

Bio-Rad (BIO)

\$602.57 (As of 04/09/21)

Price Target (6-12 Months): **\$633.00**

Long Term: 6-12 Months

Zacks Recommendation:
Neutral

(Since: 12/29/20)

Prior Recommendation: Outperform

Short Term: 1-3 Months

Zacks Rank: (1-5)

2-Buy

Zacks Style Scores:

VGM:D

Value: C

Growth: C

Momentum: F

Summary

Bio-Rad's solid bottom-line growth in the fourth quarter of 2020 is impressive. The Life Science arm saw strong pandemic-induced sales. Strength in many of Bio-Rad's key product lines across major geographies bodes well. Uptick in PCR, ddPCR and Process Media product revenues due to robust demand due to COVID-19 testing and related research and continued momentum of the ddPCR business augur well. Product launches and receipt of EUAs instill investors' confidence. Expansion of both margins is also encouraging. Bio-Rad's results in the fourth quarter were better-than-expected. Over the past year, Bio-Rad has outperformed its industry. Yet, fall in Clinical Diagnostics revenues is worrying. Foreign-exchange woes, stiff competition and pandemic-led macroeconomic woes persist.

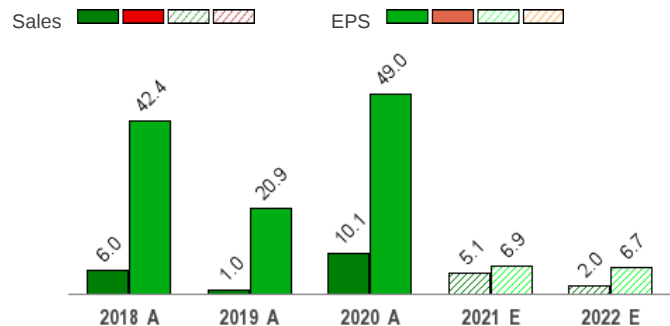
Price, Consensus & Surprise



Data Overview

52-Week High-Low	\$689.00 - \$390.93
20-Day Average Volume (Shares)	157,771
Market Cap	\$18.0 B
Year-To-Date Price Change	3.4%
Beta	0.81
Dividend / Dividend Yield	\$0.00 / 0.0%
Industry	Medical - Products
Zacks Industry Rank	Bottom 41% (151 out of 254)

Sales and EPS Growth Rates (Y/Y %)



Last EPS Surprise	-83.3%
Last Sales Surprise	15.9%
EPS F1 Estimate 4-Week Change	0.0%
Expected Report Date	05/05/2021
Earnings ESP	0.0%

Sales Estimates (millions of \$)

	Q1	Q2	Q3	Q4	Annual*
2022	674 E	610 E	697 E	750 E	2,731 E
2021	661 E	598 E	683 E	735 E	2,677 E
2020	572 A	537 A	647 A	790 A	2,546 A

EPS Estimates

	Q1	Q2	Q3	Q4	Annual*
2022	\$2.85 E	\$3.05 E	\$2.94 E	\$3.16 E	\$12.00 E
2021	\$2.50 E	\$2.21 E	\$2.91 E	\$3.62 E	\$11.25 E
2020	\$1.91 A	\$1.61 A	\$3.00 A	\$4.01 A	\$10.52 A

*Quarterly figures may not add up to annual.

P/E TTM	57.2
P/E F1	53.6
PEG F1	NA
P/S TTM	7.1

The data in the charts and tables, including the Zacks Consensus EPS and sales estimates, is as of 04/09/2021. The report's text and the analyst-provided price target are as of 04/12/2021.

Overview

Hercules, CA-headquartered Bio-Rad Laboratories is a manufacturer and global supplier of clinical diagnostics and life science research products in the healthcare, analytical chemistry life science research and other markets. It offers a wide portfolio of products and systems which allow the separation of complex chemical and biological materials and discovery, analysis and purification of their components.

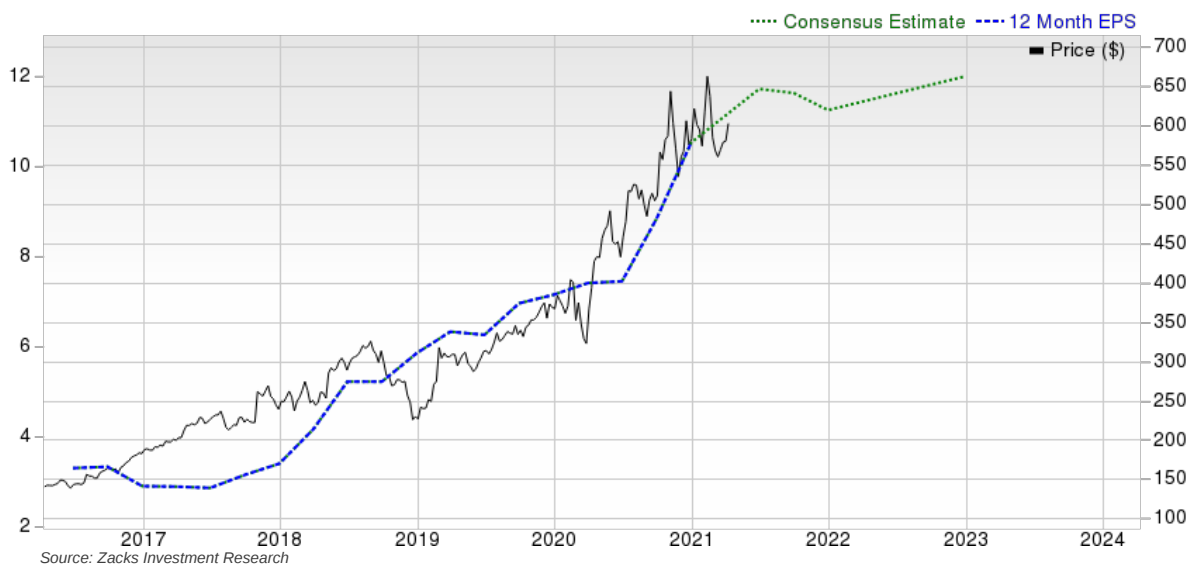
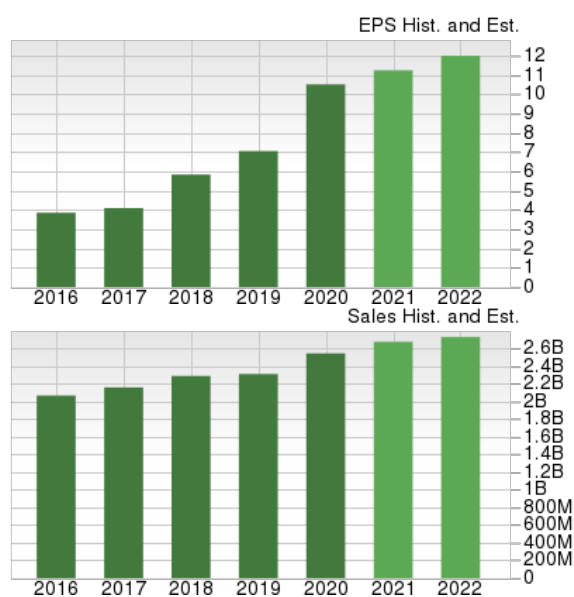
Bio-Rad has extensive and direct distribution channels in over 35 countries outside the United States through subsidiaries which focus on sales, customer service and product distribution.

