

EPS Rank Study

QUANTITATIVE RESEARCH

O'NEIL GLOBAL ADVISORS INC.

Executive Summary

In this paper, we examine the effectiveness of using William O'Neil +Co.'s proprietary Earnings Per Share (EPS) Rank as a primary factor in managing a portfolio of U.S. equities. Our study included nearly 12,000 U.S. equities from January 1995 to December 2015.

Portfolios built around EPS Rank are analyzed by decile, sector, and liquidity range. We also simulate the selection process of a discretionary portfolio manager by testing portfolios containing 30 names selected at random from a basket of stocks with the highest EPS Ranks.

The results of our tests show that EPS Rank, as a measure of earnings growth and stability, is a viable predictor of future stock price performance. Portfolios of stocks with higher EPS Ranks outperform portfolios of stocks with lower EPS Ranks during the study period. We also show that portfolios of stocks with higher EPS Ranks have lower turnover compared with portfolios of stocks with lower EPS Ranks. These relationships hold up in both our comprehensive backtests and our random selection tests.

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Introduction

The history of William O'Neil + Co.'s EPS Rank started with the work of the company's founder, William J. O'Neil, in the 1950s and 1960s. Over several decades of investing in and profiling the best performing stocks of each market cycle, Mr. O'Neil noted certain repeated patterns of exceptional earnings growth that preceded the large advances of the biggest winners, including large year-over-year earnings growth in the two most recent quarters. After further study, he found that focusing on just the two most recent quarters was not enough; the best growth stocks also had a long-term record of earnings growth and of stability in that growth. With the help of early computers, Mr. O'Neil created a rating that combined these factors into one number that could be compared among all U.S. stocks.

The U.S. EPS Rank used today by our firm first appeared in June 1983. In 2008, the Rank's coverage was expanded beyond the U.S., and additional in-country ranks were created for a number of international markets along with a global rank. This paper is limited to a study of the U.S. domestic EPS Rank.

Since its initial appearance, our EPS Rank has been used by Mr. O'Neil, his portfolio managers, our research analysts, and our clients to find stocks that exhibit strong growth characteristics. While we had performed internal studies of EPS Rank, we had never published a comprehensive back-test of portfolios built around the EPS Rank that was developed decades ago. To that end, we established the tools, data, and a team of quantitative analysts and software engineers to test the EPS Rank as well as other proprietary O'Neil metrics in the future. This paper is the result of those efforts.

EPS Rank Definition

The William O'Neil + Co. EPS Rank measures a company's earnings per share (EPS) growth using four factors: percent increase in the most recent quarter vs. the same quarter a year ago, percent increase in the prior quarter vs. the same quarter a year ago, five-year earnings growth rate (three-year earnings growth rate is used if a five-year rate is not available), and an earnings stability factor. These

About the O'Neil Capital Management Quantitative Services Group

Over the years we have described the investment process used by William J. O'Neil as 'Qualitative Quant.' This type of investor looks at quantitative measures to accurately evaluate and efficiently compare companies but ultimately invests based on their own qualitative analysis of the data.

The O'Neil Capital Management Quantitative Services Group grew out of a desire to create quantitative research based on the work pioneered by Mr. O'Neil. The Quant Group develops quantitative research and systematic investment strategies for the O'Neil family of companies. The program comprises a global team of data scientists, software engineers, and investment professionals. Our research is composed primarily of factor studies for discretionary and quantitative portfolio managers, and our current interests include factor investing, time series analysis, and machine learning techniques.

The Quant Group provides quantitative research and data science expertise for O'Neil Global Advisors. The two benefit from a common heritage and passion for finding what leads to outperformance in global equity markets.

factors are ranked separately and weighted according to a proprietary formula.

The results are ranked on a scale from 1 (worst) to 99 (best). Stocks with a higher EPS Rank will have higher earnings growth and more earnings stability, and vice versa. The rules also adjust for new companies that may not yet have a long record of earnings growth, but have high recent growth. Given such adjustments, equities are not necessarily divided equally among percentiles.

Earnings data for the Rank is gathered from publicly available sources by William O'Neil + Co.'s in-house Data Research Team, with most information being updated shortly after quarterly press releases are issued. Our Data Research Analysts adjust reported earnings numbers to

remove one-time gains and charges that are not indicative of a company's sustainable earnings power, producing earnings results that more accurately reflect the future earnings prospects of the company than strictly GAAP numbers.

Previous Research

Numerous studies have confirmed that earnings announcements have an important influence on stock returns. In their seminal paper, Ball and Brown (1968) identified that the market appears to underreact to annual earnings announcements, as stocks with good news announcements tend to drift higher for at least two months after the announcement month.

Foster, Olsen, and Shevlin (1984) replicated Ball and Brown's results using quarterly earnings and a seasonal random walk with drift earnings expectation model. Bernard and Thomas (1989) concluded the effect is due to investors' delayed reactions to updated financial information.

While earnings are subject to forecast error and management manipulations, several studies have still found them to be more effective measures of firms' value than the alternatives. Dechow (1994) and Penman and Sougiannis (1998) determined that earnings are a more powerful input than dividends or cash flow in determining market value.

Similar to the adjusted earnings that make up the William O'Neil + Co. EPS Rank, where non-recurring items are removed, several studies, including Bradshaw and Sloan (2002), have concluded that pro-forma earnings appear to best reflect stock value.

Consistent with the William O'Neil + Co. EPS Rank's stability factor, Barnes (2001) found there is a negative relationship between a firm's market-to-book ratio and its earnings volatility. Firms with more stable reported earnings are assigned a higher valuation by the market.

Drechsler and Turner (2011) of Turner Investments focused on past earnings growth, independent of whether those earnings constituted a surprise in comparison with analyst estimates. They found that a positive trend in earnings growth tends to persist. Stocks with earnings that increase

over the past four rolling quarters outperformed, and stocks with continuously improving earnings generate the highest returns.

While the record of previous research is encouraging with regard to the usefulness of earnings growth in selecting stocks, we found that no one had studied earnings growth and stability in a manner similar to that of the William O'Neil + Co. EPS Rank. The Rank's combination of factors focusing on recent quarterly growth, long-term annual growth, and stability is a new avenue of study.

Test Methodology & Results

Study Universe

Our study focuses on the 21-year period from January 1, 1995 to December 31, 2015. This timeframe was selected to include multiple bull and bear market cycles, such as the dot-com boom and the Great Recession.

The data source for our study is the William O'Neil + Co. research database, which includes earnings data collected daily from company press releases (8K) and filings (10K and 10Q) by our team of research analysts. Each EPS Rank is recalculated nightly as new data becomes available. Historical price and volume data for U.S. securities used for backtest performance measurement is based on daily end-of-day data from ICE Data Services (formerly Interactive Data Corporation).

The study universe was limited to U.S. equities in the top six deciles of liquidity, as measured by average daily dollar volume. The minimum 50-day average daily dollar volume necessary to be included in the test varied from a minimum of USD 63 thousand per day in 1995 to a maximum of USD 1.6 million per day in 2014. We also eliminated stocks that trade at less than USD 5 per share¹. Both surviving and delisted equities were included in the tests to eliminate survivorship bias. Only stocks with EPS Ranks were included in the test, so exchange traded funds (ETFs) and closed end funds (CEFs) were excluded. Common stocks, American

¹ The liquidity requirements and USD 5 cutoff were selected to replicate criteria that discretionary managers may implement and had the practical effect of eliminating stocks that were thinly traded.

depository receipts (ADRs), real estate investment trusts (REITs), and special purpose acquisition companies (SPACs) were included. This resulted in a universe of approximately 12,000 unique securities.

