



Carlsberg A/S

Company Analysis (CPSE: CARL B)

Yale School of Management

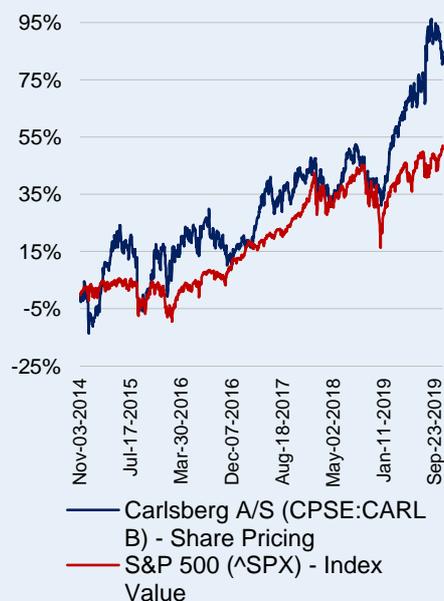
Carlsberg well positioned and outperforming competitors in key growth segments

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Key Facts

12-month price target	DKK 1,103.8
Current Price	DKK 956.2
Operating Margin	15.36%
Market Cap	DKK 144.6 B
Dividend	DKK 16.0
Dividend Yield	1.89%
Enterprise Value	DKK 166.5 B
Fiscal Year End	Dec



Recommendation:
BUY

After a 17% increase in profits reported in H1, Carlsberg has just upwardly adjusted its FY earnings forecast from a “high single-digit” percentage to 10% compared to the previous year. In contrast, Carlsberg’s main competitors AB InBev and Heineken issued profit warnings.

Foundation laid for volume growth in China with promising results in e-commerce sales (131% growth vs 60% market). We expect that market share growth among this channel, while diminishing, will continue. Further, we expect best practices in emerging channels such as e-commerce to be scalable among other Asian countries.

Carlsberg is set to further reduce operating margin gap with competitors, a trend we expect to continue over the next 3 years.

Successful investments in alcohol-free brews resulted in growth (14%) significantly outperforming the market (5%). We expect this trend to continue in long-term and drive future revenue growth in Western Europe.

Carlsberg outperforms competitors in Eastern European Emerging Economies with strong growth in Belarus (10%), Kazakhstan (24%) and Ukraine (20%).

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Company Overview

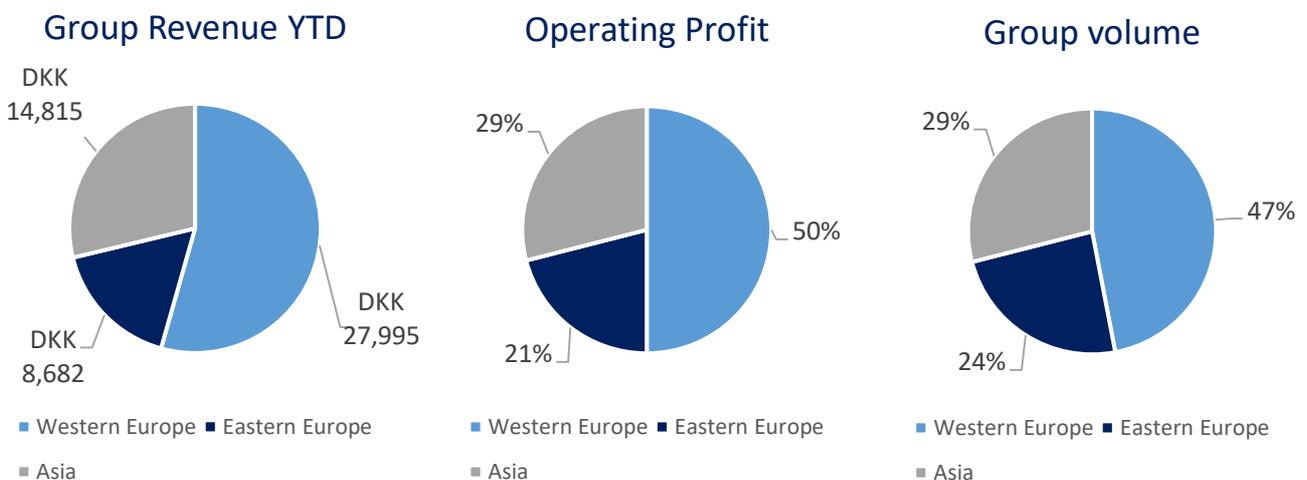
Carlsberg A/S is a Danish company primarily active within the brewing industry. It is engaged in the production, marketing and sale of beer and soft drinks. While Carlsberg's portfolio predominantly consists of premium beer brands, it also aims to cover a range of price points to meet fluctuating consumer demand. It has a large portfolio of international and regional beers including Carlsberg, Kronenbourg, Baltika, Somersby, Holsten, Tuborg, Lav and Lvivske, among others. Its operations are divided in geographical segments: Western Europe, Eastern Europe and Asia. The company is also present in a number of markets where it does not operate its own breweries, through license business and export. It operates through numerous subsidiaries in Europe and Asia, including Carlsberg Danmark A/S, Carlsberg Sverige AB, Carlsberg Bulgaria AD, Baltika Breweries OAO and Carlsberg Brewery Hong Kong Ltd, among others.

Company overview: While focused on Western European market, Carlsberg is exposed to the Asian and Eastern European markets.

The Western European market is the company's largest market in terms of revenue (54%), operating profit (50%) and volume (47%), but the company has a large stake in emerging economies throughout Eastern Europe and Asia. Asia is the company's 2nd largest market by volume but has been growing at the strongest rates both in per capita beer consumption as well as Carlsberg sales (See Exhibit 1). In Eastern Europe, Carlsberg is mainly active in the Russian and Ukrainian market via the Baltika brewery.

We anticipate Carlsberg to further pursue increased global acquisitions moving forward, following the acquisition of Chongqing Beer Group Assets Management and increased stakes in South East Asia Brewery Ltd. and Hanoi-Vung Tau Beer. The world's third-largest brewer just recently announced that it had agreed to buy the remaining 25% stake in Cambrew brewery in Cambodia, one of the country's largest, and plans to strengthen its largest beer brand, Angkor Premium Beer. With regard to Eastern Europe, the company's acquisition of several Scottish and Newcastle businesses gave Carlsberg control of the Russian brewer, Baltika. The acquisition increased Carlsberg's exposure to Eastern European markets, which we believe to have significant growth potential.

