

DILUTION FORMULAS IN REAL ESTATE JOINT VENTURE AGREEMENTS



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What happens when a member of a limited liability company fails to make a capital contribution within the time specified under the limited liability company agreement? Many limited liability company agreements give the member or members who timely contribute their share (the contributing members):

- The right to fund the non-contributing member's share (a Replacement Contribution);² and then
- One or more alternative rights,³ which may include the right to dilute the non-contributing member's interest under a dilution formula.

Despite their prevalence in real estate ventures, dilution formulas are surprisingly misunderstood. This article provides a framework to help explain, in the context of certain common real estate ventures, various types of dilution formulas and some of the computational issues they present.⁴

ASSUMPTIONS

Sometimes a real estate venture is very simple, involving two parties who make all contributions,

and receive all distributions, proportionately in accordance with venture percentages (a Straight-Up Venture). But that structure is too simple for our purposes. And it doesn't reflect the common promote structure for a real estate venture involving an institutional investor (investor) and an operator or developer (sponsor) whose expertise will be utilized to enhance the value of the real estate and the expected investment returns of the venture: Typically, the investor will contribute the vast majority of capital, often 90 percent or more, and the distributions can get very complicated, involving a return of, and return on, capital followed by one or more distribution levels in which the sponsor can receive a special allocation of profit distributions (over and above its proportionate share on account of its capital contributions), which is known as a promote.⁵ We call such an investor/sponsor venture a Multi-Distribution-Level Venture, and for ease of reference, we use more generic terms for the parties, such as Member A and Member B. Unless otherwise indicated, we assume a simplified form of Multi-Distribution-Level Venture involving a two-member Delaware⁶ limited liability company, under which contributions are

made in accordance with venture percentages⁷ and distributions are made as follows:

- First, to pay a return (the Preferred Return) on outstanding capital contributions, to the members in proportion to the respective amounts of their accrued but unpaid Preferred Return;
- Second, to recoup capital contributions, to the members in proportion to the respective amounts of their outstanding capital contributions; and
- Third, a certain percentage (the Promote Percentage) to the sponsor as a promote and the balance to the members in accordance with their venture percentages.⁸

But this structure may still be too complicated: it could result in cumbersome and potentially distracting calculations that slow down our analysis. George Pólya, a Hungarian mathematician famous for his problem-solving techniques, recommended that, when faced with a complicated problem, try to find a simpler related problem that is easier to solve. We do just that. To make the examples easier to follow, we assume that each of the Preferred Return and the Promote Percentage is zero percent, and we usually (but not always) assume that the venture percentages are initially equal.⁹

Much of the discussion applies to partnerships as well.

1. WHAT IS A DILUTION FORMULA?

A dilution formula may be viewed by some as any algorithm that reduces (and thereby dilutes) the interest of the non-contributing member and increases the interest of the contributing member. For example, some commentators have referred to a contribution default remedy as a “dilution provision,” even though it was more akin to a non-recourse default loan from a contributing member to a non-contributing member.¹⁰ But this approach is too broad for our purposes. When we mention a dilution formula, we do not mean a loan (whether to the venture or the non-contributing member), preferred contribution, or buy-out of the

non-contributing member’s interest,¹¹ or any of their functional equivalents. We mean instead a formula that directly reduces the venture percentage of the non-contributing member and directly increases the venture percentage of the contributing member. As we will see, there are many ways a dilution formula can accomplish these results (and sometimes the formula does more).

2. WHAT IS THE PURPOSE OF A DILUTION FORMULA?

The purpose of a dilution formula may vary, depending on the context:

- In the case of required capital contributions, it may be intended to function both as a deterrent to, and as a penalty for, non-performance; and
- In the case of discretionary capital contributions (i.e., contributions that are not required or mandatory but are optional or voluntary), it may be intended to function merely as an appropriate economic adjustment to compensate the contributing members for their increased share of total capital contributed to the company (without penalizing the non-contributing member).

Sometimes, the line between these two functions gets blurred: if the economic adjustment for contributing discretionary capital is too favorable to the contributing members, then there may be an economic compulsion that effectively makes the capital required and it may penalize a non-contributing member. Sometimes, there are separate formulas to address required capital, on the one hand, and discretionary capital, on the other hand. But, even then, the application of the formulas may not always serve their intended purposes and more generally may lead to unexpected results.

3. CATEGORIES OF DILUTION FORMULAS

Let’s break down some of the more common dilution formulas.

3.1 Capital Versus Value. There are capital-based formulas,¹² on the one hand, and value-based formulas, on the other hand.¹³

3.1.1 Capital-Based Formulas. A capital-based formula is generally based solely on the capital contributions of the members (and, as we will see, sometimes distributions to the members too).¹⁴ Here is an example:

Sample Capital-Based Formula. The Venture Percentages of the Members as of any particular time will be proportionate to the respective capital contributions of the Members through such time (e.g., if as of a particular time, the total capital contributions of Member A and Member B are \$60X and \$40X, respectively, then their venture percentages would then be 60 percent and 40 percent, respectively).