Portfolio Construction

Our study examines securities by EPS Rank decile. Equities with the highest EPS Rank (90 to 99) were assigned to decile ten (D10). Equities with EPS Ranks from 80 to 89 were assigned to decile nine (D9), and so on. Since the number of equities that trade in the U.S. market varied over the testing period and the EPS Rank definition includes rules to handle special earnings situations², the number of stocks in each decile varied over the course of the test, from a maximum of 797 in D8 in March 2000 to a minimum of 103 in D1 in March 2009. The average number of securities in a decile was 334.

Each decile was backtested as a separate portfolio with an initial dollar investment of USD 1 million in January 1995.

Transactions were conducted on the last market day of the month and were based on the prior day's EPS Rank. If a stock's EPS Rank had migrated between deciles at the end of the month, a transaction was executed to add or remove the position.

Positions started at an approximately³ equal weight within the portfolio, but were allowed to grow or shrink during the month. On the last market day of the month, positions remaining in the portfolio were rebalanced to an approximately equal weight. If a position was outside of the rebalance tolerance⁴, then a buy or sell transaction was executed to bring the position back to equal weight.

A transaction cost of 20 basis points (USD 0.002 per dollar), an amount selected to approximate transaction costs in the U.S. equity market over the backtest period⁵, was applied to all transactions. Dividends were not included in performance measurements, and the portfolios were at or near 100% invested at all times.

2 Special situations such as negative earnings and recent IPOs.

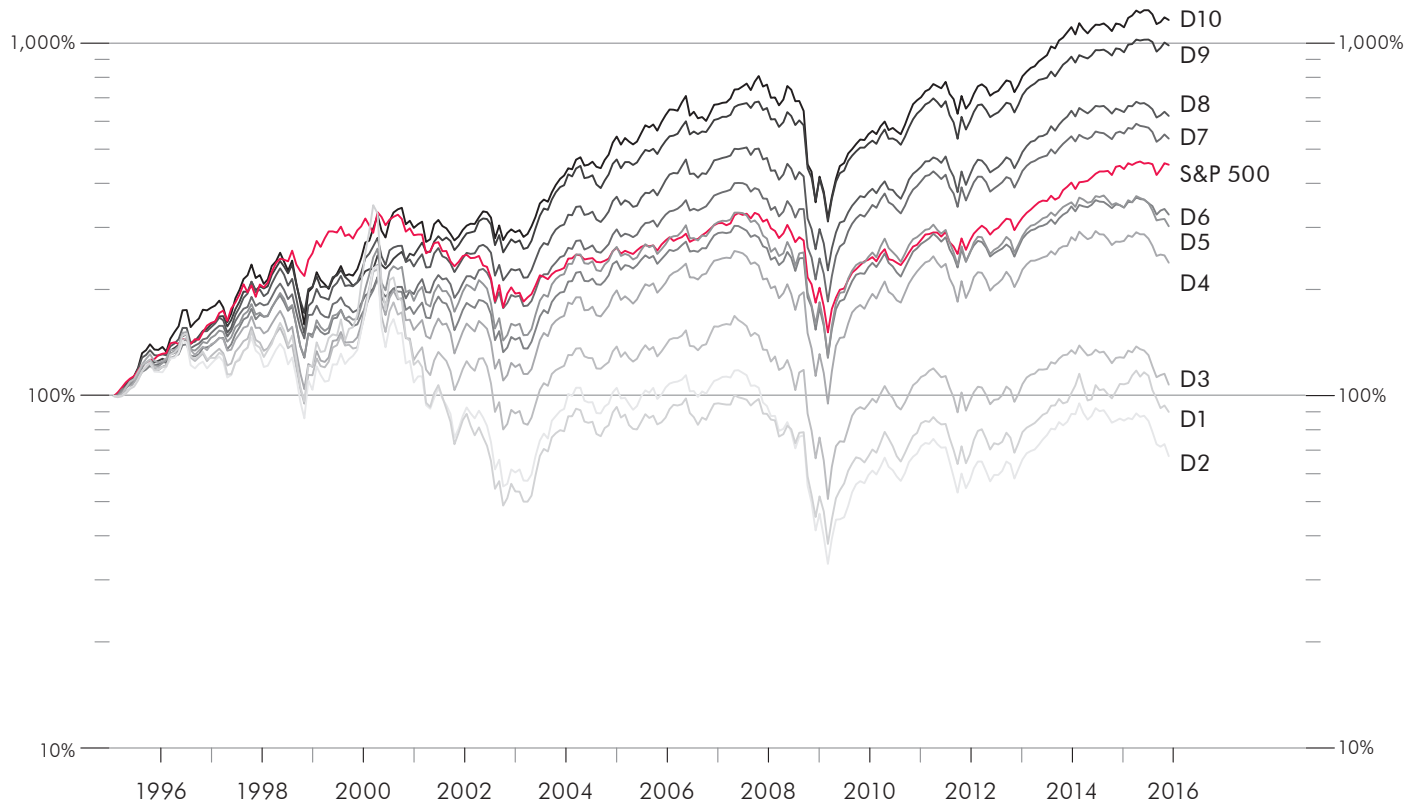
3 The initial weight and subsequent rebalancing were approximately equal because transactions were simulated using whole share amounts and the simulation was unable to achieve exactly equal weights with integer amounts.

4 A rebalance tolerance threshold of +/- 2% from equal weight was implemented to avoid additional transactions when the position was already at an approximately equal weight.

5 See Robert Pollin and James Heintz, 2011, Transaction Costs, Trading Elasticities and the Revenue Potential of Financial Transaction Taxes for the United States.

Analysis of Backtest Results

Figure 1: EPS Rank Return by Decile



This figure shows EPS Rank performance over a 21-year period from 1995 to 2015. Each line represents a single EPS Rank decile. The red line is the performance of the S&P 500 benchmark. EPS Rank performance includes transaction costs of 20 basis points and monthly rebalancing.

Table 1: EPS Rank Decile Backtest Statistics

EPS Decile	Total Return	CAGR	Alpha	Beta	Sharpe Ratio	Sortino Ratio	Info Ratio	Max Drawdown	Avg Drawdown	Hit Ratio	Avg Days Held	Turnover
D10	1034.5%	12.2%	0.05	1.00	0.48	0.79	0.49	-63.2%	-11.3%	49.0%	260	22.8%
D9	862.6	11.3	0.05	0.89	0.51	0.85	0.50	-57.4	-8.3	45.7	139	43.3
D8	510.4	9.0	0.02	0.91	0.37	0.64	0.19	-58.3	-11.0	43.3	120	51.0
D7	427.8	8.2	0.02	0.88	0.34	0.62	0.11	-57.2	-8.5	42.2	100	59.8
D6	222.7	5.7	-0.01	0.90	0.20	0.41	-0.19	-59.7	-12.6	40.9	95	63.3
D5	197.9	5.3	-0.02	0.95	0.17	0.36	-0.21	-63.9	-16.3	39.8	90	66.3
D4	136.0	4.2	-0.03	0.98	0.11	0.27	-0.30	-65.7	-20.5	39.1	90	66.6
D3	6.7	0.3	-0.07	1.02	-0.07	0.02	-0.61	-80.4	-41.4	38.4	92	65.4
D2	-32.4	-1.8	-0.09	1.04	-0.16	-0.11	-0.73	-87.7	-53.7	37.9	96	62.0
D1	-8.6	-0.4	-0.08	1.00	-0.10	-0.02	-0.56	-90.6	-60.6	39.2	118	50.8
S&P 500	345.0	7.3	0.00	1.00	0.29	0.54	0.00	-56.8	-14.4	--	--	--

This table contains the results of the EPS Rank decile backtests for a 21-year period from 1995 to 2015. Each row represents the results of a single decile. The benchmark S&P 500 is displayed at the bottom of the table for reference. EPS Rank performance includes transaction costs of 20 basis points and monthly rebalancing. Negative values are displayed in red text.

