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Understanding Price-Based Antidilution Protection: Five Principles to Apply When Negotiating a Down-Round Financing

By Robert P. Bartlett, III*

As most venture capital investors are aware, the economic downturn of the past two years—and the concomitant decrease in private company valuations—has created an opportunity for significant returns on new venture investments seldom seen since the early 1990s. Yet while the investment opportunities of the current economic environment may have attractive financial valuations, they frequently come with the added cost of significant transactional complexity. In particular, the issuance of securities by a private company at a price that is below the price previously paid by the company's investors (typically referred to as a "down-round" financing) may trigger one or more forms of price-based antidilution protection. Price-based antidilution protection, which is found in the charter documents of most venture-backed emerging growth companies, is used by many venture capital investors to minimize the dilution that occurs when a portfolio company issues stock in a down-round financing by increasing the rate at which the existing investors' shares of preferred stock (which are typically purchased by venture capital investors) convert into shares of common stock.

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2. Price-based antidilution protection is but one type of antidilution provision that might be found in a variety of convertible securities, such as convertible bonds, convertible preferred stock, and warrants. In general, convertible securities permit an investor to participate in a company's upside potential by allowing the investor to convert into more marketable securities such as common stock, while granting the investor specific rights not otherwise available to holders of other securities (e.g., special voting rights or liquidation preferences). Antidilution provisions protect holders of convertible securities against certain corporate actions that might dilute or destroy the holders' ability to convert the security. For a general discussion of antidilution provisions, see Marcel Kahan, Anti-Dilution Provisions in Convertible Securities, 2 STAN. J. L. BUS. & FIN. 147 (1995).

3. Ordinarily, upon issuance of preferred stock to a venture capital investor, one share of preferred stock will be convertible into one share of common stock. The conversion rate is of vital importance.
Upon receiving an "antidilution adjustment," the holders of a company's shares of preferred stock will thereafter be entitled to convert their shares into a greater number of shares of common stock, thereby diminishing the dilutive effect of the down-round financing. Given the significant effect an antidilution adjustment may have on a company's capitalization following a down-round financing, understanding the application of a company's antidilution protection has become a critical component of an investor's due diligence review prior to a portfolio company investment.

Despite the increased focus within the venture capital community on antidilution protection, there remains considerable uncertainty regarding the proper application of the various types of antidilution formulas. This uncertainty is made all the more troubling for venture capitalists and entrepreneurs in light of the considerable economic ramifications of antidilution protection. Absent a thorough understanding of a company's antidilution protection, a new investor may find itself unknowingly diluted by prior investors' antidilution adjustments. Likewise, the form of a company's antidilution protection may place significant constraints on the form and valuation of a potential down-round financing. The intent of this Article is to clarify the operation of these ordinarily opaque provisions and to provide five guiding principles for venture capitalists and entrepreneurs to apply when negotiating a down-round financing.

I. OVERVIEW OF PRICE-BASED ANTIDILUTION PROTECTION

As noted previously, price-based antidilution provisions generally protect a holder of a company's shares of preferred stock against the dilution that occurs when the company issues stock at a price that is less than the purchase price paid by the preferred stockholder. Ordinarily, a preferred stockholder will expect its ownership in a portfolio company to be diluted when the company issues stock to new investors at a higher price than the preferred stockholder paid for its own shares. Although its percentage ownership of the portfolio company will be diminished, the value of the stockholder's ownership interest will generally be the same or greater after the issuance, as the company will have a greater aggregate

to venture capital investors, as stockholders will generally vote on an "as-converted to common stock basis." Likewise, a company's shares of preferred stock will almost always be converted into shares of common stock prior to an initial public offering (IPO), making an investor's total return in the event of an IPO directly related to the number of shares of common stock underlying an investor's shares of preferred stock.

4. Indeed, antidilution provisions in general have historically been the subject of frequent misunderstanding even within the legal and academic communities. See, e.g., Stanley A. Kaplan, Piercing the Corporate Boilerplate: Anti-Dilution Clauses in Convertible Securities, 33 U. Chi. L. Rev. 1, 3 (1965) (noting that antidilution provisions represent a complex, difficult, and intriguing exercise in corporate draftsmanship); David L. Ratner, Dilution and Anti-Dilution: A Reply to Professor Kaplan, 33 U. Chi. L. Rev. 494, 494 (1965) (noting that anti-dilution provisions are an "arcane subject"). Perhaps for this reason, antidilution provisions have seldom been formally analyzed in the professional or academic literature. See Kahan, supra note 2, at 147 n.2 (surveying literature).
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In contrast, when a company issues stock below the price paid by the preferred stockholder, the dilution suffered by the stockholder is more costly for two reasons. First, the lower price of the new stock relative to the shares held by the existing stockholder indicates that the monetary value of its investment has decreased since the closing of the previous financing. Second, the lower price of the new stock will cause the company to sell a greater number of shares of preferred stock than the existing investor could have purchased with its own investment, thereby significantly diluting the investor's ownership interest in the enterprise.

Antidilution protection will diminish the effect of this latter form of dilution by increasing, upon the issuance of such lower-priced stock, the ratio at which each share of preferred stock converts into common stock. As a result, the protected preferred stock will convert into a greater number of shares of common stock than prior to the issuance, and on a fully-diluted, as-converted to common stock basis, the preferred stockholder will suffer less dilution than if no adjustment had been made. The extent of the adjustment will depend on the type of antidilution formula associated with the existing preferred stock. The most protective formula—the "ratchet"—places the existing preferred stockholders in the same position upon conversion of their shares of preferred stock into common stock as if the preferred stockholders had purchased their shares of common stock at the new, lower price. More mild "weighted-average" formulas treat the existing preferred stockholders upon conversion of their preferred shares as if they purchased the underlying shares of common stock at a price that is somewhere between the old purchase price and the new issue price. The exact price will be determined based on whether the formula is "broad" or "narrow"—with "broad-based" formulas requiring a smaller conversion ratio adjustment and "narrow" formulas requiring a greater adjustment. The Appendix contains sample provisions of ratchet and weighted-average antidilution formulas.

5. Take, for instance, an investor who purchases $1,000,000 of a company's Series A Preferred Stock in a financing that values the company at $3,000,000 prior to the financing (typically referred to as the "pre-money valuation"). After the financing, the investor should own twenty-five percent of the company—the result obtained by dividing the $1,000,000 investment by the $4,000,000 post-financing value of the company (i.e., $1,000,000 investment + $3,000,000 pre-money valuation). If the company later raises $5,000,000 at a $5,000,000 pre-money valuation and no additional shares have been issued by the company since the Series A financing, the value of the original investor's Series A Preferred Stock will have increased to $1,250,000 (i.e., 25% X $5,000,000 pre-money valuation), although its ownership of the company will be diluted to 12.5% (i.e., $1,250,000/ $10,000,000). To avoid this form of dilution, an investor might negotiate for preemptive rights that permit it to purchase its pro rata share of any future issuance, thereby allowing such investor to retain its percentage ownership of the enterprise.