The company operates through two reportable segments. Together, these segments offer over 9,000 different products and services. The details are as follows:

Life Science (48.4% of total revenues in 2020; constant exchange rate or CER growth rate was 38.6% from 2019): This segment designs, manufactures, markets and services reagents, apparatus and instruments utilized for biological research. The products manufactured are marketed in university and medical school laboratories, pharmaceutical and biotechnology companies, food testing laboratories and government and industrial research facilities. The company believes Life Science Segment represents a global market opportunity of approximately \$9 billion annually.

Clinical Diagnostics (51.3%; down 7.1%): This business markets and distributes products to reference laboratories, hospital laboratories, state newborn screening facilities, physicians' office laboratories, transfusion laboratories as well as insurance and forensic testing laboratories. It designs, manufactures, distributes and services automated test systems, informatics systems, test kits and specialized quality controls for the healthcare market. According to Bio-Rad, the Clinical Diagnostics segment presents an annual global market opportunity of roughly \$12 billion.

In October 2019, Bio-Rad acquired all the issued and outstanding shares of a foreign distributor for approximately \$4.2 million. In August 2019, the company acquired all the issued and outstanding membership interests of Exact Diagnostics, LLC for approximately \$60.0 million. Both buyouts added to the Clinical Diagnostics arm.



Reasons To Buy:

- ▲ **Share Price Performance:** Over the past year, Bio-Rad has outperformed its industry. The stock has gained 48.6% compared with the industry's 23.2% rise. Bio-Rad exited the fourth quarter of 2020 with better-than-expected results. The company witnessed solid bottom-line growth in the quarter. Despite the negative impact of the pandemic, its Life Science segment registered growth on robust pandemic-induced product sales, thus providing some counterbalance. Further, strength in many of its key product lines across major geographic regions buoys optimism.

Bio-Rad continues to gain ground on solid prospects in the blood typing market. The company's strong focus on geographic expansion is also encouraging.

The uptick in polymerase chain reaction (PCR), Droplet Digital PCR (ddPCR) and Process Media product revenues resulted from robust demand due to COVID-19 testing and related research. Continued momentum of the ddPCR business looks encouraging. Notably, Bio-Rad launched two new PCR systems — the CFX Opus 96 and the CFX Opus 384 — in October 2020. This strengthens the company's global response and contribution to the fight against the pandemic, raising optimism on the stock. The recent receipt of the FDA's Emergency Use Authorization (EUA) for a COVID-19, influenza A and influenza B RT-PCR (Reverse transcription PCR) syndromic multiplex test along with another EUA for the company's COVID RT-PCR assay kit (obtained in January this year) look encouraging. Expansion of both margins is encouraging as well.

- ▲ **Focus on International Markets:** In recent times, Bio-Rad has been deriving more than 60% of its net sales globally. Europe happens to be the largest international market for the company. Geographically, all the regions recorded year-over-year revenue growth at CER (73.9%) for the company's Life Science segment during the reported quarter, primarily driven by the PCR product lines along with robust performance of the biopharma segment. Further, the company registered overall top line growth at CER (24.4%) across all regions during the fourth quarter due to strength in demand for products associated with COVID-19 testing and related research.

- ▲ **Segmental Growth:** Bio-Rad witnessed constant currency sales growth of 73.9% and reported growth of 77.1% for its Life Science segment in the fourth quarter of 2020. The reported growth was primarily driven by sales of PCR, ddPCR and Process Media products. The growth at CER was primarily driven by sales of PCR product lines on the back of robust pandemic-led demand as well as strong performance in the biopharma segment. This segment also included the damages award related to intellectual property litigation. Geographically, the company recorded year-over-year revenue growth at CER across all regions. Per the company, despite affecting some of its business operations, the pandemic boosted demand for a few of its products in the reported quarter.

- ▲ **Rise in Testing Demand Amid the Pandemic:** The coronavirus pandemic has been wreaking havoc on the economy as a whole. However, Bio-Rad seems to have stood its ground. The company recorded robust demand for PCR based products related to COVID-19 testing and research, resulting in the uptick in core PCR, ddPCR and Process Media product revenues. Notably, both the PCR and ddPCR product revenues were primarily COVID-19-related.

Bio-Rad, during its earnings call in February this year, confirmed the receipt of FDA's EUA for its COVID RT-PCR assay kit last month, which runs on the company's existing CFX PCR platforms as well as on qPCR systems from other providers. It also confirmed receiving FDA's EUA for a COVID-19, influenza A and influenza B RT-PCR syndromic multiplex test — COVID FluA and FluB qPCR syndromic multiplex test — this February, which aids to discriminate between each of these three different viruses. These tests also run on Bio-Rad's CFX PCR platforms as well as qPCR systems from other providers.

Bio-Rad, in September 2020, had launched two new PCR systems — the CFX Opus 96 and the CFX Opus 384. Per the company, these launches will strengthen its global response and contribution toward combating the pandemic.

Other notable offerings from the company include its SARS-CoV-2 ddPCR test kit, which runs on its QX200 and QXDxxddPCR systems, and SARS-CoV-2 Total Ab test. Notably, the former received the EUA in May 2020 while the latter has already been commercially launched. Another test from Bio-Rad is its blood-based immunoassay kit to identify antibodies to the SARS-CoV-2, launched in April 2020.

- ▲ **Solid Prospects in Blood Typing Market:** Bio-Rad offers a broad range of platforms, reagents, data management and connectivity solutions to cater to various blood typing demands, offering efficient and reliable results for blood grouping, phenotyping, crossmatching, antibody screening and identification, direct antiglobulin tests, and single antigen typing. The company has also been actively expanding its portfolio for the blood typing market. The company currently offers products like IH-500 and IH-1000.

Going by a Grand View Research report, the global blood group typing market size was estimated at \$1.64 billion in 2018 and is projected to expand at a CAGR of 9.7% between 2019 and 2026. Taking this into account, we view the developmental steps undertaken by the company as progressive and strategically aligned.