Table 1 shows the results of our EPS Rank decile tests. We draw the following conclusions from those tests:

- A. **Portfolios with higher EPS Ranks showed better performance.** Stock portfolios in D10 and D9 had annualized returns of 12.2% and 11.3%, respectively, over the 21-year period, beating the S&P 500 return over the same period (7.3%) by 490 and 400 basis points, respectively. The percentage of trades profitable was low for all deciles (averaging 41.5%), but was highest in the top two deciles (49.0% in D10 and 45.7% in D9). This low percentage of profitable trades may suggest that the performance of the top deciles is due to a small percentage of highly profitable trades.
- B. **An orderly and linear decrease in performance from D10 to D1 confirms that EPS Rank is viable predictor of return.** There was a near linear decline in performance from D8 to D4, from an annualized return of 9.0% in D8 to an annualized return of 4.2% in D4.
- C. **Portfolios with the lowest EPS Ranked stocks underperform compared to portfolios with higher EPS Ranks.** Specifically, portfolios of stocks in the bottom three deciles (EPS Ranks between 1 and 29) had the weakest performance and showed a loss over the 21-year period⁶.
- D. **Average drawdown was mild in higher deciles and considerably higher in lower deciles.** The maximum drawdown for all deciles is high (averaging 67.9%), but is noticeably higher in the lowest three deciles (averaging 84.9%). During the backtest period, the S&P 500 benchmark had a maximum drawdown of -56.8% and an average drawdown of -14.4%. These may seem high, but our backtest did not implement any portfolio management rules to limit losses.
- E. **Turnover was lowest in the top two deciles.** The average length of time that a stock remained in a decile (i.e. the holding period) was greatest in the top decile D10 (260 calendar days). Since transaction costs were applied, the relatively low turnover in D10 provides a performance boost. The holding period in the top decile was more than twice as long as that of bottom decile (260 days versus 118 days), implying that earnings growth trends persist at the EPS Rank extremes. At the top end, companies with high earnings growth and stability continue on that trend for longer periods. At the bottom, companies with poor earnings growth and stability also continue on that trend, albeit for shorter periods of time, perhaps because these companies do not last.

⁶ We measured an anomaly in the performance between D2 and D1, indicating that stocks with an EPS Rank between 1 and 9 perform slightly better (i.e. less worse) than stocks with an EPS Rank between 10 and 19. This could be due to the relatively low turnover in D1. Since our test included 20 basis points of transaction costs, the low turnover in D1 increased its performance enough to move it slightly past D2.

Analysis of Yearly Returns

Table 2: Yearly Performance of EPS Rank Deciles

Year	All Deciles	S&P 500 Return	EPS Rank Decile										D10 - D1 Spread
			D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	
1995	28.9%	34.1%	42.4%	29.9%	34.7%	27.3%	23.1%	27.6%	29.3%	24.2%	21.4%	24.2%	18.2%
1996	14.7	20.3	26.3	25.3	18.7	21.2	15.0	15.5	9.4	6.1	1.8	2.6	23.7
1997	17.1	31.0	22.0	28.8	25.5	21.1	22.4	17.2	10.3	4.2	0.4	5.1	16.9
1998	-3.9	26.7	2.0	2.7	-2.1	-5.2	-10.6	-10.7	-18.1	-11.8	-11.5	-4.2	6.2
1999	36.0	19.5	23.4	6.4	27.7	10.5	17.2	33.2	47.1	45.8	64.2	101.7	-78.3
2000	-11.4	-9.3	12.6	16.9	-2.8	7.6	-2.5	-6.8	-17.2	-29.3	-40.4	-54.6	67.2
2001	-1.3	-13.0	-0.2	10.0	5.7	5.6	4.3	9.5	3.7	0.3	-15.1	-25.0	24.8
2002	-21.4	-23.4	-6.0	-6.3	-11.6	-13.1	-22.0	-23.4	-24.9	-29.7	-34.3	-40.6	34.7
2003	46.0	26.4	51.1	51.4	41.0	35.7	43.1	45.4	48.3	44.3	61.5	57.8	-6.7
2004	14.6	9.0	25.8	15.0	16.2	15.5	18.6	15.7	13.3	9.5	8.6	13.1	12.7
2005	4.4	3.8	13.5	11.8	10.2	8.9	3.5	1.5	4.5	-0.8	-1.4	-7.4	20.9
2006	14.3	13.6	9.6	17.2	16.4	16.7	17.0	16.7	17.1	15.0	7.7	10.5	-0.9
2007	-2.6	3.5	17.4	9.2	2.8	-2.1	-8.5	-9.5	-10.1	-12.7	-14.8	-3.6	21.0
2008	-41.3	-38.5	-48.8	-39.6	-39.7	-34.4	-34.4	-35.6	-41.2	-45.5	-51.6	-44.6	-4.2
2009	33.3	23.5	38.2	29.3	30.4	40.0	33.3	36.7	45.4	26.8	29.8	33.1	5.1
2010	19.6	12.8	24.5	23.2	17.1	20.1	16.0	16.5	23.6	19.2	19.9	22.2	2.3
2011	-11.3	-1.1	-5.5	-8.9	-7.1	-8.0	-7.2	-14.0	-15.1	-16.5	-21.2	-19.8	14.2
2012	11.7	13.4	16.6	15.5	13.7	11.5	6.9	9.0	10.7	8.5	10.9	12.4	4.2
2013	32.6	29.6	42.8	33.6	35.2	29.5	27.3	29.0	28.3	29.7	40.2	33.6	9.3
2014	2.4	11.4	2.8	5.7	0.9	4.2	1.6	-0.9	-1.5	-2.9	-1.8	7.2	-4.5
2015	-10.0	-0.7	-0.5	-0.5	-5.9	-6.9	-7.8	-15.1	-15.1	-18.6	-22.7	-16.4	15.8

This table shows the year-by-year performance of the EPS Rank deciles for 1995 to 2015. EPS Rank performance includes transaction costs of 20 basis points and monthly rebalancing. Negative values are displayed in red text.

Our study included a year-by-year analysis of the EPS Rank's performance to examine its efficacy in various market cycles and determine how returns varied across deciles. Our primary finding is that EPS Rank seems to be a viable predictor of performance in most market conditions. The most notable exception was the dot-com boom of 1999, when many stocks with low EPS Ranks strongly outperformed higher-ranked stocks. There are also several periods (2003, 2006, 2008, and 2014) when the Rank's effectiveness weakens during smaller market booms (e.g. Biotech in 2014), when companies with negative earnings growth were rewarded. Table 2 shows the year-by-year results of our EPS Rank decile tests.

We conclude the following based on the yearly performance of EPS Rank deciles:

- A. **1995 to 1997** - In this bull market, we see a positive D10-D1 spread and an increase in performance from D1 up to D10, indicating that the EPS Rank works well during this period as a predictor of performance. Examples of highly-ranked stocks during this period are RSA Security (RSAS), Cisco Systems (CSCO), Charles Schwab (SCHW), and Halliburton (HAL).