6. For instance, if the company in the previous note proposed a second-round Series B financing at a $2,000,000 pre-money valuation, the existing investor would experience a decrease in the value of its investment from $1,000,000 to $500,000 (i.e., 25% X $2,000,000 pre-money valuation) (again, assuming that no additional shares have been issued by the company since the previous financing). Assuming that $5,000,000 is raised in the financing, the company would issue 71.43% of its stock to the Series B investors (i.e., $5,000,000 investment/$7,000,000 post-financing valuation) and, after the financing, the existing investor would own only 7.14% of the company (i.e., $500,000/ $7,000,000).
II. Pricing a Down-Round: The Efficient Pricing Principle

Consider an early stage technology company, NewCo, that has already completed a Series A Preferred Stock financing. NewCo has outstanding 4,000,000 shares of Common Stock held by its founders and 6,000,000 shares of Series A Preferred Stock held by an investor. The Series A financing was completed at a pre-money valuation of $8,000,000, in which the Series A investor purchased $12,000,000 of Series A Preferred Stock at a price of $2 per share.

The company has recently been approached by another investor who offers to purchase $10,000,000 of Series B Preferred Stock of NewCo at a pre-money valuation of $10,000,000. At first blush, pricing this transaction appears straightforward:

$$\frac{\$10,000,000 \text{ pre-money valuation}}{10,000,000 \text{ shares outstanding}} = \$1 \text{ per share}$$

As it turns out, however, the Series A Preferred Stock has standard broad-based weighted-average antidilution protection, and upon issuing the Series B Preferred Stock at $1 per share, each share of Series A Preferred Stock will be convertible into 1.33 shares of Common Stock. As a result, NewCo will have a post-financing, fully-diluted capitalization as follows:

<table>
<thead>
<tr>
<th>Stock:</th>
<th>Shares Outstanding:</th>
<th>Shares As-Converted to Common Stock:</th>
<th>Fully-Diluted Percentage Ownership:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Stock:</td>
<td>4,000,000</td>
<td>4,000,000</td>
<td>18.18%</td>
</tr>
<tr>
<td>Series A Preferred Stock:</td>
<td>6,000,000</td>
<td>8,000,000</td>
<td>36.36%</td>
</tr>
<tr>
<td>Series B Preferred Stock:</td>
<td>10,000,000</td>
<td>10,000,000</td>
<td>45.45%</td>
</tr>
<tr>
<td>Total:</td>
<td>20,000,000</td>
<td>22,000,000</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

This capitalization table will ordinarily be unacceptable to the Series B investor: it is purchasing fifty percent of a $10,000,000 company; therefore, it should receive fifty percent of the company’s stock on a fully-diluted, as-converted to common stock basis. Indeed, in order to receive only 45.45% of the company’s fully-diluted capitalization, the pre-money valuation of NewCo would have to be

7. The conversion ratio for preferred stock is generally determined by dividing the original issue price of the stock (here, $2 per share) by the “conversion price,” which is usually set at the original issue price to yield a 1:1 conversion ratio. Once triggered, weighted-average antidilution formulas will adjust the conversion price by multiplying it by a fraction consisting, in most instances, of (i) a numerator equal to (A) the “outstanding shares” prior to the financing (here, 10,000,000) plus (B) the amount of stock that would have been purchased in the financing at the existing Series A conversion price (here, $10,000,000/$2, or 5,000,000 shares), and (ii) a denominator equal to (A) the “outstanding shares” (here, 10,000,000 shares) plus (B) the new stock actually issued (here, 10,000,000 shares). In our example, the fraction yields 0.75, which, when multiplied by the original Series A conversion price of $2.00, gives us a new conversion price of $1.50 and a conversion rate of 1.33 (i.e., $2.00/$1.50). It should be noted that antidilution formulas will vary by company depending on, among other things, the expansiveness of the term “outstanding shares.” In particular, the broader the concept of “outstanding shares,” the broader the antidilution formula and the smaller the antidilution adjustment.
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$12,000,000-$2,000,000 more than the Series B investor believes the company is presently worth.

These results, however, are nothing more than a literal application of the Series A antidilution provisions that are contained in NewCo’s charter documents and which are common throughout the venture capital industry. In accordance with NewCo’s charter, the sale of the Series B Preferred Stock at $1 per share will result in an adjustment in the conversion ratio of the Series A Preferred Stock that will effectively dilute the Series B investor upon the closing of the transaction. To avoid this result and honor the Series A antidilution protection, a sophisticated Series B investor will price the financing in anticipation of the Series A antidilution adjustment. Specifically, the Series B investor must give effect to the Series A antidilution adjustment when calculating the number of pre-money, fully-diluted shares. The pricing equation would then appear as follows:

\[
\frac{\text{\$10,000,000 pre-money valuation}}{10,000,000 \text{ shares outstanding} + \text{Series A antidilution adjustment}} = \text{Series B Price Per Share}
\]

Of course, the Series A antidilution adjustment will depend, in turn, on the price of the Series B Preferred Stock, but through a bit of standard algebra, it is possible to price any down-round financing in this manner.\(^8\) Using this formula, the Series B investor would purchase 13,333,333 shares of Series B Preferred Stock at a price of $0.75 per share, and the Series A antidilution protection would then result in each share of Series A Preferred Stock being convertible into approximately 1.55 shares of NewCo’s Common Stock.\(^9\) As shown in NewCo’s post-financing, fully-diluted capitalization, applying this pricing formula permits the Series B investor to receive exactly fifty percent of NewCo’s post-financing, fully-diluted capitalization, while giving full effect to the Series A antidilution protection:

8. For NewCo, the pre-money, fully-diluted capitalization used in the denominator of the pricing equation would be determined as follows, where “\(y\)” equals the pre-money, fully-diluted capitalization:

\[
y = \frac{4,000,000 + 6,000,000}{\frac{2}{\frac{10,000,000 + 5,000,000}{10,000,000 + \frac{10,000,000}{y}}} = 13,333,333
\]

And upon solving for “\(y\)” (i.e., the pre-money capitalization):

\[
y = \frac{10,000,000 + \frac{10,000,000}{52}}{10,000,000 + \frac{10,000,000}{0.75}} = \frac{2.00 \times (10,000,000 + \frac{10,000,000}{2})}{10,000,000 + \frac{10,000,000}{0.75}} = 1.2857
\]

The Series A conversion rate of 1.55 would be determined by dividing the original Series A issue price of $2.00 by the new Series A conversion price of $1.2857.
Shares Shares As-Converted Fully-Diluted
Outstanding: to Common Stock:

<table>
<thead>
<tr>
<th>Stock:</th>
<th>Shares Outstanding:</th>
<th>Shares As-Converted to Common Stock:</th>
<th>Fully-Diluted Percentage Ownership:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Stock:</td>
<td>4,000,000</td>
<td>4,000,000</td>
<td>15.00%</td>
</tr>
<tr>
<td>Series A Preferred Stock:</td>
<td>6,000,000</td>
<td>9,333,333</td>
<td>35.00%</td>
</tr>
<tr>
<td>Series B Preferred Stock:</td>
<td>13,333,333</td>
<td>13,333,333</td>
<td>50.00%</td>
</tr>
<tr>
<td>Total:</td>
<td>23,333,333</td>
<td>26,666,666</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Thus, we come to our first principle in applying antidilution protection:

**Principle #1:** When pricing a down-round financing for a company that has antidilution protection, in order to adhere to a particular pre-money valuation, an investor must include in the pre-money, fully-diluted capitalization all antidilution adjustments to be made in the round (the “Efficient Pricing Principle”).

### III. Pricing a Down-Round: The Limits of the Efficient Pricing Principle

As shown above, the Efficient Pricing Principle gives effect to both the Series B investor's desire to own a certain percentage of NewCo and the Series A investor's negotiated right to antidilution protection, which effectively allows it to maintain a certain value of its original investment on an as-converted to common stock basis and, therefore, a certain ownership percentage of the company. When phrased in this manner, however, the question naturally arises: is it ever possible for the percentage of NewCo allocated to the Series B investor (due to the size of its investment) and the percentage of NewCo allocated to the Series A investor (due to the operation of its antidilution protection) to exceed 100%?

Again, let us turn to NewCo's $10,000,000 Series B financing, but now assume that the Series A Preferred Stock has “ratchet” antidilution protection. As before, the Series B investor will expect to receive fifty percent of the company's fully-diluted post-financing capitalization. In addition, the Series A “ratchet” antidilution protection will allow the Series A investor to have its Series A Preferred Stock “re-priced” at the Series B price. In other words, the Series A investor will be entitled to retain the full value of its $12,000,000 investment on an as-converted to common stock basis. Given NewCo's anticipated post-financing valuation of $20,000,000 (i.e., $10,000,000 pre-money valuation + $10,000,000 Series B investment), the Series A ratchet antidilution protection will require that the Series A investor hold exactly sixty percent of NewCo's post-financing, fully-diluted capitalization (i.e., $12,000,000 Series A investment value / $20,000,000 post-financing valuation). Even without calculating the Series B price per share, we can already see that honoring the expectations of the Series B investor and the antidilution protection of the Series A investor will require allocating 110% of NewCo's post-financing, fully-diluted capitalization.

10. The decrease in the Common Stock fully-diluted ownership percentage from 18.18% in the preceding table to 15.00% in the current table illustrates that a primary consequence of applying this pricing method is to create additional dilution for the holders of a company's capital stock who lack antidilution protection. For a more detailed discussion of this topic, see *infra* text accompanying notes 14–16 and Part IV.
The same problem would occur if the Series A Preferred Stock had weighted-average antidilution protection. As noted above, weighted-average antidilution protection would "re-price" the Series A investor's $12,000,000 investment as if, on an as-converted to common stock basis, it were made at a price somewhere between the actual purchase price and the new issue price. For example, at a $10,000,000 pre-money valuation, broad-based weighted-average antidilution protection would adjust the Series A investor's conversion ratio in connection with the Series B financing so that, upon conversion of the Series A Preferred Stock to Common Stock, the effective per share purchase price of the Common Stock would be $1.2857 instead of $2.00. In effect, this adjustment entitles the Series A investor to retain $7,000,000 of its $12,000,000 investment on an as-converted to common stock basis.

Like the ratchet, the weighted-average formula will always ensure that the Series A investor's investment retains a certain value, and consequently, that the Series A investor retains a certain percentage ownership of the post-financing company. As a result, at a low enough pre-money valuation, honoring the expectations of the Series B investor and the antidilution protection of the Series A investor will require an allocation of NewCo's fully-diluted capitalization that exceeds 100%.

11. As noted in note 9, assuming the Series B investor uses the Efficient Pricing Principle, a $10,000,000 Series B financing at a pre-money valuation of $10,000,000 will result in a Series A conversion price of $1.2857. Because this is the price at which each share of Series A Preferred Stock will convert into Common Stock, it is effectively the price that the Series A investor will be deemed to have paid for each share of Common Stock underlying the Series A Preferred Stock, all other things being equal.

12. A conversion price of $1.2857 will entitle the Series A investor to receive approximately 1.55 (i.e., $2.00 / $1.2857) shares of Common Stock for each share of its Series A Preferred Stock. As a result, on an as-converted to common stock basis, the Series A investor will own 9,333,333 shares, or thirty-five percent of NewCo's post-financing, fully-diluted capitalization of 26,666,666. See supra notes 8-9 and accompanying text. Based on NewCo's $20,000,000 post-financing valuation (i.e., $10,000,000 pre-money valuation + $10,000,000 Series B investment), the Series A investor's investment would therefore have a post-financing value of $7,000,000.

13. For the mathematically inclined, this conclusion is also suggested by the equation set forth in note 8 for determining NewCo's pre-money, fully-diluted capitalization. In note 8, we assumed that the pre-money valuation of NewCo was $10,000,000. By setting the pre-money valuation as independent variable "x" (but still assuming an investment of $10,000,000), the equation for the pre-money, fully-diluted capitalization would appear as follows:

\[
y = \frac{4,000,000 + 6,000,000 \times \frac{2}{10,000,000 + \frac{5,000,000}{x/y}}}{2}
\]

Upon solving for "y" (i.e., the pre-money capitalization):

\[
y = \frac{8,000,000(x)}{x - 4,000,000}
\]

Thus, at any non-negative valuation (or "x") at or below $4,000,000, the number of pre-money, fully-diluted shares would have to be either an irrational number (in the case of a $4,000,000 pre-money valuation) or a negative number (in the case of a valuation below $4,000,000), indicating the realistic impossibility at such valuations of honoring both the Series B investor's expectations and the Series A investor's right to antidilution protection.
Because of these problems, application of the Efficient Pricing Principle in a down-round financing at particularly low pre-money valuations will generally require the new investor to negotiate with the existing investors regarding the waiver of all or part of their antidilution protection. Moreover, the need for this dialogue will generally occur at valuations where honoring antidilution is technically possible, but practically infeasible. As discussed previously, the Efficient Pricing Principle calculates the Series B price per share based on NewCo's deemed pre-money, fully-diluted capitalization after taking into account all antidilution adjustments to be made in the financing. Figure 1 shows that as NewCo's pre-money valuation decreases, application of the Efficient Pricing Principle requires the size of NewCo's deemed pre-money, fully-diluted capitalization to increase at an exponential rate until applying the principle would result in an allocation of more than 100% of NewCo's fully-diluted capitalization (the "Absolute Minimum Valuation"). As NewCo's common stockholders (which may include NewCo's management) will generally retain the same fixed number of shares of Common Stock, the dilution experienced by these stockholders will therefore also increase exponentially as the pre-money valuation decreases. Thus, absent a waiver or modification of the Series A antidilution protection in such instances, NewCo's fully-diluted capitalization can easily reach into the hundreds of millions of shares as its valuation approaches the Absolute Minimum Valuation, leaving common stockholders and unprotected investors with truly worthless stock. Of course, our Series B investor could forgo use of the Efficient Pricing Principle to avoid such a situation, but as noted in Part II, this will simply increase the effective pre-money valuation of the financing.