- ▲ **Strong Solvency and Balance Sheet:** Bio-Rad exited the fourth quarter of 2020 with cash, cash equivalents and short-term investments of \$997 million compared with \$1.12 billion at the end of 2019. Meanwhile, total debt (including current maturities) at the end of the fourth quarter was \$14 million compared with \$440 million at the end of 2019. This figure is much lower than the quarter-end cash and cash equivalent, and investments level, indicating strong solvency. This is good news in terms of solvency position of the company, at least during the year of economic downturn, implying that the company is holding sufficient cash for debt repayment.

Debt comparison with the industry is, however, favorable as industry's total debt of \$9.99 billion is much higher than the company's debt level.

The quarter's total debt-to-capital stands at a very low level of 0.1% and also represents a significant decrease from 7.1% at the end of 2019. This compares favorably with the total debt-to-capital of the industry, which stands at a higher level of 37.4%. The overall data concludes that the solvency level of Bio-Rad is pretty promising. Further, with respect to the leverage level also, the company's balance sheet looks promising.

The times interest earned for the company in the reported quarter stands at a very high level of 225.5%, which is excellent and represents an increase from 97.6% at the end of 2019. This, however, compares favorably with the times interest earned for the industry which stands at a pretty low level (5.6%).

Reasons To Sell:

▼ **Continuous Plunge in Clinical Diagnostics:** Bio-Rad's Clinical Diagnostics segment has continued with its dismal performance in the fourth quarter as well, similar to the last-reported quarter. In the fourth quarter, the segmental revenues plunged 5.1% on a reported basis and 6.6% at CER. The segment was adversely impacted by lower demand resulting from the COVID-19 pandemic. The adverse impact was across most product lines and across all regions.

▼ **Tough Competitive Pressure:** Bio-Rad operates in a highly competitive environment dominated by firms varying from large multinational corporations with significant resources to start-ups. Also, the competitive and regulatory conditions in the markets where the company operates limit Bio-Rad's ability to switch to strategies like price increases and other drivers of cost increases. Further, the extension of the public tender commitments to multiple years by the government, resulting in reduced number of annual tenders, has led to aggressive tender pricing by Bio-Rad's competitors. Thus, Bio-Rad faces pricing pressure resulting from increased competition which makes it difficult for the company to efficiently manage its operational, financial and business conditions.

In the Life Science segment, Bio-Rad primarily competes with Becton Dickinson, GE Biosciences, Merck Millipore and Thermo Fisher Scientific. Again, some prominent competitors in the Clinical Diagnostics segment are Roche, Abbott Laboratories, Siemens, Danaher, Thermo Fisher, Becton Dickinson and DiaSorin.

▼ **Global ERP System Implementation Process Tough & Lengthy:** Bio-Rad has been involved in a multi-year implementation of a new global enterprise resource planning (ERP) system. Through the ERP system, the company expects to effectively manage its books and record and make important business-related information available to management in a timely manner. Per the company, the successful implementation of ERP will depend on significant human and financial resource investments.

Further, any shortfall in the design or implementation of ERP might have a detrimental impact on the company's abilities to process and dispatch orders, sending invoices and tracking payments, meeting contractual obligations or maintaining normal business operations. For example, Bio-Rad progressed with the third deployment of ERP in Western Europe in April 2017. In the process, the company faced several issues like lower productivity levels, adverse impact of the timing of payment of vendor invoices, delays in product availability and shipments, all of which dented sales in the second and third quarter of 2017. Thus, Bio-Rad continues to be at risk of failing to cope with the tough and lengthy ERP implementation process.

▼ **Exposure to Foreign Currency:** Bio-Rad derives more than 50% of its revenues from the international market, which exposes it to the effects of fluctuations in foreign currency. In the past several years, the company's earnings were significantly affected by foreign exchange.

▼ **Economic Uncertainty Continues to Hamper Growth:** Bio-Rad's business largely depends on global economic conditions. Weaker global economic conditions may lead to reduced demand for the company's products, increased competition, pressure on prices, declining supply and lengthier sales cycle. Moreover, a number of countries in Western Europe are facing liquidity crunch. Bio-Rad had to experience difficulty in collecting receivables in these and certain other regions facing similar economic conditions.

The company is also exposed to the risk of a slowdown in the Chinese economy along with some other emerging markets, particularly the oil-producing nations which get impacted by a drop in oil prices. Further, the company is closely monitoring the adverse possible impacts on its business following the United Kingdom's decision to exit the European Union. We are particularly cautious as growth could moderate further if the economic scenario worsens. Macroeconomic woes stemming from the coronavirus pandemic is another concern for the company.

▼ **Reduced Reimbursement Rates:** Bio-Rad's Clinical Diagnostics business is exposed to changing reimbursement rates for clinical tests from third-party payors like Medicare and Medicaid in the United States. Payment for several diagnostic tests furnished to Medicare fee-for-service beneficiaries is dependent on the Medicare Clinical Laboratory Fee Schedule (CLFS) in the United States. Notably, CLFS is a fee schedule that is managed by the Centers for Medicare and Medicaid Services (CMS).

Further, the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act (PPACA) and the Middle Class Tax Relief and Job Creation Act of 2012, has lowered payments for clinical laboratory services paid under the CLFS. Additionally, the Protecting Access to Medicare Act of 2014 (PAMA) rule has led to lower reimbursement rates and mode of payment for clinical laboratory services by Medicare.

▼ **Difficult Pricing Scenario:** Bio-Rad is exposed to the effects of changes in the healthcare industry in the United States and Europe. The changing trend toward managed care, healthcare reform of the delivery system in the United States, efforts to reform in Europe, along with increasing consolidations among healthcare providers have resulted in increased pricing burden.

Unfavorable macroeconomic conditions continue to weigh heavily on Bio-Rad's stocks. Also, competitive headwinds and currency fluctuations continue to pose a threat on the stock's value.

Last Earnings Report

Bio-Rad Q4 Earnings Surpass Estimates, Margins Rise

Bio-Rad posted fourth-quarter 2020 adjusted earnings per share of \$4.01, which surpassed the Zacks Consensus Estimate by 29.4%. Moreover, the bottom line rose 72.8% from the prior-year quarter.

The quarter's adjustments eliminate the impacts of certain non-recurring items like amortization of purchased intangibles, legal charges, restructuring costs and acquisition-related one-time benefits.

GAAP earnings per share of the company was \$27.81 per share in the quarter, up from the year-ago quarter's earnings per share of \$18.31, reflecting an uptick of 51.9%.

Full-year adjusted earnings per share was \$10.52, reflecting a 49% increase from the year-ago period. Moreover, the metric surpassed the Zacks Consensus Estimate by 9.5%.

Full-year GAAP earnings per share was \$126.20, reflecting a surge of 116.6% from the year-ago period.

