

Estimating the Growth Rate from Historical Data for Firms that Repurchase Stock

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INTRODUCTION

One of the most important steps in a discounted cash flow valuation of a firm is the estimation of g , the long-term growth rate. This is commonly estimated by calculating g as the addition to retained earnings divided by beginning common equity.

A serious problem can occur if the firm has participated in a stock buyback because buying back stock deflates the denominator. The financial statements record the historical value of the firm's stock. Movements in the market value of the stock do not affect the book value, unless the firm issues additional stock, or repurchases previously issued stock. When a firm buys back stock by paying cash, the cash account is credited by the amount of the repurchase while the treasury stock account, a contra account, is debited by the same amount (Rogers, 2019). The net result is that the repurchased stock is subtracted at the purchase price, which differs from (and is usually much higher than) the historical price recorded on the balance sheet. This drives the book value of equity down much lower than it would have been if the remaining stock were valued at the historical issue price. This inflates the estimate of g , often making it unusable. Indeed, a complete growth estimation process can be detailed and sophisticated. Penman (2001) notes that "accounting is not a natural phenomenon," and that "one purpose of financial statements is, presumably, to help analysts and the investors they serve understand what firms are worth."

Our purpose here is to present to students the distortion that can occur when firms repurchase their stock and a simple adjustment process to illustrate the reasonableness of a growth estimate.

METHODOLOGY

In order to determine a "reasonable" estimate of g , we ask the question, "What would the value of g have been if the repurchased stock had been repurchased at the book value (from before the repurchase)?"

Here is a simple example. Suppose that ABC Company has an IPO. The firm's projects are very risky, with a high potential payoff and a high chance of failure. They issue 100 shares at \$10/share. The total amount of capital raised is

$$100 \text{ shares} * \$10/\text{share} = \$1,000$$

The firm's projects all succeed, so the market price of the stock moves to \$100/share. The firm decides to buy back 6

shares at the market price. The total amount that the firm spends is

$$6 \text{ shares} * \$100/\text{share} = \$600$$

Therefore, the book value of equity is $\$1,000 - \$600 = \$400$.

Most of the shares remain in investors' hands, but the book value of the firm's stock drops by 60%. What we propose is that the book value of common stock, for estimating the growth rate, be modified as follows. The firm bought back 6 shares. At the original issue price, 6 shares would have been worth

$$6 \text{ shares} * \$10/\text{share} = \$60$$

At the original purchase price, therefore, the remaining shares would have been worth

$$(100 \text{ shares} - 6 \text{ shares}) * \$10/\text{share} = \$940$$

The \$940 is not the book value of equity. However, it may be a useful value for estimating the growth rate.

Here is an example using publicly available data from www.sec.gov on Sherwin-Williams (Ticker is SHW). We will estimate g by calculating the return on equity over the fiscal year 2015. We use balance sheet data from the beginning of the period (end of fiscal year 2014/ also the beginning of fiscal year 2015) and income statement data from 2015 (flow during the fiscal year). Select data for the filing date 2016-02-24. Using this data, we estimate g for 2015. The beginning value of shareholders' equity for 2015 is the same as the ending value for 2014, \$996,470,000.

The addition to retained earnings for the current year is

$$\$3,228,876,000 - \$2,424,674,000 = \$804,202,000$$

Thus, our estimate of g would be

$$g = \$804,202,000 / \$996,470,000 = 80.7\%$$

This is probably not a reasonable estimate for a long-term growth rate for any company.

In order to resolve this problem, we recommend the following procedure:

1. Calculate the fraction of total shares repurchased. We will make an approximation that will understate the number of shares – we will assume that all the treasury stock in 2014 was purchased in 2014, at the 2014 stock price, which was probably higher than the previous years' stock prices.
2. Subtract this value from 1. Call the result the “correction factor.” Add back the book value of treasury stock to equity, then multiply the sum by the correction factor.
3. Use this new value for the beginning stockholders' equity in the estimation of g.

We can find the stock price for year-end 2014 from finance.yahoo.com. The stock price on 12/31/2014 closed at \$263.04 per share. The total treasury stock was \$3,150,410,000. Use this to estimate the number of treasury shares:

$$\$3,150,410,000 / \$263.04 = 11,976,924 \text{ shares}$$

The total number of shares outstanding at the end of 2014 is 94,704,170 shares. Thus, the shares that were repurchased represent

$$(11,976,920 / 11,976,920 + 94,704,170) = 0.112, \text{ or } 11.2\%$$

The total book value of common equity and treasury stock, at cost, is

$$\$996,470,000 + \$3,150,410,000 = \$3,895,308,000.$$

The book value of common equity if treasury stock had been repurchased at book value is thus

$$\$3,895,308,000 * (1 - 0.112) = \$3,459,034,000$$

Using this value for the denominator, the estimate for g becomes

$$g = \$804,202,000 / \$3,459,034,000 = 23.2\%$$

We can compare this with the actual change in the dividend.

The cash dividends in 2014 were \$0.55 per share per quarter, for a total of \$2.20 per share per year. The cash dividends in 2015 were \$0.67 per share per quarter, for a total of \$2.68 per share. This represents a growth rate of

$$\$2.68 / \$2.20 - 1 = 21.8\%$$

REFLECTIONS AND RECOMMENDATIONS

It is important to note that this is a “back-of-the-envelope” type of estimation. It is not always applicable.

This method is only for approximating the growth rate, g. This method is agnostic regarding the market-to-book ratio. When a long-lived firm has made significant stock buybacks in the recent past, this method may be a useful addition to the standard toolbox of techniques of financial statement analysis.

REFERENCES

- Penman, Stephen (2001). On Comparing Cash Flow and Accrual Accounting Models for Use in Equity Valuation: A Response to Lundholm and O'Keefe. *Contemporary Accounting Research* 18(4).
- Rogers, Karen (2019). How to Account for Buyback of Shares. (<https://finance.zacks.com/account-buyback-shares-5799.html> retrieved July 21, 2019).

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