Sample Capital-Based Formula
$\frac{\text{Member's Total Contributions}}{\text{Total Contributions}}$

This formula (which we call a pro-rata formula and discuss further in part 3.3.1 below) is one of many possible capital-based formulas. We choose this one because it is simple: Each member's venture percentage equals its proportion of the total capital contributions. It is often used when discretionary capital is not contributed by one of the members (because it is perceived by many to be non-punitive).

Example 3.1.1 Assume the following facts: (i) There is a 50/50 venture that plans to acquire multiple real estate assets without financing (i.e., solely with capital contributions); (ii) The first asset is acquired for \$10X, with capital contributions of \$5X from each of the members; and (iii) Immediately before the second capital call, the value of the first asset has doubled to \$20X. If the venture were liquidated at this point in time (assuming for simplicity, no seller closing costs or other liquidation costs), then each member would receive \$10X. Further assume that: (i) Member A fails to contribute its share of the cost of the second asset and Member B contributes the entire amount, which is again \$10X (and assume that this amount equals the value of the second asset); (ii) There are no other contributions; and (iii) The venture agreement provides for the sample capital-based dilution formula identified above. Immediately after

Member B's second contribution, the total capital of the venture is \$20X and the total value of (and equity in) the venture's assets is \$30X.

Applying the pro-rata formula to the facts, the venture percentages would be changed (from 50/50) as follows:

Member	Adjusted %	Calculation
A	25%	5/20
B	75%	15/20

If the venture were liquidated either immediately before or immediately after Member B's second contribution (assuming for simplicity, no seller closing costs or other liquidation costs), then the members would receive the following respective amounts:

Time of Liquidation	Member A	Member B
Immediately Before 2nd Contrib.	\$10X ¹⁵	\$10X ¹⁶
Immediately After 2nd Contrib.	\$7.5X ¹⁷	\$22.5X ¹⁸

Thus, the value of Members A's interest is reduced from \$10X to \$7.5X as a result of the application of the sample capital-based formula. The reason for this loss is a shift in the allocation of appreciation: Immediately prior to Member B's second contribution, the \$10X of appreciation in the first asset was shared 50/50 and immediately after Member B's second contribution, it is shared 25/75.

3.1.2 Value-Based Formulas. By contrast, a value-based formula takes into account the value of the venture's assets (and using that asset value, the value of the membership interests). A value-based formula may be used to avoid a penalty in connection with capital contributions that are discretionary (or voluntary):

Dilution provisions are also used, not as remedy to delinquency, but as a means of adjusting partners' or members' interests to reflect changes in their respective voluntary contributions. In connection with voluntary contributions, the

entity’s property is typically revalued ... and the partner’s or member’s ... interests ... are adjusted accordingly.¹⁹

In value-based formulas encountered by the author, the assets of the venture are marked to market immediately *before* the contributions in question (or at a time when the most recent periodic valuation occurred).²⁰ But in the context of a Multi-Distribution-Level Venture between an institutional investor and a sponsor, as opposed to a fund context, the author has rarely encountered a value-based formula. This is not surprising because such a formula can get complicated and may require not only revaluation but also capital account adjustments.²¹ Here is a value-based formula which, without additional adjustments, may not always achieve the intended non-punitive results:

Sample Value-Based Formula. If one Member does not contribute its share of a capital call for discretionary capital and the other Member contributes the entire amount of such capital call, then the assets of the Venture will be revalued by the Manager as of the time immediately before such capital call, the Value of each Member’s Interest will be determined by Manager as of such time (based on what such Member would receive if the Venture were liquidated immediately after a sale of the Venture’s assets at such asset value), and the Venture Percentage of each Member will then be adjusted to equal the percentage equivalent of a fraction, (i) the numerator of which is the sum of (a) the Value of such Member’s Interest, and (b) such Member’s current discretionary contribution, if any, and (ii) the denominator of which is the sum of (a) the “Entity Value” (i.e., the sum of the Values of the Members’ Interests), and (b) the current discretionary contributions of the Members.²²

Value of Member’s Interest + Member’s Current Contribution

Entity Value + Total Current Contributions

This formula may be written more simply (as a pro-rata formula where each Member’s venture percentage equals its proportion of the value of the

venture) by defining: (i) the “Value of Member’s Interest” to equal the sum of (x) that Member’s share of net liquidation proceeds from the hypothetical liquidation described above, plus (y) the amount of such Member’s current contribution; and (ii) the Entity Value to be the sum of the values of each Member’s interest:

Sample Value-Based Formula

Value of Member’s Interest
Entity Value

Example 3.1.2. Assume the same facts as in Example 3.1.1, except that in lieu of the capital-based (pro-rata) formula, the venture agreement provides for the sample value-based (pro-rata) formula above.