Exhibit 1. Revenue, Operating Profit, and Group volume per Region



Source: Carlsberg Q3 2019 Earnings call

Company overview: Earnings adjustment believable based on previous track-record

Further, after a 17% increase in profits reported in H1, Carlsberg has just upwardly adjusted its FY earnings forecast from a “high single-digit” percentage to 10% compared to the previous year. In contrast, Carlsberg’s main competitors AB InBev and Heineken issued profit warnings. We believe this number to be believable due to Carlsberg’s track-record of underestimating earnings in the past as well as the progression of the year with only one quarter to go with traditionally rather low sales (see Exhibit 2).

Exhibit 2. Carlsberg’s Operating Profit Growth: Management Forecast vs. Actual

Operating Profit Growth: Forecast vs. Actual

	Management Forecast	Actual
2016	1-3% organic growth	5.0% organic growth
2017	4-6% organic growth	8.4% organic growth
2018	4-6% organic growth	11.0% organic growth

Source: Carlsberg 2016, 2017, 2018 annual reports

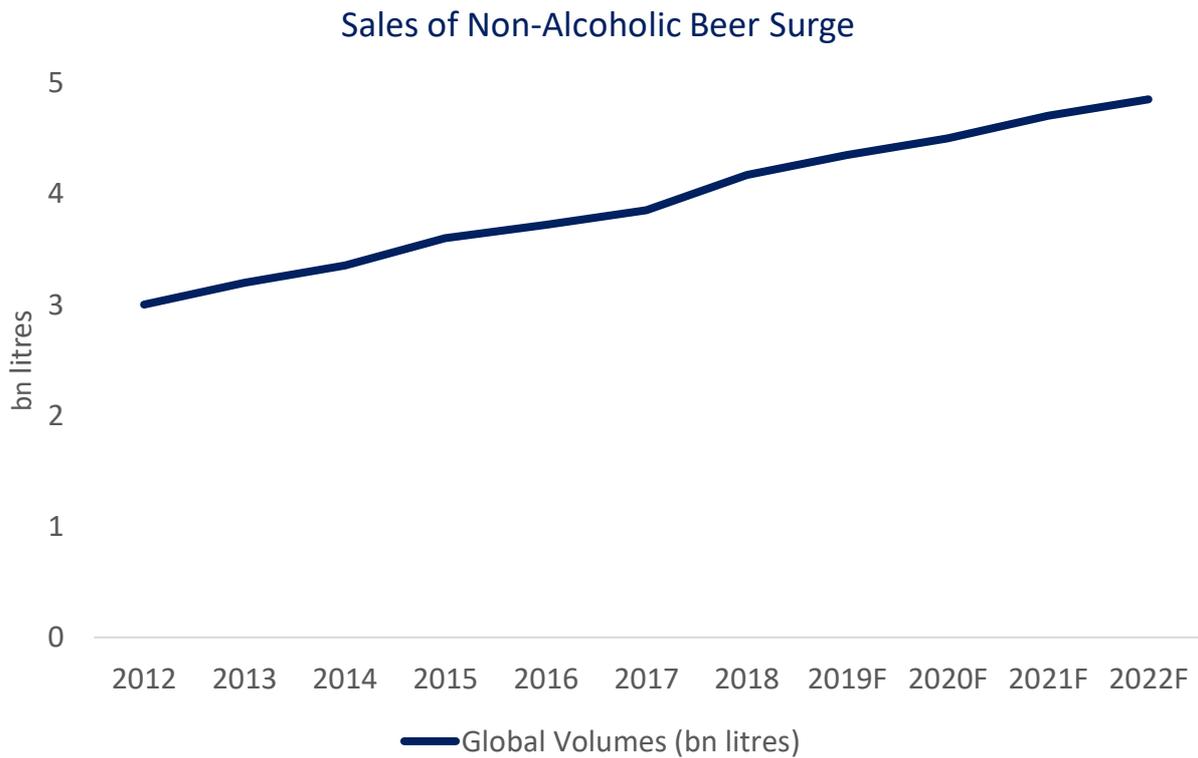
Western Europe: Strong growth in Alcohol-free brews

With standard beer consumption stagnating and competitive pressure remaining high, in Western Europe, Carlsberg has successfully placed itself in a position to leverage market trends around craft brews and non-alcoholic beer. Looking at volume figures, as Carlsberg does not report revenue splits per product category.

For non-alcoholic beers, Carlsberg has significantly outperformed the market with an increase of 14% in H1 compared to a market size increase of approximately 5%. Making up 19.7% of total Carlsberg sales volume this has a significant impact on overall sales. This is particularly remarkable as this has been organic growth not driven by acquisition. In order to evaluate whether or not a potential difference in prices could affect Carlsberg, we analyzed beer prices in a Danish supermarket (Coop.dk). Here we found that alcohol-free beer was sold at the exact same price as the most comparable alcoholic beer from the same brand for 6 of 7 available products. We thereby do not expect a potential price difference to impact Carlsberg’s bottom line in the short-term.

Overall, we expect the trend towards non-alcoholic beer to continue (See Exhibit 3), driving Carlsberg’s revenue and long-term growth in Europe. We account for this in our model with an EBIT growth adjustment of +0.9% in 2020, diminishing linearly by 0.2% annually. For the remainder of the 2019, the impact is +0.3% on Y/Y growth.