Quarter Ending	12/2020
Report Date	Feb 11, 2021
Sales Surprise	15.85%
EPS Surprise	-83.33%
Quarterly EPS	4.01
Annual EPS (TTM)	10.53

Revenues in Detail

Bio-Rad's revenues of \$789.8 million in the quarter surpassed the Zacks Consensus Estimate by 15.9%. Moreover, revenues improved 26.5% from the year-ago quarter (up 24.4% at CER).

Per the company, fourth-quarter revenues were boosted by damages award related to intellectual property litigation with 10x Genomics amounting to \$32 million. Further, strong demand for products associated with COVID-19 testing and related research were observed during the quarter.

Full-year revenues were \$2.55 billion, reflecting a 10.1% increase (up 10.3% at CER) from the year-ago period. Again, the metric surpassed the Zacks Consensus Estimate by 4.5%.

Segmental Analysis

Sales at the Life Science segment in the fourth quarter totaled \$428.5 million, up 77.1% year over year and 73.9% at CER. The growth at CER was primarily driven by sales of PCR product lines on the back of robust pandemic-led demand as well as strong performance in the biopharma segment. This segment also included the damages award related to intellectual property litigation. Other growth contributors were strength in ddPCR and Process Media products. Geographically, the company's quarterly growth at CER was experienced by all regions.

Net sales at the Clinical Diagnostics segment totaled \$359.6 million, down 5.1% on a year-over-year basis and 6.6% at CER. The downside at CER was driven by lower demand due to the pandemic and was across most product lines as well as all regions.

Margins

In the quarter under review, Bio-Rad's gross profit rose 39.3% to \$460.2 million. Gross margin expanded 534 basis points (bps) to 58.3%. Per the company, adjusted gross margin was 58.2%, expanding 150 bps.

Operating expenses were \$284.9 million in the fourth quarter, up 5% year over year. Operating profit totaled \$175.2 million, reflecting a stupendous upsurge of 195.9% from the prior-year quarter. Further, operating margin in the fourth quarter expanded 1271 bps to 22.2%.

Company-adjusted operating margin was 21.4%, expanding 710 bps year over year.

Financial Update

Bio-Rad exited the year with cash and cash equivalents (including short-term investments) of \$9.9 million compared with \$1.12 billion at the end of 2019. Total debt (including current maturities) at the end of 2020 was \$14.1 million compared with \$439.8 million.

Cumulative net cash flow from operating activities at the end of 2020 was \$575.3 million compared with \$457.9 million in the year-ago period.

2021 Guidance

Although Bio-Rad put up a strong performance in 2020 amid the gradual return to pre-pandemic activity levels and normalized business mix, the company continues to be uncertain about the duration and impact of the pandemic.

Bio-Rad expects full-year revenues to be up 4.5-5% at CER year over year. Further, the Life Science segment's growth is expected to be flat as the company projects lower sales of pandemic-related products in 2021. However, the Clinical Diagnostics segment is likely to grow by 10-11% for the year.

Valuation

Bio-Rad shares are up 3.3% in the year-to-date period and up 48.6% in the trailing 12-month periods. Stocks in the Zacks sub-industry are up 5.4% while the Zacks Medical sector fell 3.1% in the year-to-date period. Over the past year, the Zacks sub-industry is up 23.2% and sector is up 10.2%.

The S&P 500 index is up 10.5% in the year-to-date period and rose 52.8% in the past year.

The stock is currently trading at 52.6X Forward 12-months earnings, which compares to 27.2X for the Zacks sub-industry, 20.3X for the Zacks sector and 23.1X for the S&P 500 index.

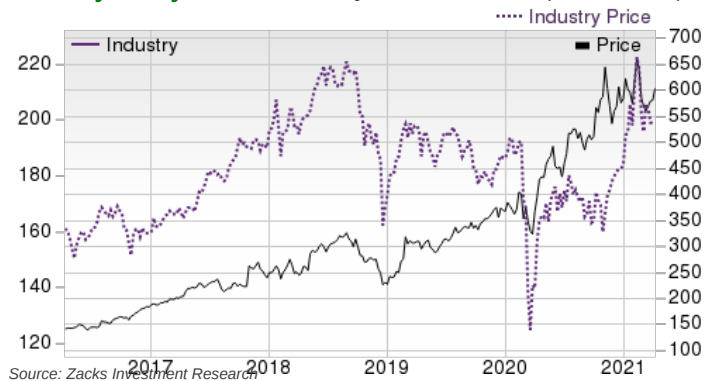
Over the past five years, the stock has traded as high as 92.8X and as low as 32.5X, with a 5-year median 45.6X. Our Neutral recommendation indicates that the stock will perform in-line with the market. Our \$633 price target reflects 55.2X forward 12-months earnings.

The table below shows summary valuation data for BIO

Valuation Multiples - BIO					
		Stock	Sub-Industry	Sector	S&P 500
P/E F12M	Current	52.58	27.24	20.30	23.12
	5-Year High	92.81	31.26	22.84	23.83
	5-Year Low	32.50	17.09	15.87	15.30
	5-Year Median	45.61	22.10	19.23	18.00
P/S F12M	Current	6.68	4.00	2.65	4.78
	5-Year High	7.98	4.03	3.18	4.78
	5-Year Low	1.97	2.90	2.27	3.21
	5-Year Median	3.58	3.45	2.82	3.71
P/B TTM	Current	1.82	3.68	3.85	7.01
	5-Year High	2.84	3.92	5.12	7.01
	5-Year Low	1.35	2.28	3.03	3.83
	5-Year Median	1.95	2.99	4.36	4.98

As of 04/09/2021 Source: Zacks Investment Research

Industry Analysis Zacks Industry Rank: Bottom 41% (151 out of 254)



Top Peers

Company (Ticker)	Rec	Rank
GN STORE NORD (GNNDY)	Outperform	1
Envista Holdings Corporation (NVST)	Outperform	1
Abbott Laboratories (ABT)	Neutral	3
Becton, Dickinson and Company (BDX)	Neutral	4
ICU Medical, Inc. (ICUI)	Neutral	4
ResMed Inc. (RMD)	Neutral	4
Thermo Fisher Scientific Inc. (TMO)	Neutral	3
Demant AS Unsponsored ADR (WILYY)	Neutral	2

The positions listed should not be deemed a recommendation to buy, hold or sell.