Principle #2: For every company with antidilution protection, there exists a pre-money valuation at which application of the Efficient Pricing Principle becomes a mathematical impossibility unless the existing preferred stockholders relinquish a portion of their antidilution protection.

14. The graphs contained in Figure 1 are based on the equations representing NewCo's deemed pre-money, fully-diluted capitalization as a function of NewCo's pre-money valuation for each of the following scenarios in which the Efficient Pricing Principle is applied: (a) where the Series A Preferred Stock has no antidilution protection (f(x) = 10,000,000), (b) where the Series A Preferred Stock has broad-based antidilution protection (f(x) = (8,000,000(x))/(x - 4,000,000)) and (c) where the Series A Preferred Stock has ratchet antidilution protection (f(x) = (4,000,000(x))/(x - 12,000,000)). The equation for the scenario in which the Series A Preferred Stock has broad-based antidilution protection is derived in note 13. The equation for the scenario in which the Series A Preferred Stock has ratchet antidilution protection is derived as follows (where "y" represents NewCo's pre-money, fully-diluted capitalization and "x" represents NewCo's pre-money valuation):

\[
y = 4,000,000 + 6,000,000 \times \frac{2}{x/y}
\]

And upon solving for "y" (i.e., the pre-money capitalization):

\[
y = \frac{4,000,000(x)}{x - 12,000,000}
\]

For each scenario, the graph is limited to the positive domain and the positive range of the function (i.e., for pre-money valuations and pre-money, fully-diluted capitalizations having values greater than 0).
IV. PROVIDING FOR MANAGEMENT AND EMPLOYEES IN A DOWN-ROUND

As suggested in Part III, a principle effect of antidilution protection is to increase the dilution of a down-round financing on common stockholders, such as a company’s management and employees. By increasing the conversion rate of the outstanding preferred stock, an antidilution adjustment will cause the company’s existing shares of common stock to represent a smaller portion of the company’s fully-diluted capitalization than prior to the adjustment. Moreover, applying the Efficient Pricing Principle will generally exacerbate this dilutive effect by decreasing the price per share paid by a new investor in a down-round financing and, consequently, further increasing the preferred stock’s antidilution adjustment. Accordingly, it is common in many down-rounds to increase a company’s option pool and provide for a round of “replenishment” option grants to provide an incentive to employees following the financing. In increasing an option pool, however, venture capital investors and entrepreneurs should be mindful of the two principles discussed previously.

First, the logic of the Efficient Pricing Principle suggests that, in order to price a down-round financing at a particular pre-money valuation, an investor should include the increased option pool in a company’s pre-money, fully-diluted...
capitalization. For example, assume that our Series B investor has agreed to create an option pool in connection with NewCo's Series B financing such that, after the financing, the unallocated pool will equal twenty percent of the company's fully-diluted capitalization. Assume further that the Series A Preferred Stock, as before, has broad-based antidilution protection. As discussed in Part II, application of the Efficient Pricing Principle will ensure that our Series B investor owns fifty percent of NewCo's fully-diluted capitalization following the issuance of the Series B Preferred Stock and will result in a post-financing, fully-diluted capitalization of 26,666,666 shares. Based on these numbers, the size of the unallocated option pool would ordinarily equal 6,666,667 shares, and the post-financing capitalization table would appear as follows:

<table>
<thead>
<tr>
<th>Stock:</th>
<th>Shares Outstanding</th>
<th>Shares As-Converted to Common Stock</th>
<th>Fully-Diluted Percentage Ownership</th>
</tr>
</thead>
<tbody>
<tr>
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<td>4,000,000</td>
<td>4,000,000</td>
<td>12.00%</td>
</tr>
<tr>
<td>Series A Preferred Stock:</td>
<td>6,000,000</td>
<td>9,333,333</td>
<td>28.00%</td>
</tr>
<tr>
<td>Series B Preferred Stock:</td>
<td>13,333,333</td>
<td>13,333,333</td>
<td>40.00%</td>
</tr>
<tr>
<td>Option Pool:</td>
<td>6,666,667</td>
<td>6,666,667</td>
<td>20.00%</td>
</tr>
<tr>
<td>Total:</td>
<td>30,000,000</td>
<td>33,333,333</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

As before, however, the Series B investor may object to this result, as the increased pool will decrease the Series B investor's stake in NewCo to forty percent of the company's post-financing, fully-diluted capitalization. Economically, our Series B investor would then be in the same position as if it invested in NewCo at a pre-money valuation of $15,000,000 rather than at a pre-money valuation of $10,000,000.

For the Series B investor to avoid this dilution and to adhere to a $10,000,000 pre-money valuation, it will be necessary to include the increased option pool in NewCo's pre-money, fully-diluted capitalization. Accordingly, the price per share would be calculated as follows:

$$\frac{\$10,000,000 \text{ pre-money valuation}}{10,000,000 \text{ shares outstanding} + \text{Series A antidilution adjustment} + \text{increased option pool}}$$

16. Calculating the pre-money, fully-diluted capitalization for this example—and hence the price per share—will require a combination of the following two equations, where "x" equals the pre-money valuation, "y" equals the pre-money, fully-diluted capitalization, and "z" equals the post-money, fully-diluted capitalization:

$$(i) \quad y = 4,000,000 + 6,000,000 \times \frac{2}{\frac{1}{10,000,000} + \frac{2(10,000,000/2)}{10,000,000} + 0.2(z)}$$

and

$$(ii) \quad z = 4,000,000 + 6,000,000 \times \frac{2}{\frac{1}{10,000,000} + \frac{2(10,000,000/2)}{10,000,000} + \frac{10,000,000}{x/y} + 0.2(z)}$$
Using this formula, the Series B investor would then purchase 40,000,000 shares of Series B Preferred Stock at $0.25 per share and the option pool would be increased to 16,000,000 shares. NewCo's post-financing, fully-diluted capitalization would appear as follows:

<table>
<thead>
<tr>
<th>Stock:</th>
<th>Shares Outstanding</th>
<th>Shares As-Converted to Common Stock</th>
<th>Fully-Diluted Percentage Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Stock:</td>
<td>4,000,000</td>
<td>4,000,000</td>
<td>5.00%</td>
</tr>
<tr>
<td>Series A Preferred Stock:</td>
<td>6,000,000</td>
<td>20,000,000</td>
<td>25.00%</td>
</tr>
<tr>
<td>Series B Preferred Stock:</td>
<td>40,000,000</td>
<td>40,000,000</td>
<td>50.00%</td>
</tr>
<tr>
<td>Option Pool:</td>
<td>16,000,000</td>
<td>16,000,000</td>
<td>20.00%</td>
</tr>
<tr>
<td>Total:</td>
<td>66,000,000</td>
<td>80,000,000</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

As in Part III, pricing a financing in this manner will significantly increase the dilution experienced by the company's common stockholders, which may require an investor to reconsider the pre-money valuation at which it has priced the transaction. To the extent an investor has settled on a company's pre-money valuation, however, this pricing method will ensure that an option pool increase in connection with a financing does not undermine an investor's anticipated percentage ownership of a portfolio company.

Upon combining the equations and solving for "y," we get the following equation:

\[ y = \frac{10,000,000(x)}{x-7,500,000} \]

Thus, assuming a $10,000,000 round of financing and a $10,000,000 pre-money valuation, the pre-money, fully-diluted capitalization that will yield a satisfactory result for our Series B investor will be 40,000,000 shares. Again, most spreadsheets can compute these calculations automatically when appropriately designed.

17. Although "replenishment options" may mitigate the dilutive effect of a financing on a company's employees, an investor should not underestimate the numerous problems associated with significantly diluting a company's common stock. As a practical matter, granting new options will require often difficult negotiations with the company's management regarding the terms of the new option grants. Should the options vest from the date of grant or from an individual's employment commencement date? Should management be made entirely whole or only partially whole? Moreover, as discussed below, including the option pool in the pre-money, fully-diluted capitalization will increase the company's Absolute Minimum Valuation, raising the possibility that it may be impossible to provide for a sufficient option pool increase to cover the desired allocation of replenishment options. Significant dilution to a company's common stockholders may also adversely affect employee morale, especially when employees have early-exercised their stock options or purchased founders stock. Lastly, the dilution suffered by certain stockholders in a down-round financing can raise difficult questions about directors' fiduciary duties. This is especially true where one or more directors (or venture capital funds affiliated with any directors) will be participating in the dilutive financing. For additional discussion regarding this subject, see Joseph W. Bartlett & Kevin R. Garlitz, Fiduciary Duties in Burnout/Cramdown Financings, 20 J. Corp. L. 593 (1994) and José M. Padilla, What's Wrong with a Washout?: Fiduciary Duties of the Venture Capitalist Investor in a Washout Financing, 1 Hous. Bus. & Tax L.J. 269 (2001).

18. The logic of including a proposed option pool increase in the pre-money, fully-diluted capitalization when pricing a financing applies equally to any other outstanding contingent stock rights or other deal-related security issuances, such as warrants issuable to placement agents. All such contingent rights and issuances effectively dilute the new investor's ownership percentage of the company's post-financing capitalization. As a result, to the extent an investor views such contingent rights and issuances as tied to the company's pre-money valuation, it will be necessary to include such rights and issuances in the denominator of the pricing equation in order to give full effect to the investor's pre-money valuation. In contrast, where a particular contingent right or issuance may provide...
Second, as in the application of the Efficient Pricing Principle in Part III, requiring a company to include in its pre-money capitalization a proposed option pool increase will raise the company’s Absolute Minimum Valuation. As shown in Figure 1, where the Series A investors had broad-based antidilution protection, application of the Efficient Pricing Principle to NewCo’s $10,000,000 Series B financing resulted in an Absolute Minimum Valuation of $4,000,000. In contrast, if the terms of the same Series B financing also require NewCo to increase its option pool to twenty percent of the company’s post-financing, fully-diluted capitalization, application of the Efficient Pricing Principle would result in an Absolute Minimum Valuation of $7,500,000. That is, at any valuation below $7,500,000, application of the principle would require the company to allocate over 100% of its capitalization in order to (i) grant the Series B investor fifty percent of the company’s post-financing, fully-diluted capitalization, (ii) honor the Series A investor’s broad-based antidilution protection, and (iii) provide for a twenty percent post-financing unallocated option pool.19 If the Series A Preferred Stock were to have ratchet antidilution protection in such a financing, the minimum pre-money valuation necessary to achieve these results would increase to $17,500,000 (as compared to an Absolute Minimum Valuation of $12,000,000 in the absence of an increase in NewCo’s option pool). Moreover, as in Part III, when NewCo’s pre-money valuation decreases towards the Absolute Minimum Valuation, the size of NewCo’s deemed pre-money, fully-diluted capitalization increases exponentially, resulting in an exponential increase in the rate at which the company’s common stockholders are diluted. (Figure 2).20 Thus, by increasing an option pool in connection with a down-round financing, existing investors may have to relinquish a portion of their antidilution protection at a higher pre-money valuation than without an option pool increase if (i) the new investor is to receive a specified post-financing ownership percentage, (ii) the option pool is to be increased to a specified size, and (iii) the existing shares of common stock are to represent a certain minimum ownership stake of the company.

additional value to the company after the financing, an investor may agree to exclude such right or issuance from the equation and share in its dilutive effect. As one might imagine, the inclusion or exclusion of such contingent rights and issuances from the pricing equation is a common element of many venture financing negotiations.

19. As Figure 2 indicates, even without antidilution protection, increasing an option pool in connection with a financing will lead to an Absolute Minimum Valuation so long as the new investor uses the Efficient Pricing Principle. In the case of a $10,000,000 financing of NewCo and no Series A antidilution protection, any valuation below $2,500,000 will require an allocation of more than 100% of the company’s capitalization.

20. The graphs set forth in Figure 2 are based on the equations for NewCo’s deemed pre-money, fully-diluted capitalization as a function of NewCo’s pre-money valuation for each of the following scenarios in which NewCo increases the stock option pool to an unallocated twenty percent and the Efficient Pricing Principle is applied: (a) where the Series A Preferred Stock has no antidilution protection \( f(x) = 10,000,000 + 2,000,000 \cdot (x + 10,000,000)/(0.8(x - 2,000,000)) \), (b) where the Series A Preferred Stock has broad-based antidilution protection \( f(x) = (10,000,000(x))/(x - 7,500,000) \) and (c) where the Series A Preferred Stock has ratchet antidilution protection \( f(x) = (5,000,000(x))/(x - 17,500,000) \). In each case, the underlying equation for the graph is derived by a combination of two formulas using the method described in note 16.
Principle #3: When increasing an option pool in connection with a down-round financing, in order to adhere to a particular pre-money valuation, an investor must include in the pre-money, fully-diluted capitalization the proposed option pool increase, which will further increase the pre-money valuation at which the existing preferred stockholders must relinquish a portion of their antidilution protection.