Exhibit 3. Sales of Non-Alcoholic Beer



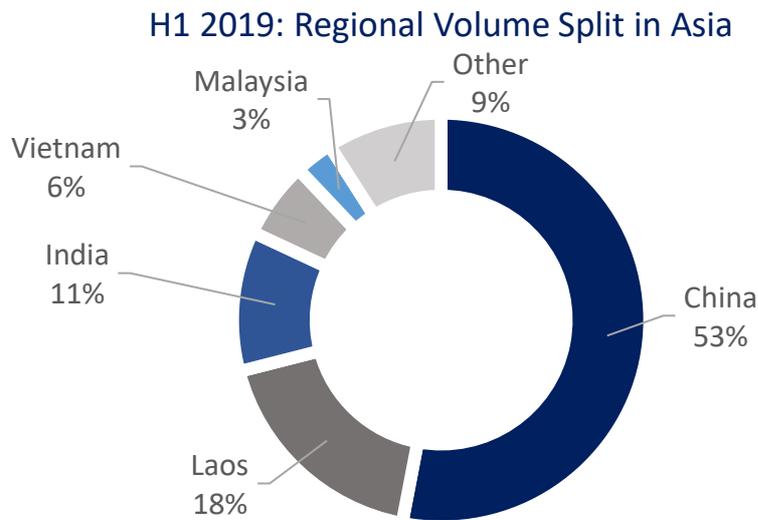
Source: Euromonitor

Asia: Strong volume growth driven by successful Market Channel strategy in China

With more than 10% growth for YTD sales volume, Asia is one of the leading drivers for Carlsberg's revenue growth. With China making up more than 50% of the regional sales volume, the country is of particular importance (see Exhibit 4). In this market, Carlsberg has been particularly successful among the market channels with a positive growth rate (E-commerce 60% and Supermarkets/Convenience Stores 2%). In these, Carlsberg has significantly outperformed its competitors YTD (see Exhibit 5). While they only make up 1% and 5% of Carlsberg's current sales volume and 1% and 32% of the market volume respectively, we see large room for continuous improvement and Carlsberg appears to be well situated to catch up in the Supermarket/Convenience store category as well as lead the push towards online retail of beer.

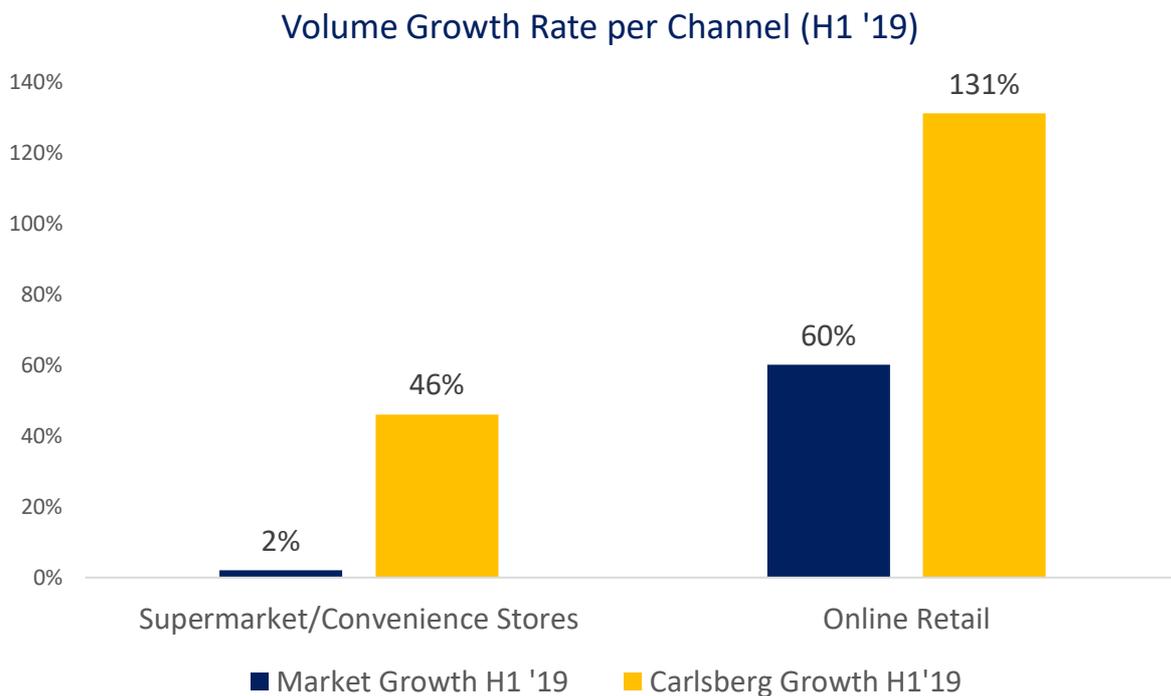
We believe that market share growth among these channels, while diminishing, will continue. Further, we expect best practices among emerging channels such as e-commerce to be scalable among other Asian countries. Beyond what our model would predict based on historical data, we expect this to have a significant impact on growth in the upcoming 5 years adding an additional 1% to the annual EBIT growth rate from 2020 to 2024. For 2019, the full-year EBIT growth impact is estimated at 0.2%.

Exhibit 4. Regional split of Carlsberg sales volume within Asia



Source: Carlsberg Q3 2019 CMD Meeting, percentage estimate based on company reports

Exhibit 5. Volume Growth Comparisons per Channel



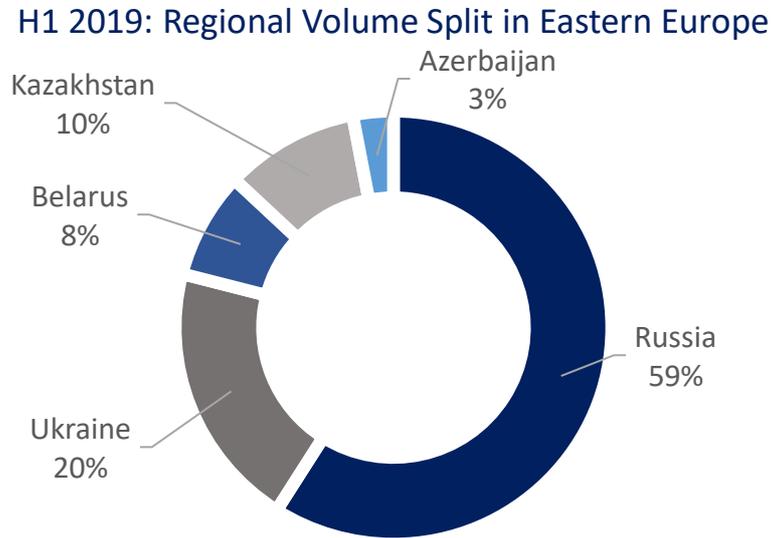
Source: Carlsberg Q3 2019 CMD Meeting

Eastern Europe: Growth in Eastern European Emerging economies picking up – sustainability of trend questionable

With the Russian market stabilizing, (2% growth in H1) evident in its first 6 consecutive quarters of growth following an average of 6% per annum decline from 2015-2017, Carlsberg as the market leader (30% market share) in this region has been able to benefit from this growth. More importantly however,

Carlsberg has been able to grow significantly in Ukraine (20%), Kazakhstan (24%) and Belarus (10%). While these numbers appear promising, it must be noted that volume rates have been volatile historically and that when added together, these three countries account for less than 5% of Carlsberg’s total revenue.