Industry Comparison Industry: Medical - Products				Industry Peers		
	BIO	X Industry	S&P 500	HRC	NVST	WILYY
Zacks Recommendation (Long Term)	Neutral	-	-	Neutral	Outperform	Neutral
Zacks Rank (Short Term)	2	-	-	2	1	2
VGM Score	D	-	-	C	C	D
Market Cap	17.98 B	571.60 M	29.66 B	7.49 B	6.79 B	11.16 B
# of Analysts	1	3	12	6	8	1
Dividend Yield	0.00%	0.00%	1.33%	0.85%	0.00%	0.00%
Value Score	C	-	-	B	C	D
Cash/Price	0.06	0.10	0.06	0.04	0.14	NA
EV/EBITDA	3.45	-0.81	17.00	16.75	32.60	NA
PEG F1	NA	2.64	2.38	2.68	1.04	NA
P/B	1.82	4.24	4.01	4.25	1.81	NA
P/CF	56.69	21.25	17.08	11.35	19.99	51.88
P/E F1	53.52	29.61	22.05	19.47	25.41	29.35
P/S TTM	7.06	6.29	3.45	2.55	2.98	NA
Earnings Yield	1.87%	0.63%	4.47%	5.14%	3.93%	3.41%
Debt/Equity	0.00	0.01	0.66	0.93	0.24	NA
Cash Flow (\$/share)	10.63	0.00	6.78	9.95	2.11	0.45
Growth Score	C	-	-	B	C	C
Historical EPS Growth (3-5 Years)	30.30%	5.04%	9.39%	15.78%	NA	NA
Projected EPS Growth (F1/F0)	264.23%	36.03%	15.24%	491.84%	69.78%	120.68%
Current Cash Flow Growth	48.88%	-1.29%	0.61%	21.50%	-26.30%	-24.10%
Historical Cash Flow Growth (3-5 Years)	22.91%	8.66%	7.37%	19.83%	NA	NA
Current Ratio	3.39	3.10	1.39	1.49	0.94	NA
Debt/Capital	0.12%	12.31%	41.26%	48.25%	19.61%	NA
Net Margin	149.52%	-9.39%	10.59%	8.24%	1.46%	NA
Return on Equity	3.92%	-4.61%	14.86%	23.78%	4.52%	NA
Sales/Assets	0.23	0.50	0.51	0.63	0.35	NA
Projected Sales Growth (F1/F0)	5.17%	13.05%	7.36%	0.91%	19.43%	33.05%
Momentum Score	F	-	-	F	D	C
Daily Price Change	1.75%	0.00%	0.62%	1.40%	-2.47%	0.89%
1-Week Price Change	0.23%	0.54%	0.35%	-0.24%	-0.80%	1.48%
4-Week Price Change	5.92%	-2.73%	4.25%	5.31%	4.91%	13.54%
12-Week Price Change	1.59%	4.22%	8.87%	11.52%	20.15%	23.68%
52-Week Price Change	53.27%	43.78%	52.90%	1.63%	141.05%	44.04%
20-Day Average Volume (Shares)	157,771	247,170	2,047,782	398,178	2,083,976	869
EPS F1 Estimate 1-Week Change	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
EPS F1 Estimate 4-Week Change	0.00%	0.00%	0.00%	0.00%	0.00%	1.28%
EPS F1 Estimate 12-Week Change	10.29%	-0.50%	2.24%	8.24%	12.70%	19.70%
EPS Q1 Estimate Monthly Change	0.00%	0.00%	0.00%	0.00%	0.00%	NA

Source: Zacks Investment Research

Zacks Stock Rating System

We offer two rating systems that take into account investors' holding horizons: Zacks Rank and Zacks Recommendation. Each provides valuable insights into the future profitability of the stock and can be used separately or in combination with each other depending on your investment style.

Zacks Recommendation

The Zacks Recommendation aims to predict performance over the next 6 to 12 months. The foundation for the quantitatively determined Zacks Recommendation is trends in the company's estimate revisions and earnings outlook. The Zacks Recommendation is broken down into 3 Levels; Outperform, Neutral and Underperform. Unlike many Wall Street firms, we maintain a balance between the number of Outperform and Neutral recommendations. Our team of 70 analysts are fully versed in the benefits of earnings estimate revisions and how that is harnessed through the Zacks quantitative rating system. But we have given our analysts the ability to override the Zacks Recommendation for the 1200 stocks that they follow. The reason for the analyst over-rides is that there are often factors such as valuation, industry conditions and management effectiveness that a trained investment professional can spot better than a quantitative model.

Zacks Rank

The Zacks Rank is our short-term rating system that is most effective over the one- to three-month holding horizon. The underlying driver for the quantitatively-determined Zacks Rank is the same as the Zacks Recommendation, and reflects trends in earnings estimate revisions.

Zacks Style Scores

The Zacks Style Score is as a complementary indicator to the Zacks rating system, giving investors a way to focus on the highest rated stocks that best fit their own stock picking preferences.

Academic research has proven that stocks with the best Value, Growth and Momentum characteristics outperform the market. The Zacks Style Scores rate stocks on each of these individual styles and assigns a rating of A, B, C, D and F. We also produce the VGM Score (V for Value, G for Growth and M for Momentum), which combines the weighted average of the individual Style Scores into one score. This is perfectly suited for those who want their stocks to have the best scores across the board.

Value Score	C
Growth Score	C
Momentum Score	F
VGM Score	D

As an investor, you want to buy stocks with the highest probability of success. That means buying stocks with a Zacks Recommendation of Outperform, which also has a Style Score of an A or a B.

Disclosures

This report contains independent commentary to be used for informational purposes only. The analysts contributing to this report do not hold any shares of this stock. The analysts contributing to this report do not serve on the board of the company that issued this stock. The EPS and revenue forecasts are the Zacks Consensus estimates, unless indicated otherwise on the reports first page. Additionally, the analysts contributing to this report certify that the views expressed herein accurately reflect the analysts personal views as to the subject securities and issuers. ZIR certifies that no part of the analysts compensation was, is, or will be, directly or indirectly, related to the specific recommendation or views expressed by the analyst in the report.

Additional information on the securities mentioned in this report is available upon request. This report is based on data obtained from sources we believe to be reliable, but is not guaranteed as to accuracy and does not purport to be complete. Any opinions expressed herein are subject to change.

ZIR is not an investment advisor and the report should not be construed as advice designed to meet the particular investment needs of any investor. Prior to making any investment decision, you are advised to consult with your broker, investment advisor, or other appropriate tax or financial professional to determine the suitability of any investment. This report and others like it are published regularly and not in response to episodic market activity or events affecting the securities industry.

This report is not to be construed as an offer or the solicitation of an offer to buy or sell the securities herein mentioned. ZIR or its officers, employees or customers may have a position long or short in the securities mentioned and buy or sell the securities from time to time. ZIR is not a broker-dealer. ZIR may enter into arms-length agreements with broker-dealers to provide this research to their clients. Zacks and its staff are not involved in investment banking activities for the stock issuer covered in this report.

