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Introduction

Morningstar’s proprietary classification system is comprised of 11 sectors, 69 industry groups and 148 industries. The company is assigned to the most specific industry level. The industry assignment reflects the company’s largest source of revenue and income. Once a company is classified, its financial data becomes part of the aggregated industry financial statement – weighted by the company’s market capitalization.

Aggregate financial data is available by industry, industry group and sector. Aggregate industry and company data includes: balance sheet accounts, cash flow statement accounts, income statement accounts, pricing and ratios.
Price-to-Earnings Ratio

Morningstar calculates two distinct P/E ratio aggregations. One calculation utilizes Net Income to Common Stockholders and the other calculation utilizes Net Income from Continuing Operations.

P/E using earnings:

\[ P/E_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} MC_i}{\sum_{i=1}^{n} NICS_i^{\text{TTM}}} \]

where

- \( MC_i \) = Market Capitalization
- \( NICS_i^{\text{TTM}} \) = Net Income to Common Stockholders for trailing twelve months
- \( n \) = The total number of companies in the industry for which data is available

P/E using earnings from continuing operations:

\[ P/E_{\text{EcoINDUSTRY}} = \frac{\sum_{i=1}^{n} MC_i}{\sum_{i=1}^{n} NICOCS_i^{\text{TTM}}} \]

\[ NICOCS_i^{\text{TTM}} = NICO^{\text{qtr}} - PrefDiv^{\text{qtr}} \]

where

- \( MC_i \) = Market Capitalization
- \( NICO^{\text{qtr}} \) = Net Income from Continuing Operations per quarter for trailing twelve months
- \( PrefDiv^{\text{qtr}} \) = Preferred Dividends per quarter for trailing twelve months
- \( NICOCS_i^{\text{TTM}} \) = Net Income from Continuing Operations for trailing twelve months
- \( n \) = The total number of companies in the industry for which data is available

For calculating the current P/E, we utilize the most recent Market Capitalization and Net Income available for the company.
To determine the trailing twelve months we take the Market Capitalization as of the date of the calculation. For Net Income we use four quarters going back twelve months from the date of calculation for each individual company and total them for the industry.

If Net Income from Continuing Operations is not available for a company we will use Net Income instead. This is also the procedure for calculating an individual company’s ratio.

The aggregation will not include any company that is missing Market Capitalization or Net Income to Common Stockholders with no substitution available for formula 1 or Net Income from Continuing Operations with no substitution available for formula 2.

For information on calculating TTM values from quarterly history please refer to the section Trailing Twelve Month Calculations for Income Statement Items Methodology on page 16.
Price-to-Book Value Ratio

\[
\text{\textbf{[4] \text{P/B}_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} MC_i}{\sum_{i=1}^{n} BV_i}}
\]

where

\begin{align*}
MC_i &= \text{Market Capitalization} \\
BV_i &= \text{Book Value} \\
n &= \text{The total number of companies in the industry for which data is available}
\end{align*}

For calculating the current P/B, we utilize the most recent Market Capitalization and Book Value data available for the company. The latest value available for Book Value must not be older than twelve months.

To determine the trailing twelve months we take the Market Capitalization as of the date of the calculation. For Book Value we use data available going back twelve months from the date of calculation.

The aggregation will not include any company that is missing Market Capitalization or Book Value.
Price-to-Sales Ratio

\[ P/S_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} MC_i}{\sum_{i=1}^{n} Sales_i^{TTM}} \]

where

- \( MC_i \) = Market Capitalization
- \( Sales_i^{TTM} \) = Total Revenue for trailing twelve months
- \( n \) = The total number of companies in the industry for which data is available

For calculating the current P/S, we utilize the most recent Market Capitalization and Total Revenue available for the company.

To determine the trailing twelve months we take the Market Capitalization as of the date of the calculation. For Total Revenue we use four quarters going back twelve months from the date of calculation for each individual company and total them for the industry.

The aggregation will not include any company that is missing Market Capitalization or Total Revenue.