V. THE INCOMPLETE "RE-START"

Let us now turn to a scenario frequently encountered in the current market environment. As in our prior examples, NewCo has previously completed a $12,000,000 Series A financing, but after exhausting these funds, it is in need of an additional $10,000,000 to continue its product development and to close a strategic transaction. Our Series B investor finds the company's prospects appealing but is only willing to provide funding at a $5,000,000 pre-money valuation. Recognizing that the Series A Preferred Stock has broad-based antidilution protection, the investor applies the Efficient Pricing Principle and purchases $10,000,000 of Series B Preferred Stock at $0.125 per share. At this price, the Series A investor will be entitled to a conversion ratio adjustment such that, upon conversion of its Series A Preferred Stock, the investor's effective per share purchase price will be $0.33 rather than $2.00, allowing the Series A Preferred Stock

---

21. As discussed in Part II, the Series B price per share would be determined by dividing the pre-money valuation of $5,000,000 by the sum of (i) the pre-money, fully-diluted capitalization of 12,000,000 and (ii) the Series B antidilution adjustment. See supra note 8 and accompanying text.
to convert into 36,000,000 shares of Common Stock. As a result, the post-financing capitalization table will appear as follows:

<table>
<thead>
<tr>
<th>Stock:</th>
<th>Shares Outstanding</th>
<th>Shares As-Converted to Common Stock</th>
<th>Fully-Diluted Percentage Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Stock:</td>
<td>4,000,000</td>
<td>4,000,000</td>
<td>3.33%</td>
</tr>
<tr>
<td>Series A Preferred Stock:</td>
<td>6,000,000</td>
<td>36,000,000</td>
<td>30.00%</td>
</tr>
<tr>
<td>Series B Preferred Stock:</td>
<td>80,000,000</td>
<td>80,000,000</td>
<td>66.67%</td>
</tr>
<tr>
<td>Total:</td>
<td>90,000,000</td>
<td>120,000,000</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

One year later, NewCo has completed its strategic transaction and has achieved a number of milestones. An outside investor has proposed a $10,000,000 preferred stock financing at a $25,000,000 pre-money valuation, or $0.208 per share. Given the significant increase in the company's valuation since the Series B financing, the Series B investor should ordinarily be delighted with this turn of events. However, the Series A investor (whose investment appears to have contributed little to the recent growth of NewCo) has alerted the company that it will be entitled to a conversion ratio adjustment upon the closing of the Series C financing, as the issue price of the Series C Preferred Stock is less than $0.33 per share, the effective as-converted price per share for the Series A Preferred Stock after the Series B financing. As a result, the Series C investor will likely apply the Efficient Pricing Principle, the Series A investor will receive an even greater antidilution adjustment, and the Series B investor's ownership interest will be diluted by an additional two percent upon completion of the Series C financing.

The reason for this situation stems from the nature of most weighted-average antidilution formulas. As discussed previously, antidilution protection will generally be triggered when a company issues stock at a price that is below the effective as-converted purchase price of a particular series of preferred stock. Upon being triggered, the conversion ratio of such series of preferred stock will then be adjusted, with a ratchet formula decreasing the effective as-converted purchase price of such series of preferred stock to the new, lower price, and a weighted-average formula decreasing the effective as-converted purchase price to a price that is somewhere between the old purchase price and the new issue price. In either case, the preferred stock's antidilution protection will continue to apply automatically to any future issuances below the new, adjusted purchase price. Thus, in the case of NewCo's Series B financing, the issuance of the Series B Preferred Stock would convert into six shares of Common Stock (i.e., $2/$0.33).

22. The Series A conversion price would be adjusted as follows:

\[
\frac{10,000,000}{10,000,000} + \frac{(10,000,000/2)}{10,000,000} = \frac{10,000,000}{120,000,000} = 0.33
\]

Thus, each share of Series A Preferred Stock would convert into six shares of Common Stock (i.e., $2/$0.33).

23. The price is calculated as follows: $25,000,000 / 120,000,000. The example assumes that no additional shares of NewCo stock have been issued since the Series B financing.

24. Without a Series A antidilution adjustment, the Series B investor would hold 47.6% of NewCo's fully-diluted capitalization following the Series C financing. Assuming the Series C investor applies the Efficient Pricing Principle, the Series A antidilution adjustment would result in the Series B investor holding only 45.8% of NewCo's fully-diluted capitalization after the financing.
Preferred Stock resulted in a Series A antidilution adjustment such that the Series A investor had an effective as-converted purchase price of $0.33 per share. Any issuance of stock below this price—including the proposed Series C financing—will therefore require an additional conversion ratio adjustment for the Series A Preferred Stock.

Although the Series A investor is unlikely to waive this adjustment at the Series C financing, the Series B investor might have had more leverage to obtain such a waiver during the Series B financing. Specifically, the Series B investor could have required the Series A investor to modify its antidilution protection so that it would only be triggered upon an issuance of NewCo stock below the Series B issue price of $0.125 per share.

Additionally, the Series B investor might have taken one further step to avoid the risk of future dilution by the antidilution protection of the Series A Preferred Stock: requiring that all future adjustments of the Series A conversion price be in proportion to any future adjustment of the Series B conversion price. Although many venture investors have now made it a practice to adopt the first-mentioned modification, few venture capital investors have, to date, begun to implement this second step when making a down-round investment. Absent this second modification of the Series A antidilution protection, however, an issuance by NewCo of stock below $0.125 per share will result in dilution to the Series B investor by virtue of a decrease in the conversion price of the Series A Preferred Stock. Although both the Series A Preferred Stock and the Series B Preferred Stock would receive an antidilution adjustment, the decrease in the Series A conversion price will be based on the difference between $0.33 (the existing conversion price of the Series A Preferred Stock) and the price of the new stock, while the decrease in the Series B conversion price will be based on the difference between $0.125 (the existing conversion price of the Series B Preferred Stock) and the price of the new stock. As a result, the antidilution adjustment of the Series B conversion price will be less extreme than the adjustment of the Series A conversion price, thereby resulting in dilution to the Series B investors. By way of example, an issuance of $10,000,000 of Series C Preferred Stock by NewCo at a price per share of $0.05 would result in an increase in the conversion rate of the Series A Preferred Stock of 115% but would yield only a sixty percent increase in the Series B conversion.

