

**Schedule PKC-1**

| <b>Credit Ratings</b>         |                      |                |                |                  |
|-------------------------------|----------------------|----------------|----------------|------------------|
| <b>Company</b>                | <b>Ticker Symbol</b> | <b>Moody's</b> | <b>S&amp;P</b> | <b>ValueLine</b> |
| Atmos Energy Corporation      | ATO                  | A2             | A              | A+               |
| One Gas, Inc.                 | OGS                  | A2             | A              | B++              |
| Northwest Natural Gas Company | NWN                  | A3             | A+             | A                |
| Spire Inc.                    | SR                   | Baa2           | A-             | B++              |
| Southwest Gas Holdings, Inc.  | SWX                  | Baa1           | BBB+           | B++              |

Ratings downloaded from SNL data on Nov. 27, 2017.

Value Line Financial Strengths rating from latest one-pagers.

**Schedule PKC-2**  
**Common Equity Ratios**

| <b>Company</b>                | <b>2014</b>  | <b>2015</b>  | <b>2016</b>  | <b>Average<br/>(2014-16)</b> |
|-------------------------------|--------------|--------------|--------------|------------------------------|
| Atmos Energy Corporation      | 55.7         | 56.5         | 61.3         | 57.83333                     |
| One Gas, Inc.                 | 59.9         | 60.5         | 61.3         | 60.56667                     |
| Northwest Natural Gas Company | 55.2         | 57.5         | 55.6         | 56.1                         |
| Spire Inc.                    | 44.9         | 47           | 49.1         | 47                           |
| Southwest Gas Holdings, Inc.  | 47.6         | 50.7         | 51.8         | 50.03333                     |
| <b>Average</b>                | <b>52.66</b> | <b>54.44</b> | <b>55.82</b> | <b>54.31</b>                 |

Source: Value Line One-pagers (latest as of Dec. 18, 2017)

## Schedule PKC-3

**STOCK PRICES**

| Date       | ATO     | OGS     | NWN     | SR      | SWX     |
|------------|---------|---------|---------|---------|---------|
| 12/15/2017 | 89.3700 | 76.3800 | 65.0500 | 77.0500 | 80.1100 |
| 12/14/2017 | 89.4200 | 75.7700 | 64.0500 | 76.5500 | 79.4000 |
| 12/13/2017 | 89.9600 | 76.4800 | 64.5000 | 77.5500 | 80.5300 |
| 12/12/2017 | 89.2800 | 75.4400 | 64.0000 | 77.1500 | 80.4800 |
| 12/11/2017 | 91.9100 | 76.7900 | 65.3500 | 79.5000 | 82.9500 |
| 12/8/2017  | 91.8000 | 77.5000 | 67.2000 | 80.2000 | 82.8100 |
| 12/7/2017  | 91.5600 | 77.4500 | 67.5500 | 80.5500 | 82.6700 |
| 12/6/2017  | 91.4300 | 77.3500 | 67.7500 | 80.3500 | 82.7400 |
| 12/5/2017  | 91.4500 | 77.4000 | 68.0500 | 80.3500 | 83.4000 |
| 12/4/2017  | 91.7000 | 78.0800 | 68.7500 | 81.7500 | 85.6600 |
| 12/1/2017  | 92.2400 | 78.7800 | 68.4000 | 81.7500 | 86.2300 |
| 11/30/2017 | 92.2900 | 79.2500 | 69.1500 | 82.2500 | 85.9400 |
| 11/29/2017 | 90.5100 | 78.1700 | 68.5500 | 81.0000 | 84.9600 |
| 11/28/2017 | 90.2700 | 78.1100 | 67.8000 | 80.0500 | 84.1200 |
| 11/27/2017 | 89.5000 | 77.3000 | 66.9500 | 78.7500 | 82.9600 |
| 11/24/2017 | 88.7200 | 76.7900 | 66.6500 | 78.3000 | 81.7000 |
| 11/22/2017 | 89.1000 | 76.7400 | 66.7500 | 78.1500 | 82.2600 |
| 11/21/2017 | 89.4200 | 77.2400 | 67.0500 | 78.9000 | 82.2900 |
| 11/20/2017 | 89.1100 | 76.9500 | 66.1500 | 78.2000 | 82.1300 |
| 11/17/2017 | 89.3300 | 77.1200 | 66.7000 | 78.5500 | 82.6900 |
| 11/16/2017 | 89.9500 | 77.5300 | 67.2500 | 78.7500 | 82.8500 |
| Average    | 90.40   | 77.27   | 66.84   | 79.32   | 82.80   |

Source: SNL

**Schedule PKC-4**

| <b>Dividend Yield Estimate for the Next Period</b> |                     |               |               |
|----------------------------------------------------|---------------------|---------------|---------------|
| Company                                            | Average Stock Price | 2018 Dividend | Div. Yield(1) |
| ATO                                                | 90.40               | 1.94          | 2.15%         |
| OGS                                                | 77.27               | 1.88          | 2.43%         |
| NWN                                                | 66.84               | 1.89          | 2.83%         |
| SR                                                 | 79.32               | 2.25          | 2.84%         |
| SWX                                                | 82.80               | 2.08          | 2.51%         |
| <b>Average</b>                                     |                     |               | 2.55%         |

DY data from Value Line (latest one-pagers as of Dec. 18, 2017)

## Schedule PKC-5

## Growth Components

| Company                       |     | Value Line 5-yearly projections |                 |                 | Consensus EPS | Zacks EPS   | SNL LTG     | Average EPS | Average of Average EPS, DPS and BPS | Internal growth | External Growth | Internal plus External growth |
|-------------------------------|-----|---------------------------------|-----------------|-----------------|---------------|-------------|-------------|-------------|-------------------------------------|-----------------|-----------------|-------------------------------|
|                               |     | EPS growth rate                 | DPS growth rate | BPS growth rate |               |             |             |             |                                     |                 |                 |                               |
| Atmos Energy Corporation      | ATO | 6.75                            | 5.37            | 4.37            | 6.50          | 7.00        | 7.00        | 6.81        | 5.52                                | 5.50%           | 4.21%           | 9.71%                         |
| One Gas, Inc.                 | OGS | 9.50                            | 13.50           | 3.00            | 6.00          | 5.70        | 6.00        | 6.80        | 7.77                                | 3.66%           | 1.66%           | 5.32%                         |
| Northwest Natural Gas Company | NWN | 4.75                            | 2.37            | 3.00            | 4.00          | 4.50        | 5.00        | 4.56        | 3.31                                | 3.14%           | 0.62%           | 3.77%                         |
| Spire Inc.                    | SR  | 8.75                            | 4.25            | 5.24            | 4.52          | 5.00        | 4.75        | 5.75        | 5.08                                | 4.15%           | 0.89%           | 5.04%                         |
| Southwest Gas Holdings, Inc.  | SWX | 7.25                            | 7.62            | 3.87            | 4.00          | 5.90        | 4.00        | 5.29        | 5.59                                | 4.63%           | 2.46%           | 7.09%                         |
| <b>Average</b>                |     | <b>7.40</b>                     | <b>6.62</b>     | <b>3.90</b>     | <b>5.00</b>   | <b>5.62</b> | <b>5.35</b> | <b>5.84</b> | <b>5.45</b>                         | <b>4.22%</b>    | <b>1.97%</b>    | <b>6.19%</b>                  |

Value Line data based on information downloaded on Dec. 18, 2017 and the latest Value Line one-pager for OGS.

Zacks, SNL and Consensus data from Dec. 18, 2017.

**Schedule PKC-6****"External Component" of COE**

|                               |     | current<br>market to<br>book<br>ratio | # of<br>shares<br>2018 | # of<br>shares<br>2020-22 | growth<br>rate in #<br>of shares | sv    |
|-------------------------------|-----|---------------------------------------|------------------------|---------------------------|----------------------------------|-------|
| Atmos Energy Corporation      | ATO | 2.43                                  | 110                    | 120                       | 2.94%                            | 4.21% |
| One Gas, Inc.                 | OGS | 2.06                                  | 52.5                   | 55                        | 1.56%                            | 1.66% |
| Northwest Natural Gas Company | NWN | 2.11                                  | 29.5                   | 30                        | 0.56%                            | 0.62% |
| Spire Inc.                    | SR  | 1.87                                  | 48.5                   | 50                        | 1.02%                            | 0.89% |
| Southwest Gas Holdings, Inc.  | SWX | 2.23                                  | 49                     | 52                        | 2.00%                            | 2.46% |

Source: Value Line one-pagers (data as of Dec. 18, 2017)

Market to book ratio (mrq) based on yahoo finance data from Dec. 18, 2017

**Schedule PKC-7**

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| <b>Expected Return on Equity</b> |     |        |         |         |
|----------------------------------|-----|--------|---------|---------|
| EXPECTED ROE                     |     | 2018   | 2020-22 | 2018-22 |
| Atmos Energy Corporation         | ATO | 10.50% | 11.50%  | 11.25%  |
| One Gas, Inc.                    | OGS | 8.50%  | 9.50%   | 9.25%   |
| Northwest Natural Gas Co         | NWN | 8.00%  | 10.00%  | 9.50%   |
| Spire Inc.                       | SR  | 8.50%  | 9.50%   | 9.25%   |
| Southwest Gas Holdings, I        | SWX | 9.50%  | 10.00%  | 9.88%   |
| Average                          |     |        |         | 9.83%   |

Source: Value Line one-pagers (latest data as of Dec. 18, 2017)

Schedule PKC-7 (continued)

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| Retention Ratio (b)       |     |                      |                       |      |                      |                       |      |                                   |
|---------------------------|-----|----------------------|-----------------------|------|----------------------|-----------------------|------|-----------------------------------|
|                           |     | 2018                 |                       |      | 2020-22              |                       |      | Average<br>Retention<br>ratio (b) |
|                           |     | earnings<br>pershare | dividends<br>pershare | b    | earnings<br>pershare | dividends<br>pershare | b    |                                   |
| Atmos Energy Corporation  | ATO | 3.80                 | 1.94                  | 0.49 | 4.50                 | 2.30                  | 0.49 | 0.49                              |
| One Gas, Inc.             | OGS | 3.25                 | 1.88                  | 0.42 | 4.00                 | 2.45                  | 0.39 | 0.40                              |
| Northwest Natural Gas Co  | NWN | 2.45                 | 1.89                  | 0.23 | 3.15                 | 2.00                  | 0.37 | 0.33                              |
| Spire Inc.                | SR  | 3.80                 | 2.25                  | 0.41 | 4.65                 | 2.50                  | 0.46 | 0.45                              |
| Southwest Gas Holdings, I | SWX | 3.70                 | 2.08                  | 0.44 | 4.80                 | 2.50                  | 0.48 | 0.47                              |

Source: Value Line one-pagers (latest data as of Dec. 18, 2017)

## Schedule PKC-8

## DCF ROE Estimates

| Company                                |     | Average of EPS, DPS, and<br>BVPS growth rates | br and sv    | EPS growth rates |
|----------------------------------------|-----|-----------------------------------------------|--------------|------------------|
| Atmos Energy Corporation               | ATO | 7.66%                                         | 11.86%       | 8.96%            |
| One Gas, Inc.                          | OGS | 10.20%                                        | 7.75%        | 9.23%            |
| Northwest Natural Gas Company          | NWN | 6.14%                                         | 6.60%        | 7.39%            |
| Spire Inc.                             | SR  | 7.92%                                         | 7.88%        | 8.59%            |
| Southwest Gas Holdings, Inc.           | SWX | 8.11%                                         | 9.60%        | 7.80%            |
| <b>Average Cost of Equity estimate</b> |     | <b>8.00%</b>                                  | <b>8.74%</b> | <b>8.39%</b>     |

The shaded cells (if any) represent outliers.

