The following letter is in response to our article last week, The Q Ratio Sends a Modestly Bearish Long-Term Signal.

Dear Editor,

How does the q ratio more than double from .33 to .72 when the market is only up 40% or so from March lows?

The one percent drop in the replacement cost does not account for the difference.

If the ratio is going to bounce from .32 to .72 on a 40 percent move in the market, how reliable is the indicator? Will it swing in a few months even if the market is flat? At least the market cap-to-GDP ratio does not seem to be subject to wide swings from judgments on replacement costs.

Tom Behlmer
NCGV Investment Consulting
Nevada City, CA

John Mihaljevic, who publishes the Manual of Ideas, a quarterly newsletter about the Q ratio and its implications for investors, responds:

Tom,

Thank you for your question. Tobin's Q is often approximated by analysts using book value as a proxy for replacement cost. Some analysts essentially calculate Q as the market value of equities divided by the book value of equities. However, this is an overly simplified and not very reliable way of estimating true Tobin's Q.

The Q ratio, as calculated under the method James Tobin and I used at Yale in the mid-1990s, does not rise and fall in a linear relationship with equity prices. In addition to the market value of equities, the Q calculation also includes a number of other variables, most of which are provided by the Federal Reserve in the quarterly Z.1 release. As Fed
data is available only quarterly, the Q ratio at the market bottom in early March represents an estimate extrapolated from year-end 2008 Fed data.

A detailed explanation of the Tobin's Q calculation is provided following this letter. This spreadsheet contains Tobin's Q data going back to 1945. The spreadsheet also includes inputs used in calculating Q.

Please do not hesitate to contact me should you have any questions after reviewing the attached documents.

Sincerely,

John Mihaljevic, CFA
Managing Editor, The Manual of Ideas
http://www.manualofideas.com

Calculating Tobin’s Q

Tobin's Q is impossible to calculate with precision, as the concept of replacement value is inherently subjective. For example, rational investors are likely to disagree on the replacement value of The Coca-Cola Company, as investors will have divergent views on the value of Coke’s brand equity. As a result, the calculation of Q requires a number of estimates and approximations.

In this report, we focus on estimating Q for the market as a whole rather than any single stock.

The data used to estimate Q can be found in the Federal Reserve Board's Z.1 statistical release entitled Flow of Funds Accounts of the United States. Before proceeding with this brief tutorial, we suggest that you access the FRB’s website and print out the relevant page from the latest Z.1 release. To do so, simply go to www.federalreserve.gov/releases/z1/ and click on the date of the current Z.1 release. Then click on PDF file labeled “Balance sheet tables.” The file will contain several pages, but you only need the page entitled “B.102 Balance Sheet of Nonfarm Nonfinancial Corporate Business.” All references below to lines that contain certain data relate to line numbers in the B.102 table. For your convenience, we have reproduced on the next page the data used to calculate Q from 1945 thru 2008.
Where \( Q = \frac{\text{market value of debt \& equities} - \text{net liquid assets} - \text{land value}}{\text{replacement cost of structures, equipment \& software, and inventories}}, \)

- The market value of debt can be estimated by using book value of debt as a proxy for market value; book value of debt outstanding in any particular year is the sum of the following line items contained in balance sheet B.102 of statistical release Z.1: Municipal Securities (line 24), Corporate Bonds (line 25), and Mortgages (line 28). (See note below)
- The market value of equities is found in line 35 of B.102. Equity market value can be updated through the present by adjusting the value provided in the Z.1 statistical release to reflect the subsequent change in a major market index, such as the S&P 500 Index.
- Net liquid assets = total financial assets – (total liabilities – municipal securities – corporate bonds – mortgages) = line 6 – (line 21 – line 24 – line 25 – line 28)
- Land value is approximated as the market value of real estate – the replacement cost of residential and nonresidential structures, i.e., land value = line 3 – line 33 – line 34.
- The replacement cost of structures, equipment \& software, and inventories is the sum of lines 4, 5, 33, and 34 of B.102.

Note: It is possible to estimate the market value of debt more accurately than by using book value as a proxy. In order to do so, long-term debt can be modeled in the form of 10-year, Baa-grade bonds with semiannual coupons. (Historical data on Moody’s Baa interest rates is available on the FRB’s website.) The market value of the debt outstanding in year \( t \) would then equal the sum of the market values of debt issued in years \( t-9 \) through \( t \). The book value of bonds issued in year \( t \) equals the book value of debt outstanding in year \( t \) (calculated as noted in text above) minus the book value of debt outstanding in year \( t-1 \) plus the book value of debt outstanding in year \( t-10 \). The market value of debt issued in year \( t \) can be estimated as the book value of debt issued in year \( t \). The market value of debt issued in years \( t-9 \) through \( t-1 \) can be estimated via a net present value formula using the applicable Moody’s Baa interest rates.

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