Exhibit 6. Regional split of Carlsberg sales volume within Eastern Europe



Source: Carlsberg Q3 2019 CMD Meeting, percentage estimates based on company reports

Operating Margins and Cost Structure: Consistent increases in margins combined with competitors running significantly higher margins highlight potential of Carlsberg

Analyzing the operating margin of Carlsberg (15.36%) and comparing it with their main competitors’, they have recently overtaken Heineken (14.86%) but are still lagging significantly behind AB InBev (31.67%) (see Exhibit 7). While this may seem like an argument against Carlsberg at first, we argue that this, together with the recent development of operating margin improvement across its Asian and European markets, highlights the potential for improvement Carlsberg has on its profitability.

Exhibit 7. Operating Margin Comparisons

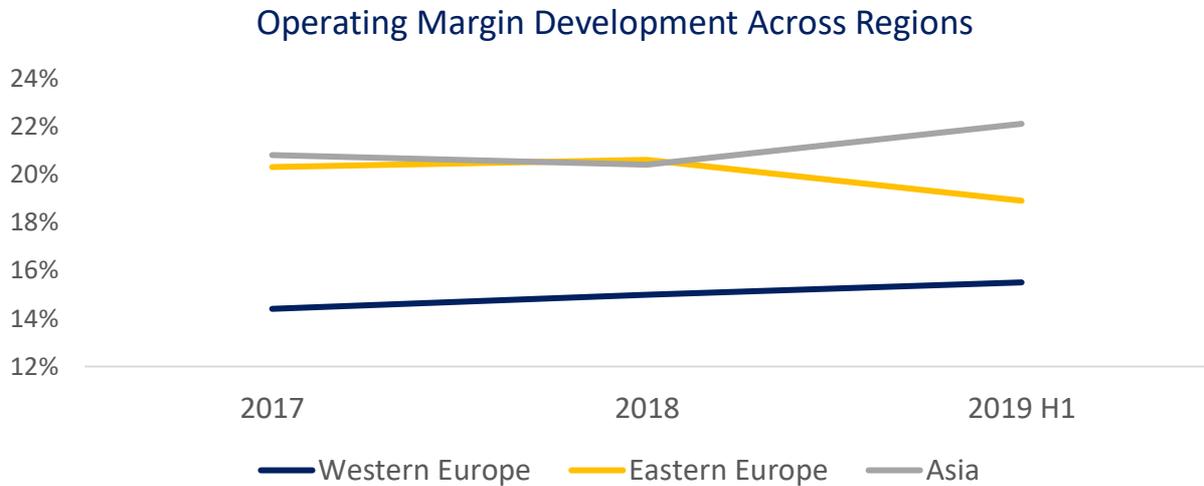


Source: Yahoo Finance

Looking more closely at this development, it becomes clear that when considering the sizes of the markets, the overall operating margin has increased quite significantly (see Exhibit 8). From this graph, it

becomes clear that Western Europe poses a challenge for Carlsberg’s margins, considering it is the largest market.

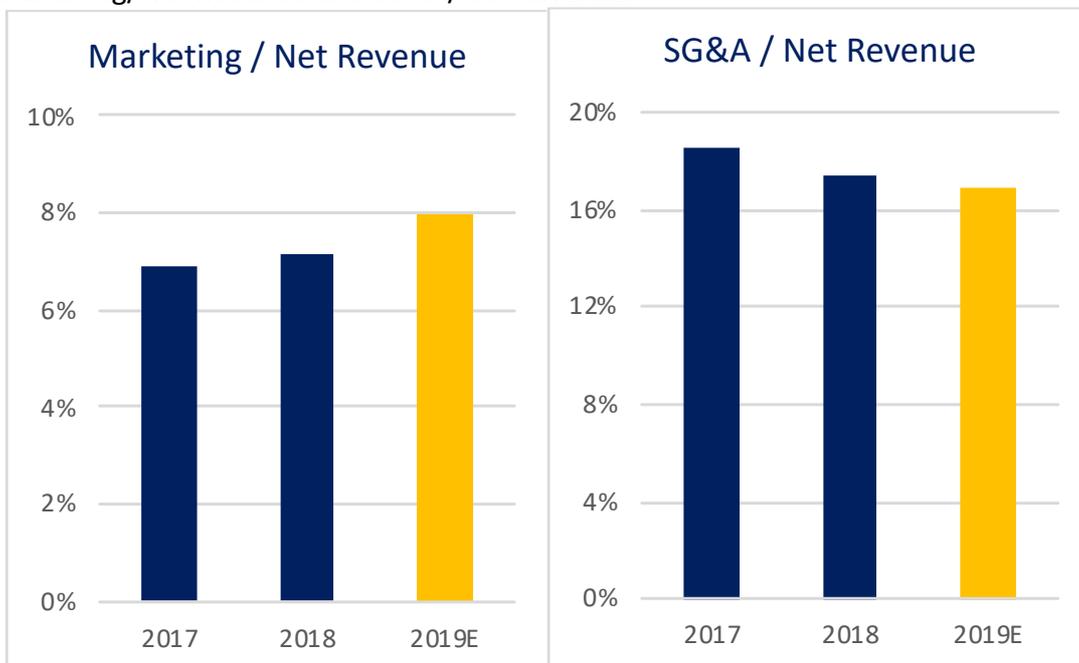
Exhibit 8. Operating Margin Development Across Regions



Source: Carlsberg H1 2019 Report

Further, Marketing expenditure is increasing and SG&A is decreasing as percentage of net revenue (see Exhibit 9). This highlights that the gains in operating margins are actually due to efficiency gains. We forecast this to result in 1.5% of additional EBIT growth beyond what our forecast predicts for 2020. This then diminishes linearly by 0.3% per year. For 2019, the impact is forecasted to be +0.2%.