Applying this sample value-based formula (and noting that the equity of the venture, immediately after Member B’s second contribution, is \$30X), the venture percentages would be changed (from 50/50) as follows:

Member	Adjusted %	Calculation
A	33-1/3%	10/30 ²³
B	66-2/3%	20/30 ²⁴

If, contrary to our assumptions, all distributions were made in accordance with venture percentages, and the venture were liquidated immediately after Member B’s second contribution, then Member A would not be penalized: assuming for simplicity no seller closing costs or other liquidation costs, Member A’s \$10X liquidation value immediately before Member B’s second contribution (i.e., \$10X = 50% of \$20X) would be preserved immediately after Member B’s second contributions (because \$10X = 33-1/3% of \$30X). But our assumed venture is not a Straight-Up Venture: under our assumed second distribution level, capital is returned in accordance with capital contributions (\$5X and \$15X) and only the remaining (third level) distributions are made in accordance with venture percentages, so that the

members would receive the following respective approximate amounts:

Time of Liquidation	Member A	Member B
Immediately Before 2nd Contribution	\$10X ²⁵	\$10X ²⁶
Immediately After 2nd Contribution	\$8.33X ²⁷	\$21.67X ²⁸

3.1.3 Comparison. The two sample formulas in parts 3.1.1 and 3.1.2 above basically determine each member’s venture percentage based on that member’s proportion of capital (contributions) or value, respectively (assuming each current capital contribution is valued under the value-based formula on a \$1-for-\$1 basis). Unlike the capital-based formula in part 3.1.1, the value-based formula in part 3.1.2 would not reduce the value of the non-contributing member’s interest in our example if all venture distributions were made in accordance with venture percentages. But the assumed distribution levels are more complicated. Under our assumed facts, the sample value-based formula is less punitive than the sample capital-based formula; but it is still punitive. To achieve a non-punitive result, one would need to make some adjustment to the distributions (e.g., by increasing the second level distributions to cover not only the sum of the capital contributions of each member and but also the sum of each member’s then-share of appreciation, and thereby correspond to the value, rather than the amount, of the existing capital).

Value-based formulas may be better suited to achieve non-punitive and predictable results (and avoid some of the problems described in this article) for discretionary capital,²⁹ especially when the venture already marks to market its assets on a periodic basis for independent (e.g., accounting) reasons (or the parties are willing to give someone, such as a manager, the discretion to determine value). But, as illustrated above, these formulas may get complicated. Moreover, if a value determination is not readily available, then an appraisal or other valuation process may be necessary, which can be cumbersome, costly, and time consuming and may give

rise to disagreements. Consequently, real estate professionals, in the context of facts similar to those initially assumed in this article, usually opt for a more expeditious solution by using some form of capital-based formula (which can be easily and quickly applied); in the case of discretionary capital, some real estate professionals do not use a dilution formula at all (and rely instead on alternative adjustments, such as preferred capital or loans earning a return or interest at a non-punitive rate). Unless otherwise stated, we assume that the dilution formula in question is capital-based.

3.2 Gross Versus Net. Capital-based dilution formulas may be gross-capital formulas, on the one hand, or net-capital formulas, on the other hand.

3.2.1 Gross-Capital Formulas. A gross-capital formula takes into account the gross amount of capital contributions (i.e., without deduction for any portion of the capital contributions that is recouped through distributions). The dilution formula in part 3.1.1 is a gross-capital formula.

Sample Gross-Capital Formula
$\frac{\text{Member's Total Contributions}}{\text{Total Contributions}}$

Example 3.2.1. Assume the following facts: (i) We have another 50/50 venture that plans (at least initially) to acquire multiple real estate assets without financing (i.e., solely with capital contributions); (ii) The first asset is again acquired for \$10X, with capital contributions of \$5X from each of the members; (iii) The first asset doubles in value immediately before the second call; (iv) The venture obtains a \$10X mortgage loan on the first asset so that each member recoups (through a distribution of financing proceeds) all its capital before the second capital call (and, at this time, the venture has \$10X of remaining equity in the first asset); (v) One of the members fails to contribute its share of the cost of the second asset and the other member contributes the entire amount, which is again \$10X (and assume that this amount equals the value of the second asset); (vi) There are no other contributions; and (vii) The dilution formula is the same as in part 3.1.1 (where

the member’s venture percentages are simply proportionate to their contributions).

Using the assumed dilution formula, the venture percentages would, as in part 3.1.1, be changed (from 50/50) as follows:

Member	Adjusted %	Calculation
A	25%	5/20
B	75%	15/20

3.2.2 Net-Capital Formulas. By contrast, a net-capital formula takes into account only the net amount of capital contributions (i.e., the portion of the capital contributions that has not been recouped from distributions).³⁰

Example 3.2.2 Assume the same facts as in Example 3.2.1, except that the dilution formula is based on *net* (rather than *gross*) capital (i.e., the venture percentages are proportionate to the members’ *unrecouped* capital contributions).

