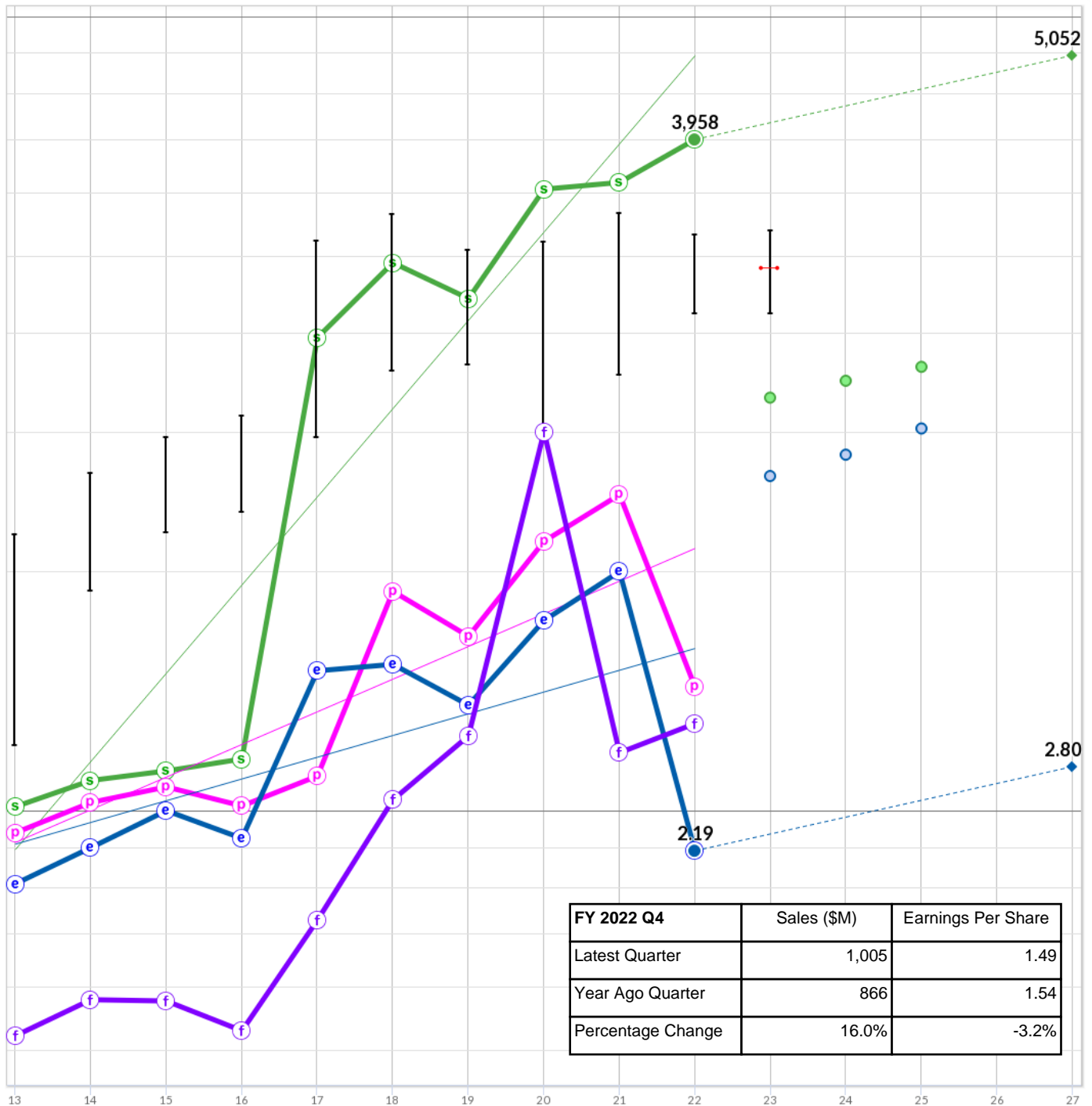


Stock Selection Guide

Company	Cboe Global Markets		Date	03/10/23	
Prepared by	HENRIKSON		Data taken from	BI Stock Data	
Where traded	BATS	Industry	Financial Data & Stock Exchanges		
Capitalization ---	Outstanding Amounts	Reference			
Preferred (\$M)	0.0	% Insiders	% Institution		
Common (M Shares)	107.0	1.8		63.5	
Debt (\$M)	1,871.3	% to Tot Cap	35.1	% Pot Dil	0.9