For information on calculating TTM values from quarterly history please refer to the section Trailing Twelve Month Calculations for Income Statement Items Methodology on page 16.
Price-to-Cash Flow Ratio

\[
[6] \quad \text{P/CF}_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} MC_i}{\sum_{i=1}^{n} CFO_{i \text{TTM}}} 
\]

where

- \( MC_i \) = Market Capitalization
- \( CFO_{i \text{TTM}} \) = Operating Cash Flow for trailing twelve months
- \( n \) = The total number of companies in the industry for which data is available

For calculating the current P/CF, we utilize the most recent Market Capitalization and Operating Cash Flow available for the company.

To determine the trailing twelve months we take the Market Capitalization as of the date of the calculation. For Operating Cash Flow we use four quarters going back twelve months from the date of calculation for each individual company and total them for the industry.

The aggregation will not include any company that is missing Market Capitalization or Operating Cash Flow.

For information on calculating TTM values from quarterly history please refer to the section Trailing Twelve Month Calculations for Income Statement Items on page 16.
Return on Equity

\[
\text{ROE}_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} \text{NICS}^{\text{TTM}}_i}{\sum_{i=1}^{n} \text{E}^{\text{TTM-AVG}}_i}
\]

\[
\text{E}^{\text{TTM-AVG}}_i = \frac{\sum_{i=1}^{n} \text{E}_i}{n_a}
\]

where

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\text{NICS}^{\text{TTM}}_i)</td>
<td>Net Income to Common Stockholders for trailing twelve months</td>
</tr>
<tr>
<td>(\text{E}^{\text{TTM-AVG}}_i)</td>
<td>Average Common Stock Equity for trailing twelve months</td>
</tr>
<tr>
<td>(n)</td>
<td>The total number of companies in the industry for which data is available</td>
</tr>
<tr>
<td>(\text{E}_i)</td>
<td>The quarter-end Common Stock Equity available for the quarter</td>
</tr>
<tr>
<td>(n_a)</td>
<td>The total number of quarters available and ending in the TTM period</td>
</tr>
</tbody>
</table>

If \(\text{NICS}^{\text{qtr}}\) is not available we will substitute with \(\text{NI}^{\text{qtr}} - \text{PrefDiv}^{\text{qtr}}\). These two values will be equivalent in most instances. \(\text{PrefDiv}^{\text{qtr}}\) is set to zero if the value is not available.

where

<table>
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<tr>
<th>Term</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>(\text{NICS}^{\text{qtr}})</td>
<td>Net Income to Common Stockholders for quarter</td>
</tr>
<tr>
<td>(\text{NI}^{\text{qtr}})</td>
<td>Net Income for quarter</td>
</tr>
<tr>
<td>(\text{PrefDiv}^{\text{qtr}})</td>
<td>Preferred Dividends for quarter</td>
</tr>
</tbody>
</table>

To determine the trailing twelve months we use four quarters going back twelve months from the date of calculation for each individual company and total them for the industry.

The aggregation will not include any company that is missing Common Stock Equity or Net Income to Common Stockholders (or Net Income).

For information on calculating TTM values from quarterly history please refer to the section Trailing Twelve Month Calculations for Income Statement Items on page 16.
Net Margin

\[
[9] \text{NM}_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} NICS_{i}^{\text{TTM}}}{\sum_{i=1}^{n} S_{i}^{\text{TTM}}}
\]

where

\begin{align*}
NICS_{i}^{\text{TTM}} &= \text{Net Income to Common Stockholders for trailing twelve months} \\
S_{i}^{\text{TTM}} &= \text{Total Revenue for trailing twelve months} \\
n &= \text{The total number of companies in the industry for which data is available}
\end{align*}

If \(NICS_{i}^{\text{qtr}}\) is not available we will substitute with \(NI_{i}^{\text{qtr}} - PrefDiv_{i}^{\text{qtr}}\). These two values will be equivalent in most instances. \(PrefDiv_{i}^{\text{qtr}}\) is set to zero if the value is not available.

where

\begin{align*}
NICS_{i}^{\text{qtr}} &= \text{Net Income to Common Stockholders for quarter} \\
NI_{i}^{\text{qtr}} &= \text{Net Income for quarter} \\
PrefDiv_{i}^{\text{qtr}} &= \text{Preferred Dividends for quarter}
\end{align*}

To determine the trailing twelve months we use four quarters going back twelve months from the date of calculation for each individual company and total them for the industry.

