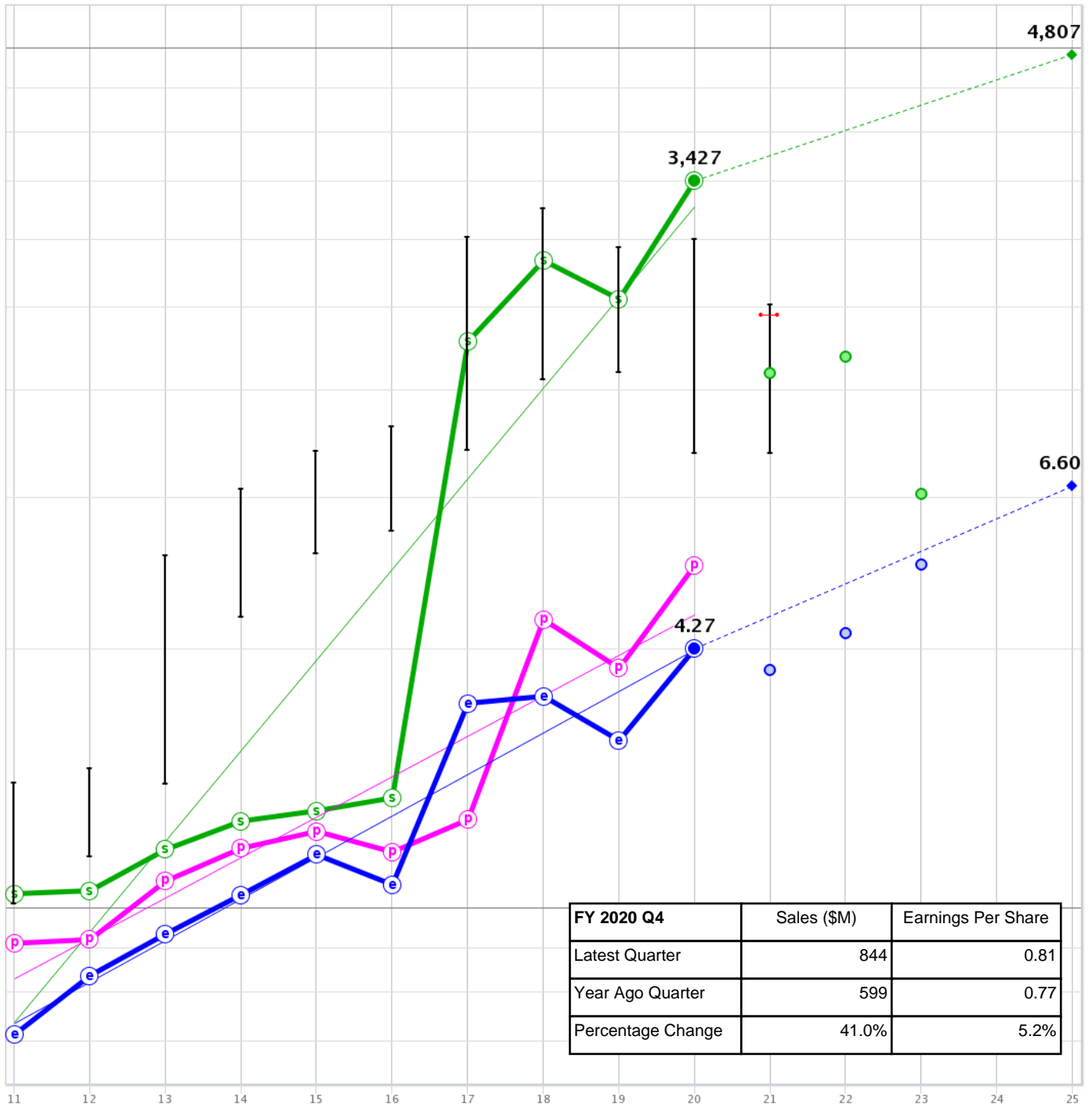


Company	Cboe Global Markets		Date	03/12/21	
Prepared by	FWIC		Data taken from	BI Stock Data	
Where traded	BATS	Industry	Financial Data & Stock Exchanges		
Capitalization ---	Outstanding Amounts	Reference			
Preferred (\$M)	0.0	% Insiders	% Institution		
Common (M Shares)	107.9	1.7		98.9	
Debt (\$M)	1,336.0	% to Tot Cap	28.5	% Pot Dil	0.0