25. See supra note 22 and accompanying text.
26. Assuming the Series C investor applies the Efficient Pricing Principle, the Series C issue price would be $0.20 rather than $0.208. As such, the Series A conversion price would be adjusted upon the issuance of the Series C Preferred Stock as follows:

\[
\frac{0.33 \times 120,000,000 + (10,000,000 / 0.33)}{120,000,000 + (10,000,000 / 0.20)} = 0.294
\]

27. It should be noted that the Series A conversion price, even after the antidilution adjustment in the Series C financing, will be higher than the Series C issue price of $0.20. Thus, the Series C investor should require that the Series A investor waive any future antidilution adjustments for issuances of NewCo stock above $0.20 per share.
28. This, of course, assumes that the Series B Preferred Stock has antidilution protection.
rate.\textsuperscript{29} In contrast, requiring a proportional adjustment of the Series A conversion price would result in a sixty percent increase in the conversion rate for both the Series A Preferred Stock and the Series B Preferred Stock.\textsuperscript{30}

Principle #4: In a down-round financing in which weighted-average antidilution protection will apply, an investor should require that all future antidilution adjustments for shares of existing preferred stock be in proportion to any antidilution adjustment applicable to the new preferred stock issued in the financing.

VI. JUST WHEN YOU THOUGHT IT WAS OVER . . .

For our Series B investor, application of the preceding four principles will help ensure that the economics of a down-round financing are not undermined by the existence of the Series A antidilution protection. Even after the transaction closes, however, the investor should remain attentive to the various ways in which antidilution protection may continue to affect its ownership of NewCo. In particular, our Series B investor will need to examine each issuance of securities by NewCo to determine whether the issuance qualifies for an antidilution adjustment to the Series B Preferred Stock. Direct issuances of stock at a price per share that is less than the conversion price of the Series B Preferred Stock will ordinarily result in an antidilution adjustment unless the issuance falls within an exemption from the antidilution provisions contained in the company's charter.\textsuperscript{31} Likewise, absent an exemption, an issuance of options or warrants may also result in an antidilution adjustment if the exercise price of such securities is less than the Series B conversion price.

For similar reasons, our Series B investor will need to monitor any modifications made to the terms of the company's outstanding securities, such as a decrease in the conversion price of any outstanding series of preferred stock or the

\textsuperscript{29} Prior to the issuance, each share of Series A Preferred Stock would be convertible into six shares of Common Stock (i.e., $2 / $0.33). Using the formula set forth in note 26, the issuance of the Series C Preferred Stock at $0.05 per share will result in a decrease in the Series A conversion price to approximately $0.155. The new conversion rate of 12.9 (i.e., $2 / $0.155) represents a 115\% increase over the prior conversion rate. In contrast, assuming the Series B Preferred Stock has broad-based antidilution protection, the Series B conversion price will decrease to approximately $0.08. The new Series B conversion price will thereafter represent a conversion rate of approximately 1.6 (i.e., $0.125 / $0.08), or an increase of sixty percent from the original conversion rate of 1:1.

\textsuperscript{30} Mechanically, this result can be achieved by substituting the Series B conversion price for the Series A conversion price in the numerator of the Series A antidilution formula:

\[
\frac{0.33 \times 120,000,000 + (10,000,000/0.125)}{120,000,000 + (10,000,000/0.05)} = 0.208
\]

Using this method, the Series A conversion rate will increase from 6 to 9.6 (i.e., $2 / $0.208), or sixty percent. As discussed in note 29, the Series B conversion rate will also increase sixty percent assuming the issuance of $10,000,000 of Series C Preferred Stock at $0.05 per share.

\textsuperscript{31} In connection with negotiating antidilution protection, investors will almost always agree to exempt certain issuances of stock by the company from triggering the investors' antidilution protection. For example, investors will generally agree to exempt the issuance by the company of lower-priced stock or options to employees, service providers, and certain vendors.
modification of a material term of an outstanding warrant or option (e.g., a modification to the security's exercise price or the number of shares underlying the security). Virtually all forms of antidilution protection contain "deemed issuance" provisions that seek to protect a series of preferred stock with antidilution protection from the dilution that can occur when a company modifies the terms of an outstanding security in a manner that dilutes the protected class of preferred stock. For instance, without such provisions, NewCo could avoid the Series B antidilution protection by first issuing a new series of preferred stock at a price per share that is greater than the Series B conversion price and then later reducing the conversion price of the new stock to a price that is less than the Series B conversion price. On an as-converted to common stock basis, the new security would have an effective as-converted price per share that is less than the conversion price of the Series B Preferred Stock, but no Series B antidilution adjustment would have been required. The deemed issuance provisions prevent this loophole by requiring the company to re-evaluate the original issuance of such modified security as if it had been issued with the new, lower conversion price. Thus, any modification of a security that might result in dilution to the Series B Preferred Stock—such as an increase in the number of shares deliverable upon exercise of an option or warrant or a decrease in the exercise price or conversion price of an exercisable or convertible security—should be closely examined by an investor to determine whether it will trigger any form of antidilution protection.

**Principle #5:** Investors holding shares of preferred stock with antidilution protection should closely monitor any changes in a company’s capitalization—whether the termination or modification of existing securities or the issuance of new ones—as an antidilution adjustment may be warranted.

***

32. In this regard, an investor considering a down-round investment in a portfolio company should carefully examine the deemed issuance language contained in the company's charter to determine whether an anticipated antidilution adjustment in the financing to one series of preferred stock will trigger a separate, additional antidilution adjustment for any other outstanding series of preferred stock. This seldom-discussed issue can have considerable economic ramifications on a portfolio company and its investors. For example, assume in Part V that NewCo completed its $10,000,000 Series C financing at a price per share of $0.05, issuing an aggregate of 200,000,000 shares of Series C Preferred Stock. Because the price per share of the Series C Preferred Stock is less than the $0.33 conversion price of the Series A Preferred Stock and the $0.125 conversion price of the Series B Preferred Stock, both the Series A and the Series B Preferred Stock would be entitled to an antidilution adjustment due to the Series C issuance. The decrease in the Series B conversion price, however, will permit the Series B Preferred Stock to convert into a greater number of shares of Common Stock than when the Series A antidilution adjustment was initially calculated upon the issuance of the Series B Preferred Stock at a price per share of $0.125. As a result, under certain types of deemed issuance provisions, the subsequent antidilution adjustment of the Series B Preferred Stock may require a second, separate adjustment to the Series A conversion price. Specifically, such provisions will require a re-calculation of the initial Series A antidilution adjustment based on the new Series B conversion price. Such a re-calculation may impose considerable administrative burdens on the company and its investors, including the need to resurrect a capitalization table that may be months or even years old. Likewise, depending on the language of the deemed issuance provisions, this second adjustment may dilute the new investor after the financing. As a result, it is generally advisable to carve-out from the deemed issuance provisions a decrease in the conversion price of an outstanding series of preferred stock resulting from its antidilution protection.
A down-round financing can provide venture capital investors with a unique opportunity to invest in a promising company on favorable terms. Through a proper understanding of a company's antidilution provisions, venture capital investors and entrepreneurs can ensure that such provisions do not later undermine the terms of a proposed financing.