The aggregation will not include any company that is missing Total Revenue or Net Income to Common Stockholders (or Net Income).

For information on calculating TTM values from quarterly history please refer to the section Trailing Twelve Month Calculations for Income Statement Items Methodology on page 16.
Debt-to-Equity Ratio

\[
\frac{D}{E}_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} D_i}{\sum_{i=1}^{n} E_i}
\]

where

\begin{align*}
D_i & = \text{Long Term Debt and Capital Lease Obligations} \\
E_i & = \text{Common Stock Equity} \\
 n & = \text{The total number of companies in the industry for which data is available}
\end{align*}

To determine the trailing twelve months we take the Long Term Debt and Capital Lease Obligations and Common Stock Equity data that is available going back twelve months from the date of calculation.

The aggregation will not include any company that is missing Long Term Debt and Capital Lease Obligations or Common Stock Equity.
Operating Margin

\[
[11] \text{OM}_{\text{INDUSTRY}} = \frac{\sum_{i=1}^{n} EBIT_{i}^{\text{TTM}}}{\sum_{i=1}^{n} S_{i}^{\text{TTM}}}
\]

where

- \( EBIT_{i}^{\text{TTM}} \) = Operating Income for trailing twelve months
- \( S_{i}^{\text{TTM}} \) = Total Revenue for trailing twelve months
- \( n \) = The total number of companies in the industry for which data is available

To determine the trailing twelve months we take the quarterly Operating Income and Total Revenue data that is available going back twelve months from the date of calculation for each individual company and total them for the industry.

The aggregation will not include any company that is missing Operating Income or Total Revenue.

For information on calculating TTM values from quarterly history please refer to the section Trailing Twelve Month Calculations for Income Statement Items Methodology on page 16.
Dividend Yield

\[ \text{Dividend Yield} = \frac{\sum_{i=1}^{n} \text{Div}_{i}^{\text{TTM}}}{\sum_{i=1}^{n} \text{MC}_{i}} \]

where

- \( \text{Div}_{i}^{\text{TTM}} \) = Dividends trailing twelve months
- \( \text{MC}_{i} \) = Market Capitalization
- \( n \) = The total number of companies in the industry for which MC is available

To determine the trailing twelve months we take all regular cash dividend payment over the past trailing twelve months, special cash dividends are not included. These are total paid amount, not per share.
Yearly Earnings Growth

\[ EGr_{\text{INDUSTRY}}^{x-y} = \left( \frac{\sum_{i=1}^{n} NI_{0}^{\text{TTM}}}{\sum_{i=1}^{m} NI_{-x}^{\text{TTM}}} \right)^{\frac{1}{x}} - 1 \times 100 \]

\[ NI_{-m}^{\text{TTM}} : \text{EndDate}_m = \text{EndDate}( NI_{0}^{\text{TTM}} ) - m \]

where

| \( NI^{\text{TTM}} \) | = Net Income for trailing twelve months |
| \( n \) | = The total number of companies in the industry for which \( NI_{0}^{\text{TTM}} \) data is available |
| \( m \) | = The total number of companies in the industry for which \( NI_{-x}^{\text{TTM}} \) data is available |
| \( x \) | = The number of years over which the annualized growth is computed |

A company can participate in the numerator or denominator totals or both. This growth metric includes both organic growth of the long-term members of the industry and growth from new entrants.

If either of \( \sum_{i=1}^{n} NI_{0}^{\text{TTM}} \) and \( \sum_{i=1}^{m} NI_{-x}^{\text{TTM}} \) is negative, earnings growth is undefined.