# Stock Selection Guide

Symbol: CBOE

## 1 VISUAL ANALYSIS of Sales, Earnings, and Price



FY 2020 Q4	Sales (\$M)	Earnings Per Share
Latest Quarter	844	0.81
Year Ago Quarter	599	0.77
Percentage Change	41.0%	5.2%

- |                                   |       |  |       |
|-----------------------------------|-------|--|-------|
| (1) Historical Sales Growth       | 27.5% | (3) Historical Earnings Per Share Growth       | 11.8% |
| (2) Estimated Future Sales Growth | 7.0%  | (4) Estimated Future Earnings Per Share Growth | 9.1%  |

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Last 5 Year Avg.
Pre-tax Profit on Sales	47.2%	47.3%	49.6%	50.2%	51.1%	46.7%	15.0%	20.6%	20.1%	19.3%	24.3%
% Earned on Equity	54.9%	65.0%	53.1%	75.8%	77.7%	63.7%	14.5%	13.3%	11.1%	13.7%	23.3%
% Debt To Capital	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	28.5%	27.3%	21.4%	28.5%	21.1%

## 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** 104.34 (03/12/21)

**HIGH THIS YEAR** 107.12

**LOW THIS YEAR** 72.01

	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
2016	77.3	58.4	2.27	34.0	25.7	0.96	42.3	1.6
2017	128.3	72.5	3.69	34.8	19.7	1.04	28.2	1.4
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
AVERAGE		76.1		34.6	22.5		35.6	
CURRENT/TTM			4.27			1.68	39.3	
AVERAGE PRICE EARNINGS RATIO: 28.5				CURRENT PRICE EARNINGS RATIO: 24.4				

## 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 29.0 X Estimate High Earnings/Share 6.60 = Forecasted High Price \$ 191.4

### B LOW PRICE - NEXT 5 YEARS

(a) Avg. Low P/E 19.0 X Estimate Low Earnings/Share 4.27 = Forecasted Low Price \$ 81.1

(b) Avg. Low Price of Last 5 Years 76.1

(c) Recent Market Low Price 72.0

(d) Price Dividend Will Support  $\frac{\text{Indicated Dividend}}{\text{High Yield}} = \frac{1.68}{2.17\%} = 77.5$

Selected Forecasted Low Price \$ 81.1

### C ZONING using 25%-50%-25%

Forecasted High Price 191.4 Minus Forecasted Low Price 81.1 = 110.3 Range. 25% of Range 27.6

Buy Zone 81.1 to 108.7

Hold Zone 108.7 to 163.8

Sell Zone 163.8 to 191.4

Present Market Price of 104.34 is in the **BUY** Zone

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

$\frac{\text{High Price} - \text{Present Price}}{\text{Present Price} - \text{Low Price}} = \frac{191.4 - 104.34}{104.34 - 81.1} = \frac{87.06}{23.24} = 3.7$  To 1

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

$\frac{\text{High Price} - \text{Closing Price}}{\text{Closing Price}} = \frac{191.4 - 104.34}{104.34} = 1.8344$  X 100 = 183.44 - 100 = 83.4 % 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**  $\frac{\text{Indicated Annual Dividend}}{\text{Closing Price}} = \frac{1.56}{104.34} = 0.0161 = 1.6\%$  Current Yield

### B AVERAGE YIELD - USING FORECAST HIGH P/E

$\frac{\text{Avg. \% Payout}}{\text{Forecast High PE}} = \frac{35.6\%}{29.00} = 1.2\%$

### AVERAGE YIELD - USING FORECAST AVERAGE P/E

$\frac{\text{Avg. \% Payout}}{\text{Forecast Average PE}} = \frac{35.6\%}{24.00} = 1.5\%$