Sample Net-Capital Formula
$\frac{\text{Member's Total Unrecouped Contributions}}{\text{Total Unrecouped Contributions}}$

Using this net-capital formula, the venture percentages would be changed (from 50/50) as follows:

Member	Adjusted %	Calculation
A	0%	0/10 ³¹
B	100%	10/10 ³²

Thus, the non-contributing member’s venture percentage (and its share of appreciation, which was worth roughly \$5X) is reduced to zero percent. Observe that the non-contributing member’s venture percentage (and its share of appreciation) would be wiped out regardless of how small the Replacement Contribution is (even if the Replacement Contribution were only \$1, because $0/\$1 = 0$)! Moreover, under the sample net-capital formula, the venture percentages might automatically adjust not only when contributions are made, but also when distributions are made; but once all capital has been recouped, the sample net-capital formula would not

make sense ($0/0$), so additional provisions would be required to avoid that result (i.e., to avoid letting the denominator, in the calculation of the venture percentages, reach 0).

Net-capital formulas are rare. Unless otherwise stated, we assume that capital-based dilution formulas are gross-capital formulas.

3.2.3 Gross-Capital Formulas are Not Perfect Either. As we saw in Example 3.1.1, gross-capital formulas may also have issues. Gross-capital formulas can even yield unexpected results that may not occur with a net-capital formula.

Example 3.2.3. Assume the same facts as Example 3.2.1, except that instead of refinancing the first asset, the venture sells the first asset for its \$20X value (and distributes all the sale proceeds, assuming no closing costs) immediately before Member B’s second contribution.

As observed in part 3.2.1, the revised venture percentages are 25 percent and 75 percent. But is it fair that the 25 percent member may get 25 percent of the future profits from the second asset even though it failed to contribute any of the capital to acquire the second asset and it has no outstanding investment in the venture?³³

3.3 Pro-Rata Versus Bonus. Capital-based dilution formulas may be pro-rata formulas, on the one hand, or bonus formulas, on the other hand.

3.3.1 Pro-Rata Formulas. A pro-rata formula is the most straightforward of all dilution formulas. It is simply based on each member’s proportionate share of total contributions. Parts 3.1.1 and 3.2.1 illustrate the application of a pro-rata formula. Although sometimes referred to as a non-punitive dilution formula,³⁴ Example 3.1.1 illustrates how a dilution formula may in some circumstances be punitive. In Example 3.1.1, the non-contributing member lost half (i.e., 50 percent of \$5X = \$2.5X) of its share of the appreciation in the first asset acquired by the venture. In some circumstances, a pro-rata formula might even hurt the contributing member.³⁵

Example 3.3.1. Assume the same facts as in Example 3.1.1, except that the first asset declines in value to \$6X (i.e., 60 percent of its original value) before Member B’s second contribution. At this point in time, there is a \$4X (unrealized) loss in value, which is shared equally by the members (i.e., \$2X each).

But capital-based formulas do not address changes in value. So, as we have seen before, the pro-rata dilution formula would change the venture percentages (from 50/50) as follows:

Member	Adjusted %	Calculation
A	25%	5/20
B	75%	15/20

Immediately after the second contribution, the venture still has a \$4X (unrealized) loss (with total contributions of \$20X and total assets valued at \$16X). One might expect, as a result of the new \$10X contribution by the contributing member, that the liquidation value (assuming no liquidation costs) of the contributing member’s interest would increase by the amount of its new \$10X contribution (from \$3X to \$13X) and the liquidation value (assuming no liquidation costs) of the non-contributing member’s interest would not increase beyond its then value of \$3X. But that is not what happens.

Time of Liquidation	Member A	Member B
Immediately Before 2nd Contribution	\$3X ³⁶	\$3X ³⁷
Immediately After 2nd Contribution	\$4X ³⁸	\$12X ³⁹

The contributing member gets only a \$9X increase (\$12X - \$3X) because it picks up an additional \$1X (25 percent) of the loss; while the non-contributing member gets a corresponding \$1X increase (\$4X - \$3X) because it is effectively relieved of that portion (25 percent) of the loss! In other words, the contributing member now has 75 percent of the \$4X loss (i.e., \$3X) rather than only 50 percent (i.e., \$2X) and the non-contributing member now has only 25 percent of the \$4X loss (i.e., \$1X) rather than 50 percent (i.e., \$2X).⁴⁰

3.3.2 Bonus Formulas. A bonus formula involves a bonus (or penalty) factor that gives extra credit to the contributing member for making a Replacement Contribution in adjusting the venture percentages. These formulas are typically used only for the failure to contribute required capital (i.e., when there is a contribution default) as opposed to discretionary capital. The bonus (or penalty) typically takes into account an artificially increased Replacement Contribution, such as 150 percent of the Replacement Contribution as compared to the actual amount of the Replacement Contribution that would be used in a pro-rata formula. The artificial portion of the increased Replacement Contribution (e.g., 50 percent of the Replacement Contribution if the Replacement Contribution is increased to 150 percent of the actual amount for purposes of recalculating the venture percentages) effectuates the bonus (or penalty) and may be referred to as a bonus amount. It is also possible to apply the bonus factor to the entire contribution made by the contributing member (both its regular contribution and its Replacement Contribution), but this approach (which is discussed in part 3.5 below) is rare.⁴¹

3.4 Shift Versus Increasing-Pie. Bonus Formulas may take many different forms. In the author’s experience, there are two predominate types based on the source of the bonus: *shift formulas*, on the one hand, and *increasing-pie formulas*, on the other hand.