- B. **1998 to 1999** - We start to see a weakening of the D10-D1 spread, culminating in the dot-com boom of 1999, when stocks with lower EPS Ranks outperform stocks with higher EPS Ranks. This period represents a time when tech startups with little to no earnings were rewarded with growth. Examples of stocks from this period with low EPS Rank but good price performance include Amazon.com (AMZN), Digital River (DRIV), Inktomi (INKT), Netopia (NTPA), and DoubleClick (DCLK).
- C. **2000 to 2002** - In the bear market after the dot-com bubble, we see a strong return to a positive D10-D1 spread due to the underperformance of stocks with low EPS Ranks, such as Abovenet Inc (ABVT), Global Crossing Ltd (GLBC), Zoom Technologies (ZOOM), Nanogen Inc. (NGEN), American Tower REIT (AMT), and US Office Products (OFSE). Stocks in deciles D3 to D1 suffered greatly during this period and we see a wide gap in the cumulative returns between D4 and D3 due to the relative underperformance of low-ranked stocks during this period.
- D. **2003 to 2006** - In the strong bull market of 2003, we again see a negative performance spread between D10 and D1 due to the relatively strong performance of names with lower EPS Ranks. Examining D1 and D2, names such as Rentech Inc. (RTK), Emeritus Corp. (ESC), Regeneron Pharmaceutical (REGN), Alexion Pharmaceuticals (ALXN), and Allegheny Technologies (ATI) were some of the strongest performers. 2004 and 2005 have a positive D10-D1 spread, however, the difference is less than it was in the 1995-1997 bull market. 2006 has a slightly negative spread.
- E. **2007 to 2008** - In 2007, there is a strong positive D10-D1 spread due to the underperformance of the lower deciles. As the Great Recession takes hold in 2008, we see stocks at the extremes of the EPS Rank spectrum get hit equally hard. The D10-D1 spread turns negative due to the underperformance of higher-ranked stocks. This fits with the nature of the 2008 global financial crisis, when companies such as MasterCard (MA), Intercontinental Exchange (ICE), Google (GOOG), Monolithic Power Systems (MPWR), Alcon (ACL), and Jacobs Engineering (JEC), which all had strong earnings growth and stability, were sold.
- F. **2009 to 2013** - In the recovery period after the Great Recession, we see a return to a positive performance spread between D10 and D1, albeit weaker than in earlier years, possibly due to the relatively stronger performance of low-ranked names such as Amazon (AMZN), Immunogen Inc. (IMGN), Sprint Corp. (S), and Kate Spade (KATE).
- G. **2014 to 2015** - The negative D10-D1 spread in 2014 is a result of the short-lived outperformance of Biotech names that had little or no earnings but still managed new price highs. Such names included Puma Biotechnology (PBYI), Agios Pharmaceuticals (AGIO), and Intercept Pharmaceuticals (ICPT), all appearing in D1.

Sector Analysis

Table 3: EPS Rank Decile Performance by O'Neil Sector

O'Neil Sector	All Deciles	D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D10-D1
Transportation	8.2%	10.2%	17.4%	9.0%	8.2%	-3.3%	-0.4%	-7.1%	2.4%	4.1%	-20.0%	30.2%
Retail	13.7	18.4	17.4	14.9	10.7	11.4	11.3	3.9	9.3	3.3	-6.3	24.7
Consumer Staple	12.1	11.5	14.1	12.0	12.1	10.0	8.1	17.2	-0.3	7.8	-2.7	14.1
Consumer Cyclical	9.1	14.3	13.0	13.0	7.0	7.3	5.7	6.2	6.2	-0.1	0.6	13.6
Technology	12.4	15.4	17.3	13.9	15.3	11.9	10.2	9.8	7.0	7.9	1.9	13.5
Financial	9.2	15.6	12.0	10.3	8.2	8.2	9.3	6.2	3.7	-2.2	2.2	13.4
Basic Material	6.6	16.3	10.1	6.0	8.4	6.3	4.2	5.7	-1.9	-7.7	3.5	12.7
Energy	8.8	15.0	13.6	8.0	12.9	7.8	8.1	5.6	5.1	-1.4	2.3	12.7
Capital Equipment	10.6	11.0	13.1	12.5	11.9	8.1	9.9	7.3	7.6	4.8	2.3	8.7
Health Care	15.0	18.2	17.0	18.9	14.3	8.5	15.9	17.7	9.1	9.0	13.6	4.6
Utility	6.4	2.3	8.3	8.9	8.9	5.0	5.4	6.7	-0.4	5.2	0.0	2.3

This table shows the performance of EPS Rank deciles, arranged horizontally, organized by the 11 O'Neil sectors, listed vertically. The performance is the compound annualized growth rate (CAGR) for the backtest period (1995-2015). EPS Rank performance includes transaction costs of 20 basis points and monthly rebalancing. Negative values are displayed in red text.

We examined the performance results by O'Neil sector, which groups securities into 1 of 11 broad categories, to understand the effectiveness of EPS Rank within these sectors. Table 3 shows the performance of EPS Rank deciles by sector.

We draw the following conclusions based on our sector performance analysis:

- A. **The D10-D1 performance spread remains positive for all sectors, indicating that EPS Rank is a valid predictor of future performance across all sectors.**
- B. **Healthcare and Retail had the strongest absolute performance**, 15.0% and 13.7%, respectively, beating the S&P 500 benchmark return of 7.3% for the period.
- C. **Transportation, Retail, and Consumer Staple had the widest performance spread between top and bottom deciles.** Returns in these sectors may be more sensitive to EPS growth and stability.
- D. **Healthcare and Utilities showed the weakest D10-D1 spread over the backtest period.** The weak spread in Healthcare is due to the relatively strong performance of names with low EPS Ranks. Many of these companies are in the Bio-Medical / Bio-Technology group which can show price strength despite weak earnings.

Liquidity Analysis

Table 4: EPS Rank Decile Performance by Liquidity Decile

Liquidity Decile	Avg Daily Dollar Range in millions (2015)	EPS Rank										
		D10	D9	D8	D7	D6	D5	D4	D3	D2	D1	D10-D1
D10	> 83.0	10.1%	11.7%	8.7%	9.7%	8.6%	4.7%	2.1%	1.5%	-3.7%	-5.8%	15.9%
D9	30.8 to 83.0	11.5	12.9	11.6	11.5	7.8	4.2	5.7	2.6	-2.3	-0.3	11.8
D8	14.8 to 30.8	16.0	12.6	12.0	12.2	4.8	11.5	7.1	4.3	3.4	2.1	13.9
D7	7.3 to 14.8	16.8	14.0	12.4	9.2	10.3	7.7	11.3	3.0	2.5	0.6	16.2
D6	3.6 to 7.3	23.0	17.1	12.4	11.6	9.7	8.5	8.3	3.9	1.6	1.7	21.4
D5	1.5 to 3.6	20.5	17.2	10.4	8.5	7.6	9.1	4.8	1.0	-1.6	2.3	18.2

This table contains the performance of the EPS Rank deciles, arranged horizontally, by the top six liquidity deciles, arranged vertically. Liquidity is measured by average daily dollar volume. The approximate range for each liquidity decile in the 2015 calendar year is displayed. The performance displayed is for the full backtest period (1995–2015) and includes transaction costs of 20 basis points. Negative values are displayed in red text.

We examined EPS Rank performance by segmenting the security universe into distinct liquidity ranges by average daily dollar volume. We chose to analyze liquidity in order to identify potential concerns that portfolio managers might have about their ability to trade the stocks included in our study. To address those concerns, we excluded stocks in the bottom four liquidity deciles, hence only 6 of 10 deciles are displayed. Table 4 shows the results of our liquidity analysis.