DCF All Methods

|                                  |        |        |       |        |
|----------------------------------|--------|--------|-------|--------|
| mean + 2 times st. deviation     | 10.91% | 12.83% | 9.95% | 8.38%  |
| mean - 2 times st. deviation     | 5.10%  | 4.64%  | 6.84% | 11.26% |
| Without outliers (if applicable) |        |        |       | 5.50%  |
|                                  |        |        |       | 8.13%  |

|               |       |
|---------------|-------|
| CAPM Method 1 | 9.74% |
| CAPM Method 2 | 9.06% |
| CAPM Average  | 9.40% |

**Schedule PKC-9****PROXY BETA**

| Company                   |     | VL Betas    | Bloomberg Beta |
|---------------------------|-----|-------------|----------------|
| Atmos Energy Corporation  | ATO | 0.70        | 0.61           |
| One Gas, Inc.             | OGS | 0.70        | 0.69           |
| Northwest Natural Gas Co. | NWN | 0.70        | 0.53           |
| Spire Inc.                | SR  | 0.70        | 0.65           |
| Southwest Gas Holdings    | SWX | 0.80        | 0.67           |
| Proxy Average             |     | <b>0.72</b> | <b>0.63</b>    |

Sources: Latest Value Line One Pagers (Downloaded on Dec. 18, 2017)

Bloomberg: Company response to DR OCA 5-3

**Schedule PKC-10**

| <b>Pricing Date</b> | <b>10y US T-<br/>Note</b> |
|---------------------|---------------------------|
| 12/15/2017          | 2.35                      |
| 12/14/2017          | 2.35                      |
| 12/13/2017          | 2.36                      |
| 12/12/2017          | 2.40                      |
| 12/11/2017          | 2.39                      |
| 12/08/2017          | 2.38                      |
| 12/07/2017          | 2.37                      |
| 12/06/2017          | 2.33                      |
| 12/05/2017          | 2.36                      |
| 12/04/2017          | 2.37                      |
| 12/01/2017          | 2.37                      |
| 11/30/2017          | 2.42                      |
| 11/29/2017          | 2.37                      |
| 11/28/2017          | 2.34                      |
| 11/27/2017          | 2.32                      |
| 11/24/2017          | 2.34                      |
| 11/23/2017          | 2.32                      |
| 11/22/2017          | 2.32                      |
| 11/21/2017          | 2.36                      |
| 11/20/2017          | 2.37                      |
| 11/17/2017          | 2.35                      |
|                     | 2.36                      |

Data source for yields is SNL

| <b>CAPM Method 1</b>                         |             |
|----------------------------------------------|-------------|
| S&P 500                                      |             |
|                                              |             |
|                                              |             |
|                                              |             |
| Return on B-cap-weighted                     | 14.07       |
| market risk premium                          | 11.71       |
| <b>CAPM Method 1 cost-of-equity estimate</b> | <b>9.74</b> |

| <b>CAPM Method 2</b>                         |             |
|----------------------------------------------|-------------|
| Value Line using S&P 500 constituents        |             |
|                                              |             |
|                                              |             |
| VL portfolio beta                            | 1.00        |
|                                              |             |
| Return on Value Line portfolio               | 11.67       |
| market risk premium                          | 9.30        |
| <b>CAPM Method 2 cost-of-equity estimate</b> | <b>9.06</b> |