3.4.1 Shift Formulas. In a shift formula, the bonus comes from the non-contributing member (there is, in effect, a shift from the non-contributing member to the contributing member of the bonus amount in the calculation of the revised venture percentages). Here is a representative sample with a 50 percent bonus (or penalty) factor (i.e., the formula takes into account 150 percent rather than 100 percent of the Replacement Contribution):

Sample Shift Formula. The Venture Percentage of a Member at any given time equals the percentage equivalent of a fraction, (i) the numerator of which is the amount, if any, by which (a) the sum of all Contributions made by such Member

(including Replacement Contributions) and 50% of all Replacement Contributions made by such Member, is greater than (b) 50% of all Replacement Contributions made by the other Member, and (ii) the denominator of which is the sum of all Contributions (including Replacement Contributions) made by the Members; except that such Venture Percentage may not be more than 100%.⁴²

Sample Shift Formula
$\frac{\text{Member's Cs} + [0.5 \times \text{Member's RCs}] - [0.5 \times \text{Other Member's RCs}]}{\text{Total Cs}}$
<i>*Where: RCs = Replacement Contributions; Cs = Contributions (incl. RCs); and the bonus or penalty is 50% (so that the contributing member is credited with 150% of each Replacement Contribution); except that the result may not be less than 0% or more than 100%.</i>

Example 3.4.1. Assume the following facts: (i) a 50/50 venture; (ii) a venture agreement that provides for the shift formula above; and (iii) there are two capital calls: the first is in the amount of \$10X and contributed equally by Member A and Member B, and the second is also in the amount of \$10X and is contributed entirely by Member B.

The venture percentages after application of the dilution formula would be as follows:

Member	Adjusted %	Calculation
A	12.5%	2.5/20 ⁴³
B	87.5%	17.5/20 ⁴⁴

3.4.2 Increasing-Pie Formulas. In an increasing-pie formula, the bonus comes, in effect, from the venture, by using an artificially increased total of capital contributions (as though the venture issues new bonus units to the member making the Replacement Contribution) in determining the adjusted venture percentages. In other words, both the numerator and the denominator of the contributing member’s venture percentage (when expressed as a fraction representing the contributing member’s deemed contributions divided by the

total deemed contributions) are increased by the bonus amount. Here is a representative sample with a 50 percent bonus (or penalty) factor (i.e., the formula takes into account 150 percent rather than 100 percent of the Replacement Contribution):

Sample Increasing-Pie Formula. The Venture Percentage of a Member at any given time equals the percentage equivalent of a fraction, (i) the numerator of is the sum of (a) all Contributions made by such Member (including Replacement Contributions) and (b) 50% of the sum of all Replacement Contributions made by such Member; and (ii) the denominator of which is the sum of (a) all Contributions (including Replacement Contributions) made by the Members, and (b) 50% of the sum of all Replacement Contributions made by the Members.⁴⁵

Sample Increasing-Pie Formula
$\frac{\text{Member's Cs} + [0.5 \times \text{Member's RCs}]}{\text{Total Cs} + [0.5 \times \text{Total RCs}]}$
<i>*Where: RCs = Replacement Contributions; Cs = Contributions (incl. RCs); and the bonus or penalty is 50% (so that the contributing member is credited with 150% of each Replacement Contribution).</i>

Example 3.4.2. Assume the same facts as those in Example 3.4.1 except that the dilution formula in the venture agreement is the increasing-pie formula above (so that the \$2.5X bonus amount increases the \$20X pie to \$22.5X).

The venture percentages after application of the dilution formula would be approximately as follows:

Member	Adjusted %	Calculation
A	22.22%	5/22.5 ⁴⁶
B	77.78%	17.5/22.5 ⁴⁷

3.4.3 Comparison. As Examples 3.4.1 and 3.4.2 illustrate, increasing-pie formulas are generally less harsh than shift formulas (assuming the same bonus factor). Unlike increasing-pie formulas, shift formulas could reduce a member’s venture percentage to zero percent or even below zero percent; but

reductions below zero percent can be (and typically are in the author’s experience) expressly negated (and additional consequences, such as a buy-out option, when a venture percentage is reduced to zero percent may be provided).

3.4.4 More than Two Members. Increasing-pie formulas can be dangerous in ventures with more than two members because a non-defaulting member who doesn’t elect to contribute any portion of the defaulting member’s share may be diluted (even though the members may not have intended any penalty if a contributing member does not elect to fund any portion of a defaulting member’s contribution).⁴⁸

Example 3.4.4. Assume the following facts: (i) The venture has three (initially) equal members; (ii) There are two consecutive capital calls of \$30X each; (iii) The first capital call is contributed \$10X by each member; (iv) The second capital call is contributed \$20X by Member A, \$10X by Member B, and \$0X by Member C; and (v) The dilution formula is the increasing-pie formula above with a 50 percent bonus factor (so that the bonus for the \$10X Replacement Contribution is \$5X and the increased pie is \$65X).