### C COMPOUND ANNUAL RETURN - USING FORECAST HIGH P/E

Annualized Appreciation 12.9 %  
Average Yield 1.2 %  
Annualized Rate of Return 14.1 %

### COMPOUND ANNUAL RETURN - USING FORECAST AVG P/E

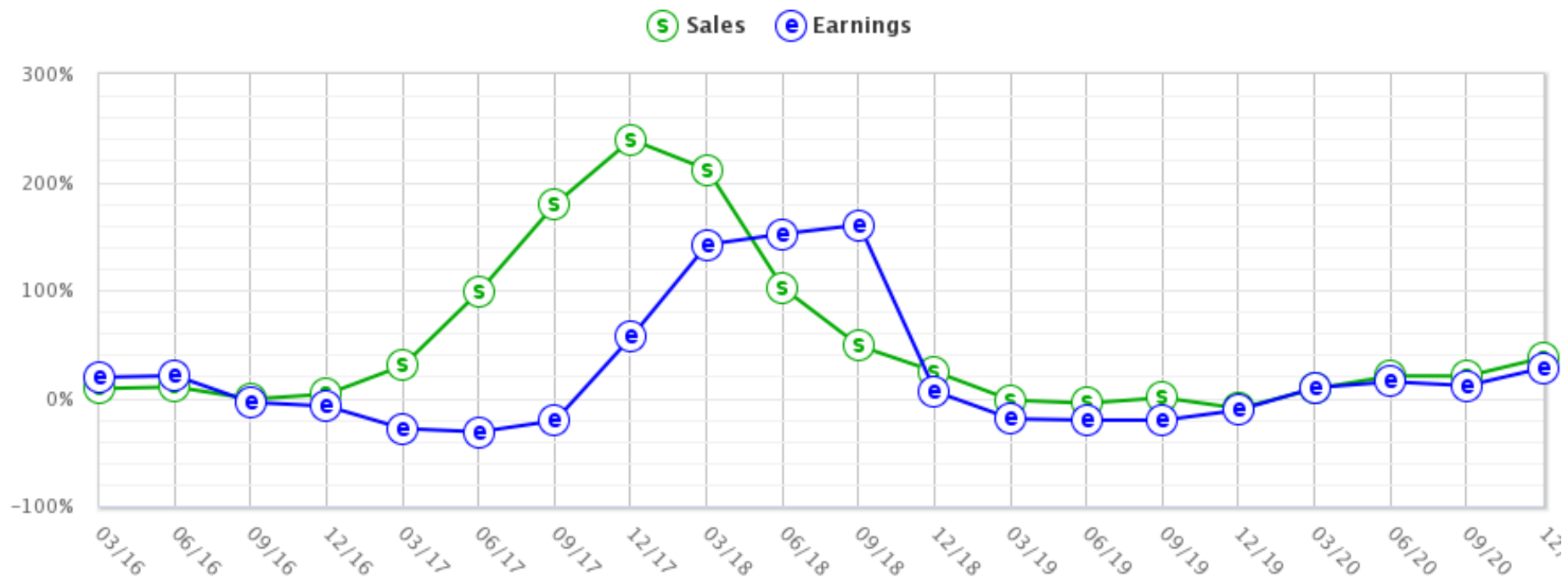
Annualized Appreciation 8.7 %  
Average Yield 1.5 %  
Annualized Rate of Return 10.2 %