Exhibit 9. Marketing/Net Revenue and SG&A/Net Revenue

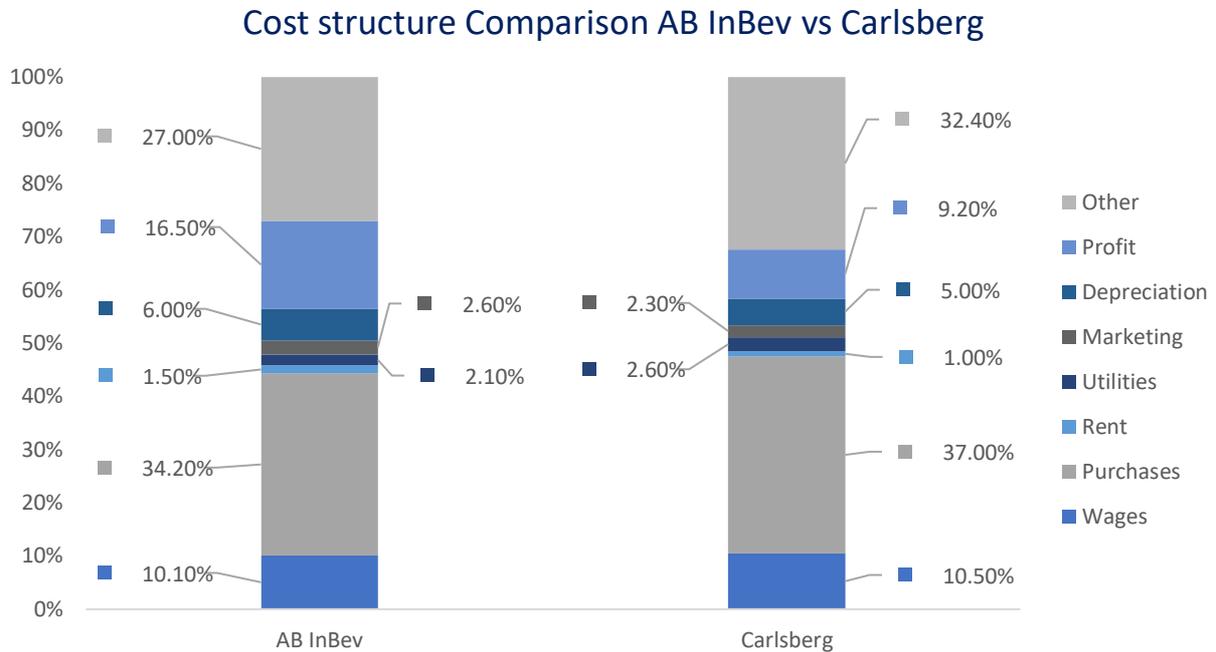


Source: Carlsberg Q3 2019 Earnings call

Further, comparing the cost structure of AB InBev and Carlsberg (see Exhibit 10), one can see that the largest differences in profitability appear to be originating from the category others, purchasing and

depreciation. In particular, in the field of purchasing we see room for improvement and corresponding management initiatives to achieve this.

Exhibit 10. Cost Structure of Breweries Industry



Source: AB InBev and Carlsberg Financial Statements 2018

Key Risks

High exposure to currency risk

With more than 80% of revenue being generated in other currencies, Carlsberg is exposed to large range of currency risks. Due to its extent, this should be considered when making investment decisions.

High reliance on intangibles

The success of the business relies strongly on intangibles such as reputation or brand image, or protection of intellectual property such as trademarks, patents, domain names or trade secrets. Failing to maintain these could result in significantly negative effects on revenue and profitability.

Chairman of Supervisory board Flemming Besenbacher sold 25,607 shares for 24m DKK

This may be an indicator that the Chairman of the Board does not believe in Carlsberg outperforming the market. As few people are better informed about the company than Flemming Besenbacher, this may be a warning sign.

Conservative forecasting may lower overall ambition

By living a culture of conservative forecasting, Carlsberg was able to outperform its forecasts relatively frequently. We believe, however, that such a culture may result in targets being too low and thereby demotivating employees or partners.

Dependence on manufacturer/distribution agreements

Carlsberg manufactures and/or distributes several products of other beverage companies through joint ventures, licensing, distribution, contract brewing or other similar arrangements. The inability to renew or the loss of such an agreement could have an immediate impact on the financial performance of the company.

Projections

The EBIT of Boston Beer Company is forecasted to grow by 6.8% from DKK 9.1 billion in CY 2018 to DKK 9.7 billion in CY 2019, and 1.7% from CY 2019 to CY 2020, reaching DKK 9.9 billion in CY 2020.

Free cashflows are forecasted to grow by 27.6% in 2019 driven by EBIT growth. Our model predicts free cashflows to grow by an average of 9.2% over the next 6 years, although the growth will slow down considerably after 2019.

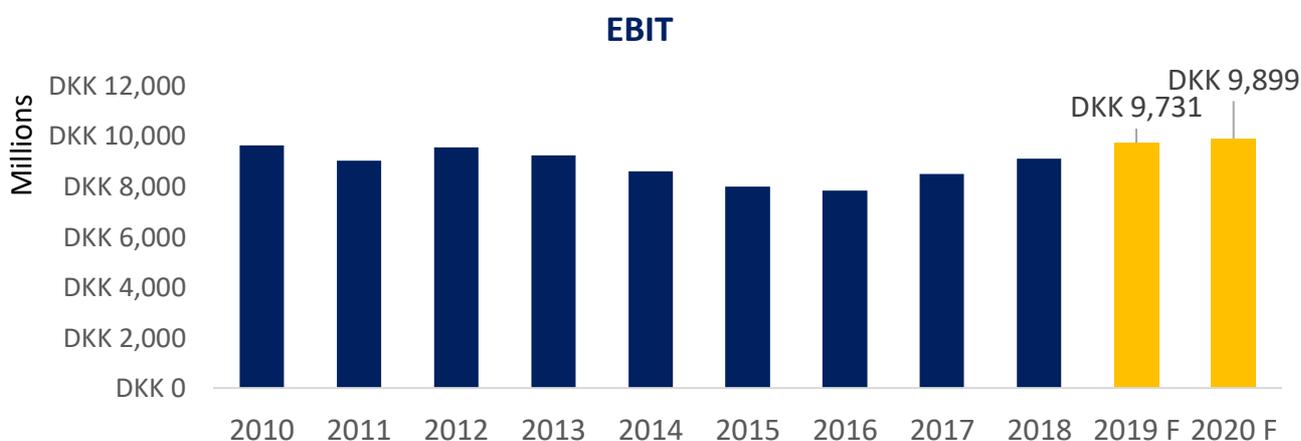
These projections were calculated by running multiple linear regression considering the coefficients of year-on-year quarterly changes in European area private personal consumption expenditures and average summer temperatures in Denmark (Carlsberg's largest market) on a time series forecasting model (see Appendix 1a for calculations and Appendix 1b for regression output).

The model uses data from the 39 most recently reported financial quarters. For each forecasted quarter, the model uses each of the coefficients of the regression output and multiplies the coefficients of each variable by the value of each respective variable. The resulting values—including the intercept—are then summed to arrive at the forecast.