ZIR uses the following rating system for the securities it covers. **Outperform-** ZIR expects that the subject company will outperform the broader U.S. equities markets over the next six to twelve months. **Neutral-** ZIR expects that the company will perform in line with the broader U.S. equities markets over the next six to twelve months. **Underperform-** ZIR expects the company will underperform the broader U.S. equities markets over the next six to twelve months.

No part of this report can be reprinted, republished or transmitted electronically without the prior written authorization of ZIR.

Additional Disclosure

This material represents an assessment of the market and economic environment at a specific point in time and is not intended to be a forecast of future events, or a guarantee of future results. Forward-looking statements are subject to certain risks and uncertainties. Any statements that refer to expectations, projections or characterizations of future events or circumstances, including any underlying assumptions, are forward-looking statements. Actual results, performance, or achievements may differ materially from those expressed or implied.

Returns quoted represent past performance which is no guarantee of future results. Investment returns and principal value will fluctuate so that when shares are redeemed, they may be worth more or less than their original cost. Current performance may be higher or lower than the performance shown.

Investing involves risk; principal loss is possible. There is no guarantee that companies that can issue dividends will declare, continue to pay or increase dividends.

Glossary of Terms and Definitions

52-Week High-Low: The range of the highest and lowest prices at which a stock has traded during the past year. This range is determined based on the stock's daily closing price which may differ from the intra-day high or low. Many investors use it as a technical indicator to determine a stock's current value and future price movement. The idea here is that if price breaks out from the 52-week range, in either direction, the momentum may continue in the same direction.

20-Day Average Volume (Shares): The average number of shares of a company traded in a day over the last 20 days. It is a direct indication of a security's overall liquidity. The higher the average daily trading volume, the easier it is to enter or exit the stock at a desired price with more buyers and sellers being available.

Daily Price Change: This is the percentage difference between a trading day's closing price and the prior trading day's closing price. This item is updated at 9 p.m. EST each day.

1-Week Price Change: This is the percentage change in a stock's closing price over the last 5 trading days. This change reflects the collective buying and selling sentiment over the 1-week period.

A strong weekly price increase for the stock, especially when accompanied by increased volume, is an indication of it gaining momentum.

4-Week Price Change: This is the percentage change in a stock's closing price over the last 20 trading days or past 4 weeks. This is a medium-term price change metric and an indication of the stock gaining momentum.

12-Week Price Change: This is the percentage change of a stock's closing price over the last 60 trading days or past 12 weeks. Similar to 4-week price change, this is a medium-term price change metric. It shows whether a stock has been enjoying strong investor demand, or if it has been in consolidation, or distress over this period.

52-Week Price Change: This is the percentage change in a stock's closing price over the last 260 trading days or past 52 weeks. This long-term price change metric is a good reference point for investors. Some investors seek stocks with the best percentage price change over the last 52 weeks, expecting the momentum to continue.

Market Cap: The number of outstanding common shares of a company times its latest price per share. This figure represents a company's size, which indicates various characteristics, including price stability and risk, in which investors could be interested.

Year-To-Date Price Change: Change in a stock's daily closing price in the period of time beginning the first day of the current calendar year through to the previous trading day.

of Analysts: Number of EPS estimates used in calculating the current-quarter consensus. These estimates come from the brokerage analysts tracking this stock. However, the number of such analysts tracking this stock may not match the number of estimates, as all brokerage analysts may not come up with an estimate or provide it to us.

Beta: A measure of risk commonly used to compare the volatility of a stock to the overall market. The S&P 500 Index is the base for calculating beta and carries a value of 1. A stock with beta below 1 is less risky than the market as a whole. And a stock with beta above 1 is riskier.

Dividend: The portion of earnings a company is expected to distribute to its common shareholders in the next 12 months for each share they own. Dividends are usually paid quarterly. Dividend payments reflect positively on a company and help maintain investors' trust. Investors typically find dividend-paying stocks appealing because the dividend adds to any market price appreciation to result in higher return on investment (ROI). Moreover, a steady or increasing dividend payment provides investors a cushion in a down market.

Dividend Yield: The ratio of a company's annual dividend to its share price. The annual dividend used in the ratio is calculated based on the most recent dividend paid by the company. Dividend yield is an estimate of the dividend-only return from a stock in the next 12 months. Since dividend itself doesn't change frequently, dividend yield usually changes with a stock's price movement. As a result, often an unusually high dividend yield is a result of weak stock price.

S&P 500 Index: The Standard & Poor's 500 (S&P 500) Index is an unmanaged group of securities considered to be representative of the stock market in general. It is a market-capitalization-weighted index of stocks of the 500 largest U.S. companies. Each stock's weight in the index is proportionate to its market value.

Industry: One of the 250+ groups that Zacks classifies all stocks into based on the nature of business. These groups are termed as expanded (aka "X") industries and map to their respective (economic) sectors; Zacks has 16 sectors.

Zacks Industry Rank: The Zacks Industry Rank is determined by calculating the average Zacks Rank for all stocks in the industry and then assigning an ordinal rank to it. For example, an industry with an average Zacks Rank of 1.6 is better than an industry with an average Zacks Rank of 2.3. So, the industry with the better average Zacks Rank would get a better Zacks Industry Rank. If an industry has the best average Zacks Rank, it would be considered the top industry (1 out of 250+), which would place it at the top 1% of Zacks-ranked industries. Studies have shown that roughly half of a stock's price movement can be attributed to the industry group it belongs to. In fact, the top 50% of Zacks-ranked industries outperforms the bottom 50% by a factor of more than 2 to 1.

Last EPS Surprise: The percentage deviation of a company's last reported earnings per share from the Zacks Consensus Estimate. Companies with a positive earnings surprise are more likely to surprise again in the future (or miss again if they recently missed).

Last Sales Surprise: The percentage deviation of a company's last reported sales from the Zacks Consensus Estimate.

Expected Report Date: This is an estimated date of a company's next earnings release. The information originated or gathered by Zacks Investment Research from its information providers or publicly available sources is the basis of this estimate.

Earnings ESP: The Zacks Earnings ESP compares the Most Accurate Estimate to the Zacks Consensus Estimate for the yet-to-be reported quarter. The Most Accurate Estimate is the most recent version of the Zacks Consensus EPS Estimate. The idea here is that analysts revising their estimates closer to an earnings release have the latest information, which could potentially be more accurate than what they and others contributing to the consensus had predicted earlier. Thus, a positive or negative Earnings ESP reading theoretically indicates the likely deviation of the actual earnings from the consensus estimate. However, the model's predictive power is significant for positive ESP readings only. A positive Earnings ESP is a strong predictor of an earnings beat, particularly when combined with a Zacks Rank #1 (Strong Buy), #2 (Buy) or #3 (Hold). Our research shows that stocks with this combination produce a positive surprise nearly 70% of the time.