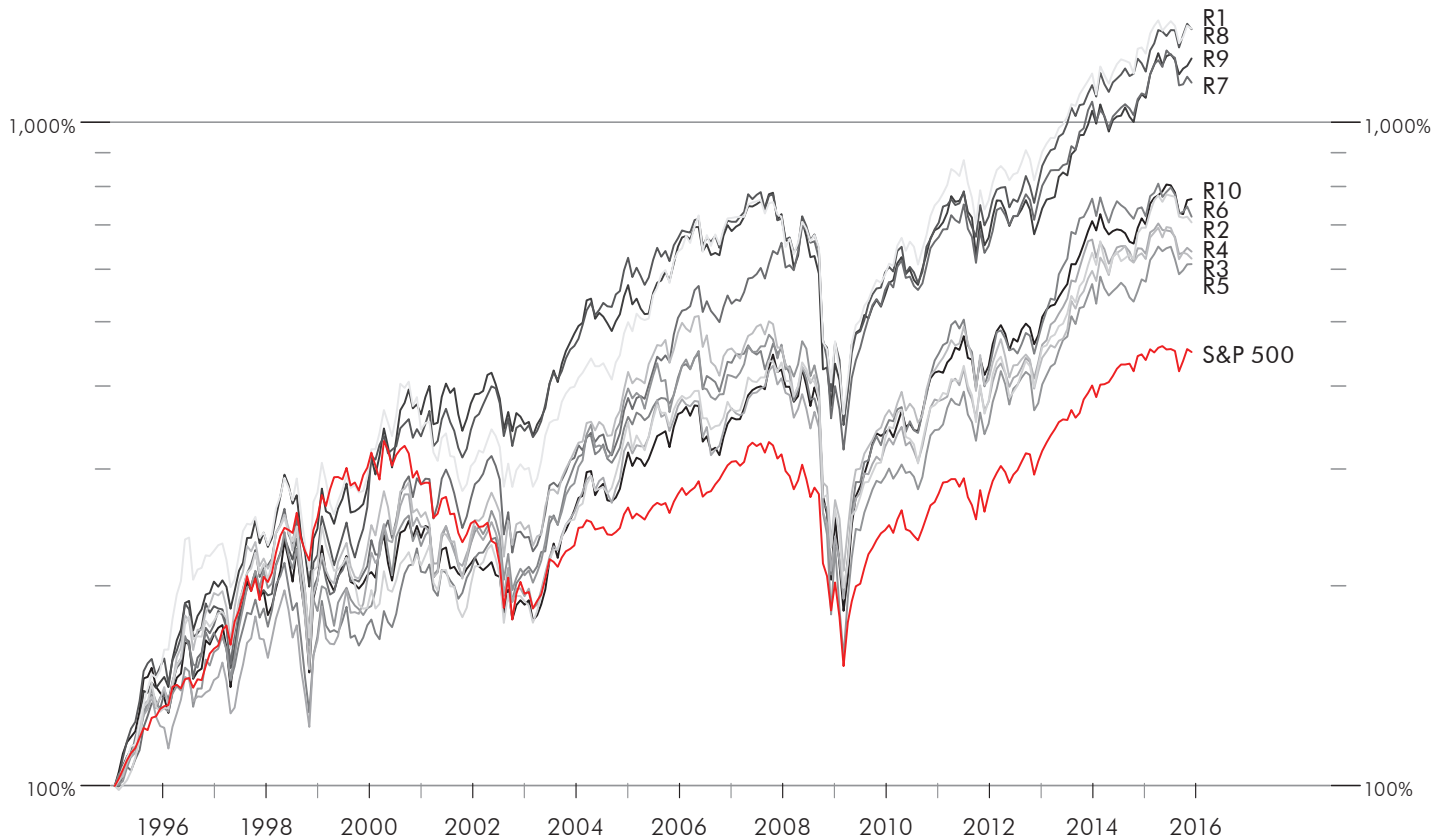
Our findings based on these tests are:

- A. **EPS Rank shows a positive D10–D1 spread in all liquidity deciles, indicating that it is an effective predictor of performance.**
- B. **The spread is the strongest in the lower liquidity deciles (liquidity deciles D6 and D5), indicating that EPS Rank differentiates more effectively between less liquid names.** The larger spread is caused by the relatively strong performance of highly-ranked stocks in the lowest liquidity deciles, echoing the “small cap premium” noted in other research.

Random Sample Tests

To simulate a discretionary manager’s stock selection process, we ran a series of tests on the highest-ranked stocks using a random selection and replacement process. For these tests we chose, at random, a basket of 30 stocks from D10, each an equal percentage of the portfolio (3.3%) that was allowed to grow or shrink until the end of the month, when EPS Ranks were reevaluated and the portfolio was rebalanced. If the EPS Rank of one of the portfolio holdings fell below 90, a transaction was executed to sell the position and it was replaced by another randomly selected security from D10. The rebalancing process used for this test was the same as the process described earlier.

Figure 2: Random Sample Test Performance



This graph shows the performance of 10 randomly-generated portfolios of 30 stocks with EPS Ranks between 90 and 99. The tests include transaction costs of 20 basis points and monthly rebalancing.

Table 5: Random Sample Test Statistics

Random Test Run	Total Return	CAGR	Alpha	Beta	Sharpe Ratio	Sortino Ratio	Info Ratio	Max Drawdown	Avg Drawdown	Hit Ratio	Avg Days Held	Turnover
Test R1	1256.5%	13.2%	0.06	1.02	0.49	0.82	0.48	-58.3%	-10.7%	50.9%	337	17.2%
Test R2	588.7	9.6	0.02	1.01	0.34	0.60	0.19	-58.2	-12.2	50.3	332	17.4
Test R3	504.6	8.9	0.01	1.04	0.30	0.54	0.13	-60.3	-12.9	49.7	339	17.1
Test R4	547.2	9.3	0.02	0.99	0.33	0.59	0.16	-59.0	-12.3	50.1	335	17.2
Test R5	490.4	8.8	0.01	1.02	0.30	0.53	0.11	-68.7	-14.1	49.2	304	19.2
Test R6	606.7	9.7	0.02	0.99	0.35	0.61	0.20	-61.4	-11.2	49.9	324	17.9
Test R7	1046.5	12.3	0.05	1.02	0.46	0.77	0.43	-56.9	-9.9	50.4	321	18.0
Test R8	1247.7	13.1	0.06	0.96	0.52	0.85	0.50	-59.1	-9.4	51.1	326	17.8
Test R9	1103.4	12.5	0.05	1.00	0.48	0.80	0.45	-59.5	-10.1	50.8	371	15.4
Test R10	641.4	10.0	0.03	0.99	0.36	0.63	0.22	-62.1	-11.2	49.5	331	17.4
Avg	803.3	10.7	0.03	1.00	0.39	0.67	0.29	-60.3	-11.4	50.2	332	17.5
S&P 500	345.0	7.3	0.00	1.00	0.29	0.54	0.00	-56.8	-14.4	--	--	--

This table contains the test statistics for 10 backtests (R1 through R10) run on portfolios of 30 randomly-selected stocks with the highest EPS Ranks (90 to 99). The tests include transaction costs of 20 basis points and monthly rebalancing. Negative values are displayed in red text.

Table 5 shows the results of our random sample tests. We draw the following conclusions based on those tests:

- A. **The random tests confirm the outperformance of names in D10.** The annual return of these focused portfolios ranged from a low of 8.8% to a high of 13.2%, with an average of 10.7%. The average excess return over the S&P 500 was 340 basis points.
- B. **The random tests had a higher maximum drawdown but a lower average drawdown.** This could indicate that the names in the highest decile are more stable (i.e. react less negatively on average) but are more susceptible to general market corrections, during which higher drawdowns are likely to be experienced. The maximum drawdown for the random tests (an average of -60.3%) occurred in 2008 during the Great Recession. Average drawdown for the random tests was -11.4%. The S&P 500 benchmark had a maximum drawdown of -56.8% and an average drawdown of -14.4%. These may seem high, but our backtests did not implement any portfolio management rules to limit losses.
- C. **The average annualized return for these focused portfolios (10.7%) is lower than the average for all of D10 (12.2%).** This could be due to the exceptional performance of a small number of names not captured by our random sample.