EBIT Forecast

Beer consumption in the key markets is expected to decrease slightly, while increased consumer discretionary spending is driving consumer demand towards higher-priced craft beers. Carlsberg is strongly positioned in the growing non-alcoholic beer market and has had success in emerging distribution channels. This is reflected in growth of 6.8% and 1.7% Y/Y predicted by our model (see Exhibit 11).

Exhibit 11. EBIT Forecast



Source: Data from Capital IQ with added forecast

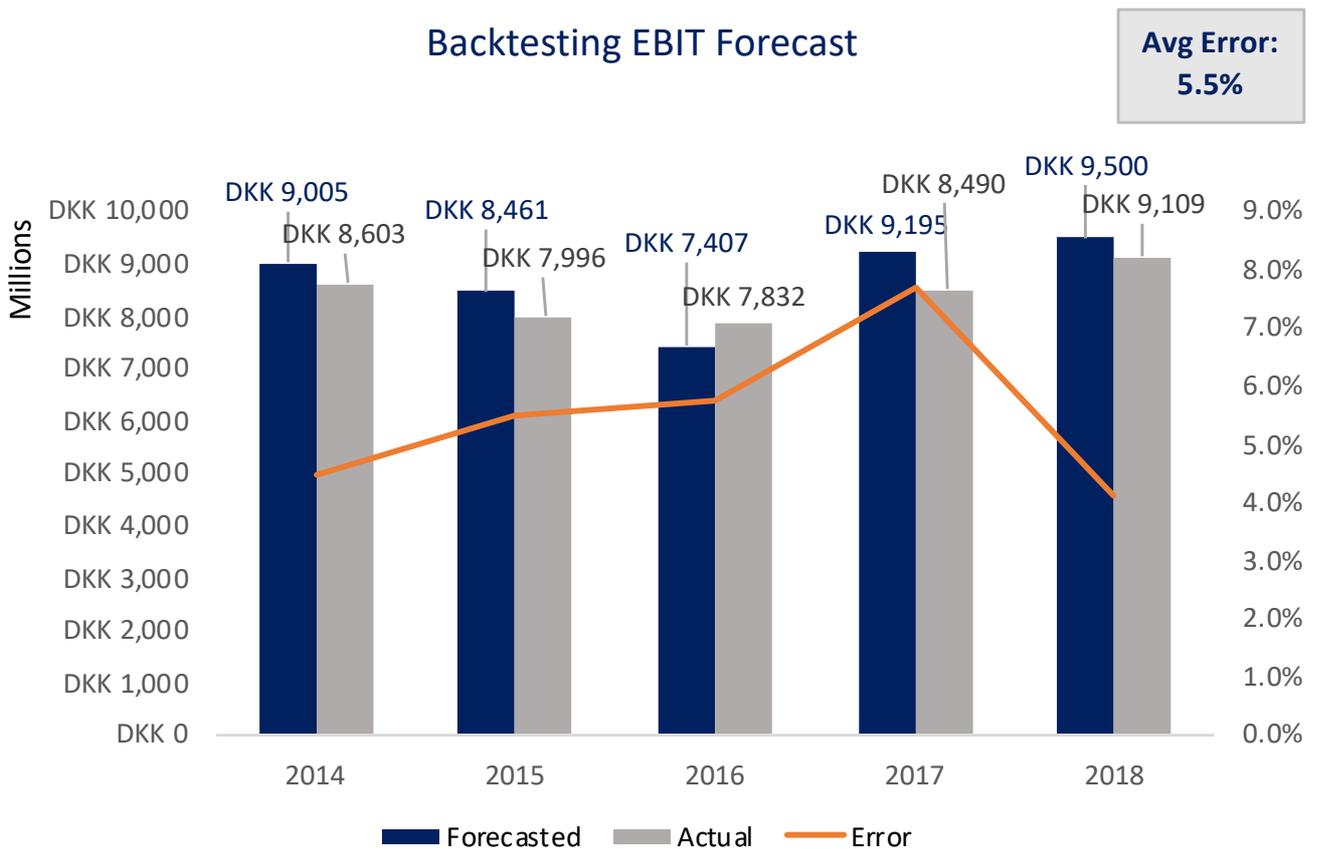
Backtesting the Model

Backtesting the time series model on EBIT forecast shows a strong fit with an average differential/error of 5.5% across 2014, 2015, 2016, 2017 and 2018 (see Exhibit 12).

In this backtesting, we applied the European area private personal consumption expenditure growth figures from the Federal Reserve of Bank of St. Louis and calculated the quarterly year-on-year changes, and added average summer month temperatures from Denmark (Carlsberg's largest market), and ran a multiple linear regression on the time series forecasting model, estimating what the model would have predicted for each of these years using data from the preceding 10 years and comparing it to the actual reported EBIT.

For each forecasted quarter—as in the previously described EBIT forecast—the model uses each of the coefficients of the regression output and multiplies the coefficients of each variable by the value of each respective variable. The resulting values—including the intercept—are then summed to arrive at the forecast.

Exhibit 12. Backtesting EBIT Forecast (in M DKK)



Source: Data from Capital IQ

Our Adjustments

For our analysis, we considered three major adjustments in order to accurately reflect the value of the company for factors which are not incorporated in our DCF model based on historical data: Carlsberg's operating margin performance and potential, Carlsberg's strong positioning in the growing non-alcoholic beer market and the success of Carlsberg in emerging distribution channels.

As discussed in the previous paragraphs, for the operating margin and its potential we expect an EBIT growth impact of 1.5% in 2020, diminishing linearly by 0.3% annually. For the remainder of the first year, the impact is 0.2%. Regarding Carlsberg's strong positioning in the growing non-alcoholic beer market we added an additional 0.9% of EBIT growth diminishing by 0.2% per annum in the consecutive years. For 2019, the overall EBIT growth impact is estimated at 0.3%. Lastly, for the successful channel strategy in Asia and its leveraging across the rest of Asia we expect an EBIT additional growth impact of 1% for the 5 years we are forecasting. For 2019, we estimated an impact of 0.2%. The adjustments are presented in Exhibit 13.