## Schedule PKC-11

## Value Line Market Returns

| Ticker | Exp. EPS<br>Growth<br>Rate | Exp. EPS<br>Growth<br>Rate | Exp. EPS<br>Growth<br>Rate | BETA | Exp. DY | EPS<br>based<br>DCF | DPS<br>based<br>DCF | BVPS<br>based<br>DCF | MCAP<br>weight | CW EPS<br>weighted<br>EPS | CW EPS<br>weighted<br>DPS | CW EPS<br>weighted<br>VPS | CW Betas |
|--------|----------------------------|----------------------------|----------------------------|------|---------|---------------------|---------------------|----------------------|----------------|---------------------------|---------------------------|---------------------------|----------|
| AAL    | 1.5                        | 24                         | 14                         | 1.3  | 0.8     | 2.306               | 24.896              | 14.856               | 0.001205       | 0.002778                  | 0.029987                  | 0.017894                  | 0.001566 |
| AAP    | 9.5                        | 16.5                       | 7.5                        | 1.05 | 0.2     | 9.7095              | 16.7165             | 7.7075               | 0.000388       | 0.003763                  | 0.006478                  | 0.002987                  | 0.000407 |
| AAPL   | 11                         | 12.5                       | 15                         | 0.9  | 1.8     | 12.899              | 14.4125             | 16.935               | 0.043953       | 0.566844                  | 0.633467                  | 0.744337                  | 0.039557 |
| ABC    | 9.5                        | 9.5                        | 15                         | 0.9  | 1.8     | 11.3855             | 11.3855             | 16.935               | 0.000961       | 0.010943                  | 0.010943                  | 0.016277                  | 0.000865 |
| ABT    | 8.5                        | 7                          | 5.5                        | 1.05 | 2.2     | 10.7935             | 9.277               | 7.7605               | 0.004801       | 0.051819                  | 0.044539                  | 0.037258                  | 0.005041 |
| ACN    | 9                          | 8.5                        | 12                         | 1    | 2       | 11.09               | 10.585              | 14.12                | 0.004756       | 0.052744                  | 0.050342                  | 0.067154                  | 0.004756 |
| ADBE   | 33                         | 0                          | 17.5                       | 1.1  | 0       | 33                  | 0                   | 17.5                 | 0.004186       | 0.13814                   | 0                         | 0.073256                  | 0.004605 |
| ADI    | 16                         | 4                          | 15                         | 1.1  | 2.3     | 18.484              | 6.346               | 17.4725              | 0.001576       | 0.029127                  | 0.01                      | 0.027534                  | 0.001733 |
| ADM    | 3.5                        | 6.5                        | 4                          | 1.15 | 3.2     | 6.756               | 9.804               | 7.264                | 0.001162       | 0.007848                  | 0.011389                  | 0.008438                  | 0.001336 |
| ADP    | 10                         | 9.5                        | 6                          | 1    | 2.1     | 12.205              | 11.69975            | 8.163                | 0.002567       | 0.03133                   | 0.030033                  | 0.020955                  | 0.002567 |
| AEE    | 4.5                        | 4                          | 0.7                        | 3.2  | 9.296   | 7.772               | 7.264               | 0.000772             | 0.007174       | 0.005998                  | 0.005606                  | 0.00054                   | 0.00054  |
| AEP    | 4                          | 5                          | 3.5                        | 0.65 | 3.4     | 7.468               | 8.485               | 6.9595               | 0.001915       | 0.014332                  | 0.016284                  | 0.013356                  | 0.001247 |
| AET    | 9                          | 17                         | 6.5                        | 1    | 1.3     | 10.3585             | 18.4105             | 7.84225              | 0.002938       | 0.030432                  | 0.054089                  | 0.02304                   | 0.002938 |
| AFL    | 4                          | 5                          | 13.5                       | 1    | 2.3     | 6.346               | 7.3575              | 15.9525              | 0.001747       | 0.011087                  | 0.012854                  | 0.027874                  | 0.001747 |
| AGN    | 10                         | 0                          | 9                          | 1    | 1.1     | 11.155              | 1.1                 | 10.1495              | 0.002798       | 0.031217                  | 0.003078                  | 0.028403                  | 0.002798 |
| AIG    | 27                         | 13.5                       | 5.5                        | 1.1  | 2       | 29.27               | 15.635              | 7.555                | 0.002686       | 0.078612                  | 0.041992                  | 0.020291                  | 0.002954 |
| AIZ    | 4                          | 11.5                       | 9                          | 0.9  | 2       | 6.04                | 13.615              | 11.09                | 0.000271       | 0.001635                  | 0.003686                  | 0.003003                  | 0.000244 |
| AJG    | 15.5                       | 2.5                        | 7.5                        | 0.95 | 2.6     | 18.3015             | 5.1325              | 10.1975              | 0.000607       | 0.011107                  | 0.003115                  | 0.006189                  | 0.000577 |
| AKAM   | 11                         | 0                          | 9.5                        | 1.25 | 0       | 0                   | 0                   | 9.5                  | 0.000461       | 0.005294                  | 0                         | 0.004572                  | 0.000602 |
| ALB    | 9.5                        | 4.5                        | 6                          | 1.3  | 1.1     | 10.65225            | 5.62475             | 7.133                | 0.000721       | 0.007676                  | 0.004053                  | 0.00514                   | 0.000937 |
| ALGN   | 17                         | 0                          | 15                         | 1.1  | 0       | 17                  | 0                   | 15                   | 0.000913       | 0.015516                  | 0                         | 0.013691                  | 0.001004 |
| ALK    | 10                         | 14                         | 7.5                        | 1.2  | 1.4     | 11.47               | 15.498              | 8.9525               | 0.000424       | 0.004858                  | 0.006564                  | 0.003792                  | 0.000508 |
| ALL    | 7.5                        | 5                          | 8                          | 0.85 | 1.6     | 9.16                | 6.64                | 9.664                | 0.001875       | 0.011711                  | 0.012447                  | 0.018115                  | 0.001593 |
| ALLE   | 10                         | 13.5                       | 78.5                       | 1.1  | 0.8     | 10.84               | 14.354              | 79.614               | 0.0004         | 0.004333                  | 0.005738                  | 0.031827                  | 0.00044  |
| ALXN   | 23.5                       | 0                          | 6                          | 1.1  | 0       | 23.5                | 0                   | 6                    | 0.001259       | 0.029579                  | 0                         | 0.007552                  | 0.001385 |
| AMAT   | 23                         | 7                          | 9                          | 1.15 | 1.1     | 24.2265             | 8.1385              | 10.1495              | 0.002676       | 0.06483                   | 0.021779                  | 0.02716                   | 0.003077 |
| AME    | 8.5                        | 14                         | 8.5                        | 1.15 | 0.6     | 9.1255              | 14.642              | 9.1255               | 0.000836       | 0.007633                  | 0.012248                  | 0.007633                  | 0.000962 |
| AMC    | 7                          | 0                          | 6.5                        | 1.45 | 0.4     | 7.414               | 0.4                 | 6.913                | 0.000553       | 0.0041                    | 0.00221                   | 0.003823                  | 0.000802 |
| AMGN   | 8.5                        | 11                         | 12.5                       | 1.1  | 2.8     | 11.419              | 13.954              | 15.475               | 0.00654        | 0.074675                  | 0.091253                  | 0.1012                    | 0.007194 |
| AMP    | 12                         | 4                          | 12                         | 1.35 | 2.3     | 14.438              | 6.346               | 14.438               | 0.001235       | 0.017826                  | 0.007835                  | 0.017826                  | 0.001667 |
| AMT    | 15.5                       | 16                         | 8                          | 0.95 | 2       | 17.655              | 18.16               | 10.08                | 0.003005       | 0.053047                  | 0.054565                  | 0.030287                  | 0.002854 |
| AMZN   | 58.5                       | 0                          | 30                         | 1.15 | 0       | 58.5                | 0                   | 30                   | 0.027548       | 1.611558                  | 0                         | 0.82644                   | 0.03168  |
| ANDV   | 6.5                        | 9                          | 20                         | 1.2  | 2.5     | 9.08125             | 11.6125             | 22.75                | 0.000841       | 0.00764                   | 0.009769                  | 0.019139                  | 0.00101  |
| ANTM   | 12                         | 6                          | 11                         | 0.95 | 1.4     | 13.484              | 7.442               | 12.477               | 0.002912       | 0.039264                  | 0.021671                  | 0.036332                  | 0.002766 |
| AON    | 12                         | 15.5                       | 10.5                       | 0.9  | 1       | 13.06               | 16.5775             | 11.5525              | 0.001176       | 0.022981                  | 0.029171                  | 0.020329                  | 0.001584 |
| AOS    | 11.5                       | 11                         | 8                          | 1.25 | 1       | 12.5575             | 12.055              | 9.04                 | 0.000539       | 0.00877                   | 0.006499                  | 0.004874                  | 0.000674 |
| APA    | 20                         | 3                          | -1.5                       | 1.55 | 2       | 22.2                | 5.03                | 0.485                | 0.00083        | 0.018423                  | 0.004174                  | 0.000402                  | 0.001286 |
| APD    | 9                          | 6                          | 12                         | 1.05 | 2.6     | 11.717              | 8.678               | 14.756               | 0.001179       | 0.020973                  | 0.015533                  | 0.026412                  | 0.001879 |
| APH    | 8.5                        | 7.5                        | 6.5                        | 1    | 0.9     | 9.43825             | 8.43375             | 7.42925              | 0.001362       | 0.012852                  | 0.011485                  | 0.010117                  | 0.001362 |
| ATVI   | 9                          | 12                         | 5.5                        | 1.1  | 0.5     | 9.5225              | 12.53               | 6.01375              | 0.002234       | 0.021271                  | 0.027989                  | 0.013433                  | 0.002457 |
| AVGO   | 44                         | 22                         | 19                         | 1.1  | 1.7     | 46.074              | 23.887              | 20.8615              | 0.005422       | 0.249816                  | 0.129517                  | 0.113112                  | 0.005964 |
| AVY    | 8.5                        | 4.5                        | 9.5                        | 1    | 2       | 10.585              | 6.545               | 11.595               | 0.000497       | 0.005263                  | 0.003254                  | 0.005765                  | 0.000497 |
| AWK    | 8.5                        | 10                         | 5.5                        | 0.65 | 2.2     | 10.7935             | 12.31               | 7.7605               | 0.000821       | 0.008864                  | 0.010109                  | 0.006373                  | 0.000534 |
| AXP    | 9                          | 8.5                        | 9                          | 1.1  | 1.5     | 7.545               | 10.06375            | 10.5675              | 0.004314       | 0.032552                  | 0.043419                  | 0.045592                  | 0.004746 |
| AXI    | 16.5                       | 7.5                        | 15                         | 1.3  | 0.3     | 16.82475            | 7.81125             | 15.3225              | 0.000366       | 0.006156                  | 0.002856                  | 0.005607                  | 0.000476 |
| BBT    | 5.5                        | 8.5                        | 4.5                        | 1    | 2.8     | 8.377               | 11.419              | 7.363                | 0.001998       | 0.016739                  | 0.022818                  | 0.014713                  | 0.001998 |
| BBY    | 9                          | 10                         | 4.5                        | 1.1  | 2.4     | 11.508              | 12.52               | 6.954                | 0.000922       | 0.010609                  | 0.011542                  | 0.006411                  | 0.001014 |
| BCR    | 10                         | 7                          | 18                         | 0.85 | 0.3     | 10.315              | 7.3105              | 18.327               | 0.001222       | 0.012606                  | 0.008934                  | 0.022397                  | 0.001039 |
| BDX    | 9                          | 9                          | 4                          | 0.8  | 1.6     | 10.672              | 10.672              | 5.632                | 0.002516       | 0.026853                  | 0.026853                  | 0.014171                  | 0.002013 |
| BEN    | 5                          | 12.5                       | 4.5                        | 1.35 | 1.9     | 6.9475              | 14.51875            | 6.44275              | 0.001246       | 0.008657                  | 0.018091                  | 0.008028                  | 0.001682 |
| BIIB   | 7                          | 0                          | 10.5                       | 1.1  | 0       | 7                   | 0                   | 10.5                 | 0.003384       | 0.023688                  | 0                         | 0.035532                  | 0.003722 |
| BK     | 8.5                        | 10                         | 5.5                        | 1.15 | 1.8     | 10.3765             | 11.89               | 7.3495               | 0.002863       | 0.02971                   | 0.034044                  | 0.021043                  | 0.003293 |
| BLK    | 10.5                       | 10                         | 4                          | 1.3  | 2.3     | 12.92075            | 12.415              | 6.346                | 0.004151       | 0.053631                  | 0.051531                  | 0.026341                  | 0.005396 |
| BLL    | 15                         | 9.5                        | 25.5                       | 0.95 | 0.5     | 15.5375             | 10.02375            | 26.06375             | 0.000717       | 0.011147                  | 0.007191                  | 0.018698                  | 0.000682 |
| BMJ    | 14.5                       | 2.5                        | 4                          | 0.9  | 2.8     | 17.503              | 5.335               | 6.856                | 0.005155       | 0.090223                  | 0.0275                    | 0.035341                  | 0.004639 |
| BSX    | 18.5                       | 0                          | 8                          | 0.95 | 0       | 18.5                | 0                   | 8                    | 0.001724       | 0.031891                  | 0                         | 0.013791                  | 0.001638 |
| BWA    | 8                          | 6.5                        | 4.5                        | 1.35 | 1.3     | 9.352               | 7.84225             | 5.82925              | 0.000577       | 0.005392                  | 0.004521                  | 0.003361                  | 0.000778 |
| C      | 11                         | 43                         | 5                          | 1.3  | 1.8     | 12.899              | 45.187              | 6.845                | 0.010277       | 0.132567                  | 0.464402                  | 0.070348                  | 0.013361 |
| CA     | 6                          | 3                          | 5                          | 1.1  | 3.3     | 9.399               | 6.3495              | 8.3825               | 0.000702       | 0.00066                   | 0.004459                  | 0.005887                  | 0.000772 |
| CAG    | 3                          | 2.5                        | 6                          | 0.7  | 2.4     | 5.436               | 4.93                | 8.472                | 0.000781       | 0.004246                  | 0.003851                  | 0.006618                  | 0.000547 |
| CAH    | 12                         | 12                         | 7                          | 1.3  | 2.7     | 14.862              | 14.35525            | 9.7945               | 0.00097        | 0.014412                  | 0.013921                  | 0.009498                  | 0.00097  |
| CAT    | 10                         | 3                          | 10                         | 1.2  | 2.7     | 12.835              | 5.7405              | 12.835               | 0.004244       | 0.054474                  | 0.024363                  | 0.054474                  | 0.005093 |
| CB     | 8                          | 4.5                        | 8                          | 0.85 | 2       | 10.08               | 6.545               | 10.08                | 0.00353        | 0.03558                   | 0.023102                  | 0.03558                   | 0.003    |
| CBG    | 8.5                        | 0                          | 20                         | 1.4  | 0       | 8.5                 | 0                   | 20                   | 0.000742       | 0.006309                  | 0                         | 0.014845                  | 0.001039 |
| CBOE   | 13                         | 5.5                        | 51                         | 0.7  | 1.1     | 14.1715             | 6.63025             | 52.3805              | 0.0007         | 0.00992                   | 0.004641                  | 0.036665                  | 0.00049  |
| CBS    | 13.5                       | 9                          | 10                         | 1.1  | 1.1     | 14.67425            | 10.1495             | 11.155               | 0.001099       | 0.016121                  | 0.01115                   | 0.012255                  | 0.001208 |
| CCI    | 8.5                        | 17.5                       | 0.5                        | 0.85 | 3.9     | 12.56575            | 21.74125            | 4.40975              | 0.002246       | 0.028216                  | 0.04882                   | 0.009902                  | 0.001909 |
| CCL    | 11                         | 4                          | 4                          | 0.9  | 2.4     | 13.532              | 6.448               | 6.448                | 0.001809       | 0.024483                  | 0.011666                  | 0.011666                  | 0.001628 |
| CDNS   | 10                         | 0                          | 7.5                        | 1.05 | 0       | 10                  | 0                   | 7.5                  | 0.000604       | 0.006039                  | 0                         | 0.004529                  | 0.000634 |
| CELG   | 25                         | 0                          | 10.5                       | 1.2  | 0       | 25                  | 0                   | 10.5                 | 0.004073       | 0.101823                  | 0                         | 0.042765                  | 0.004887 |
| CERN   | 9.5                        | 0                          | 14.5                       | 0.95 | 0       | 9.5                 | 0                   | 14.5                 | 0.00117        | 0.011111                  | 0                         | 0.016959                  | 0.001111 |
| CFG    | 10.5                       | 21                         | 4.5                        | 1.15 | 2       | 12.605              | 23.21               | 6.545                | 0.001038       | 0.013085                  | 0.024093                  | 0.006794                  | 0.001194 |
| CHD    | 7                          | 5                          | 7.5                        | 0.75 | 1.4     | 8.449               | 6.435               | 8.9525               | 0.000609       | 0.005147                  | 0.00392                   | 0.005454                  | 0.000457 |
| CHRW   | 6                          | 6.5                        | 8.5                        | 0.85 | 2.6     | 8.678               | 9.1845              | 11.2105              | 0.00061        | 0.005292                  | 0.0056                    | 0.006836                  | 0.000518 |
| CHTR   | 26                         | 0                          | 22.5                       | 0.95 | 0       | 26                  | 0                   | 22.5                 | 0.004663       | 0.121237                  | 0                         | 0.104916                  | 0.000443 |
| CI     | 11.5                       | 4                          | 8.5                        | 0.9  | 0       | 11.5                | 4                   | 8.5                  | 0.002537       | 0.029176                  | 0.010148                  | 0.021565                  | 0.002283 |
| CINF   | 6.5                        | 3                          | 4                          | 0.9  | 2.6     | 9.1845              | 5.639               | 6.652                | 0.000623       | 0.005726                  | 0.003515                  | 0.004147                  | 0.000561 |
| CLX    | 7.5                        | 7                          | 33.5                       | 0.65 | 2.4     | 9.99                | 9.484               | 36.302               | 0.00093        | 0.009286                  | 0.008815                  | 0.037473                  | 0.000604 |
| CMA    | 13.5                       | 8.5                        | 4.5                        | 1.25 | 1.7     | 15.31475            | 10.27225            | 6.23825              | 0.000746       | 0.011429                  | 0.007666                  | 0.004655                  | 0.000933 |
| CMCSA  | 8                          | 9                          | 4                          | 0.9  | 1.5     | 9.56                | 10.5675             | 5.53                 | 0.009501       | 0.090826                  | 0.100398                  | 0.052539                  | 0.008551 |
| CME    | 8.5                        | 7                          | 3                          | 0.75 | 2.1     | 10.68925            | 9.1735              | 5.1315               | 0.002632       | 0.028133                  | 0.024144                  | 0.013506                  | 0.001974 |
| CMG    | 11                         | 0                          | 3                          | 0.85 | 0       | 11                  | 0                   | 3                    | 0.000449       | 0.004941                  | 0                         | 0.001348                  | 0.000382 |
| CMJ    | 8                          | 5                          | 7.5                        | 1.1  | 2.7     | 10.808              | 7.7675              | 10.30125             | 0.00138        | 0.014918                  | 0.010721                  | 0.014219                  | 0.001518 |
| CMS    | 6.5                        | 6.5                        | 6.5                        | 0.65 | 2.9     | 4.9425              | 9.49425             | 9.49425              | 0.000708       | 0.006719                  | 0.006719                  | 0.006719                  | 0.00046  |
| CNC    | 14                         | 0                          | 17.5                       | 1    | 0       | 14                  | 0                   | 17.5                 | 0.00           |                           |                           |                           |          |