**Notes: CBOE 3/15/21 - Arvind**

Date	Subject	Description	Type																		
03/15/21	Notes on my Judgements used for CBOE SSG Arvind	<p>I used Historical sales forecast of 7% based upon my conservative assessment of various Analyst estimates (Value Line, CFRA, Schwab Equity report, Fidelity Equity report and the Argus Analysis report and also based upon the historical data projections over the last 10 years. I took into consideration the Analyst's estimates for 2021 and 2022 Earnings and the revenue Growth Projections.</p> <p>I used the Preferred Procedure Method to develop 5 yr estimates for Historical EPS forecast as 9.1%.</p> <p>For high P/E in Section 4, I selected 29.0 same as Average P/E 28.5. The current P/E is 24.4.</p> <p>For Low P/E in section 4, I selected 19.0 based upon my assessment that the P/E ratios for this stock are tending downwards compared to the average high P/E 34.6 and average Low P/E 22.5 as indicated in Section 3</p>	Study																		
01/11/21	Oct Round Table	Got 15% of votes at the Manifest Round Table Oct 2020 meeting. Presented by Mark R.	Community																		
11/14/20	2017 Inc Tax Benefit	<p>2017 10K p.72</p> <p>We have recorded a \$191.3 million net tax benefit in 2017 associated with the impact of the Jobs Act primarily due to the tax benefit associated with re-measuring net deferred tax liabilities. Although the \$191.3 million net benefit represents what Cboe believes is a reasonable estimate of the impact of the income tax effects of the Jobs Act on Cboe's Consolidated Financial Statements as of December 31, 2017, it should be considered provisional. Once Cboe finalizes certain tax positions and files its 2017 US tax return it will be able to conclude whether any further adjustments are required to its net deferred tax liability as well as to the liability associated with the one-time mandatory deemed repatriation tax. Any adjustments to these provisional amounts will be reported as a component of Tax expense (benefit) in the reporting period in which any such adjustments are determined, which will be no later than the fourth quarter of 2018.</p> <p>No adjustments made in 2018</p> <table border="1" data-bbox="558 1528 1125 1696"> <thead> <tr> <th>Changes for 2017</th> <th>Adjmnts</th> <th>New values</th> </tr> </thead> <tbody> <tr> <td>Sales 2229.1</td> <td></td> <td></td> </tr> <tr> <td>PTP 334.4</td> <td>-191.3</td> <td>143.1</td> </tr> <tr> <td>Net Inc 396.7</td> <td>-191.3</td> <td>205.4</td> </tr> <tr> <td>EPS 3.69</td> <td></td> <td>1.91</td> </tr> <tr> <td>Shares 107.5</td> <td></td> <td></td> </tr> </tbody> </table>	Changes for 2017	Adjmnts	New values	Sales 2229.1			PTP 334.4	-191.3	143.1	Net Inc 396.7	-191.3	205.4	EPS 3.69		1.91	Shares 107.5			Community
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**Quarterly Growth Trend Data**

Graph: Trailing 4 Quarters, Last 5 Years of Data



Period	Quarterly Data								Last 12 Months Data								
	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	
12/20	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

**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
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	12.0	10.0	5.8
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	4.1	10.4	5.2
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	9.5	16.6	10.0
12/13	0.52	15.6	72.2	50.9	21.5	141.8	9.0	36.1	1.99	283.7	49.6	572.1	107.7	38.0	11.8	16.9	11.7
09/13	0.47	-9.6	67.9	49.7	12.2	136.7	6.6	39.1	1.92	270.9	48.3	560.3	100.9	37.2	14.3	15.0	11.5
06/13	0.52	18.2	74.9	49.7	14.1	150.8	13.7	38.4	1.97	263.5	47.8	551.9	88.4	33.6	22.4	5.6	6.6
03/13	0.48	29.7	68.7	48.1	20.6	142.7	17.6	38.3	1.89	254.3	47.7	533.7	87.2	34.3	23.5	5.9	5.6
12/12	0.45	28.6	59.4	45.7	13.5	130.1	8.2	33.1	1.78	242.6	47.3	512.3	85.0	35.1	17.1	1.0	0.8
09/12	0.52	15.6	60.5	47.2	-18.8	128.3	-10.6	24.4	1.68	235.5	46.9	502.5	86.2	36.6			
06/12	0.44	22.2	65.7	49.5	16.6	132.5	10.2	41.4	1.61	249.5	48.2	517.8	103.9	41.6			
03/12	0.37	2.8	57.0	46.9	0.1	121.4	-2.1	41.3	1.53	240.2	47.5	505.5	99.5	41.5			
12/11	0.35		52.3	43.5		120.2		39.2									
09/11	0.45		74.6	51.9		143.6		44.6									
06/11	0.36		56.3	46.8		120.3		40.7									
03/11	0.36		56.9	45.9		124.0		42.2									