For information on calculating TTM values from quarterly history as well as for computing TTM from a given target end date please refer to the section Trailing Twelve Month Calculations for Income Statement Items Methodology on page 16.
Yearly Revenue Growth

\[ RGr^{S_{-\text{TMM}}} = \left( \frac{\sum_{i=1}^{n} S_{0}^{\text{TMM}}}{\sum_{i=1}^{m} S_{-x}^{\text{TMM}}} \right)^{\frac{1}{x}} - 1 \times 100 \]

\[ S_{-x}^{\text{TMM}} : \text{EndDate}_{m} = \text{EndDate}(S_{0}^{\text{TMM}}) - x \]

where

- \( S_{\text{TMM}}^{i} \): Total Revenue for trailing twelve months
- \( n \): The total number of companies in the industry for which \( S_{0}^{\text{TMM}} \) data is available
- \( m \): The total number of companies in the industry for which \( S_{-x}^{\text{TMM}} \) data is available
- \( x \): The number of years over which the annualized growth is computed

A company can participate in the numerator or denominator totals or both. This growth metric includes both organic growth of the long-term members of the industry and growth from new entrants.

If either of \( \sum_{i=1}^{n} S_{0}^{\text{TMM}} \) and \( \sum_{i=1}^{m} S_{-x}^{\text{TMM}} \) is negative, earnings growth is undefined.

For information on calculating TTM values from quarterly history as well as for computing TTM from a given target end date please refer to the section Trailing Twelve Month Calculations for Income Statement Items Methodology on page 16.
Trailing Twelve Months Calculations for Income Statement Items

The following methodology is used for determining the trailing twelve month (TTM) value for financial data points for any constituent company in an industry.

First, the ending date of the latest quarterly or annual report that has been published is determined for the company under consideration. This becomes the TTM ending date for this company. TTM ending date cannot be older than 90 days plus 3 months, which provides sufficient allowance for maximum SEC reporting delay and variance in fiscal calendar between different companies.

For income and cash flow statement items, TTM value of the item is the sum of the quarterly item values for the quarter with TTM ending date and the three preceding quarters. If the item value is missing for any of the four quarters, TTM is not computed and the company will not participate in the industry calculation.

For balance sheet items, TTM value of the item is the arithmetic mean of the item value for the quarter with TTM ending date and the quarter that ended 1 year prior to TTM ending date. If the value for the older quarter is not available, the value from the TTM ending date quarter is used as the TTM value.

Historical financial ratios can be produced for an arbitrary ending date prior to current date. Historical financial ratios are computed using the information available to the market participants on the historical ending date. Filing date of the quarterly or annual report is used to determine the latest reporting period with available data as of the historical end date. For example, if a company has fiscal calendar quarters ending on Jan 31 and Apr 30, and the filing dates are Feb 5 and Jun 5, respectively, for the trailing P/E with May 31 ending date, earnings from the quarter ending in Jan 31 and the three preceding quarters are used to compute TTM earnings. Earnings from the quarter ending in Apr 30 are not used in the calculation, because that data has not been published as of the May 31 ending date.
Financial Statement Items

Quarterly aggregate financial statement items are computed for each calendar quarter-end date \( D_0 \) with defined aggregate membership using the following methodology:

\[
F_{\text{INDUSTRY}} = \sum_{i=1}^{n} F_i
\]

where

\( F_i \) = Quarterly financial statement item value for company \( i \) with fiscal quarter ending date in the interval \( (D_{-2}, D_1] \)

\( n \) = The total number of companies in the aggregate for which \( F_i \) data is available

\( D_{-2} \) = Month-end date two months prior to \( D_0 \)

\( D_1 \) = Month-end date one month after \( D_0 \)

To allow for variance in the constituent companies’ fiscal calendars, report ending dates are accepted from a 3-month interval balanced around the aggregate ending date \( D_0 \).
Industry Return

The methodology for Industry Return replicates a return as if an investor holds a market capitalization-weighted portfolio of all equities in the industry and reinvests all distributions.

The following assumptions are:

➢ There are no transaction costs, redemption costs and taxes.

➢ Cash distributions are reinvested on the ex-dividend date, at the market close price. They are reinvested into the entire industry portfolio in proportion with the market capitalizations of the securities at market close. This treatment also applies to special dividends.

➢ The investor rebalances the portfolio daily to market-close capitalization weights. The investor buys shares of companies that were added to the industry on that day and sells shares that were removed.