|      |      |      |      |      |     |          |          |          |          |          |          |          |          |
|------|------|------|------|------|-----|----------|----------|----------|----------|----------|----------|----------|----------|
| ECL  | 8.5  | 8    | 9.5  | 1    | 1.1 | 9.64675  | 9.144    | 10.65225 | 0.001999 | 0.019287 | 0.018282 | 0.021297 | 0.001999 |
| ED   | 2.5  | 3    | 3.5  | 0.5  | 3.4 | 5.9425   | 6.451    | 6.9595   | 0.001383 | 0.008219 | 0.008923 | 0.009626 | 0.000692 |
| EPX  | 8    | 8.5  | 13.5 | 0.95 | 1.1 | 9.144    | 9.64675  | 14.67425 | 0.000687 | 0.006277 | 0.006623 | 0.010074 | 0.000652 |
| EIX  | 4    | 9    | 4    | 0.65 | 2.9 | 6.958    | 12.0305  | 6.958    | 0.001318 | 0.009173 | 0.01586  | 0.009173 | 0.000857 |
| EL   | 8    | 7.5  | 3.5  | 0.85 | 1.4 | 9.456    | 8.9525   | 4.9245   | 0.002327 | 0.022003 | 0.020852 | 0.011459 | 0.001978 |
| EMN  | 10   | 8    | 7    | 1.2  | 2.4 | 12.52    | 10.496   | 9.484    | 0.000662 | 0.006292 | 0.006952 | 0.006281 | 0.000795 |
| EMR  | 5    | 2.5  | 1.5  | 1.1  | 3.2 | 8.28     | 5.74     | 4.724    | 0.002106 | 0.017442 | 0.012091 | 0.009951 | 0.002317 |
| EOG  | 29   | 7.5  | 4.5  | 1.45 | 0.9 | 30.0305  | 8.43375  | 5.42025  | 0.002946 | 0.088462 | 0.024844 | 0.015967 | 0.004271 |
| EOIX | 23   | 14   | 7.5  | 1    | 1.9 | 25.1185  | 16.033   | 9.47125  | 0.001744 | 0.043818 | 0.027969 | 0.016522 | 0.001744 |
| EOT  | 20.5 | 5    | 5.5  | 1    | 0.2 | 20.7205  | 5.205    | 5.7055   | 0.000521 | 0.010801 | 0.002713 | 0.002974 | 0.000521 |
| ES   | 6.5  | 6    | 4    | 0.65 | 3.2 | 9.804    | 9.296    | 7.264    | 0.001046 | 0.010256 | 0.009725 | 0.007599 | 0.00068  |
| ESRX | 13   | 0    | 9    | 0.95 | 0   | 13       | 0        | 9        | 0.001946 | 0.025301 | 0        | 0.017516 | 0.001849 |
| ETFC | 15.5 | 0    | 8.5  | 1.4  | 0   | 15.5     | 0        | 8.5      | 0.000683 | 0.010584 | 0        | 0.005804 | 0.00056  |
| ETN  | 7    | 5.5  | 2    | 1.2  | 3.1 | 10.2085  | 8.68525  | 5.131    | 0.001723 | 0.017159 | 0.01496  | 0.008841 | 0.002068 |
| ETTR | -3.5 | 2    | 0.5  | 0.65 | 4.4 | 0.823    | 6.444    | 4.911    | 0.000764 | 0.000629 | 0.004924 | 0.003752 | 0.000497 |
| EW   | 17   | 0    | 10   | 0.8  | 0   | 17       | 0        | 10       | 0.001214 | 0.02064  | 0        | 0.012141 | 0.000971 |
| EXC  | 7    | 5.5  | 4    | 0.7  | 3.5 | 10.6225  | 9.09625  | 7.57     | 0.002013 | 0.021386 | 0.018313 | 0.01524  | 0.001409 |
| EXPD | 8    | 7.5  | 11   | 0.95 | 1.5 | 9.56     | 9.05625  | 12.5825  | 0.000582 | 0.005561 | 0.005268 | 0.007319 | 0.000553 |
| EXPE | 19   | 17   | 9.5  | 1.2  | 0.8 | 19.876   | 17.868   | 10.338   | 0.00094  | 0.018679 | 0.016792 | 0.009716 | 0.001128 |
| F    | 3    | 4    | 8.5  | 1.25 | 5.5 | 8.5825   | 9.61     | 14.23375 | 0.002529 | 0.021708 | 0.024307 | 0.036002 | 0.003162 |
| FAST | 4    | 6.5  | 5    | 1    | 2.9 | 6.958    | 9.49425  | 7.9725   | 0.000795 | 0.005533 | 0.007549 | 0.006339 | 0.000795 |
| FB   | 31.5 | 0    | 0    | 0    | 0   | 31.5     | 0        | 0        | 0.02512  | 0.79128  | 0        | 0.52752  | 0.02512  |
| FBHS | 13.5 | 8.5  | 8.5  | 1.25 | 1.1 | 14.67425 | 9.64675  | 9.64675  | 0.000527 | 0.007737 | 0.005086 | 0.005086 | 0.000659 |
| FDX  | 12.5 | 21   | 9.5  | 1.1  | 1   | 13.5625  | 22.105   | 10.5475  | 0.003232 | 0.04383  | 0.071436 | 0.034086 | 0.003555 |
| FE   | 12   | 2    | 0    | 0.7  | 4.5 | 16.77    | 6.545    | 4.5      | 0.000731 | 0.012254 | 0.004782 | 0.003288 | 0.000511 |
| FFIV | 10   | 0    | 12   | 1.05 | 0   | 10       | 0        | 12       | 0.000425 | 0.004246 | 0        | 0.005095 | 0.000446 |
| FIS  | 7    | 5.5  | 5    | 0.9  | 1.3 | 8.3455   | 6.83575  | 6.3325   | 0.001576 | 0.013152 | 0.010773 | 0.00998  | 0.001418 |
| FISV | 9    | 0    | 2.5  | 0.95 | 0   | 9        | 0        | 2.5      | 0.001389 | 0.012504 | 0        | 0.003473 | 0.00132  |
| FTB  | 4    | 7.5  | 6    | 1.2  | 2.5 | 6.55     | 10.09375 | 8.575    | 0.001116 | 0.007307 | 0.01126  | 0.009566 | 0.001339 |
| FL   | 5.5  | 14   | 0.9  | 0.9  | 2.6 | 9.1845   | 8.1715   | 16.782   | 0.000286 | 0.002627 | 0.002338 | 0.004801 | 0.000257 |
| FLIR | 7.5  | 12   | 9    | 0.9  | 1.9 | 9.47125  | 14.014   | 10.9855  | 0.000323 | 0.00306  | 0.004528 | 0.00355  | 0.000291 |
| FLR  | 2    | 0    | 8    | 1.35 | 1.8 | 3.818    | 1.8      | 9.872    | 0.000348 | 0.00133  | 0.000627 | 0.003438 | 0.00047  |
| FLS  | 2.5  | 6    | 6.5  | 1.35 | 1.6 | 4.12     | 7.648    | 8.152    | 0.000282 | 0.001162 | 0.002157 | 0.0023   | 0.000381 |
| FMC  | 8    | 6    | 12   | 1.25 | 0.9 | 8.936    | 6.927    | 12.954   | 0.000619 | 0.005533 | 0.004289 | 0.00802  | 0.000774 |
| FOXA | 11.5 | 10   | 4    | 1    | 1.3 | 12.87475 | 11.365   | 5.326    | 0.001758 | 0.022638 | 0.019984 | 0.009365 | 0.001758 |
| GD   | 5.5  | 5.5  | 3.5  | 0.95 | 1.7 | 7.24675  | 7.24675  | 5.22975  | 0.003036 | 0.022002 | 0.022002 | 0.015878 | 0.002884 |
| GE   | 14   | 11   | 2    | 1.05 | 3.5 | 17.745   | 14.6925  | 5.535    | 0.007848 | 0.139261 | 0.115305 | 0.043438 | 0.00824  |
| GILD | -1   | 16.5 | 7    | 0.95 | 2.9 | 1.8855   | 19.63925 | 10.0015  | 0.004812 | 0.009073 | 0.094507 | 0.048129 | 0.004572 |
| GIS  | 3.5  | 4    | 3.5  | 0.8  | 3.7 | 7.26475  | 7.774    | 7.26475  | 0.001658 | 0.012044 | 0.012888 | 0.012044 | 0.001326 |
| GLW  | 11.5 | 14   | 5.5  | 1.25 | 2.1 | 13.72075 | 16.247   | 7.65775  | 0.001411 | 0.019363 | 0.022929 | 0.010807 | 0.001764 |
| GM   | 9.5  | 12   | 9.5  | 1.2  | 4.4 | 14.109   | 16.664   | 14.109   | 0.003083 | 0.043496 | 0.051372 | 0.043496 | 0.003699 |
| GPC  | 7    | 5    | 5.5  | 1    | 2.9 | 10.0015  | 7.9725   | 8.47975  | 0.000695 | 0.006946 | 0.005537 | 0.005889 | 0.000695 |
| GPV  | 12   | 7    | 17.5 | 1.1  | 0   | 12       | 7        | 17.5     | 0.00077  | 0.009239 | 0.005389 | 0.013473 | 0.000847 |
| GPS  | 0.5  | 2    | 6.5  | 1.05 | 3.8 | 4.3095   | 5.838    | 10.4235  | 0.000668 | 0.00288  | 0.003902 | 0.006966 | 0.000702 |
| GRMN | 5    | 1.5  | 3.5  | 1.05 | 4   | 9.1      | 5.53     | 7.57     | 0.000608 | 0.00553  | 0.00336  | 0.0046   | 0.000638 |
| GS   | 9    | 7    | 7.5  | 1.2  | 1.3 | 10.3585  | 8.3455   | 8.84875  | 0.004767 | 0.049374 | 0.039779 | 0.042178 | 0.00572  |
| GT   | -1   | 18.5 | 7.5  | 1.35 | 1.2 | 11.16    | 19.811   | 8.745    | 0.000388 | 0.004484 | 0.00789  | 0.003483 | 0.000538 |
| GWV  | 4.5  | 9    | 3.5  | 0.9  | 2.9 | 7.46525  | 12.0305  | 6.45075  | 0.000654 | 0.004879 | 0.007863 | 0.004216 | 0.000588 |
| HAL  | 21.5 | 0.5  | 2    | 1.45 | 1.5 | 23.16125 | 2.00375  | 3.515    | 0.001931 | 0.044718 | 0.003869 | 0.006786 | 0.0028   |
| HAS  | 10.5 | 6    | 8    | 0.9  | 2.1 | 12.71025 | 8.163    | 10.184   | 0.000579 | 0.007354 | 0.004723 | 0.005892 | 0.000521 |
| HBAN | 10   | 14.5 | 7    | 1.15 | 3.5 | 13.675   | 18.25375 | 10.6225  | 0.000801 | 0.010955 | 0.014623 | 0.00851  | 0.000921 |
| HBI  | 9    | 14   | 19   | 1    | 2.6 | 11.717   | 16.782   | 21.847   | 0.000389 | 0.004555 | 0.006524 | 0.008493 | 0.000389 |
| HD   | 10.5 | 15   | -25  | 1    | 2.6 | 13.2365  | 17.795   | -22.725  | 0.010886 | 0.144087 | 0.193709 | -0.24737 | 0.010886 |
| HIG  | 12   | 7    | 5    | 1.05 | 1.7 | 13.802   | 8.7955   | 6.7425   | 0.001016 | 0.014024 | 0.008901 | 0.006851 | 0.001067 |
| HOG  | 8    | 4    | 7    | 1.1  | 3   | 11.12    | 7.06     | 10.105   | 0.00044  | 0.004888 | 0.003104 | 0.004442 | 0.000484 |
| HOLX | 25   | 0    | 9.5  | 1    | 0   | 25       | 0        | 9.5      | 0.000582 | 0.014542 | 0        | 0.005526 | 0.000582 |
| HON  | 8.5  | 11   | 8    | 1    | 2   | 10.585   | 13.11    | 10.08    | 0.005906 | 0.062515 | 0.077427 | 0.059532 | 0.005906 |
| HP   | 4.5  | 1    | -2.5 | 1.5  | 5   | 9.6125   | 6.025    | 2.4375   | 0.00032  | 0.003075 | 0.001928 | 0.00078  | 0.00048  |
| HRB  | 8    | 7    | 15   | 0.85 | 3.1 | 11.224   | 10.2085  | 18.3325  | 0.000277 | 0.003105 | 0.002824 | 0.005072 | 0.000235 |
| HRL  | 10.5 | 9.5  | 10   | 0.75 | 2.2 | 12.8155  | 11.8045  | 12.31    | 0.001003 | 0.01285  | 0.011836 | 0.012343 | 0.000752 |
| HRS  | 10.5 | 5.5  | 7.5  | 1.05 | 2   | 12.605   | 7.555    | 9.575    | 0.000851 | 0.010733 | 0.006433 | 0.008153 | 0.000894 |
| HSIC | 10.5 | 0    | 11   | 0.95 | 0   | 10.5     | 0        | 11       | 0.000563 | 0.005917 | 0        | 0.006198 | 0.000535 |
| HSY  | 6.5  | 7    | 17   | 0.75 | 2.4 | 8.978    | 9.484    | 19.804   | 0.001198 | 0.010759 | 0.011366 | 0.023484 | 0.000899 |
| HUM  | 10.5 | 14   | 8.5  | 0.85 | 0.6 | 11.1315  | 14.642   | 9.1255   | 0.001817 | 0.020228 | 0.026605 | 0.016581 | 0.001544 |
| IBM  | 0    | 6.5  | 16.5 | 0.9  | 3.9 | 3.9      | 10.52675 | 20.72175 | 0.007303 | 0.02848  | 0.076873 | 0.151324 | 0.006572 |
| ICE  | 12   | 11.5 | 8    | 0.8  | 1.2 | 13.272   | 12.769   | 9.248    | 0.002119 | 0.028118 | 0.027052 | 0.019593 | 0.001695 |
| IFF  | 7.5  | 10   | 11   | 0.95 | 2.1 | 9.67875  | 12.205   | 13.2155  | 0.000615 | 0.005948 | 0.0075   | 0.008121 | 0.000584 |
| ILMN | 17   | 0    | 18   | 0.95 | 0   | 17       | 0        | 18       | 0.001571 | 0.026709 | 0        | 0.02828  | 0.001493 |
| INFO | 14.5 | 0    | 16.5 | 1.05 | 0   | 14.5     | 0        | 16.5     | 0.000894 | 0.012959 | 0        | 0.014746 | 0.000938 |
| INTC | 7.5  | 3.5  | 4.5  | 1.05 | 3.1 | 10.71625 | 6.65425  | 7.66975  | 0.010497 | 0.11249  | 0.069851 | 0.080511 | 0.011022 |
| INTU | 14.5 | 10.5 | 19   | 1.1  | 1   | 15.5725  | 11.5525  | 20.095   | 0.001992 | 0.031018 | 0.023011 | 0.040026 | 0.002191 |
| IP   | 6    | 18.5 | 6    | 1.1  | 3.3 | 22.10525 | 9.939    | 14.4815  | 0.001184 | 0.026175 | 0.011129 | 0.017147 | 0.001362 |
| IPG  | 13   | 17   | 8    | 1.05 | 3.2 | 16.408   | 20.472   | 11.328   | 0.000405 | 0.006548 | 0.008294 | 0.00459  | 0.000425 |
| IR   | 11   | 10   | 12   | 1.25 | 1.7 | 12.7935  | 11.785   | 13.802   | 0.001072 | 0.013718 | 0.012637 | 0.0148   | 0.00134  |
| ISRG | 15.5 | 0    | 11.5 | 0.8  | 0   | 15.5     | 0        | 11.5     | 0.00209  | 0.032392 | 0        | 0.024033 | 0.001672 |
| ITW  | 13   | 14   | 4    | 1.05 | 2.3 | 15.4495  | 16.461   | 6.346    | 0.002871 | 0.044356 | 0.04726  | 0.018219 | 0.003015 |
| IVZ  | 5.5  | 9.5  | 0.5  | 1.4  | 3.3 | 8.89075  | 12.95675 | 3.80825  | 0.000757 | 0.006729 | 0.009807 | 0.002882 | 0.00106  |
| JBHT | 9    | 6    | 14   | 1    | 1   | 10.045   | 7.03     | 15.07    | 0.00061  | 0.006125 | 0.004287 | 0.009189 | 0.00061  |
| JCI  | 0.5  | 5.5  | 2.5  | 1.25 | 2.5 | 3.06625  | 8.06875  | 5.03125  | 0.001746 | 0.00525  | 0.014091 | 0.008786 | 0.002183 |
| JEC  | 8    | 0    | 6    | 1.3  | 1.1 | 8.144    | 1.1      | 7.133    | 0.000405 | 0.003704 | 0.000446 | 0.002889 | 0.000527 |
| JNJ  | 9.5  | 9    | 9.5  | 0.85 | 2.6 | 12.2235  | 11.717   | 12.2235  | 0.018828 | 0.230142 | 0.220606 | 0.230142 | 0.016004 |
| JNPR | 8    | 13.5 | 0    | 1.1  | 1.5 | 9.56     | 15.10125 | 1.5      | 0.000536 | 0.005125 | 0.008096 | 0.000804 | 0.00059  |
| JPM  | 5.5  | 7    | 6.5  | 1.15 | 2.3 | 7.86325  | 9.3805   | 8.87475  | 0.018709 | 0.14711  | 0.175496 | 0.166034 | 0.021515 |
| JWN  | 2    | 6    | 6.5  | 1.05 | 3.2 | 5.232    | 9.296    | 9.804    | 0.000397 | 0.002077 | 0.00369  | 0.003891 | 0.000417 |
| K    | 7    | 4.5  | 13.5 | 0.75 | 3.2 | 10.312   | 7.772    | 16.916   | 0.001175 | 0.012119 | 0.009134 | 0.01988  | 0.000881 |
| KEY  | 11   | 13   | 6    | 1.15 | 2.4 | 13.532   | 15.556   | 8.472    | 0.001064 | 0.014402 | 0.016556 | 0.009017 |          |