Symbol: CBOE

1 VISUAL ANALYSIS of Sales, Earnings, and Price



- | | | | |
|-----------------------------------|-------|--|------|
| (1) Historical Sales Growth | 29.1% | (3) Historical Earnings Per Share Growth | 6.5% |
| (2) Estimated Future Sales Growth | 5.0% | (4) Estimated Future Earnings Per Share Growth | 5.0% |

2 EVALUATING Management

Cboe Global Markets

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Last 5 Year Avg.
% Pre-tax Profit on Sales	49.6%	50.2%	51.1%	46.7%	15.0%	20.6%	20.1%	19.3%	21.6%	10.9%	18.5%
% Earned on Equity	53.1%	75.8%	77.7%	63.7%	14.5%	13.3%	11.1%	13.7%	15.0%	7.1%	12.0%
% Debt To Capital	0.0%	0.0%	0.0%	0.0%	28.5%	27.3%	21.4%	28.5%	28.4%	35.1%	28.1%

3 PRICE-EARNINGS HISTORY as an indicator of the future

This shows how stock prices have fluctuated with earnings and dividends. It is building block for translating earnings into future stock prices.

CLOSING PRICE 118.65 (03/10/23) **52-WEEK HIGH** 132.01 **52-WEEK LOW** 103.82

	A	B	C	D	E	F	G	H
Year	Price		Earnings	Price Earnings Ratio		Dividend	% Payout	% High Yield
	High	Low	Per Share	High A / C	Low B / C	Per Share	F / C * 100	F / B * 100
2018	138.5	87.9	3.76	36.8	23.4	1.16	30.9	1.3
2019	124.9	89.5	3.34	37.4	26.8	1.34	40.1	1.5
2020	127.9	72.0	4.27	30.0	16.9	1.56	36.5	2.2
2021	139.0	87.0	4.92	28.3	17.7	1.80	36.6	2.1
2022	130.5	103.8	2.19	59.6	47.4	1.96	89.5	1.9
AVERAGE		88.0		38.4	26.4		46.7	
CURRENT/TTM			2.18	60.6	47.6	2.00	91.7	
AVERAGE PRICE EARNINGS RATIO: 32.4					CURRENT PRICE EARNINGS RATIO: 54.4			

4 EVALUATING RISK and REWARD over the next 5 years

Assuming one recession and one business boom every 5 years, calculations are made of how high and how low the stock might sell. The upside-downside ratio is the key to evaluating risk and reward.

A HIGH PRICE - NEXT 5 YEARS

Avg. High P/E 50.0 X Estimate High Earnings/Share 2.80 = Forecasted High Price \$ 140.0

B LOW PRICE - NEXT 5 YEARS

(a) Avg. Low P/E 26.4 X Estimate Low Earnings/Share 2.18 = Forecasted Low Price \$ 57.6

(b) Avg. Low Price of Last 5 Years 88.0

(c) Recent Market Low Price 87.0

(d) Price Dividend Will Support $\frac{\text{Indicated Dividend}}{\text{High Yield}} = \frac{2.00}{2.17\%} = 92.3$

Selected Forecasted Low Price \$ 57.5

C ZONING using 25%-50%-25%

Forecasted High Price 140.0 Minus Forecasted Low Price 57.5 = 82.5 Range. 25% of Range 20.6

Buy Zone 57.5 to 78.1

Hold Zone 78.1 to 119.4

Sell Zone 119.4 to 140.0

Present Market Price of 118.65 is in the **HOLD** Zone

D UPSIDE DOWNSIDE RATIO (POTENTIAL GAIN VS. RISK OR LOSS)