Exhibit 13. Growth rate adjustments for EBIT forecast per year

Growth Rate Adjustment for EBIT Forecast	2019	2020	2021	2022	2023	2024
Carlsberg's operating margin performance and potential	0.2%	1.5%	1.2%	0.9%	0.6%	0.3%
Carlsberg's strong positioning in the growing non-alcoholic beer market	0.3%	0.9%	0.7%	0.5%	0.3%	0.1%
Success of Carlsberg in emerging distribution channels	0.2%	1%	1%	1%	1%	1%
Total Adjustment	0.7%	3.4%	2.9%	2.4%	2%	1.4%

DCF Company Valuation

The equity value of the company is valued at DKK 168.4 billion—in contrast to the current sum of market capitalization of DKK 144.66 billion—**based on a discounted cash flow (DCF)** model that calculates the present value of future cash flows for the next 6 years based on our model and the consecutive years based on terminal growth.

For the cash flows from year 1 to 6, the model bases its prediction on the most recently reported EBIT, Depreciation and Amortization, Capital Expenditure and Changes in NWC. Based on these numbers and the forecasts generated by the multiple linear regression on a time series forecasting model the expected growth rate is calculated.

These forecasts estimate slow overall growth for EBIT. *These are then adjusted for as discussed in the previous adjustment paragraph.* Depreciation and Amortization as well as Capital expenditure are expected to remain relatively constant and estimated using a moving average of three years. Changes in net working capital are predicted to move towards 0.

Exhibit 14. DCF: Carlsberg A/S (in M DKK)

(Million DKK)	Fiscal	2016	2017	2018	2019E	2020E	2021E	2022E	2023E	2024E
DCF: Carlsberg A/S										
EBIT		7832.0	8490.0	9109.0	9730.8	9898.9	10062.3	10223.3	10381.7	10537.5
% growth				7.29%	6.90%	1.70%	1.65%	1.60%	1.55%	1.50%
EBIT Post-Adjustment					9794.5	10232.0	10359.0	10471.9	10591.2	10685.7
Adjustment (DKK)					63.8	333.0	296.7	248.6	209.4	148.3
% growth					0.7%	3.4%	2.9%	2.4%	2.0%	1.4%
Taxes @	27%	2114.6	2292.3	2459.4	2627.3	2672.7	2716.8	2760.3	2803.1	2845.1
Tax-affected EBIT		5717.4	6197.7	6649.6	7167.2	7559.2	7642.2	7711.6	7788.1	7840.6
% growth				7.3%	7.8%	5.5%	1.1%	0.9%	1.0%	0.7%
+ Depreciation and amortisation		4761.0	4707.0	4091.0	4344.0	4380.7	4271.9	4332.2	4328.2	4310.8
- Capital expenditure		-3554.0	-3853.0	-3955.0	-3787.3	-3865.1	-3869.1	-3840.5	-3858.3	-3856.0
- Change in net working capital		-105.0	1236.0	1960.0	1568.0	1097.6	768.3	537.8	376.5	263.5
Free Cash Flow to Firm		7029.4	5815.7	4825.6	6155.9	6977.2	7276.6	7665.4	7881.6	8031.9
% growth				-17.0%	27.6%	13.3%	4.3%	5.3%	2.8%	1.9%

Source: Data from Capital IQ with added forecasts

WACC and capital expenditures. In order to appropriately value the company, the weighted average cost of capital was used as the discount rate in the DCF valuation (see Exhibit 14). To arrive at the WACC (see Exhibit 15), the return on 10-year U.S. treasury bond adjusted for country risk premium is used as the risk-free rate. As market risk premium, we used the market risk premium for Denmark (5.96%) provided by valuation expert Professor Damodaran of NYU's Stern School of Business. Average Beta of the industry—which is used as the Beta in our WACC calculation—is also provided by Professor Damodaran. Finally, calculating the after-tax cost of debt, a tax shield based on the average effective tax rate of the last three years was deducted from the cost of debt as exhibited in the Q2 financial statements.

Exhibit 15. Weighted Average Cost of Capital Calculation

WACC Calculation	
Cost of Equity	7.95%
Beta	1.05
Market Risk Premium	5.96%
Risk-Free Rate	1.69%
After-Tax Cost of Debt	2.04%
Cost of Debt	2.80%
Effective Tax Rate	27.00%
Target Capital Structure	
Debt / Value	41.00%
Equity / Value	59.00%
WACC	5.53%

Source: Data from Capital IQ

Based on the resulting WACC of 5.53%, the DCF model arrives at a share price of DKK 1,103.80 which is about 15% above the current market price of DKK 956.20 (See Exhibit 16). We assume a terminal growth rate of 1.50% which is based on expected population growth and inflation.

The valuation model works in the following way (see Exhibit 16): after calculating the net present values of stream and the net present values of terminal values, the model calculates total market value by share for each WACC and terminal growth rate = (NPV of Stream + NPV of Terminal Value – Net Debt) / Shares Outstanding.

Performing a sensitivity analysis on WACC and the terminal growth rate, the two most significant factors impacted in our DCF analysis, we expect the true value of the share price to lie between DKK 1,020 and DKK 1,220.

Exhibit 16. Net Present Value of Cash Flows plus Sensitivity Analysis (in M DKK)

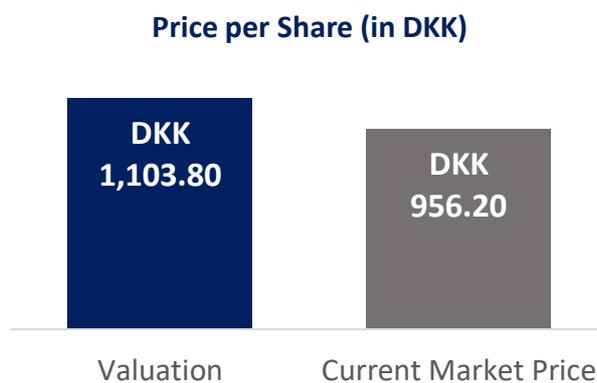
		NPV of Cash Flows (2019–2024)				
WACC		5.3%	5.4%	5.53%	5.6%	5.7%
NPV of Stream		38524	38433	38316	38252	38162
		NPV of Terminal Value				
	Growth					
	1.10%	DKK 142,042	DKK 137,595	DKK 132,222	DKK 129,293	DKK 125,413
	1.30%	DKK 151,604	DKK 146,707	DKK 140,805	DKK 137,595	DKK 133,350
	1.50%	DKK 162,172	DKK 156,753	DKK 150,240	DKK 146,707	DKK 142,042
	1.70%	DKK 173,915	DKK 167,885	DKK 160,661	DKK 156,753	DKK 151,604
	1.90%	DKK 187,039	DKK 180,289	DKK 172,232	DKK 167,885	DKK 162,172
Less Net Debt (current)		DKK 20,160	DKK 20,160	DKK 20,160	DKK 20,160	DKK 20,160
		Total Market Value per Share				
	Growth					
	1.10%	DKK 1,051	DKK 1,022	DKK 986	DKK 966	DKK 940
	1.30%	DKK 1,114	DKK 1,081	DKK 1,042	DKK 1,020	DKK 992
	1.50%	DKK 1,183	DKK 1,147	DKK 1,104	DKK 1,080	DKK 1,049
	1.70%	DKK 1,260	DKK 1,220	DKK 1,172	DKK 1,146	DKK 1,112
	1.90%	DKK 1,346	DKK 1,302	DKK 1,248	DKK 1,219	DKK 1,181
		Shares outstanding (current)				
		152.56				
		12-month Price Target				
		DKK 1,103.80				