|      |      |       |      |      |     |          |          |          |          |          |          |          |          |
|------|------|-------|------|------|-----|----------|----------|----------|----------|----------|----------|----------|----------|
| MRK  | 5.5  | 2     | -3   | 0.85 | 2.9 | 8.47975  | 4.929    | -0.1435  | 0.00773  | 0.065551 | 0.038103 | -0.00111 | 0.006571 |
| MS   | 10.5 | 14.5  | 7    | 1.4  | 1.8 | 12.3945  | 16.4305  | 8.863    | 0.004802 | 0.059513 | 0.078892 | 0.042556 | 0.006722 |
| MSFT | 8    | 9.5   | 2    | 1.05 | 2.1 | 10.184   | 11.69975 | 4.121    | 0.031535 | 0.321151 | 0.36895  | 0.129955 | 0.033112 |
| MSI  | 10.5 | 9     | 6    | 0.95 | 2.3 | 12.92075 | 11.4035  | 8.369    | 0.000765 | 0.009881 | 0.00872  | 0.0064   | 0.000726 |
| MTB  | 8    | 1     | 6.5  | 0.15 | 1.8 | 9.872    | 2.805    | 8.355    | 0.001307 | 0.012904 | 0.003672 | 0.010925 | 0.001242 |
| MTD  | 9.5  | 0     | 16.5 | 1.05 | 0   | 9.5      | 0        | 16.5     | 0.000783 | 0.007434 | 0        | 0.012912 | 0.000822 |
| MU   | 25.5 | 0     | 22   | 1.6  | 0   | 25.5     | 0        | 22       | 0.00232  | 0.059157 | 0        | 0.051037 | 0.003712 |
| MYL  | 10   | 0     | 13   | 1.15 | 0   | 10       | 0        | 13       | 0.001012 | 0.010123 | 0        | 0.013159 | 0.001164 |
| NAVI | 6    | 4     | 2.5  | 1.45 | 4.3 | 10.429   | 8.386    | 6.85375  | 0.000176 | 0.001835 | 0.001476 | 0.001206 | 0.000255 |
| NBL  | 0    | 5     | 0    | 1.5  | 1.4 | 1.4      | 6.435    | 1.4      | 0.000658 | 0.000922 | 0.004237 | 0.000922 | 0.000988 |
| NCLH | 28   | 0     | 10   | 1.15 | 0   | 28       | 0        | 10       | 0.000638 | 0.01787  | 0        | 0.006382 | 0.000734 |
| NDAQ | 9.5  | 12    | 6.5  | 0.9  | 2.1 | 11.69975 | 14.226   | 8.66825  | 0.000664 | 0.007765 | 0.009442 | 0.005753 | 0.000597 |
| NEE  | 7    | 9.5   | 5    | 0.65 | 2.8 | 9.898    | 12.433   | 7.87     | 0.003699 | 0.036612 | 0.045988 | 0.02911  | 0.002404 |
| NEM  | 9    | 17.5  | 3.5  | 0.85 | 0.6 | 9.627    | 18.1525  | 4.1105   | 0.000991 | 0.009536 | 0.017981 | 0.004072 | 0.000842 |
| NFLX | 44.5 | 0     | 12   | 1.05 | 0   | 44.5     | 0        | 12       | 0.004015 | 0.178671 | 0        | 0.048181 | 0.004216 |
| NFX  | 18   | 0     | 4    | 1.9  | 0   | 18       | 0        | 4        | 0.000316 | 0.005688 | 0        | 0.001264 | 0.0006   |
| NI   | 5.5  | 6.5   | -1.5 | 0.6  | 2.6 | 8.1715   | 9.1845   | 1.0805   | 0.000459 | 0.00375  | 0.004215 | 0.000496 | 0.000275 |
| NKE  | 14   | 12    | 7    | 0.95 | 1.2 | 15.284   | 13.272   | 8.242    | 0.004943 | 0.075556 | 0.06561  | 0.040744 | 0.004696 |
| NLSN | 2.5  | 8     | -0.5 | 0.95 | 3.3 | 5.84125  | 11.432   | 2.79175  | 0.000675 | 0.003945 | 0.00772  | 0.001885 | 0.000642 |
| NOC  | 8    | 8.5   | 6    | 0.9  | 1.5 | 9.56     | 10.06375 | 7.545    | 0.002638 | 0.025217 | 0.026546 | 0.019902 | 0.002374 |
| NOV  | 3    | -18.5 | 1    | 1.15 | 0.6 | 3.609    | -17.9555 | 1.603    | 0.000651 | 0.002325 | -0.01169 | 0.001044 | 0.000749 |
| NSC  | 8    | 3     | 6    | 1.15 | 2   | 10.08    | 5.03     | 8.06     | 0.002018 | 0.020342 | 0.010151 | 0.016266 | 0.002321 |
| NTAP | 12.5 | 7     | 9    | 1.05 | 2.1 | 14.73125 | 9.1735   | 11.1945  | 0.000752 | 0.011082 | 0.006901 | 0.008421 | 0.00079  |
| NTRS | 9    | 5     | 6.5  | 1.1  | 1.9 | 10.9855  | 6.9475   | 8.46175  | 0.001135 | 0.012463 | 0.007882 | 0.0096   | 0.001248 |
| NUE  | 24.5 | 5     | 7.5  | 1.3  | 2.7 | 27.53075 | 7.7675   | 10.30125 | 0.000943 | 0.025955 | 0.007323 | 0.009712 | 0.001226 |
| NVDA | 19.5 | 7.5   | 23.5 | 1.1  | 0.4 | 19.939   | 7.915    | 23.947   | 0.005703 | 0.113708 | 0.045138 | 0.136565 | 0.006273 |
| NWL  | 23.5 | 5.5   | 22   | 1.1  | 1.7 | 25.39975 | 7.24675  | 23.887   | 0.000786 | 0.019964 | 0.005696 | 0.018775 | 0.000865 |
| OKE  | 18.5 | 8     | 36.5 | 1.55 | 5.6 | 24.618   | 13.824   | 43.122   | 0.001011 | 0.024885 | 0.013974 | 0.043589 | 0.001567 |
| OMC  | 7.5  | 9.5   | 3.5  | 1    | 2.9 | 10.50875 | 12.53775 | 6.45075  | 0.000868 | 0.009124 | 0.010885 | 0.005601 | 0.000868 |
| ORCL | 8    | 9.5   | 5.5  | 1.05 | 1.5 | 9.56     | 11.07125 | 7.04125  | 0.010184 | 0.097357 | 0.112747 | 0.071707 | 0.010693 |
| ORLY | 11   | 0     | 16.5 | 0.9  | 0   | 11       | 0        | 16.5     | 0.001077 | 0.01185  | 0        | 0.017775 | 0.00097  |
| OXY  | 25   | 3.5   | 1.5  | 1.15 | 5.2 | 30.85    | 8.791    | 6.739    | 0.002703 | 0.083385 | 0.023761 | 0.018215 | 0.003108 |
| PAYX | 9    | 8.5   | 4    | 0.95 | 3.6 | 12.762   | 12.253   | 7.672    | 0.001224 | 0.015616 | 0.014994 | 0.009388 | 0.001162 |
| PBCT | 10.5 | 1.5   | 3.5  | 0.95 | 4   | 14.71    | 5.53     | 7.57     | 0.000336 | 0.004943 | 0.001858 | 0.002544 | 0.000319 |
| PCAR | 10   | 6.5   | 8    | 1.15 | 2.4 | 12.52    | 8.978    | 10.496   | 0.001246 | 0.015596 | 0.011183 | 0.013074 | 0.001432 |
| PCG  | 9.5  | 7.5   | 5    | 0.65 | 3.3 | 12.95675 | 10.92375 | 8.3825   | 0.001388 | 0.017984 | 0.015163 | 0.011635 | 0.000902 |
| PCLN | 15   | 0     | 24.5 | 1.2  | 0   | 15       | 0        | 24.5     | 0.004262 | 0.063932 | 0        | 0.104423 | 0.005115 |
| PDCO | 10.5 | 13.5  | 8.5  | 0.9  | 2.8 | 13.447   | 16.489   | 11.419   | 0.00018  | 0.00242  | 0.002968 | 0.002055 | 0.000162 |
| PEG  | 5    | 5     | 3    | 0.7  | 3.8 | 4.819    | 8.895    | 6.857    | 0.001349 | 0.006502 | 0.012002 | 0.009252 | 0.000945 |
| PEP  | 7.5  | 6.5   | 6    | 0.8  | 2.9 | 10.50875 | 9.49425  | 8.967    | 0.008422 | 0.088501 | 0.79957  | 0.057685 | 0.006737 |
| PFE  | 11   | 6     | -2.5 | 0.9  | 3.8 | 15.009   | 9.914    | 1.2525   | 0.010836 | 0.162645 | 0.107433 | 0.013573 | 0.009753 |
| PGF  | 5    | 8     | 7.5  | 1.35 | 2.8 | 7.87     | 10.912   | 10.405   | 0.001031 | 0.008117 | 0.011255 | 0.010732 | 0.001392 |
| PG   | 7.5  | 6.5   | 2    | 0.7  | 3.1 | 10.71625 | 9.70075  | 5.131    | 0.011692 | 0.125289 | 0.113417 | 0.059989 | 0.008184 |
| PGR  | 8    | 8     | 4    | 0.85 | 2   | 10.08    | 10.08    | 6.04     | 0.001594 | 0.016068 | 0.016068 | 0.009628 | 0.001355 |
| PH   | 7.5  | 4.5   | 11.5 | 1.25 | 1.6 | 9.16     | 6.136    | 13.192   | 0.001248 | 0.011434 | 0.00766  | 0.016467 | 0.001056 |
| PHM  | 16.5 | 12    | 10.5 | 1.35 | 1.6 | 18.232   | 13.696   | 12.184   | 0.00051  | 0.009306 | 0.006991 | 0.006219 | 0.000689 |
| PKG  | 8.5  | 8.5   | 11   | 1.05 | 2.4 | 11.002   | 13.002   | 13.532   | 0.000566 | 0.006223 | 0.007654 | 0.00065  | 0.00035  |
| PKI  | 8    | 2.5   | 10   | 1.05 | 0.4 | 8.416    | 2.905    | 10.42    | 0.000388 | 0.003263 | 0.001126 | 0.00404  | 0.000407 |
| PNC  | 5.5  | 8     | 4.5  | 1.05 | 2.3 | 7.86325  | 10.392   | 6.85175  | 0.00345  | 0.027131 | 0.035857 | 0.023641 | 0.003623 |
| PNR  | 12   | 7.5   | 10   | 1.25 | 2.1 | 14.226   | 9.67875  | 12.205   | 0.000633 | 0.009008 | 0.006128 | 0.007728 | 0.000791 |
| PNW  | 5.5  | 5.5   | 4    | 0.7  | 3.2 | 8.788    | 8.788    | 7.264    | 0.000508 | 0.004466 | 0.004466 | 0.003691 | 0.000356 |
| PPG  | 10.5 | 6.5   | 4.5  | 1.2  | 1.7 | 12.28925 | 8.25525  | 6.23825  | 0.001508 | 0.018535 | 0.012451 | 0.009409 | 0.00181  |
| PRGO | -0.5 | 11    | 0    | 0.85 | 0.9 | 0.39775  | 11.9495  | 0.9      | 0.000613 | 0.000244 | 0.007322 | 0.000552 | 0.000521 |
| PRU  | 5.5  | 8.5   | 5    | 1.3  | 2.9 | 8.47975  | 11.52325 | 7.9725   | 0.002533 | 0.021482 | 0.029193 | 0.020197 | 0.003293 |
| PSX  | 5    | 9.5   | 3.5  | 1.25 | 3.6 | 8.69     | 13.271   | 7.163    | 0.002492 | 0.021652 | 0.033067 | 0.017848 | 0.003115 |
| PVH  | 7.5  | 0     | 8    | 1.05 | 0.1 | 7.60375  | 0.1      | 8.104    | 0.000524 | 0.003985 | 5.24E-05 | 0.004248 | 0.000054 |
| PWR  | 15   | 0     | 7.5  | 1.35 | 0   | 15       | 0        | 7.5      | 0.000303 | 0.00454  | 0        | 0.00227  | 0.000409 |
| PX   | 8    | 8.5   | 10   | 0.95 | 2.5 | 10.6     | 11.0625  | 12.625   | 0.002214 | 0.023465 | 0.024585 | 0.027947 | 0.002103 |
| PXD  | 37.5 | 52.5  | 6    | 1.45 | 0   | 37.5     | 52.5     | 6        | 0.001341 | 0.05028  | 0.070392 | 0.008045 | 0.001944 |
| QCOM | 6    | 10.5  | 3.5  | 0.9  | 3.9 | 10.017   | 14.60475 | 7.46825  | 0.004798 | 0.048063 | 0.070076 | 0.035834 | 0.004318 |
| QRVO | 28   | 0     | -2.5 | 1.3  | 0   | 28       | 0        | -2.5     | 0.000464 | 0.012995 | 0        | -0.00116 | 0.000603 |
| RCL  | 19   | 20.5  | 4    | 1.1  | 1.7 | 20.8615  | 22.37425 | 5.734    | 0.001135 | 0.028164 | 0.030206 | 0.007741 | 0.001485 |
| RE   | 3.5  | 5     | 9    | 0.8  | 2   | 5.535    | 11.09    | 9.07     | 0.000442 | 0.002448 | 0.004804 | 0.004011 | 0.000354 |
| RF   | 14.5 | 5     | 12   | 1.25 | 2.7 | 12.32825 | 17.39575 | 7.7675   | 0.000991 | 0.01222  | 0.017243 | 0.007    | 0.001239 |
| RHI  | 4.5  | 7     | 12   | 1.2  | 2.1 | 6.64725  | 9.1735   | 14.226   | 0.00036  | 0.002396 | 0.003307 | 0.005128 | 0.000433 |
| RHT  | 19.5 | 0     | 15   | 1.2  | 0   | 19.5     | 0        | 15       | 0.001073 | 0.020929 | 0        | 0.016099 | 0.001288 |
| RJF  | 6    | 7     | 7    | 1.2  | 1.1 | 7.133    | 8.1385   | 8.1385   | 0.000656 | 0.004679 | 0.005339 | 0.005339 | 0.000787 |
| RL   | 1.5  | 0.5   | 2.5  | 1.15 | 2.8 | 4.321    | 3.307    | 5.335    | 0.000409 | 0.001765 | 0.001351 | 0.00218  | 0.00047  |
| RMD  | 8.5  | 7     | 4    | 0.9  | 1.9 | 10.48075 | 8.9665   | 5.938    | 0.000598 | 0.006266 | 0.005361 | 0.00355  | 0.000538 |
| ROK  | 5.5  | 5.5   | 11   | 1.15 | 1.9 | 7.45225  | 7.45225  | 13.0045  | 0.001236 | 0.009211 | 0.009211 | 0.016073 | 0.001421 |
| ROP  | 7.5  | 10.5  | 9.5  | 1    | 0.6 | 8.1225   | 11.1315  | 10.1285  | 0.001351 | 0.010397 | 0.015043 | 0.013688 | 0.001351 |
| ROST | 9    | 10.5  | 15.5 | 0.95 | 1.2 | 10.254   | 11.763   | 16.793   | 0.001517 | 0.01555  | 0.017839 | 0.025467 | 0.001441 |
| RRC  | 23.5 | 9     | 11   | 6    | 0.4 | 23.947   | 11.422   | 6.412    | 0.000224 | 0.005533 | 0.002553 | 0.001433 | 0.000257 |
| RSR  | 8.5  | 6.5   | 6.5  | 0.8  | 2.1 | 10.68925 | 8.66825  | 8.66825  | 0.001096 | 0.011713 | 0.009498 | 0.009498 | 0.000877 |
| RTN  | 8    | 4     | 6.5  | 0.8  | 1.8 | 9.872    | 5.836    | 8.3585   | 0.002704 | 0.026695 | 0.015781 | 0.022603 | 0.002163 |
| SBUX | 15   | 16    | 16   | 0.95 | 2.3 | 17.4725  | 18.484   | 18.484   | 0.004215 | 0.073645 | 0.077909 | 0.077909 | 0.004004 |
| SCG  | 3.5  | 3     | 3    | 0.65 | 4   | 7.57     | 7.06     | 7.06     | 0.000319 | 0.002418 | 0.002255 | 0.002255 | 0.000208 |
| SCHW | 4    | 10    | 10   | 1.3  | 0.7 | 4.714    | 10.735   | 10.735   | 0.00348  | 0.016406 | 0.037361 | 0.037361 | 0.004524 |
| SEE  | 12   | 7.5   | 22.5 | 1    | 1.4 | 13.848   | 8.9525   | 24.0575  | 0.000438 | 0.005091 | 0.003918 | 0.010528 | 0.000438 |
| SHW  | 13.5 | 10.5  | 30   | 1.05 | 1   | 14.5675  | 11.5525  | 31.15    | 0.001918 | 0.027948 | 0.022163 | 0.059761 | 0.002014 |
| SHG  | 2    | 14.5  | 8.5  | 1.05 | 2.2 | 4.222    | 16.5595  | 10.7935  | 0.000153 | 0.000546 | 0.002579 | 0.001651 | 0.000161 |
| SJM  | 6    | 4.5   | 4.5  | 0.7  | 2.7 | 8.781    | 7.26075  | 7.26075  | 0.000684 | 0.006004 | 0.004955 | 0.004955 | 0.000479 |
| SLB  | 17.5 | 4.5   | 4.5  | 1.2  | 2.7 | 20.43625 | 7.26075  | 7.26075  | 0.004512 | 0.0922   | 0.032757 | 0.032757 | 0.005414 |
| SNA  | 9.5  | 5.5   | 4    | 1.15 | 1.8 | 11.3855  | 7.3495   | 5.836    | 0.000498 | 0.005671 | 0.003661 | 0.002907 | 0.000573 |
| SNI  | 6.5  | 8     | 11   | 1    | 1.5 | 8.04875  | 9.56     | 12.5825  | 0.000546 | 0.004392 | 0.005216 | 0.006865 | 0.000546 |
| SNPS | 8    | 0     | 6    | 1.05 | 0   | 8        | 0        | 6        |          |          |          |          |          |