Under these facts, the adjusted venture percentages would be approximately as follows:

Member	Adjusted Venture %	Calculation
A	53.85%	35/65 ⁴⁹
B	30.77%	20/65 ⁵⁰
C	15.38%	10/65 ⁵¹

Consequently, Member B ends up with a smaller venture percentage (its 33.33 percent venture percentage is reduced to 30.77 percent) even though it did not default.⁵²

3.5 Excess-Shift Versus Entire-Shift. Shift Formulas may be further broken down into excess-shift formulas, on the one hand, and entire-shift formulas, on the other hand.

3.5.1 To What is the Bonus Factor Applied?

Bonus dilution formulas may be distinguished based on how the bonus (or penalty) factor is applied, and in particular whether this factor is applied only to the Replacement Contribution or to the entire contribution (Entire Contribution) of the contributing member (i.e., both its regular contribution and its Replacement Contribution) when the other member fails to timely make a contribution. The bonus factor is typically applied only to the Replacement Contribution. But not always. Some bonus formulas apply the bonus factor to the Entire Contribution. While it is possible to take this alternative approach (of applying the bonus factor to the Entire Contribution) in both shift formulas and increasing-pie formulas, we consider only the case of shift formulas.⁵³ In a 50/50 venture, this approach (under our sample formulas) doubles the bonus (or penalty) amount in relation to the first Replacement Contribution. But when the venture percentages are not equal, the consequences may disproportionately affect the minority member. Assume, for example, that the venture percentages are initially 90 percent and 10 percent.

3.5.2 Excess-Shift Formulas. The excess-shift formulas encountered by the author are typically equivalent to the following (assuming a 50 percent bonus or penalty), which is the same as the formula in part 3.4.1 above:

Sample Excess-Shift Formula. The Venture Percentage of a Member at any given time equals the percentage equivalent of a fraction, (i) the numerator of which is the amount, if any, by which (a) the sum of all Contributions made by such Member (including Replacement Contributions) and 50% of all Replacement Contributions made by such Member, is greater than (b) 50% of all Replacement Contributions made by the other Member; and (ii) the denominator of which is the sum of all Contributions (including Replacement Contributions) made by the Members; except that such Venture Percentage may not be greater than 100%.

Sample Excess-Shift Formula

$$\frac{\text{Member's Cs} + [0.5 \times \text{Member's RCs}] - [0.5 \times \text{Other Member's RCs}]}{\text{Total Cs}}$$

**Where: RCs = Replacement Contributions; Cs = Contributions (incl. RCs); and the bonus or penalty is 50% (so that each member is credited with 150% of each Replacement Contribution it makes); except that the result may not be less than 0% or more than 100%.*

To illustrate the application of this *excess-shift* formula when the venture percentages are 90/10, consider the following example:

Example 3.5.2. Assume the following facts: (i) There is a two-member venture between Investor and Sponsor; (ii) The venture percentages are 90 percent for Investor and 10 percent for Sponsor; (iii) The dilution formula is the excess-shift formula above; (iv) The first contributions are \$90X and \$10X for a total of \$100X and the second contributions are \$20X by the 90 percent member and \$0X by the 10 percent member; and (v) The 10 percent member defaulted in its obligation to contribute its share of the second capital contributions (i.e., \$2X), so the dilution formula applied.

Under these facts, the bonus amount is \$1X (50 percent of the \$2X Replacement Contribution), and the adjusted venture percentages are as follows:

Member	Adjusted %	Calculation
90% Member	92.5%	111/120 ⁵⁴
10% Member	7.5%	9/120 ⁵⁵

3.5.3 Entire-Shift Formulas. We have encountered an entire-shift formula worded substantially as follows (assuming a 50 percent bonus or penalty):

Sample Entire-Shift Formula. The Venture Percentage of a Member at any given time equals the percentage equivalent of a fraction, (i) the numerator of which is the amount, if any, by which (a) the sum of all Contributions made by such Member (including

Entire Contributions) and 50% of all Entire Contributions made by such Member, is greater than (b) 50% of all Entire Contributions made by the other Member; and (ii) the denominator of which is the sum of all Contributions (including Replacement Contributions) made by the Members; except that such Venture Percentage may not be greater than 100%.

Sample Entire-Shift Formula

$$\frac{\text{Member's Cs} + [0.5 \times \text{Member's ECs}] - [0.5 \times \text{Other Member's ECs}]}{\text{Total Cs}}$$

**Where: ECs = Entire Contributions; Cs = Contributions (incl. ECs); and the bonus or penalty is 50% (so that each member is credited with 150% of each Replacement Contribution it makes); except that the result may not be less than 0% or more than 100%.*

To illustrate the application of this formula, consider the following example:

Example 3.5.3. Assume the same facts as in Example 3.5.2 except that the dilution formula is the *entire-shift* formula above.

Under these facts, the bonus amount is \$10X (50 percent of the \$20X Entire Contribution), and the adjusted venture percentages are as follows:

Member	Adjusted %	Calculation
90% Member	100%	120/120 ⁵⁶
10% Member	0%	0/120 ⁵⁷

In this example, the venture percentage of the 10% Member is completely wiped out even though it contributed 83 1/3 percent⁵⁸ of the total amount it was required to contribute.

