.0	239.4
Gross Profit (incremental)					36.0	45.0	51.8	59.5	65.5	72.0	75.6
SG&A (incremental)				5.0	12.0	15.0	17.3	19.8	21.8	24.0	25.2
R&D (incremental)					7.0	7.0	7.0	7.0	7.0	0.0	0.0
EBIT (incremental)				-5.0	17.0	23.0	27.5	32.7	36.6	48.0	50.4
Income Tax @ 33% (incremental)				-1.7	5.6	7.6	9.1	10.8	12.1	15.8	16.6
Net earnings (incrementa)	0.0	0.0	0.0	-3.4	11.4	15.4	18.4	21.9	24.6	32.2	33.8
Capital Expenditure (incremental)				80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Depreciation (incremental)					13.3	13.3	13.3	13.3	13.3	13.3	0.0
Investment in Net Working Capital (incremental)					24.0	6.3	4.7	5.4	4.1	4.5	2.5
Incremental Free Cash Flow	0.0	0.0	0.0	-83.4	0.7	22.5	27.1	29.8	33.8	41.0	31.3

Exhibit 2

**DRAGON BEER**

Estimation of Tsingtao's Stock Return Volatility and Cost of Equity

Date	MSCI world total return index US\$	Tsingtao H total return index HK\$
8/31/93	172.7	152.8
9/30/93	169.8	162.5
10/29/93	174.8	165.3
11/30/93	165.8	198.6
12/31/93	174.7	270.8
1/31/94	186.3	219.4
2/28/94	183.6	229.2
3/31/94	175.4	190.3
4/29/94	180.1	208.3
5/31/94	181.2	208.8
6/30/94	180.3	165.3
7/29/94	184.3	175.5
8/31/94	190.9	189.3
9/30/94	186.4	174.0
10/31/94	191.2	168.2
11/30/94	182.9	162.4
12/30/94	183.5	123.3
1/31/95	179.8	101.5
2/28/95	181.7	108.8
3/31/95	190.0	120.4
4/28/95	196.9	79.8
5/31/95	199.1	95.3
6/30/95	199.1	90.1
7/31/95	208.8	96.8
8/31/95	204.2	75.2
9/29/95	209.8	76.0
10/31/95	206.3	61.1
11/30/95	212.8	59.0
12/29/95	219.2	53.3
1/31/96	224.1	73.0
2/29/96	225.0	70.8
3/29/96	228.5	65.5
4/30/96	234.1	63.3

Date	MSCI world total return index US\$	Tsingtao H total return index HK\$
5/31/96	234.3	94.0
6/28/96	235.6	85.6
7/31/96	226.8	81.8
8/30/96	229.6	84.1
9/30/96	238.1	82.6
10/31/96	239.0	84.9
11/29/96	251.8	79.5
12/31/96	248.1	90.2
1/31/97	252.3	91.7
2/28/97	255.8	94.8
3/31/97	250.6	91.0
4/30/97	258.7	100.2
5/30/97	274.1	95.6
6/30/97	288.1	91.7
7/31/97	301.2	157.5
8/29/97	280.0	146.0
9/30/97	295.0	97.9
10/31/97	277.4	80.3
11/28/97	281.7	65.8
12/31/97	285.4	55.4
1/30/98	291.6	44.0
2/27/98	311.6	59.3
3/31/98	324.9	55.0
4/30/98	327.9	46.2
5/29/98	321.7	38.2
6/30/98	327.5	37.0
7/31/98	327.6	35.5
8/31/98	281.7	22.6
9/30/98	287.3	26.9
10/30/98	313.6	26.9
11/30/98	332.6	29.1
12/31/98	348.0	25.1
1/29/99	355.2	21.1

Date	MSCI world total return index US\$	Tsingtao H total return index HK\$
2/26/99	346.2	19.9
3/31/99	361.8	22.3
4/30/99	377.4	34.6
5/31/99	364.1	32.4
6/30/99	382.2	49.5
7/30/99	380.7	48.3
8/31/99	380.2	78.0
9/30/99	376.1	66.5
10/29/99	395.1	66.5
11/30/99	407.4	79.5
12/31/99	441.4	72.6
1/31/00	417.6	76.5
2/29/00	419.0	58.1
3/31/00	446.5	48.3
4/28/00	426.5	37.3
5/31/00	415.4	35.8
6/30/00	429.5	47.0
7/31/00	416.9	60.9
8/31/00	429.9	74.5
9/29/00	406.2	77.8
10/31/00	398.3	63.6
11/30/00	373.6	56.9
12/29/00	379.9	54.0
1/31/01	389.5	59.6
2/28/01	356.7	70.4
3/30/01	332.7	75.3
4/30/01	356.9	73.7
5/31/01	352.9	93.0
6/29/01	342.1	91.3
7/31/01	336.7	75.8
8/31/01	321.3	77.5
9/28/01	291.9	71.5
10/31/01	298.1	72.3
11/30/01	316.4	81.8