$\frac{\text{High Price} - \text{Present Price}}{\text{Present Price}} = \frac{140.0 - 118.65}{118.65} = 0.18$
 $\frac{\text{Present Price} - \text{Low Price}}{\text{Present Price}} = \frac{118.65 - 57.5}{118.65} = 0.51$
 Ratio = $\frac{0.18}{0.51} = 0.35$ To 1

E PRICE TARGET (Note: This shows the potential market price appreciation over the next five years in simple interest terms.)

$\frac{\text{High Price} - \text{Closing Price}}{\text{Closing Price}} = \frac{140.0 - 118.65}{118.65} = 1.1799 \times 100 = 117.99 - 100 = 18.0\%$ % Appreciation

5 5-YEAR POTENTIAL

This combines price appreciation with dividend yield to get an estimate of total return. It provides a standard for comparing income and growth stocks.

A $\frac{\text{Indicated Annual Dividend}}{\text{Closing Price}} = \frac{1.96}{118.65} = 0.0169 = 1.7\%$ Current Yield

B AVERAGE YIELD - USING FORECAST HIGH P/E

$\frac{\text{Avg. \% Payout}}{\text{Forecast High PE}} = \frac{46.7\%}{50.00} = 0.9\%$

AVERAGE YIELD - USING FORECAST AVERAGE P/E

$\frac{\text{Avg. \% Payout}}{\text{Forecast Average PE}} = \frac{46.7\%}{38.20} = 1.2\%$

C COMPOUND ANNUAL RETURN - USING FORECAST HIGH P/E

Annualized Appreciation 3.4 %
 Average Yield 0.9 %
 Annualized Rate of Return 4.3 %

COMPOUND ANNUAL RETURN - USING FORECAST AVG P/E

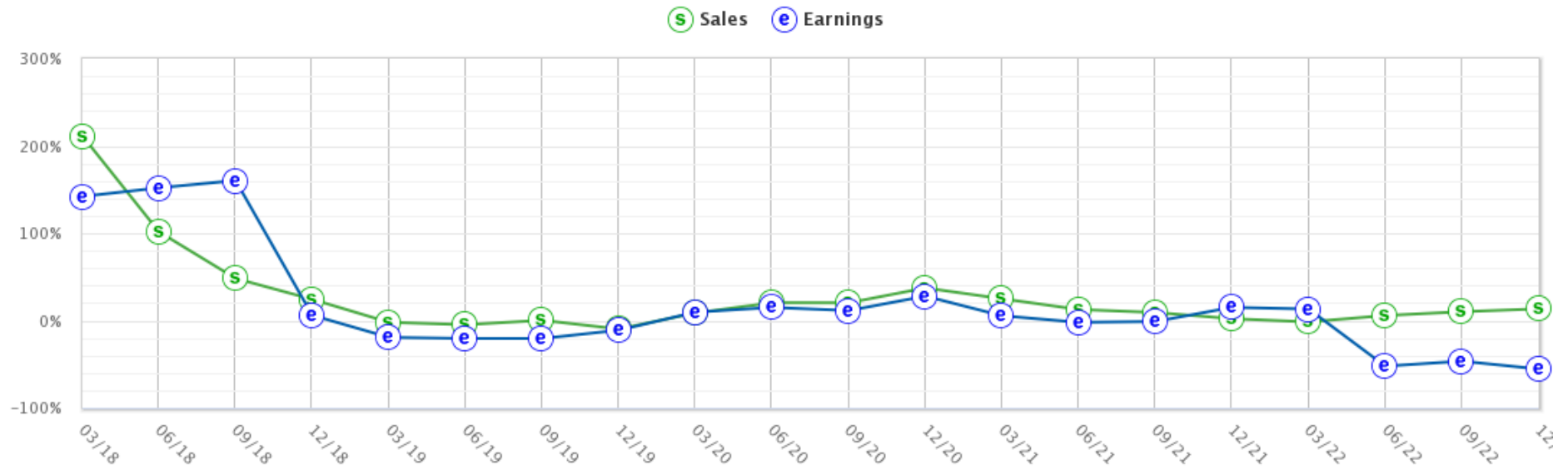
Annualized Appreciation -2.1 %
 Average Yield 1.2 %
 Annualized Rate of Return -0.8 %