3.5.4 Comparison. The only difference between the excess-shift formula in part 3.5.2 and the entire-shift formula in part 3.5.3 is the bonus amount. Each reference to “50% of all *Replacement Contributions*” in part 3.5.2 above is replaced by

a reference to “50% of all *Entire Contributions*” in part 3.5.3 above in the word versions of the formulas (emphasis added); and each reference to “0.5 x Member’s *RCs*” in part 3.5.2 above is replaced by a reference to “0.5 x Member’s *ECs*” in part 3.5.3 in the algebraic versions of the formulas (emphasis added). As noted earlier, in a 50/50 venture, the initial difference would be that the entire-shift formula in part 3.5.3 simply doubles the bonus (or penalty) amount in the excess-shift formula in part 3.5.2 for the first Replacement Contribution.⁵⁹ But our examples in this part 3.5 assume a 90/10 venture, and in this context, the difference may be shocking.

Consequences of 10% Member Default. Here are the consequences of the 10% Member’s default:

Bonus Formula	90% Member	10% Member
Excess-Shift	92.5% (111/120) ⁶⁰	7.5% (9/120) ⁶¹
Entire-Shift	100% (120/120) ⁶²	0% (0/120) ⁶³

Under the *entire-shift* formula, the 10% Member’s venture percentage is completely wiped out! By contrast, it loses only one-quarter of its venture percentage under the excess-shift formula.

Consequences of 90% Member Default. By contrast, if the 90% Member defaults, then the disparity in the consequences to the 10% Member is not as significant.⁶⁴

Bonus Formula	90% Member	10% Member
Excess-Shift	67.5% (81/120) ⁶⁵	32.5% (39/120) ⁶⁶
Entire-Shift	66-2/3% (80/120) ⁶⁷	33-1/3% (40/120) ⁶⁸

Explanation of Results. The extreme results under the entire-shift formula should not be surprising because the contributing member is getting a bonus based not only on the amount in default, but also the amount of the contributing member’s regular contribution. The 90% Member has a

much larger regular contribution, so it gets a much larger credit when it is the contributing member. When the bonus (or penalty) factor is applied to the Entire Contribution, then, assuming the 10% Member defaults, the bonus (or penalty) amount is five times the amount in default (\$10X = 5 x the \$2X Replacement Contribution); but if the 90% Member defaults, then the bonus (or penalty) amount is only about 1/2 the amount in default (\$10X is approximately 0.55 x the \$18X Replacement Contribution). Because of this disproportionate impact, the author rarely sees entire-shift formulas and we assume that any shift dilution formula is an excess-shift formula.

3.6 Other Bonus Formula Categories. Bonus formulas can be broken down into other categories. For example:

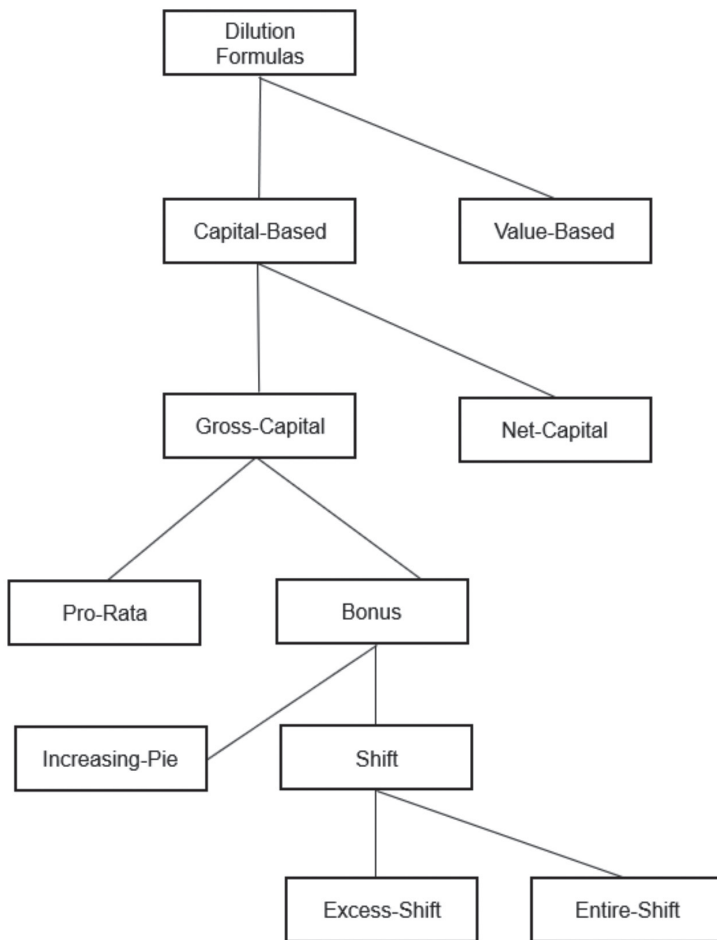
Is the Formula Applied Individually (and Iteratively) or Cumulatively (in One Aggregate Application)? Some bonus formulas apply to each Replacement Contribution individually to determine the relevant adjustment amount and then to adjust the venture percentages previously adjusted; others apply to all Replacement Contributions at the same time. The difference is relevant only for bonus formulas and is discussed in Appendix A.