|                                       |      |      |      |      |     |          |          |          |          |          |          |          |          |
|---------------------------------------|------|------|------|------|-----|----------|----------|----------|----------|----------|----------|----------|----------|
| VFC                                   | 8.5  | 8.5  | 5    | 1.05 | 3   | 11.6275  | 11.6275  | 8.075    | 0.001419 | 0.016497 | 0.016497 | 0.011457 | 0.00149  |
| VIAB                                  | 10   | 8.5  | 16   | 1.2  | 2.3 | 12.415   | 10.89775 | 18.484   | 0.000519 | 0.006444 | 0.005657 | 0.009594 | 0.000623 |
| VLO                                   | 5    | 12   | 6    | 1.2  | 4.4 | 9.51     | 16.664   | 10.532   | 0.001862 | 0.017709 | 0.031031 | 0.019612 | 0.002235 |
| VMC                                   | 20.5 | 22.5 | 4    | 1.25 | 0.8 | 21.382   | 23.39    | 4.816    | 0.000835 | 0.017859 | 0.019537 | 0.004023 | 0.001044 |
| VNO                                   | -0.5 | 1    | 2    | 0.95 | 3   | 2.4925   | 4.015    | 5.03     | 0.00074  | 0.001945 | 0.002972 | 0.003723 | 0.000703 |
| VRSK                                  | 10.5 | 0    | 28.5 | 0.9  | 0   | 10.5     | 0        | 28.5     | 0.000797 | 0.00837  | 0        | 0.022719 | 0.000717 |
| VZ                                    | 3    | 2    | 5.5  | 0.75 | 5   | 8.075    | 7.05     | 10.6375  | 0.010637 | 0.005895 | 0.074992 | 0.113152 | 0.007978 |
| WAT                                   | 6    | 0    | 7.5  | 0.9  | 0   | 6        | 0        | 7.5      | 0.000781 | 0.004683 | 0        | 0.005854 | 0.000703 |
| WBA                                   | 11   | 8    | 8    | 0.95 | 1.8 | 12.899   | 9.872    | 9.872    | 0.003573 | 0.046094 | 0.035277 | 0.035277 | 0.003395 |
| WDC                                   | 13.5 | 8.5  | 13.5 | 1.35 | 2.3 | 15.95525 | 10.89775 | 15.95525 | 0.001148 | 0.018309 | 0.012505 | 0.018309 | 0.001549 |
| WEC                                   | 6    | 6    | 5    | 0.6  | 3.4 | 9.502    | 9.502    | 8.485    | 0.001091 | 0.010368 | 0.010368 | 0.009258 | 0.000655 |
| WFC                                   | 5    | 5    | 4    | 1.1  | 2.9 | 7.9725   | 7.9725   | 6.958    | 0.014258 | 0.113672 | 0.113672 | 0.099207 | 0.015684 |
| WHR                                   | 10.5 | 7    | 10.5 | 1.3  | 2.3 | 12.92075 | 9.3805   | 12.92075 | 0.000615 | 0.007941 | 0.005765 | 0.007941 | 0.000799 |
| WM                                    | 8.5  | 10   | 4.5  | 0.8  | 2.2 | 10.7935  | 12.31    | 6.7495   | 0.00182  | 0.019647 | 0.022407 | 0.012286 | 0.001456 |
| WMB                                   | 18.5 | -2.5 | 5.5  | 1.85 | 4.1 | 22.97925 | 1.54875  | 9.71275  | 0.001211 | 0.027824 | 0.001875 | 0.01176  | 0.00224  |
| WMT                                   | 5.5  | 8    | 4    | 0.7  | 2.7 | 8.27425  | 10.808   | 6.754    | 0.014488 | 0.119881 | 0.156591 | 0.097855 | 0.010142 |
| WU                                    | 5    | 13.5 | 24   | 1.05 | 3.5 | 8.5875   | 17.23625 | 27.92    | 0.000456 | 0.003919 | 0.007867 | 0.012743 | 0.000479 |
| WY                                    | 14.5 | 3.5  | 5    | 1.15 | 3.7 | 18.46825 | 7.26475  | 8.7925   | 0.001337 | 0.02469  | 0.009712 | 0.011754 | 0.001537 |
| WYN                                   | 6.5  | 7.5  | 11.5 | 1.1  | 2.2 | 8.7715   | 9.7825   | 13.8265  | 0.000573 | 0.005028 | 0.005607 | 0.007926 | 0.000631 |
| WYNN                                  | 14   | 2.5  | 52.5 | 1.5  | 1.4 | 15.498   | 3.9175   | 54.2675  | 0.000819 | 0.012694 | 0.003209 | 0.04445  | 0.001229 |
| XEC                                   | 31   | 2    | 6.5  | 1.4  | 0.3 | 31.3465  | 2.303    | 6.80975  | 0.000542 | 0.016982 | 0.001248 | 0.003689 | 0.000758 |
| XEL                                   | 4.5  | 6    | 4    | 0.6  | 3.2 | 7.772    | 9.296    | 7.264    | 0.001308 | 0.010163 | 0.012155 | 0.009498 | 0.000785 |
| XL                                    | 13   | 9    | 5.5  | 0.9  | 2.1 | 15.2365  | 11.1945  | 7.65775  | 0.00049  | 0.00746  | 0.005481 | 0.003749 | 0.000441 |
| XLNX                                  | 8    | 6    | 3    | 1.05 | 2.1 | 10.184   | 8.163    | 5.1315   | 0.000862 | 0.008782 | 0.007039 | 0.004425 | 0.000905 |
| XOM                                   | 10.5 | 3.5  | 4.5  | 0.95 | 4   | 14.71    | 7.57     | 8.59     | 0.017852 | 0.262601 | 0.135139 | 0.153348 | 0.016959 |
| XRAY                                  | 8.5  | 11   | 10   | 0.95 | 0.6 | 9.1255   | 11.633   | 10.63    | 0.000761 | 0.006948 | 0.008857 | 0.008093 | 0.000723 |
| XXR                                   | 4    | 1.5  | -4   | 1.2  | 3.5 | 7.57     | 5.02625  | -0.57    | 0.000377 | 0.002854 | 0.001895 | -0.00021 | 0.000452 |
| XYL                                   | 12.5 | 10   | 10   | 1.1  | 1.3 | 13.88125 | 11.365   | 11.365   | 0.000623 | 0.008644 | 0.007077 | 0.007077 | 0.000685 |
| ZBH                                   | 11   | 7    | 4    | 0.95 | 0.9 | 11.9495  | 7.9315   | 4.918    | 0.001172 | 0.014006 | 0.009296 | 0.005764 | 0.001113 |
| ZTS                                   | 12   | 9.5  | 28.5 | 0.95 | 0.7 | 12.742   | 10.23325 | 29.29975 | 0.001745 | 0.022231 | 0.017854 | 0.05112  | 0.001658 |
| 1 14.20599 10.05597 10.75822 1.001305 |      |      |      |      |     |          |          |          |          |          |          |          |          |