➢ For corporate actions where an existing investor receives an option (for example, a rights issue), the investor will exercise in full.

➢ The calculation will only use primary share classes of companies. For companies with multiple share classes, the number of shares outstanding is adjusted in such a way that when multiplied with the primary share class price produces total market capitalization of the company.

**Methodology One-Day Return**

\[
R_{\text{daily}}^{18} = \frac{\sum_{i=1}^{n} (P_{i0}N_{i0}^{'0} + D_{i1}N_{i1}^{'1})}{\sum_{i=1}^{n} P_{i0}N_{i0}}
\]

where

| \( P_{ix} \) | Market close price for security i on day x (not adjusted for splits, etc…) |
| \( N_{i0} \) | Total number of shares outstanding on day0 |
| \( D_{i1} \) | Cash distribution with excluding date of day1, including special dividends |
| \( N_{i1}^{'1} \) | Number of shares that an investor would own on day1, if the investor held \( N_{i0} \) shares on day0 and did not sell or buy additional shares |

\( n \) = The total number of companies that were members of the industry on both day0 and day1, day0 and day1, are two consecutive trading days, respectively beginning and end of the return period.
Industry Return

In most cases, \( N'_{i_1} \) is equal to \( N_{i_0} \). The following are the exceptions:

- If there was a split, \( N'_{i_1} \) is the number of shares outstanding after the split of \( N_{i_0} \) shares.

- If there was a stock dividend, \( N'_{i_1} \) is the number of shares outstanding after the dividend was issued on \( N_{i_0} \) shares.

- If there was a spinoff, \( N'_{i_1} = N_{i_0} + \frac{MV_s}{P_{i_1}} \), where \( MV_s \) is market capitalization of the spinoff shares received by an owner of \( N_{i_0} \) shares.

- If there was a rights issue, \( N'_{i_1} = \frac{P_{i_0} N_{i_0} (r + 1)}{P_{i_0} + P_{offer} r} \), where \( P_{offer} \) is the price at which additional shares are offered to current shareholders, and \( r \) is the ratio of offered shares to shares already owned. It’s the number of shares owned after the full exercise, adjusted for the cost of the exercise.

**Methodology Multi-Day Return**

\[
R(m, n) = \prod_{i=m+1}^{n} R^{daily}_i
\]

where

| \( R^{daily}_i \) | The one day return with end date = \( i \) |
| \( n \) | The total number of trading days in the \([\text{day}_{m}, \text{day}_{n}]\) interval defining the span of time over which return is computed |
Industry Total Return Index

The Morningstar Industry Total Return Index is the index level of an industry’s total return and is often associated with wealth accumulation such as growth of $10,000. The Morningstar Total Return Index represents the value over time of $b invested at index inception into the market-weighted industry portfolio, assuming that all dividends and distributions are reinvested.

Using the Morningstar Total Return Index, one can easily generate a graph of total performance of the industry portfolio over an arbitrary time interval, as well as calculate total return for any start date, end date combination.

Methodology Return Index

\[ I(n) = bR(0, n) \]

where

\[ b = 10 \] is the base value of the index at day_0, the start of the return history

It follows from the definition of multi-day return where \[ R(m, n) = \frac{I(n)}{I(m)} \] which can be used to quickly calculate industry return for arbitrary start and end dates.

Return as a Percentage

While returns expressed as a ratio, as above, are easier to compose together, customarily returns are presented as percentage decrease or increase. Below is the conversion from return as ratio to return as percentage.

\[ R_{\%} = (R(m, n) - 1) \times 100 \]
Currency Conversion for Industry Aggregates

For any aggregate that contains any constituent companies reporting financial or market data in a currency different from some other constituent, a single aggregate currency will be chosen, and all currency-valued data from constituent companies will be converted into the units of the aggregate currency before aggregation of those data.

Aggregate currency will be set to the currency of Morningstar Region that the aggregate belongs to. For aggregates spanning multiple Morningstar Regions, the aggregate currency will be US dollar.

For income statement and cash flow items which express some value that applies to a time range, we use the currency conversion rate that was effective on the end date of the financial reporting period.