**APPENDIX**

**SAMPLE ANTIDILUTION PROVISIONS**

Price-based antidilution protection is most commonly implemented through adding specific antidilution provisions to the charter document of a venture-backed private company. There are three primary forms of such antidilution protection, examples of which are provided below: ratchet protection, broad-based weighted-average protection, and narrow-based weighted-average protection. For simplicity, the sample provisions provided below contain only the core language indicative of each form of antidilution protection. Additional provisions—such as provisions defining "additional stock" and exemptions from the antidilution protection—will also be required in order to give full effect to a particular provision.\(^3\)

**A. Ratchet Provision.**

If this corporation shall issue, on or after the date upon which this Restated Certificate of Incorporation is accepted for filing by the Secretary of State of the State of Delaware, any additional stock without consideration or for a consideration per share less than the conversion price applicable to a series of Preferred Stock in effect immediately prior to the issuance of such additional stock, the conversion price for such series in effect immediately prior to each such issuance shall forthwith (except as otherwise provided in this clause) be adjusted to a price equal to the price paid per share for such additional stock; provided that greater than \([\_\_\_]\) shares of additional stock were issued.

*Comment:* As discussed previously, this formula is the most punitive form of antidilution protection from the perspective of the company and its unprotected stockholders. With a ratchet, the conversion price of the preferred stock is adjusted downward to the price of the dilutive securities. It should be noted that the formula is triggered upon each issuance of securities by a company below the specified price, unless specifically carved-out. As a result, it is often desirable to impose the limitation

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\(^3\) It should be noted that, in addition to price-based antidilution provisions, other types of antidilution provisions may also be found in a company's charter. For example, most venture-backed private companies will provide in their charters for preferred stock antidilution protection in connection with stock splits and stock dividends. Such provisions ensure that if a company splits its common stock and does not split its preferred stock, the conversion rate of the preferred stock must be correspondingly adjusted. In contrast to price-based antidilution provisions, these latter provisions are seldom the subject of significant negotiation. For a sample Delaware charter containing a complete set of antidilution provisions, see Daniel E. O'Connor, *Formation and Financing of Emerging Companies*, in 1 EMERGING GROWTH COMPANIES SERIES 18-1–18-48 (Thomas F. Villeneuve & Robert V. Gunderson, Jr. eds., 1998).
set forth in the proviso in order to help prevent an accidental application of the
ratchet formula in the event the provision is overlooked and the company issues a
relatively small amount of stock to a vendor or some other person where the appli-
cation of the ratchet formula was not intended.]

B. Broad-Based Weighted-Average Provision.

If this corporation shall issue, on or after the date upon which this Restated
Certificate of Incorporation is accepted for filing by the Secretary of State of
the State of Delaware, any additional stock without consideration or for a
consideration per share less than the conversion price applicable to a series of
Preferred Stock in effect immediately prior to the issuance of such additional
stock, the conversion price for such series in effect immediately prior to each
such issuance shall forthwith (except as otherwise provided in this clause) be
adjusted to a price determined by multiplying such conversion price by a
fraction, the numerator of which shall be the number of shares of Common
Stock Outstanding (as defined below) immediately prior to such issuance plus
the number of shares of Common Stock that the aggregate consideration re-
ceived by this corporation for such issuance would purchase at such conversion
price; and the denominator of which shall be the number of shares of Common
Stock Outstanding (as defined below) immediately prior to such issuance plus
the number of shares of such additional stock. For purposes of this section,
the term “Common Stock Outstanding” shall mean and include the following:
(1) outstanding Common Stock, (2) Common Stock issuable upon conversion
of outstanding Preferred Stock, (3) Common Stock issuable upon exercise of
outstanding stock options, and (4) Common Stock issuable upon exercise
(and, in the case of warrants to purchase Preferred Stock, conversion) of out-
standing warrants. Shares described in (1) through (4) above shall be included
whether vested or unvested, whether contingent or non-contingent, and
whether exercisable or not yet exercisable.

[Comment: This is the most common type of antidilution protection. The formula
is as follows:

\[
\text{AP} = \frac{\text{Common Stock Outstanding}}{\text{OP} \cdot \frac{\text{New Money}}{\text{OP}}} + \frac{\text{Additional Stock}}{\text{Common Stock Outstanding}}
\]

WHERE:

- **OP** = Old conversion price (before the price-based adjustment).
- **AP** = Adjusted conversion price (after the price-based adjustment).
- **Common Stock Outstanding** = The number of shares of Common Stock Outstanding
immediately before the issuance of the dilutive securities.
- **New Money** = The amount raised in the dilutive financing.
- **Additional Stock** = The number of shares issued in the dilutive financing.

Note that the bigger the Common Stock Outstanding number, the lower the adjust-
ment to the conversion price (and hence the lower the adjustment to the conversion
rate). Accordingly, the more broad a company can make this number (i.e., the more
stock included in the definition of Common Stock Outstanding), the better for the company and its unprotected stockholders; the more narrow the investors can make this number, the better for the investors. The investors may attempt to narrow the definition by excluding certain of the items in the definition of Common Stock Outstanding.]

C. Narrow-Based Weighted-Average Provision.

If this corporation shall issue, on or after the date upon which this Restated Certificate of Incorporation is accepted for filing by the Secretary of State of the State of Delaware, any additional stock without consideration or for a consideration per share less than the conversion price applicable to a series of Preferred Stock in effect immediately prior to the issuance of such additional stock, the conversion price for such series in effect immediately prior to each such issuance shall forthwith (except as otherwise provided in this clause) be adjusted to a price determined by multiplying such conversion price by a fraction, the numerator of which shall be the number of shares of Preferred Stock outstanding immediately prior to such issuance plus the number of shares of capital stock that the aggregate consideration received by this corporation for such issuance would purchase at such conversion price; and the denominator of which shall be the number of shares of Preferred Stock outstanding immediately prior to such issuance plus the number of shares of such additional stock.

[Comment: Like the broad-based formula, the narrow-based formula is a weighted-average formula; it includes, however, fewer outstanding securities in calculating the price-based adjustment. In particular, the number included in the numerator and the denominator is the number of shares of preferred stock outstanding (or, in some cases, the number of shares of a particular series of preferred stock that are outstanding). As noted above, if the investors can narrow the broad-based definition, they can increase the conversion rate adjustment caused by the issuance of dilutive securities.]