Data Downloaded from Value Line on December 5, 2017

## Schedule PKC-12

## Annualized Growth Projections

| 3-5 Years EPS growth Projection                                                                                                                     | 3.5 Years DPS Growth Projection                                                                                                                      | 3-5 Years BVPS Growth Projection                                                                                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Atmos Energy (ATO)</b><br>2019 2020 2021 2022<br>7.5 7 6.5 6<br>Source: Value Line<br>107.5 115.025 122.5016 129.8517<br><b>0.067485363</b>      | <b>Atmos Energy (ATO)</b><br>2019 2020 2021 2022<br>3.5 5 6.5 6.5<br>Source: Value Line<br>103.5 108.675 115.7389 123.2619<br><b>0.053676</b>        | <b>Atmos Energy (ATO)</b><br>2019 2020 2021 2022<br>6.5 4.5 3.5 3<br>Source: Value Line<br>106.5 111.2925 115.1877 118.6434<br><b>0.043664</b> |
| <b>Northwest Nat. Gas (NWN)</b><br>2018 2019 2020 2021<br>4.5 4 5.5 5<br>Source: Value Line<br>104.5 108.68 114.6574 120.3903<br><b>0.047485083</b> | <b>Northwest Nat. Gas (NWN)</b><br>2018 2019 2020 2021<br>2.5 2.5 2.5 2<br>Source: Value Line<br>102.5 105.0625 107.6991 109.9428<br><b>0.023748</b> | <b>Northwest Nat. Gas (NWN)</b><br>2018 2019 2020 2021<br>3 3 3.5 2.5<br>Source: Value Line<br>103 106.09 109.8032 112.5482<br><b>0.029994</b> |
| <b>Spire Inc. (SR)</b><br>2019 2020 2021 2022<br>8 10 9 8<br>Source: Value Line<br>108 118.8 129.492 139.8514<br><b>0.087468469</b>                 | <b>Spire Inc. (SR)</b><br>2019 2020 2021 2022<br>4 4.5 3.5 5<br>Source: Value Line<br>104 108.68 112.4838 118.108<br><b>0.042485</b>                 | <b>Spire Inc. (SR)</b><br>2019 2020 2021 2022<br>5.5 7.5 3.5 4.5<br>Source: Value Line<br>105.5 113.4125 117.3819 122.6641<br><b>0.052396</b>  |
| <b>Southwest Gas (SWX)</b><br>2018 2019 2020 2021<br>8 7 7 7<br>Source: Value Line<br>108 115.56 123.6492 132.3046<br><b>0.072491286</b>            | <b>Southwest Gas (SWX)</b><br>2018 2019 2020 2021<br>7 7.5 7.5 8.5<br>Source: Value Line<br>107 115.025 123.6519 134.1623<br><b>0.076236</b>         | <b>Southwest Gas (SWX)</b><br>2018 2019 2020 2021<br>5 4.5 3 3<br>Source: Value Line<br>105 109.725 113.0168 116.4073<br><b>0.038712</b>       |

Data downloaded from Value Line on Dec. 18, 2017



```

name: <unnamed>
log: C:\Users\pradip.k.chattopadhy\Documents\statawork.smcl
log type: smcl
opened on: 13 Nov 2017, 09:53:02

```

- 1 . use "C:\Users\pradip.k.chattopadhy\Desktop\DG 17-048\Oct31 MB EROE work.dta"
- 2 . \* start from scratch by eliminating variables d1 and d2 that are dependent on specif  
> ic runs. Create them afresh
- 3 . reg mbratio lneroe beta pvar rga

| Source   | SS                | df        | MS                | Number of obs | = | 51            |
|----------|-------------------|-----------|-------------------|---------------|---|---------------|
| Model    | <b>8.78569046</b> | <b>4</b>  | <b>2.19642262</b> | F(4, 46)      | = | <b>17.12</b>  |
| Residual | <b>5.89992489</b> | <b>46</b> | <b>.128259237</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |           |                   | R-squared     | = | <b>0.5983</b> |
|          |                   |           |                   | Adj R-squared | = | <b>0.5633</b> |
| Total    | <b>14.6856154</b> | <b>50</b> | <b>.293712307</b> | Root MSE      | = | <b>.35813</b> |

| mbratio | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|---------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| lneroe  | <b>1.807103</b>  | <b>.2700691</b> | <b>6.69</b>  | <b>0.000</b> | <b>1.263482</b>      | <b>2.350724</b>  |
| beta    | <b>.7567963</b>  | <b>.5199245</b> | <b>1.46</b>  | <b>0.152</b> | <b>-.2897575</b>     | <b>1.80335</b>   |
| pvar    | <b>.7288572</b>  | <b>1.559768</b> | <b>0.47</b>  | <b>0.643</b> | <b>-2.410793</b>     | <b>3.868507</b>  |
| rga     | <b>.3677471</b>  | <b>.1675363</b> | <b>2.20</b>  | <b>0.033</b> | <b>.0305141</b>      | <b>.7049802</b>  |
| _cons   | <b>-2.795609</b> | <b>.6905148</b> | <b>-4.05</b> | <b>0.000</b> | <b>-4.185544</b>     | <b>-1.405675</b> |