Conclusions

Based on our EPS Rank analysis in this study, we draw the following conclusions:

1. **Portfolios containing stocks with higher EPS Ranks have better price performance on average than equity portfolios containing stocks with lower EPS Ranks.** The near linear distribution of returns between the highest-ranked stocks and the lowest-ranked stocks, shown in Table 1, demonstrates this relationship. Portfolios of stocks with EPS Ranks between 90 and 99 had an annualized return of 12.2% over the 21-year period. The linear decrease from high deciles to low indicates that the Rank is measuring something that matters to the market.
2. **EPS Rank is a valid measure of earnings growth, but should not be used as a standalone buy/sell signal.** Our results confirm that EPS Rank can be used to find companies with the potential for high returns and long-term growth, but it does not protect against short-term downturns and market weakness. The top half of deciles (stocks with an EPS Rank of 50 or above) had a worse maximum drawdown but a lower average drawdown than the S&P 500 benchmark. This could indicate that names in the higher deciles are more stable (i.e. react less negatively to short-term market volatility on average) but are more susceptible to general market corrections, during which higher drawdowns are likely to be experienced.
3. **Stocks with the highest EPS Ranks (between 90 and 99) have strong earnings growth and stability for longer periods of time than lower-ranked stocks.** The average length of time that a stock stayed in the top decile was 260 calendar days, twice as long as stocks in the bottom decile. This finding is not unexpected since earnings stability is a factor of EPS Rank.
4. **Although portfolios of stocks with higher EPS Ranks outperform portfolios of stocks with lower EPS Ranks in most market conditions, there have been times when the market appears to discount the value of EPS growth and stability.** During the 21-year backtest period, there are five years (1999, 2003, 2006, 2008, and 2014) when the D10-D1 performance spread turns negative due to lower-ranked stocks outperforming higher-ranked stocks. This could be the market driving up the price of stocks with little to no earnings in anticipation of future earnings growth.
5. **EPS Rank analysis can be easily combined with other investment styles.** The results in Table 5 show that a focused portfolio of 30 names selected at random from the highest-ranked stocks can produce outperformance. The random selection process used in these tests acts as a proxy for other investment styles, confirming that EPS Rank can be combined with other methodologies to improve returns.

Given these findings, it is clear that the use of EPS Rank can add value to a portfolio manager's stock selection process. EPS Rank constitutes one dimension of fundamental

quality that should be combined with other fundamental and technical metrics to better understand a company's growth potential. William O'Neil + Co.'s Quantitative Team plans to test our other proprietary metrics in a similar manner, including the Relative Strength Rating, the DataGraph Rating, the Composite Rating, and combinations of these ratings to further understand the efficacy of these metrics.

To provide the reader with current examples of companies with strong earnings growth and stability, we have provided a list of securities with the highest EPS Ranks (90 to 99) as of the publication date of this paper. Current EPS Ranks can be found in PANARAY®, our institutional equity research tool that accesses the O'Neil Research Database.

Appendices

APPENDIX A: Stocks with High EPS Rank

This section contain a list of all U.S. stocks with an EPS Rank between 90 and 99 that are within the top 60% of average daily dollar volume as of September 30, 2016.

Name	Symbol	EPS Rank	Average Daily Dollar Volume	Name	Symbol	EPS Rank	Average Daily Dollar Volume
Facebook Inc Cl A	FB	99	\$2,377,937,771	FB Financial Corporation	FBK	99	\$11,149,846
Netease Inc Adr	NTES	99	248,919,754	Bats Global Markets Inc	BATS	99	11,095,555
Linkedin Corp Class A	LNKD	99	227,430,653	Shell Midstream Partners	SHLX	99	10,327,043
Palo Alto Networks	PANW	99	223,664,886	Four Corners Ppty Tr Inc	FCPT	99	9,454,542
Mobileye N.V.	MBLY	99	170,971,513	Installed Building Prod	IBP	99	8,922,056
Host Hotels & Resorts	HST	99	163,267,788	China Lodging Group Ads	HTHT	99	8,356,406
Burlington Stores Inc	BURL	99	83,426,018	Marinemax Inc	HZO	99	5,462,830
Fortune Brands Hme & Sec	FBHS	99	78,510,595	Insteel Industries Inc	IIIN	99	5,252,404
Berry Plastics Group Inc	BERY	99	65,082,523	Tarena Intl Inc Cl A Adr	TEDU	99	4,328,813
Stamps.com Inc	STMP	99	57,032,919				
Coresite Realty Corp	COR	99	42,063,704	Ulta Salon Cosm & Frag	ULTA	98	220,162,282
A M N Healthcare Svcs	AHS	99	37,591,518	Martin Marietta Materls	MLM	98	113,026,433
Paycom Software Inc	PAYC	99	33,535,046	Centene Corp	CNC	98	111,518,307
Lumentum Holdings Inc	LITE	99	33,128,835	Mohawk Industries Inc	MHK	98	102,094,013
Pebblebrook Hotel Tr	PEB	99	30,931,429	Pulte Group Inc	PHM	98	98,692,100
Diamondrock Hospitality	DRH	99	27,491,455	Toll Brothers Inc	TOL	98	78,575,200
Hawaiian Holdings Inc	HA	99	26,851,029	Dycom Inds Inc	DY	98	78,362,661
Maxlinear Inc Cl A	MXL	99	25,969,196	Macerich Co	MAC	98	73,058,311
Drew Industries Inc	DW	99	21,393,189	Acuity Brands Inc	AYI	98	59,501,058
L G I Homes Inc	LGIH	99	18,553,374	Arista Networks Inc	ANET	98	54,558,995
Essent Group Ltd	ESNT	99	14,442,434	Lennox International Inc	LII	98	47,308,104
Apogee Enterprises	APOG	99	12,134,047	Five Below Inc	FIVE	98	47,277,652
Eastgroup Properties	EGP	99	11,181,811	Ultimate Software Group	ULTI	98	44,526,552

Name	Symbol	EPS Rank	Average Daily Dollar Volume	Name	Symbol	EPS Rank	Average Daily Dollar Volume
Dave & Buster's Ent Inc	PLAY	98	\$43,538,479	Ubiquiti Networks Inc	UBNT	97	\$21,412,975
Cyberark Software Ltd	CYBR	98	39,272,293	Trex Company Inc	TREX	97	15,943,065
Middleby Corp	MIDD	98	38,147,524	G A T X Corp	GATX	97	14,535,933
Shake Shack Inc Cl A	SHAK	98	36,852,472	American Woodmark Corp	AMWD	97	13,991,922
I N C Research Hdgs Cl A	INCR	98	36,140,154	Ryman Hospitality Prop	RHP	97	13,845,601
K B Home	KBH	98	33,911,713	Patrick Industries Inc	PATK	97	13,602,337
Tyler Technologies Inc	TYL	98	33,343,500	Cantel Medical Corp	CMN	97	12,359,659
Store Capital Corp	STOR	98	31,114,648	S P S Commerce Inc	SPSC	97	11,808,154
Manhattan Associates Inc	MANH	98	28,877,870	Headwaters Inc	HW	97	11,454,902
P R A Health Sciences	PRAH	98	28,776,201	Columbia Property Trust	CXP	97	10,360,073
Criteo SA Ads	CRTO	98	26,380,907	Gibraltar Industries Inc	ROCK	97	8,524,060
B O F I Holding Inc	BOFI	98	24,941,327	Continental Building Prd	CBPX	97	7,942,081
Genesis Energy Lp	GEL	98	23,073,962	Ethan Allen Interiors	ETH	97	5,131,867
Weingarten Realty Invs	WRI	98	22,016,839	Valero Energy Partners	VLP	97	4,708,715
Tencent Holdings Ltd Ads	TCEHY	98	19,263,203	Activision Blizzard Inc	ATVI	96	384,162,826
Wabash National Corp	WNC	98	16,856,187	Regeneron Pharmaceutical	REGN	96	304,575,709
Universal Forest Prods	UFPI	98	13,754,014	Marriott International	MAR	96	253,054,264
Healthequity Inc	HQY	98	12,599,307	Vipshop Holdings Ltd Ads	VIPS	96	104,485,658
H N I Corporation	HNI	98	12,320,141	Jetblue Airways Corp	JBLU	96	101,110,189
Inogen Inc	INGN	98	10,311,095	Lear Corporation	LEA	96	88,040,048
Comfort Systems U S A	FIX	98	9,806,538	Alaska Air Group Inc	ALK	96	82,951,735
Wingstop Inc	WING	98	9,539,388	Sabre Corporation	SABR	96	82,299,409
Argan Inc	AGX	98	9,437,921	Cintas Corp	CTAS	96	78,134,672
Ameris Bancorp	ABCB	98	6,009,728	Total System Services	TSS	96	70,015,569
Tallgrass Energy Lp Cl A	TEGP	98	4,151,986	Align Technology Inc	ALGN	96	68,390,480
Biogen Inc	BIIB	97	513,630,961	Jack In The Box Inc	JACK	96	50,593,458
Delta Air Lines Inc	DAL	97	348,518,474	Eagle Materials Inc	EXP	96	48,590,074
Shire Plc Ads	SHPG	97	187,275,999	Calatlantic Group Inc	CAA	96	47,472,005
Tyson Foods Inc Cl A	TSN	97	180,832,055	Marketaxess Holdings Inc	MKTX	96	41,380,830
Edwards Lifesciences Cp	EW	97	135,184,560	Wendy's Company	WEN	96	41,342,825
Masco Corp	MAS	97	129,226,829	Toro Co	TTC	96	34,795,759
Extra Space Storage Inc	EXR	97	93,268,493	Webmd Health Corp	WBMD	96	32,957,135
Smith & Wesson Hldg Corp	SWHC	97	55,194,528	Air Lease Corp Cl A	AL	96	28,573,339
Acadia Healthcare Inc	ACHC	97	51,351,313	Healthcare Tr of Am Cl A	HTA	96	27,249,281
Medical Properties Trust	MPW	97	49,725,618	Parexel Intl Corp	PRXL	96	26,225,269
Smith A O Corp	AOS	97	48,232,588	Euronet Worldwide Inc	EEFT	96	24,556,487
Lamar Advertising Cl A	LAMR	97	39,110,236	Autohome Inc Cl A Ads	ATHM	96	17,232,252
Lendingtree Inc	TREE	97	38,947,722	Hyatt Hotels Corp Cl A	H	96	15,640,198
Blue Buffalo Pet Prods	BUFF	97	33,311,168	Cvent Inc	CVT	96	11,631,010
Fiat Chrysler Automobile	FCAU	97	33,307,122	Western Gas Equity Ptnrs	WGP	96	11,227,467
Costar Group Inc	CSGP	97	30,411,029	Nautilus Inc	NLS	96	11,040,963
Highwoods Properties Inc	HIW	97	29,797,760	Qualys Inc	QLYS	96	10,970,551
Ollie's Bargain Outlet	OLLI	97	23,137,157	Planet Fitness Inc Cl A	PLNT	96	10,550,201
Western Alliance Bancorp	WAL	97	22,892,539	Home Bancshares Inc	HOMB	96	10,509,448