Periods:

TTM: Trailing 12 months. Using TTM figures is an effective way of analyzing the most-recent financial data in an annualized format that helps neutralize the effects of seasonality and other quarter-to-quarter variation.

F1: Current fiscal year. This period is used to analyze the estimates for the ongoing full fiscal year.

F2: Next fiscal year. This period is used to analyze the estimates for the next full fiscal year.

F12M: Forward 12 months. Using F12M figures is an effective way of analyzing the near-term (the following four unreported quarters) estimates in an annualized manner. Instead of typically representing estimates for the full fiscal year, which may not represent the nitty-gritty of each quarter, F12M figures suggest an all-inclusive annualized estimate for the following four quarters. The annualization helps neutralize the potential effects of seasonality and other quarter-to-quarter variations.

P/E Ratio: The price-to-earnings ratio measures a company's current market price per share relative to its earnings per share (EPS). Usually, the trailing-12-month (TTM) EPS, current-fiscal-year (F1) EPS estimate, or forward-12-month (F12M) EPS estimate is used as the denominator. In essence, this ratio shows what the market is willing to pay today for each dollar of EPS. In other words, this ratio gives a sense of what the relative value of the company is at the already reported level of earnings or at a future level of earnings.

It is one of the most widely-used multiples for determining the value of a company and helps comparing its valuation with that of a competitor, the industry group or a benchmark.

PEG Ratio: The price/earnings to growth ratio is a stock's P/E ratio using current fiscal year (F1) EPS estimate divided by its expected EPS growth rate over the coming 3 to 5 years. This ratio essentially determines a stock's value by factoring in the company's expected earnings growth and is thus believed to provide a more complete picture than just the P/E ratio, particularly for faster-growing companies.

P/S Ratio: The price-to-sales ratio is calculated as a company's current price per share divided by trailing 12 months (TTM) sales or revenues per share. This ratio shows what the market is willing to pay today for each dollar of TTM sales per share. The P/S ratio is at times the only valuation metric when the company has yet to become profitable.

Cash/Price Ratio: The cash-to-price ratio or Cash Yield is calculated as cash and marketable securities per share divided by the company's current share price. Like the earnings yield, which shows the anticipated yield (or return) on a stock from earnings for each dollar invested, the cash yield does the same, with cash being the source of return instead of earnings. For example, a cash/price ratio of 0.08 suggests a return of 8% or 8 cents for every \$1 investment.

EV/EBITDA Ratio: The EV/EBITDA ratio, also known as Enterprise Multiple, is calculated as a company's enterprise value (market capitalization + value of total long-term debt + book value of preferred shares - cash and marketable securities) divided by EBITDA (earnings before interest, taxes, depreciation and amortization). Usually, trailing-12-month (TTM) or forward-12-month (F12M) EBITDA is used as the denominator.

EV/Sales Ratio: The enterprise value-to-sales ratio is calculated as a company's enterprise value (market capitalization + value of total long-term debt + book value of preferred shares - cash and marketable securities) divided by annual sales. It is an expansion of the P/S valuation, which uses market value instead of enterprise value. The EV/Sales ratio is perceived as more accurate than P/S, in part, because the market capitalization does not take a company's debt into account when valuing it.

EV/CF Ratio: The enterprise value-to-cash flow ratio is calculated as a company's enterprise value (market capitalization + value of total long-term debt + book value of preferred shares - cash and marketable securities) divided by the trailing-12-month (TTM) operating cash flow. It's a measure of how long it would take to buy the entire business if you were able to use all the company's operating cash flow.

The EV/CF ratio is perceived as more accurate than the P/CF ratio, in part, because the market price does not take a company's debt into account when valuing it.

EV/FCF Ratio: The enterprise value-to-free cash flow metric compares a company's enterprise value to its trailing-12-month (TTM) free cash flow (FCF). This metric is very similar to the EV/CF ratio, but is considered a more exact measure owing to the fact that it uses free cash flow, which subtracts capital expenditures (CAPEX) from a company's total operating cash flow, thereby reflecting the actual cash flow available for funding growth activities and payments to shareholders.

P/EBITDA Ratio: The P/EBITDA ratio is calculated as a company's per share market value divided by EBITDA (earnings before interest, taxes, depreciation, and amortization). This metric is very similar to the EV/EBITDA ratio, but is considered a little less exact measure as it uses market price, which does not take a company's debt into account. However, since EBITDA is often considered a proxy for cash income, the metric is used as a measure of what the market is willing to pay today for each dollar of the company's cash profitability in the trailing 12 months (TTM) or forward 12 months (F12M).

P/B Ratio: The price-to-book ratio is calculated as a company's current price per share divided by its book value (total assets – liabilities – preferred stocks) per share. In short, the book value is how much a company is worth. In other words, it reflects the total value of a company's assets that its common shareholders would receive if it were to be liquidated. So, the P/B ratio indicates whether you're paying higher or lower than what would remain if the company went bankrupt immediately. Investors typically use this metric to determine how a company's stock price stacks up to its intrinsic value.

P/TB Ratio: The price-to-tangible-book value ratio is calculated as a the per share market value of a company divided by the value of its tangible assets (total assets – liabilities – preferred stocks – intangible assets) per share. Tangible book value is the same thing as book value except it excludes the value of intangible assets to get a step closer to the baseline value of the company.

P/CF Ratio: The price-to-cash flow ratio measures a company's per share market price relative to its trailing-12-month (TTM) operating cash flow per share. This metric is used to determine whether a company is undervalued or overvalued relative to another stock, industry or sector. And like the P/E ratio, a lower number is typically considered better from the value perspective.

One of the reasons why P/CF ratio is often preferred over P/E ratio is the fact that operating cash flow adds back non-cash expenses such as depreciation and amortization to net income. This feature helps valuing stocks that have positive cash flow but are not profitable because of large noncash charges.

P/FCF Ratio: The price-to-free cash flow ratio is an extension of P/CF ratio, which uses trailing-12-month (TTM) free cash flow per share instead of operating cash flow per share. This metric is considered a more exact measure than P/CF ratio, as free cash flow subtracts capital expenditures (CAPEX) from a company's total operating cash flow, thereby reflecting the actual cash flow available for funding activities that generate additional revenues.

Earnings Yield: The earnings yield is calculated as current fiscal year (F1) EPS estimate divided by the company's current share price. The ratio, which is the inverse of the P/E ratio, measures the anticipated yield (or return) from earnings for each dollar invested in a stock today.