Source: Data from Capital IQ

Investment Outlook

Building upon the results of the DCF model, we arrive at a buy recommendation based on a valuation per share of DKK 1,103.80 compared to the current market price of DKK 956.20.

We expect this difference to be driven by three main factors: The comparatively strong performance regarding margin development as well as the upside potential in operating margins. Secondly, the strong performance in growing market channels such as e-commerce and lastly by strong growth in the non-alcoholic brews segment.



Appendix 1a: The Time Series Forecasting Model*

t	Delta Consumer Expenditure	Q2 Dummy	Q3 Dummy	Year	Q	Quarter	EBIT	Forecast
1	0.35%	0	0	2009	Q4	4	DKK 1,347,000,000	
2	-0.15%	0	0	2010	Q1	1	DKK 711,000,000	
3	0.91%	10.7	0	2010	Q2	2	DKK 4,201,000,000	
4	-0.05%	0	16.26667	2010	Q3	3	DKK 4,102,000,000	
5	-0.31%	0	0	2010	Q4	4	DKK 616,000,000	
6	0.59%	0	0	2011	Q1	1	DKK 1,003,000,000	
7	0.52%	12.9	0	2011	Q2	2	DKK 3,662,000,000	
8	-0.16%	0	15.46667	2011	Q3	3	DKK 3,219,000,000	
9	-0.69%	0	0	2011	Q4	4	DKK 1,143,000,000	
10	-0.33%	0	0	2012	Q1	1	DKK 557,000,000	
11	0.42%	10.86667	0	2012	Q2	2	DKK 3,433,000,000	
12	0.06%	0	15.43333	2012	Q3	3	DKK 3,557,000,000	
13	-0.58%	0	0	2012	Q4	4	DKK 1,996,000,000	
14	-0.16%	0	0	2013	Q1	1	DKK 558,000,000	
15	0.79%	10.96667	0	2013	Q2	2	DKK 3,295,000,000	
16	-0.16%	0	16.2	2013	Q3	3	DKK 3,248,000,000	
17	0.28%	0	0	2013	Q4	4	DKK 2,141,000,000	
18	-0.55%	0	0	2014	Q1	1	DKK 370,000,000	
19	1.66%	12.4	0	2014	Q2	2	DKK 3,478,000,000	
20	0.00%	0	17.1	2014	Q3	3	DKK 3,255,000,000	
21	0.10%	0	0	2014	Q4	4	DKK 1,500,000,000	
22	-0.15%	0	0	2015	Q1	1	DKK 565,000,000	
23	2.44%	10.66667	0	2015	Q2	2	DKK 2,814,000,000	
24	0.15%	0	15.83333	2015	Q3	3	DKK 3,373,000,000	
25	0.08%	0	0	2015	Q4	4	DKK 1,244,000,000	
26	0.90%	0	0	2016	Q1	1	DKK 1,604,000,000	
27	0.55%	12.43333	0	2016	Q2	2	DKK 1,604,000,000	
28	0.57%	0	16.93333	2016	Q3	3	DKK 2,312,000,000	
29	0.62%	0	0	2016	Q4	4	DKK 2,312,000,000	
30	0.53%	0	0	2017	Q1	1	DKK 1,993,500,000	
31	0.42%	12.03333	0	2017	Q2	2	DKK 1,993,500,000	
32	0.61%	0	15.3	2017	Q3	3	DKK 2,251,500,000	
33	0.39%	0	0	2017	Q4	4	DKK 2,251,500,000	
34	0.47%	0	0	2018	Q1	1	DKK 2,103,500,000	
35	0.31%	13.9	0	2018	Q2	2	DKK 2,103,500,000	
36	0.24%	0	17.4	2018	Q3	3	DKK 2,451,000,000	
37	0.38%	0	0	2018	Q4	4	DKK 2,451,000,000	
38	0.35%	0	0	2019	Q1	1	DKK 2,503,500,000	
39	-0.26%	12.3	0	2019	Q2	2	DKK 2,503,500,000	
40	0.25%	0	16.26667	2019	Q3	3		DKK 3,134,408,570
41	0.37%	0	0	2019	Q4	4		DKK 1,589,356,613
42	0.86%	0	0	2020	Q1	1		DKK 1,822,289,296
43	0.46%	13.69273	0	2020	Q2	2		DKK 2,894,404,966
44	0.62%	0	16.94545	2020	Q3	3		DKK 3,371,305,634
45	0.84%	0	0	2020	Q4	4		DKK 1,810,940,205

Source: Data from Capital IQ

NOTE:

*Q2 Dummy = Q2 average temperature in Denmark

*Q3 Dummy = Q3 average temperature in Denmark

Appendix 1b: Regression Output of EBIT Forecast by The Time Series Model

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.751487171							
R Square	0.564732969							
Adjusted R	0.527424366							
Standard Error	731111271.8							
Observations	39							
<i>ANOVA</i>								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	3	2.42729E+19	8.09098E+18	15.136803	1.7621E-06			
Residual	35	1.87083E+19	5.34524E+17					
Total	38	4.29813E+19						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1417352982	165489716	8.564598552	4.146E-10	1081390998	1753314967	1081390998	1753314967
Delta Const	46892385788	23038324186	2.035407845	0.0494367	122101205	93662670371	122101204.7	93662670371
Q2 Dummy	92170415	26535365.85	3.473493282	0.0013869	38300758.4	146040071.6	38300758.42	146040071.6
Q3 Dummy	98217938.46	18062922.89	5.437544025	4.26E-06	61548255.5	134887621.4	61548255.49	134887621.4

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Please read this document before reading this report.

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