Name	Symbol	EPS Rank	Average Daily Dollar Volume	Name	Symbol	EPS Rank	Average Daily Dollar Volume
On Assignment Inc	ASGN	96	\$10,380,876	Starbucks Corp	SBUX	94	\$471,206,619
Alarm.com Holdings Inc	ALRM	96	8,439,142	Salesforce.com Inc	CRM	94	438,537,741
Chesapeake Lodging Tr	CHSP	96	8,196,415	Royal Caribbean Cruises	RCL	94	177,397,858
F C B Financial Hdg Cl A	FCB	96	7,529,829	Citrix Systems Inc	CTXS	94	113,203,751
Fox Factory Holding Corp	FOXF	96	7,261,054	Norwegian Cruise Lne Hld	NCLH	94	92,671,889
Pegasystems Inc	PEGA	96	7,044,963	C B R E Group Inc	CBG	94	66,654,307
				United Therapeutics Corp	UTHR	94	66,273,797
Home Depot Inc	HD	95	560,357,217	L K Q Corp	LKQ	94	59,494,123
Broadcom Limited	AVGO	95	450,394,269	Veeva Systems Inc Cl A	VEEV	94	50,487,898
Celgene Corp	CELG	95	445,325,063	Life Storage Inc	LSI	94	48,288,223
Southwest Airlines Co	LUV	95	243,513,945	Commscope Holding Co Inc	COMM	94	48,172,490
O Reilly Automotive Inc	ORLY	95	198,417,716	Arris International Plc	ARRS	94	47,886,504
Whirlpool Corp	WHR	95	141,676,175	Texas Roadhouse Inc	TXRH	94	46,600,096
Monster Beverage Corp	MNST	95	125,615,624	Leggett & Platt Inc	LEG	94	45,189,197
Goodyear Tire & Rubber	GT	95	100,771,113	Credit Acceptance Corp	CACC	94	44,896,790
Transdigm Group Inc	TDG	95	89,241,433	V C A Inc	WOOF	94	39,630,681
Essex Property Trust	ESS	95	80,269,870	Inphi Corp	IPHI	94	32,557,314
Quintiles Ims Holdings	Q	95	74,913,484	China Biologic Products	CBPO	94	28,389,880
Grubhub Inc	GRUB	95	71,083,857	Aspen Technology Inc	AZPN	94	25,871,339
Thor Industries Inc	THO	95	48,874,130	Fair Isaac Corp	FICO	94	22,697,151
C D K Global Inc	CDK	95	47,594,142	Shutterstock Inc	SSTK	94	19,933,625
Huntington Ingalls Inds	HII	95	46,902,181	Worthington Industries	WOR	94	16,048,201
Spectrum Brands Hldgs	SPB	95	39,575,090	Insperty Inc	NSP	94	15,929,650
Gigamon Inc	GIMO	95	39,413,887	Ebix Inc	EBIX	94	13,970,155
S S & C Technologies	SSNC	95	35,817,441	Gray Television Inc	GTN	94	9,674,883
B & G Foods Inc	BGS	95	34,533,116	Nationstar Mtg Hldgs Inc	NSM	94	7,670,267
ICON plc	ICLR	95	29,210,825	Neenah Paper Inc	NP	94	6,953,517
Sonic Corp	SONC	95	27,876,723	Selective Ins Group Inc	SIGI	94	6,659,208
Tenneco Inc	TEN	95	25,205,648	Omega Protein Corp	OME	94	6,052,586
Pool Corp	POOL	95	24,981,131	Anika Therapeutics Inc	ANIK	94	5,857,789
Epam Systems Inc	EPAM	95	23,618,745	William Lyon Homes Cl A	WLH	94	5,828,326
Papa Johns Intl Inc	PZZA	95	22,952,584	Redwood Trust Inc	RWT	94	5,351,441
V W R Corporation	VWR	95	21,338,854	Luminex Corp	LMNX	94	4,305,774
Bank Of N T Butterfield	NTB	95	18,644,656	Stoneridge Inc	SRI	94	3,885,659
Evercore Partners Inc	EVR	95	17,407,202	Sucampo Pharmaceuticals	SCMP	94	3,721,976
Mueller Water Products	MWA	95	11,881,308				
Meritage Homes Corp	MTH	95	11,186,402	Priceline Group Inc	PCLN	93	675,785,239
Supreme Industries	STS	95	7,760,386	Nvidia Corp	NVDA	93	604,525,162
Performance Food Group	PFGC	95	7,331,647	Mylan N V	MYL	93	285,385,879
Clearwater Paper Corp	CLW	95	6,095,810	C B S Corp Cl B	CBS	93	217,965,516
Universal Insurance Hldg	UVE	95	5,843,933	H C A Holdings Inc	HCA	93	190,920,493
Omnicell Inc	OMCL	95	5,487,825	Sherwin-Williams Co	SHW	93	190,872,122
W S F S Financial Corp	WSFS	95	3,962,633	Constellation Brands A	STZ	93	142,086,982
T F S Financial Corp	TFSL	95	3,811,926	Rackspace Hosting Inc	RAX	93	125,602,125
				Jazz Pharmaceuticals Plc	JAZZ	93	96,070,709