Notes: CBOE 3/8/23

Date	Subject	Description	Type
03/11/23	Judgements for CBOE- 2023	<p>CBOE had good sales in 2023 but dropped significantly in EPS, largely due to two major acquisitions. I used 5% for both sales and EPS (following average of analysts) and allowing for more acquisitions in this fragmented industry. I used high PE of 50 and used low price of 108 (low from last 52 weeks). PE is very high, but investors seem to like the future of this company. Debt level is reasonable in 30% range, and strong cash flow is consistently generated.</p> <p>Most analysts give this stock a Hold rating. While CEO on earnings call forecasted 7-10% Sales and EPS growth in 2023, I thought 5% was fair because there are a number of environmental uncertainties, such as US currency headwinds for European operations, a very regulated environment in Europe, Canada, US, and Japan, and more acquisitions on the horizon. My analysis places CBOE as a HOLD</p>	Study
05/17/21	CBOE Projections - Arvind	<p>Arvind Has gone with estimate of historical sales growth of 5.0 based upon my analysis and research from Value Line, CFRA, Schwab & Fidelity Equity Analysis Reports and ZACK Analyst Report.</p> <p>For historical EPS Growth estimate 7.5 consistent with Value Line. Arvind also used Preferred Procedure Growth Method which resulted in estimated Growth Projection for EPS 7.8%, close to the VL estimate.</p> <p>Management looks OK - Down for PTP trends and Up (for ROE trends) from Yr to Yr. Debt is almost non-existent except for the small amounts of debt incurred during the last two yrs. which is still below the industry average.</p> <p>For evaluating risk and reward over the next 5 years Arvind has selected to go with the high P/E as 30.0 and Low P/E of 23.9, which puts the Stock (Currently at \$113.68) at the end of "Buy" Range (Close to HOLD Range) based on SSG. Note that Current P/E is 27.6, which is little lower than the Average P/E of 29.2. The Stock is currently little undervalued. The upside downside ratio is 3.1 to1. Morning Star does not provide a rating for this stock.</p> <p>CBOE financial health is strong, Dividends are good, uncertainty medium and low debt.</p> <p>According to CFRA, it puts the stock in the "BUY" range and gives it 4 stars rating. It says the target price for 12 months is \$112.64 with Fair Value estimate - N/A. CBOE value is near the high end of its 52 wk range, volatility is low and insider activity is favorable.</p> <p>According to Fidelity - it is in the "Hold" range. Schwab Equity report rating D, says to "Sell"</p> <p>VL says - These quality shares are ranked to perform in tandem with the broader market averages in the year ahead. Nevertheless, CBOE offers substantial long-term capital appreciation potential over the coming 3 to 5 years.</p> <p>My current recommendation is to "HOLD" this stock until the next earnings report out.</p>	Community

