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Stock based compensation treatment in the DCF is almost always wrong

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A recent SeekingAlpha blog post questioned Amazon management's definition of free cash flows (FCF) and criticized its application in DCF valuation. The author's thesis is that Amazon stock is overvalued because the definition of FCF that management uses – and that presumably is used by stock analysts to arrive at a valuation for Amazon via a DCF analysis – ignores significant costs to Amazon specifically related to stock based compensation (SBC), capital leases and working capital. Of these three potential distortions in the DCF, the SBC is the least understood when we run analyst training programs.

Stock based compensation in the DCF

In the SeekingAlpha post, the author asserted that SBC represents a true cost to existing equity owners but is usually not fully reflected in the DCF. This is correct. Investment bankers and stock analysts routinely add back the non-cash SBC expense to net income when forecasting FCFs so no cost is ever recognized in the DCF for future option and restricted stock grants. This is quite problematic for companies that have significant SBC, because a company that issues SBC is diluting its existing owners. NYU Professor Aswath Damodaran argues that to fix this problem, analysts should not add back SBC expense to net income when calculating FCFs, and instead should treat it *as if it were a cash expense*:

> *"The stock-based compensation may not represent cash but it is so only because the company has used a barter system to evade the cash flow effect. Put differently, if the company had issued the options and restricted stock (that it was planning to give employees) to the market and then used the cash proceeds to pay employees, we would have treated it as a cash expense… We have to hold equity compensation to a different standard than we do non-cash expenses like depreciation, and be less cavalier about adding them back. Full article: http://aswathdamodaran.blogspot.com/2014/02/stock-based-employee-compensation-value.html*

While this solution addresses the valuation impact of SBC to be *issued in the future.* What about restricted stock and options issued in the past that have yet to vest? Analysts generally do a bit better with this, including already-issued options and restricted stock in the share count used to calculate fair value per share in the DCF. However it should be noted that most analysts ignore unvested restricted stock and options as well as out-of-the-money options, leading to an overvaluation of fair value per share. Professor Damodaran advocates for different approach here as well:

> *"If a company has used options in the past to compensate employees and these options are still live, they represent another claim on equity (besides that of the common stockholders) and the value of this claim has to be netted out of the value of equity to arrive at the value of common stock. The latter should then be divided by the actual number of shares outstanding to get to the value per share. (Restricted stock should have no deadweight costs and can just be included in the outstanding shares today)."*

Putting it all together, let's compare how analysts currently treat SBC and Damodaran's suggested fixes:

WHEN CALCULATING FCF USED IN DCF

- What analysts usually do: Add back SBC
- Damodaran approach: Don't add back SBC
- Bottom line: The problem with what analysts currently do is that they are systematically overvaluing businesses by ignoring this expense. Damodaran's solution is to treat SBC expense as if it were a cash expense, arguing that unlike depreciation and other non cash expenses, SBC expense represents a clear economic cost to the equity owners.

WHEN CALCULATING EQUITY VALUE PER SHARE…

- What analysts usually do: Add the impact of already-issued dilutive securities to common shares.
  Options: In-the-$ vested options are included (using the treasury stock method). All other options are ignored.
  Restricted stock: Vested restricted stock is already included in common shares. Unvested restricted stock is sometimes ignored by analysis; sometimes included.
- Damodaran approach: Options: Calculate the value of options and reduce equity value by this amount. Do not add options to common shares.
  Restricted stock: Vested restricted stock is already included in common shares. Include all unvested restricted stock in the share count (can apply some discount for forfeitures, etc.).

- Bottom line: We don't have as big a problem with the "wall Street" approach here. As long as unvested restricted stock is included, Wall Street's approach is (usually) going to be fine. There are definitely problems with completely ignoring unvested options as well as out of the $ options, but they pale in comparison to ignoring future SBC entirely.

How big of a problem is this, really?

When valuing companies without significant SBC doing it the "wrong" way is immaterial. But when SBC is significant, the overvaluing can be significant. A simple example will illustrate: Imagine you are analyzing a company with the following facts:

- Current share price is $40
- 1 million shares of common stock (includes 0.1m vested restricted shares)
- 0.1m fully vested in-the-$ options with an exercise price of $4 per share
- An additional 0.05m unvested options with the same $4 exercise price
- All the options together have an intrinsic value of $7m
- 0.06m in unvested restricted stock
- Annual FCF of $5m in perpetuity (no growth), and ignores any SBC expense
- Annual forecast SBC expense of $1m, in perpetuity no growth
- WACC is 10%
- Company carries$5m in debt, $1m in cash

Excluding SBC (The typical analyst approach):

- Enterprise value = $5m/10% = $50m.
- Equity value = $50m-$5m+$1m=$46m.

Including SBC (Damodaran's approach):

- Enterprise value = ($5m-$1m)/10% = $40m.
- Equity value = $40m-$5m+$1m=$36m.

In this example, ignoring SBC leads to a greater that 20% overvaluation. Now let's turn to the issue of pre-existing SBC…

The typical analyst approach:

- Diluted shares outstanding using the treasury stock method = 1m+0.6m (0.1m – $0.4m/$40 per share) = 1.09m.
- *Note: We are including unvested restricted shares because it is logical to assume eventual dilution from them barring forfeitures. Most analysts exclude unvested options, so we will too.*
- Equity value per share = $46m / 1.09m = $42.20

Including SBC (Damodaran's approach):

- Equity value after removing value of options = $36m – $3m = $33m
- Diluted shares = 1m + 0.6m = 1.06m (ignore options in the denominator because you're counting their value in the numerator)
- Equity value per share = $33m / 1.06m = $31.13

The difference in approaches here is not so significant as most of the difference is attributable to the SBC add back issue. Here Damodaran is simply reflecting the option value in the numerator while analysts reflect it in the denominator.

The bottom line

The way that analysts currently treat stock based compensation expense in DCF models ignores any cost associated with issuing stock options. That means that a typical DCF for Amazon, whose stock based compensation packages enable it to attract top engineers will reflect all the benefits from having great employees but will not reflect the cost that comes in the form of inevitable and significant future dilution to current shareholders. This obviously leads to overvaluation of companies that issue a lot of SBC. Damodaran's solution should be implemented in these cases.

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