Name	Symbol	EPS Rank	Average Daily Dollar Volume	Name	Symbol	EPS Rank	Average Daily Dollar Volume
Verisign Inc	VRSN	93	\$95,603,809	Equity Lifestyle Pptys	ELS	92	\$27,297,983
Dominos Pizza Inc	DPZ	93	70,876,653	West Pharmaceutical Svcs	WST	92	26,764,316
First Republic Bank	FRC	93	48,321,411	Atlassian Corp Plc Cl A	TEAM	92	24,956,022
Spirit Aerosystems Hldgs	SPR	93	46,321,016	Primerica Inc	PRI	92	24,147,700
Bank Of The Ozarks Inc	OZRK	93	43,162,291	J 2 Global Inc	JCOM	92	22,928,182
Teleflex Incorporated	TFX	93	40,212,531	National Beverage Corp	FIZZ	92	21,567,397
Silicon Motion Tech Ads	SIMO	93	34,069,627	Broadsoft Inc	BSFT	92	15,144,476
Monolithic Power Systems	MPWR	93	29,153,920	Bright Horizns Fam Solns	BFAM	92	13,951,096
Privatebancorp Inc	PVTB	93	28,850,228	Fresh Del Monte Produce	FDP	92	12,751,817
Cooper-Standard Hldgs	CPS	93	27,070,668	Cynosure Inc	CYNO	92	11,649,780
Allegiant Travel Company	ALGT	93	20,199,636	Great Western Bancorp	GWB	92	11,448,152
Cambrex Corp	CBM	93	19,969,136	Pinnacle Financial Prtnr	PNFP	92	11,228,169
Kraton Corporation	KRA	93	18,836,382	D T S Inc	DTSI	92	6,571,965
E Q T Midstream Partners	EQM	93	18,483,574	Simpson Manufacturing	SSD	92	5,836,079
Macom Tech Solution Hldg	MTSI	93	16,736,667	First N B C Bank Hldg	FNBC	92	5,618,029
Electronics For Imaging	EFII	93	16,703,350	B N C Bancorp	BNCN	92	4,026,257
Helen Of Troy Ltd	HELE	93	16,141,383	Denny's Corporation	DENN	92	3,839,476
Heico Corp	HEI	93	13,044,141	Getty Realty Corp Hld Co	GTY	92	3,609,619
Wageworks Inc	WAGE	93	11,478,346				
Echostar Corp Cl A	SATS	93	6,824,441	Alphabet Inc Cl A	GOOGL	91	1,152,921,384
Eplus Inc	PLUS	93	6,655,197	Alphabet Inc Cl C	GOOG	91	997,114,783
Heico Corp Cl A	HEIA	93	6,650,507	Dollar Tree Inc	DLTR	91	222,984,073
Vascular Solutions	VASC	93	5,339,271	Danaher Corp	DHR	91	221,529,726
N I C Inc	EGOV	93	4,921,769	Zoetis Inc	ZTS	91	172,048,780
Lydall Inc	LDL	93	4,338,163	Intercontinental Exch	ICE	91	144,407,996
Winnebago Industries Inc	WGO	93	3,831,725	Welltower Inc	HCN	91	143,117,039
				Fidelity Natl Info Svcs	FIS	91	139,209,078
Lowes Companies Inc	LOW	92	374,503,385	Red Hat Inc	RHT	91	121,004,288
Fedex Corp	FDX	92	228,574,094	D R Horton Inc	DHI	91	114,956,290
Amerisourcebergen Corp	ABC	92	172,462,103	Cooper Companies Inc	COO	91	104,111,700
Zimmer Biomet Hldgs Inc	ZBH	92	157,466,472	Vantiv Inc Cl A	VNTV	91	78,202,555
Cerner Corp	CERN	92	113,868,590	Hasbro Inc	HAS	91	64,850,361
Hormel Foods Co	HRL	92	88,169,590	Magna Intl Inc	MGA	91	51,038,613
Equifax Inc	EFX	92	77,409,772	National Retail Pptys	NNN	91	47,165,668
Brinker International	EAT	92	69,804,371	C I T Group Inc	CIT	91	47,066,245
Harman Intl Industries	HAR	92	68,401,418	N V R Inc	NVR	91	37,349,931
Snap On Inc	SNA	92	61,686,564	Akorn Inc	AKRX	91	35,283,751
Owens Corning	OC	92	59,599,288	Jack Henry & Assoc Inc	JKHY	91	27,181,469
Sprouts Farmers Market	SFM	92	58,479,226	Cooper Tire & Rubber Co	CTB	91	19,869,131
Universal Display Corp	OLED	92	49,297,053	Polyone Corp	POL	91	14,263,667
Manpowergroup	MAN	92	48,527,230	Convergys Corp	CVG	91	14,105,540
C D W Corp	CDW	92	43,005,189	Sterling Bancorp	STL	91	12,963,680
Copart Inc	CPRT	92	30,332,999	W D 40 Co	WDFC	91	10,644,171
Chemtura Corporation	CHMT	92	29,691,134	John Bean Technologies	JBT	91	9,997,569
Charles River Labs Intl	CRL	92	29,320,345	Grand Canyon Education	LOPE	91	9,493,243

Name	Symbol	EPS Rank	Average Daily Dollar Volume	Name	Symbol	EPS Rank	Average Daily Dollar Volume
Realpage Inc	RP	91	\$9,401,116	Discovery Com Inc Cl C	DISCK	90	\$39,323,399
Pinnacle Entertainment	PNK	91	8,518,076	Gentex Corp	GNTX	90	37,151,339
Financial Engines Inc	FNGN	91	7,287,375	Logmein Inc	LOGM	90	35,818,495
Nutrisystem Inc	NTRI	91	6,624,280	I T C Holdings Corp	ITC	90	34,999,058
Eagle Bancorp Inc	EGBN	91	5,126,970	Liberty Property Trust	LPT	90	33,440,209
Avid Technology Inc	AVID	91	4,547,018	Carlisle Cos Inc	CSL	90	30,910,932
				Gartner Inc	IT	90	29,374,728
Alibaba Group Hldg Ads	BABA	90	1,777,716,668	G & K Services Inc	GK	90	28,262,897
Walt Disney Company	DIS	90	725,080,173	Belden Inc	BDC	90	25,116,544
Amgen Inc	AMGN	90	487,206,995	R L J Lodging Trust	RLJ	90	24,018,174
Dollar General Corp	DG	90	338,761,801	Match Group Inc	MTCH	90	20,336,818
Paypal Holdings Inc	PYPL	90	314,093,341	Retail Opportunity Inv	ROIC	90	14,794,785
Whitewave Foods Co Cl A	WWAV	90	129,373,354	Natus Medical Inc	BABY	90	11,567,684
Fiserv Inc	FISV	90	99,231,079	Exlservice Holdings Inc	EXLS	90	11,388,229
Global Payments Inc	GPN	90	94,893,579	Advisory Board Company	ABCO	90	11,281,831
Discovery Com Cl A	DISCA	90	83,380,620	Dorman Products Inc	DORM	90	9,403,441
Amsurg Corp	AMSG	90	80,174,484	Nice Ltd Ads	NICE	90	8,662,348
Signature Bank	SBNY	90	49,734,399	Globant SA	GLOB	90	8,603,042
Ellie Mae Inc	ELLI	90	46,247,067	Huron Consulting Grp Inc	HURN	90	7,247,213
Integrated Device Tech	IDTI	90	45,664,101	Chuy's Holdings Inc	CHUY	90	7,246,491
Synopsys Inc	SNPS	90	44,822,864	Amerisafe Inc	AMSF	90	5,417,035
Avery Dennison Corp	AVY	90	44,554,326	First Citizens Bancshs A	FCNCA	90	4,792,312
M S C I Inc	MSCI	90	42,974,495	Aegean Marine Petroleum	ANW	90	3,953,209
Regency Centers Corp	REG	90	42,642,869	National General Hldgs	NGHC	90	3,734,678

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