Quarterly Growth Trend Data

Graph: Trailing 4 Quarters, Last 5 Years of Data



Quarterly Data									Last 12 Months Data								
Period	EPS		Pre-Tax Profit			Sales		Income Tax Rate	EPS	Pre-Tax Profit		Sales	Income Tax		%Change		
	\$	%Change	\$ Mil	%Sales	%Change	\$ Mil	%Change	\$		\$ Mil	%Sales	\$ Mil	%Rate	EPS	Pre-Tax Profit	Sales	
12/22	1.49	-3.2	235.8	23.5	12.2	1,004.7	16.0	32.3	2.18	432.9	10.9	3,958.5	158.1	36.5	-55.6	-42.7	13.3
09/22	1.41	25.9	229.0	23.0	31.8	993.5	21.6	34.4	2.23	407.3	10.7	3,820.2	137.4	33.7	-46.7	-39.1	10.0
06/22	-1.74	-277.6	-256.8	-26.0	-243.3	985.8	23.1	28.2	1.94	352.1	9.7	3,643.5	115.5	32.8	-52.3	-46.5	5.7
03/22	1.02	-19.7	224.9	23.1	16.6	974.5	-3.6	51.3	4.66	788.1	22.8	3,458.5	284.1	36.1	13.1	24.0	-1.6
12/21	1.54	90.1	210.2	24.3	71.0	866.4	2.6	21.1	4.91	756.1	21.6	3,494.8	230.3	30.5	15.0	14.5	2.0
09/21	1.12	10.9	173.8	21.3	6.4	816.8	3.0	30.7	4.18	668.8	19.3	3,472.6	216.9	32.4	-1.2	2.6	9.1
06/21	0.98	-4.9	179.2	22.4	14.4	800.8	-7.8	41.1	4.07	658.4	19.1	3,448.5	216.8	32.9	-2.2	4.6	12.5