For example, earnings yield for a stock, which is trading at \$35 and expected to earn \$3 per share in the current fiscal year (F1), would be 0.0857 ($3/35 = 0.0857$) or 8.57%. In other words, for \$1 invested in the stock today, the yield from earnings is anticipated to be 8.57 cents.

Investors most commonly compare the earnings yield of a stock to that of a broad market index (such as the S&P 500) and prevailing interest rates, such as the current 10-year Treasury yield. Since bonds and stocks compete for investors' dollars, stock investors typically demand a higher yield for the extra risk they assume compared to investors of U.S. Treasury-backed securities that offer virtually risk-free returns. This additional return is referred to as the risk premium.

Debt/Equity Ratio: The debt-to-equity ratio is calculated as a company's total liabilities divided by its shareholder equity. This metric is used to gauge a company's financial leverage. In other words, it is a measure of the degree to which a company is financing its operations through debt versus its own funds. The higher the ratio, the higher the risk for shareholders.

However, this ratio is difficult to compare across industry groups where ideal amounts of debt vary. Some businesses are more capital intensive than others and typically require higher debt to finance their operations. So, a company's debt-to-equity ratio should be compared with other companies in the same industry.

Cash Flow (\$/share): Cash flow per share is calculated as operating cash flow (after-tax earnings + depreciation + other non-cash charges) divided by common shares outstanding. It is used by many investors as a measure of a company's financial strength. Since cash flow per share takes into consideration a company's ability to generate cash by adding back non-cash expenses, it is regarded by some as a more accurate measure of a company's financial situation than earnings per share, which could be artificially deflated.

Current Ratio: The current ratio or liquidity ratio is a company's current assets divided by its current liabilities. It measures a company's ability to pay short-term obligations. A current ratio that is in line with the industry average or slightly higher is generally considered acceptable. A current ratio that is lower than the industry average would indicate a higher risk of distress or default. A higher number is usually better. However, a very high current ratio compared to the industry average could be an indication of inefficient use of assets by management.

Debt/Capital Ratio: Debt-to-capital ratio is a company's total debt (interest-bearing debt + both short- and long-term liabilities) divided its total capital (interest-bearing debt + shareholders' equity). It is a measure of a company's financial leverage. All else being equal, the higher the debt-to-capital ratio, the riskier the stock.

However, this ratio can vary widely from industry to industry, the ideal amount of required debt being different. Some businesses are more capital intensive than others and typically require higher debt to finance their operations. So, a company's debt-to-capital ratio should be compared with the same for its industry.

Net Margin: Net margin is calculated as net income divided by sales. It shows how much of each dollar in sales generated by a company translates into profit. For example, if a company's net margin is 15%, its net income is 15 cents for every \$1 of sales it makes.

A change in margin can reflect either a change in business conditions, or a company's cost controls, or both. If a company's expenses are growing faster than sales, its net margin will decline. However, different net margin rates are considered good for different industries, so it's better to compare net margin rates of companies in the same industry group.

Return on Equity: Return on equity (ROE) is calculated as trailing-12-month net income divided by trailing-12-month average shareholder equity (including reinvested earnings). This metric is considered a measure of how effectively management is using a company's assets to generate profits. For example, if a company's ROE is 10%, it creates 10 cents profits for every \$1 shareholder equity, which is basically the company's assets minus debt. A company's ROE deemed good or bad depends on what's normal for its peers or industry group.

Sales/Assets Ratio: The sales-to-assets ratio or asset utilization ratio or asset turnover ratio is calculated as a company's annual sales divided by average assets (average of assets at the beginning of the year and at the year's end). This metric helps investors understand how effectively a company is using its assets to generate sales. For example, a sales-to-assets ratio of 2.5 indicates that the company generated \$2.50 in sales for every \$1 of assets on its books.

The higher the sales-to-assets ratio, the better the company is performing. However, similar to many other ratios, the asset turnover ratio tends to be higher for companies in certain industries/sectors than in others. So, a company's sales-to-assets ratio should be compared with the same for its industry/sector.

Historical EPS Growth (3-5 Years): This is the average annual (trailing-12-month) EPS growth rate over the last 3-5 years. This metric helps investors see how a company's EPS has grown from a long-term perspective.

Note: There are many factors that can influence short-term numbers — a recession will reduce this number, while a recovery will inflate it. The longterm perspective helps smooth out short-term events.

Projected EPS Growth (F1/F0): This is the estimated EPS growth rate for the current financial year. It is calculated as the consensus estimate for the current fiscal year (F1) divided by the reported EPS for the last completed fiscal year (F0).

Current Cash Flow Growth: It measures the latest year-over-year change in operating cash flow. Cash flow growth tells an investor how quickly a company is generating inflows of cash from operations. A positive change in the cash flow is desired and shows that more 'cash' is coming in than going out.

Historical Cash Flow Growth (3-5 Years): This is the annualized change in cash flow over the last 3-5 years. The change in a longer period helps put the current reading into proper perspective. By looking at the rate, rather than the actual dollar value, the comparison across the industry and peers becomes easier.

Projected Sales Growth (F1/F0): This metric looks at the estimated sales growth for the current year. It is calculated as sales estimate for the current fiscal year (F1) divided by the reported sales for the last completed fiscal year (F0).

Like EPS growth, a higher rate is better for sales growth. A look at a company's projected sales growth instantly tells you what the outlook is for their products and services. However, different sales growth rates are considered good for different industries, so it's better to compare sales growth rates of companies in the same industry group.

EPS F1 Estimate 1-Week Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal year over the past week. The change in a company's consensus EPS estimate (or earnings estimate revision) has proven to be strongly correlated with the near-term price movement of its shares. It is an integral part of the Zacks Rank.

If a stock's consensus EPS estimate is \$1.10 now versus \$1.00 a week ago, that will be reflected as a 10% upward revision. If, on the other hand, it went from \$1.00 to 90 cents, that would be a 10% downward revision.

EPS F1 Estimate 4-Week Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal year over the past four weeks.

A stock's earnings estimate revision in a 1-week period is important. But it's more meaningful to look at the longer-term revision. And, of course, the 4-week change helps put the 1-week change into proper perspective.

EPS F1 Estimate 12-Week Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal year over the past 12 weeks.

This metric essentially shows how the consensus EPS estimate has changed over a period longer than 1 week or 4 weeks.

EPS Q1 Estimate Monthly Change: The percentage change in the Zacks Consensus EPS estimate for the current fiscal quarter over the past four weeks.

While the revision in consensus EPS estimate for the current fiscal year is strongly correlated with the near-term price movement of its shares, the estimate revision for the current fiscal quarter is an important metric as well, especially over the short term, and particularly as a stock approaches its earnings date. If a stock's Q1 EPS estimate decreases ahead of its earnings release, it's usually a negative sign, whereas an increase is a positive sign.