- 4 . \* do a test for heteroskedasticity
- 5 . estat imtest, white

White's test for Ho: homoskedasticity  
against Ha: unrestricted heteroskedasticity

```

chi2(14)      =    38.86
Prob > chi2    =    0.0004

```

Cameron & Trivedi's decomposition of IM-test

| Source             | chi2         | df        | p             |
|--------------------|--------------|-----------|---------------|
| Heteroskedasticity | <b>38.86</b> | <b>14</b> | <b>0.0004</b> |
| Skewness           | <b>20.02</b> | <b>4</b>  | <b>0.0005</b> |
| Kurtosis           | <b>0.83</b>  | <b>1</b>  | <b>0.3616</b> |
| Total              | <b>59.71</b> | <b>19</b> | <b>0.0000</b> |

- 6 . \* given the results there is strong evidence of heteroskedasticity
- 7 . \* do some outlier screening to potentially see whether specific observations are dri  
> ving the results and correcting them fixes heteroskedasticity
- 8 . \* start with a graphical look of leverage and residual squares
- 9 . lvr2plot, mlabel(id)

10. graph save Graph "C:\Users\pradip.k.chattopadhy\Desktop\DG 17-048\lvr rsq graph all  
> variables.gph"  
(file C:\Users\pradip.k.chattopadhy\Desktop\DG 17-048\lvr rsq graph all variables.gph  
> saved)

11. drop d1

12. drop d2

13. \* continue with outlier screening using cook's distance

14. predict d1, cooksd

15. clist id lneroe beta pvar rga if d1>4/51, noobs

| id | lneroe   | beta | pvar     | rga     |
|----|----------|------|----------|---------|
| 16 | 1.609438 | .35  | .183871  | .0324   |
| 26 | 2.397895 | .65  | .2461986 | .154595 |
| 51 | 2.251292 | .8   | .1906002 | .767645 |

16. \* check the levels for d1 for the observations with the aforementioned ids

17. clist id if d1>4/51, noobs

```
id
16
26
51
```

18. clist id d1 if d1>4/51, noobs

| id | d1       |
|----|----------|
| 16 | .5804269 |
| 26 | 1.3587   |
| 51 | .0818048 |

19. \* run ols regression dropping observations with id 16, 26, and 51

20. reg mbratio lneroe beta pvar rga if id!=16 & id!=26 & id!=51

| Source   | SS         | df | MS         | Number of obs | = | 48     |
|----------|------------|----|------------|---------------|---|--------|
| Model    | 8.11638628 | 4  | 2.02909657 | F(4, 43)      | = | 25.37  |
| Residual | 3.43969456 | 43 | .079992897 | Prob > F      | = | 0.0000 |
|          |            |    |            | R-squared     | = | 0.7023 |
|          |            |    |            | Adj R-squared | = | 0.6747 |
| Total    | 11.5560808 | 47 | .24587406  | Root MSE      | = | .28283 |

| mbratio | Coef.     | Std. Err. | t     | P> t  | [95% Conf. Interval] |           |
|---------|-----------|-----------|-------|-------|----------------------|-----------|
| lneroe  | 2.206578  | .236409   | 9.33  | 0.000 | 1.729814             | 2.683342  |
| beta    | .6334145  | .4715613  | 1.34  | 0.186 | -.3175795            | 1.584408  |
| pvar    | 3.375973  | 1.549333  | 2.18  | 0.035 | .2514448             | 6.500501  |
| rga     | .2522418  | .1363106  | 1.85  | 0.071 | -.0226547            | .5271383  |
| _cons   | -3.966866 | .647394   | -6.13 | 0.000 | -5.27246             | -2.661272 |

21. \* check whether heteroskedasticity was sufficiently fixed

22. estat imtest, white

White's test for Ho: homoskedasticity  
against Ha: unrestricted heteroskedasticity

```
chi2(14)      =    10.13
Prob > chi2    =    0.7524
```

Cameron & Trivedi's decomposition of IM-test

| Source             | chi2         | df        | p             |
|--------------------|--------------|-----------|---------------|
| Heteroskedasticity | <b>10.13</b> | <b>14</b> | <b>0.7524</b> |
| Skewness           | <b>6.32</b>  | <b>4</b>  | <b>0.1765</b> |
| Kurtosis           | <b>0.45</b>  | <b>1</b>  | <b>0.5025</b> |
| Total              | <b>16.90</b> | <b>19</b> | <b>0.5965</b> |

23. \* given the Prob > chi2 being pretty high, we can conclude that heteroskedasticity  
> is no longer an issue

24. \* it is helpful to note that the dl is especially high for id 26. Let's run the ols  
> regression by deleting only the observation with id=26

25. reg mbratio lneroe beta pvar rga if id!=26

| Source   | SS                | df        | MS                | Number of obs | = | 50            |
|----------|-------------------|-----------|-------------------|---------------|---|---------------|
| Model    | <b>9.53023247</b> | <b>4</b>  | <b>2.38255812</b> | F(4, 45)      | = | <b>27.78</b>  |
| Residual | <b>3.85926534</b> | <b>45</b> | <b>.085761452</b> | Prob > F      | = | <b>0.0000</b> |
| Total    | <b>13.3894978</b> | <b>49</b> | <b>.273255057</b> | R-squared     | = | <b>0.7118</b> |
|          |                   |           |                   | Adj R-squared | = | <b>0.6861</b> |
|          |                   |           |                   | Root MSE      | = | <b>.29285</b> |

  

| mbratio | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|---------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| lneroe  | <b>2.049978</b>  | <b>.2263827</b> | <b>9.06</b>  | <b>0.000</b> | <b>1.59402</b>       | <b>2.505936</b>  |
| beta    | <b>.3480448</b>  | <b>.4333291</b> | <b>0.80</b>  | <b>0.426</b> | <b>-.5247248</b>     | <b>1.220814</b>  |
| pvar    | <b>4.590939</b>  | <b>1.501203</b> | <b>3.06</b>  | <b>0.004</b> | <b>1.56736</b>       | <b>7.614517</b>  |
| rga     | <b>.2715429</b>  | <b>.1384092</b> | <b>1.96</b>  | <b>0.056</b> | <b>-.0072275</b>     | <b>.5503133</b>  |
| _cons   | <b>-3.537669</b> | <b>.5847775</b> | <b>-6.05</b> | <b>0.000</b> | <b>-4.715471</b>     | <b>-2.359866</b> |

26. \* check for heteroskedasticity again

27. estat imtest, white

White's test for Ho: homoskedasticity  
against Ha: unrestricted heteroskedasticity

chi2(14) = **10.46**  
Prob > chi2 = **0.7278**

Cameron & Trivedi's decomposition of IM-test

| Source             | chi2         | df        | p             |
|--------------------|--------------|-----------|---------------|
| Heteroskedasticity | <b>10.46</b> | <b>14</b> | <b>0.7278</b> |
| Skewness           | <b>5.87</b>  | <b>4</b>  | <b>0.2088</b> |
| Kurtosis           | <b>1.27</b>  | <b>1</b>  | <b>0.2607</b> |
| Total              | <b>17.60</b> | <b>19</b> | <b>0.5493</b> |

28. \* The conclusion that heteroskedasticity has been sufficiently fixed remains valid

29. \* For both the regressions wherein outliers were dropped, the variable beta remains  
> statistically insignificant even at 10 percent level

30. \*let's run the above regressions by dropping beta as a variable

31. reg mbratio lneroe pvar rga if id!=16 & id!=26 & id!=51

| Source   | SS                | df        | MS                | Number of obs | = | 48            |
|----------|-------------------|-----------|-------------------|---------------|---|---------------|
| Model    | <b>7.97205812</b> | <b>3</b>  | <b>2.65735271</b> | F(3, 44)      | = | <b>32.62</b>  |
| Residual | <b>3.58402272</b> | <b>44</b> | <b>.081455062</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |           |                   | R-squared     | = | <b>0.6899</b> |
|          |                   |           |                   | Adj R-squared | = | <b>0.6687</b> |
| Total    | <b>11.5560808</b> | <b>47</b> | <b>.24587406</b>  | Root MSE      | = | <b>.2854</b>  |

  

| mbratio | Coef.            | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|---------|------------------|-----------------|--------------|--------------|----------------------|------------------|
| lneroe  | <b>2.243411</b>  | <b>.2369497</b> | <b>9.47</b>  | <b>0.000</b> | <b>1.76587</b>       | <b>2.720951</b>  |
| pvar    | <b>4.046399</b>  | <b>1.480081</b> | <b>2.73</b>  | <b>0.009</b> | <b>1.063491</b>      | <b>7.029306</b>  |
| rga     | <b>.2589341</b>  | <b>.1374588</b> | <b>1.88</b>  | <b>0.066</b> | <b>-.0180959</b>     | <b>.5359642</b>  |
| _cons   | <b>-3.691391</b> | <b>.6196383</b> | <b>-5.96</b> | <b>0.000</b> | <b>-4.94019</b>      | <b>-2.442592</b> |

32. \* let's check for heteroskedasticity

33. estat imtest, white

White's test for Ho: homoskedasticity  
against Ha: unrestricted heteroskedasticity

chi2(9) = **5.65**  
Prob > chi2 = **0.7740**

Cameron & Trivedi's decomposition of IM-test

| Source             | chi2         | df        | p             |
|--------------------|--------------|-----------|---------------|
| Heteroskedasticity | <b>5.65</b>  | <b>9</b>  | <b>0.7740</b> |
| Skewness           | <b>5.38</b>  | <b>3</b>  | <b>0.1461</b> |
| Kurtosis           | <b>1.11</b>  | <b>1</b>  | <b>0.2914</b> |
| Total              | <b>12.15</b> | <b>13</b> | <b>0.5158</b> |

34. \* Heteroskedasticity is not an issue

35. \* let's run the above regression by dropping only the observation with id=26

36. reg mbratio lneroe pvar rga if id!=26

| Source   | SS                | df        | MS                | Number of obs | = | 50            |
|----------|-------------------|-----------|-------------------|---------------|---|---------------|
| Model    | <b>9.4749068</b>  | <b>3</b>  | <b>3.15830227</b> | F(3, 46)      | = | <b>37.11</b>  |
| Residual | <b>3.91459101</b> | <b>46</b> | <b>.085099805</b> | Prob > F      | = | <b>0.0000</b> |
|          |                   |           |                   | R-squared     | = | <b>0.7076</b> |
|          |                   |           |                   | Adj R-squared | = | <b>0.6886</b> |
| Total    | <b>13.3894978</b> | <b>49</b> | <b>.273255057</b> | Root MSE      | = | <b>.29172</b> |

  

| mbratio | Coef.           | Std. Err.       | t            | P> t         | [95% Conf. Interval] |                  |
|---------|-----------------|-----------------|--------------|--------------|----------------------|------------------|
| lneroe  | <b>2.113271</b> | <b>.2114046</b> | <b>10.00</b> | <b>0.000</b> | <b>1.687736</b>      | <b>2.538806</b>  |
| pvar    | <b>4.881197</b> | <b>1.451425</b> | <b>3.36</b>  | <b>0.002</b> | <b>1.959631</b>      | <b>7.802764</b>  |
| rga     | <b>.2830827</b> | <b>.1371294</b> | <b>2.06</b>  | <b>0.045</b> | <b>.0070555</b>      | <b>.5591099</b>  |
| _cons   | <b>-3.48212</b> | <b>.5784291</b> | <b>-6.02</b> | <b>0.000</b> | <b>-4.646437</b>     | <b>-2.317803</b> |

37. \* report the above regressions which dropped outliers in the testimony

38. log close  
    name: <unnamed>  
    log: C:\Users\pradip.k.chattopadhy\Documents\statawork.smcl  
    log type: smcl  
    closed on: 13 Nov 2017, 10:34:30

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