Quarterly Growth Trend Data

Graph: Trailing 4 Quarters, Last 5 Years of Data

Quarterly Data									Last 12 Months Data										
Period	EPS		Pre-Tax Profit			Sales		Income Tax Rate	EPS	Pre-Tax Profit			Sales	Income Tax			%Change		
	\$	%Change	\$ Mil	%Sales	%Change	\$ Mil	%Change			\$	\$ Mil	%Sales		\$ Mil	%Rate	EPS	Pre-Tax Profit	Sales	
03/21	1.27	-10.6	192.9	19.1	-11.3	1,010.8	9.7	28.9	4.12	635.8	18.1	3,516.4	187.6	29.5	5.4	7.4	24.9		
12/20	0.81	5.2	122.9	14.6	7.6	844.2	41.0	29.0	4.27	660.4	19.3	3,427.1	192.8	29.2	27.8	31.4	37.2		
09/20	1.01	7.4	163.4	20.6	16.0	792.7	17.4	32.7	4.23	651.7	20.5	3,181.5	182.9	28.1	11.3	15.5	20.2		
06/20	1.03	32.1	156.6	18.0	30.9	868.7	40.0	27.5	4.16	629.2	20.5	3,064.2	164.2	26.1	14.9	16.6	20.3		
03/20	1.42	67.1	217.5	23.6	70.2	921.5	52.9	27.6	3.91	592.2	21.0	2,816.1	157.3	26.6	9.5	9.7	8.6		
12/19	0.77	-37.4	114.2	19.1	-35.0	598.6	-19.9	24.4	3.34	502.5	20.1	2,497.2	130.8	26.0	-11.2	-12.0	-9.8		
09/19	0.94	23.7	140.9	20.9	21.2	675.4	17.3	24.8	3.80	564.0	21.3	2,646.3	142.3	25.2	-20.7	12.9	0.2		
06/19	0.78	6.8	119.6	19.3	-0.2	620.6	-7.0	29.4	3.62	539.4	21.2	2,546.8	138.1	25.6	-20.6	10.3	-4.9		
03/19	0.85	-18.3	127.8	21.2	-19.8	602.6	-22.5	25.5	3.57	539.6	20.8	2,593.7	140.0	25.9	-19.4	13.5	-2.1		
12/18	1.23	-45.6	175.7	23.5	68.8	747.7	20.5	21.2	3.76	571.2	20.6	2,768.8	148.8	26.0	5.9	70.8	24.2		
09/18	0.76	43.4	116.3	20.2	9.8	575.9	-5.8	26.3	4.79	499.6	18.9	2,641.8	-80.0	-16.0	160.3	63.6	48.1		
06/18	0.73	21.7	119.8	17.9	12.9	667.5	4.2	30.7	4.56	489.2	18.3	2,677.3	-57.8	-11.8	151.9	83.4	101.6		
03/18	1.04	550.0	159.4	20.5	771.0	777.7	118.3	25.9	4.43	475.5	17.9	2,650.6	-50.0	-10.5	142.1	94.5	211.5		
12/17	2.26	310.9	104.1	16.8	38.8	620.7	254.5	-147.0	3.55	334.4	15.0	2,229.1	-42.7	-12.8	56.4	9.1	239.3		
09/17	0.53	6.0	105.9	17.3	57.3	611.4	291.4	43.1	1.84	305.3	17.1	1,783.5	103.6	33.9	-21.0	-1.9	179.6		
06/17	0.60	-3.2	106.1	16.6	26.6	640.8	292.3	35.9	1.81	266.7	20.1	1,328.3	88.4	33.1	-31.4	-22.8	98.7		
03/17	0.16	-73.3	18.3	5.1	-77.3	356.2	119.4	16.9	1.83	244.4	28.7	850.8	83.0	34.0	-28.5	-27.1	30.1		
12/16	0.55	-9.8	75.0	42.8	-5.9	175.1	12.3	39.8	2.27	306.6	46.7	656.9	121.0	39.5	-7.7	-5.4	3.5		
09/16	0.50	-38.3	67.3	43.1	-33.6	156.2	-16.5	39.9	2.33	311.3	48.8	637.8	120.5	38.7	-4.1	-5.2	-1.1		
06/16	0.62	14.8	83.8	51.3	13.8	163.3	9.8	39.2	2.64	345.4	51.7	668.6	128.1	37.1	20.5	14.5	10.2		
03/16	0.60	20.0	80.5	49.6	16.2	162.3	13.6	38.9	2.56	335.2	51.3	654.0	124.2	37.0	19.1	12.7	8.6		
12/15	0.61	5.2	79.7	51.1	-5.1	155.9	-6.3	36.7	2.46	324.0	51.1	634.5	120.1	37.1	11.3	4.6	2.8		
09/15	0.81	42.1	101.5	54.2	35.6	187.0	25.6	33.5	2.43	328.3	50.9	645.1	125.4	38.2	13.0	10.2	8.9		
06/15	0.54	8.0	73.6	49.5	6.1	148.7	3.3	39.1	2.19	301.7	49.7	607.0	116.6	38.7	6.8	3.7	4.6		
03/15	0.50	-10.7	69.3	48.5	-15.0	142.8	-9.5	39.0	2.15	297.4	49.4	602.2	114.2	38.4	3.9	0.3	2.5		
12/14	0.58	11.5	83.9	50.4	16.3	166.5	17.4	41.2	2.21	309.7	50.2	617.2	119.6	38.6	11.1	9.2	7.9		
09/14	0.57	21.3	74.8	50.2	10.2	148.9	8.9	35.4	2.15	297.9	50.3	592.6	111.3	37.3					
06/14	0.50	-3.8	69.4	48.2	-7.3	143.9	-4.5	38.1	2.05	291.0	50.1	580.4	111.4	38.3					
03/14	0.56	16.7	81.5	51.6	18.7	157.9	10.6	39.9	2.07	296.5	50.5	587.2	113.7	38.4					
12/13	0.52		72.2	50.9		141.8		36.1											
09/13	0.47		67.9	49.7		136.7		39.1											

Quarterly Growth Trend Data

Graph: Trailing 4 Quarters, Last 5 Years of Data

Quarterly Data									Last 12 Months Data									
Period	EPS		Pre-Tax Profit			Sales		Income Tax Rate	EPS	Pre-Tax Profit			Sales	Income Tax		%Change		
	\$	%Change	\$ Mil	%Sales	%Change	\$ Mil	%Change	\$		\$ Mil	%Sales	\$ Mil		%Rate	EPS	Pre-Tax Profit	Sales	
06/13	0.52		74.9	49.7		150.8		38.4										
03/13	0.48		68.7	48.1		142.7		38.3										