What does the Dilution Formula Adjust? Some bonus formulas adjust the future sharing of profits in the third level of distributions (in addition to the manner in which future contributions are shared), as assumed in this article, but some dilution formulas operate differently, as discussed in Appendix B.

4. SUMMARY

So, what have we covered?

4.1 **Types.** First, one could construct a very dense set of branches identifying different types of dilution formulas. A few of those branches stand out and may help provide a rough road map of various dilution formulas that might be considered:



4.2 **Value-Based Formulas—Difficulties.** Second, value-based formulas may be cumbersome and time consuming due to the need to obtain and gain acceptance of a valuation – which in practice can be very difficult – and may sometimes get complicated. Consequently, value-based formulas are rare in Multi-Distribution-Level Ventures.

4.3 **Capital-Based Formulas—Problems.** Third, while capital-based formulas may solve some of the problems with value-based formulas, they have problems of their own. Indeed, capital-based

formulas can, in some circumstances, lead to surprising results that may be troublesome to one of the members – sometimes even the contributing member.

4.3.1 **Potential Harm to Contributing Member.** A capital-based formula can sometimes harm a contributing member (and may result in a corresponding windfall to the non-contributing member).

Example 3.2.3 shows how a contributing member could be deprived of (and a non-contributing member with no outstanding investment could acquire) a substantial share of the future profits from a venture asset acquired solely with contributions of the contributing member.

Example 3.3.1 shows how a contributing member could end up with a larger share of a loss if dilution occurs at a time when the venture's assets have declined in value below their original cost.

Example 3.4.4 shows how an *increasing-pie formula* could inadvertently penalize a contributing member who doesn't elect to make a Replacement Contribution.

4.3.2 **Excessive Penalties for Non-Contributing Member.** A capital-based formula can sometimes be harsher than intended.

Example 3.1.1 shows how any capital-based formula can result in a shift not only in the non-contributing member's share of future profits but also in the non-contributing member's share of existing (paper) profits attributable to unrealized appreciation.

Example 3.2.2 shows how a net-capital formula can be so punitive that any Replacement Contribution (no matter how small) could wipe out a non-contributing member.

Example 3.5.3 shows how an entire-shift formula can be so punitive that a relatively small Replacement Contribution could wipe out the venture percentage of a minority member.

5. OTHER COMPLICATIONS

The list of problems above is by no means complete. For example:

5.1 Harmonization with Other JV Provisions.

There may be difficulties harmonizing dilution formulas with other provisions in the venture agreement that alter the venture percentages (e.g., provisions changing the contribution percentages for a reverse waterfall;⁶⁹ or provisions that contemplate a change in the venture percentages—such as a 50/50 venture that is anticipated to switch to 67/33 at some point in time; or both).⁷⁰

5.2 Harmonization with other Tiers of JV.

Multi-tier ventures (e.g., where the venture is a member of another venture) may be particularly challenging when a contribution default at one tier triggers a contribution default at another tier (e.g., it may not always be possible to allocate the entire effect of dilution at one tier to the responsible defaulting member at another tier).

5.3 Harmonization with Third-Party Documents. Sometimes dilution can run afoul of restrictions on changes in ownership in third party documents (e.g., loan documents).

5.4 Tax Issues. Dilution formulas may have tax consequences.⁷¹

5.5 Reciprocity. Some dilution formulas are not reciprocal (providing for a dilution remedy only when one of the members fails to make a contribution).

5.6 Manipulation. Dilution formulas may sometimes encourage manipulation (e.g., as to the timing of, whether to split or combine, or whether to inflate or reduce, capital calls).⁷²

5.7 Logistics. Some of the logistics of implementing the dilution formula are often (if not usually) not considered or addressed (including whether there should be prorations to correspond with a closing of the books).⁷³

6. CONCLUSION

Dilution formulas are relatively common in real estate joint venture agreements. But they are often misunderstood, unpredictable, and incorrectly drafted. As observed by one commentator: “[A]ttempting to design, draft and explain to clients a fair and predictable methodology for determining the appropriate amount of dilution can quickly become a difficult exercise.”⁷⁴

Indeed, as this article suggests, it may not always be possible to design, draft, and explain to clients a fair and predictable methodology. But clients may be unpleasantly surprised, and very unhappy, should one of the pitfalls described in this article arise in their deals. So why use dilution formulas at all, especially when other remedies are available?⁷⁵ Some real estate professionals don’t. Others may not care because they are confident that they will never default in their contribution obligations; but even then, they may want (in hindsight) alternative remedies⁷⁶ if the results under the dilution formula do not sufficiently compensate, or actually hurt, the contributing member. The bottom line is that, in the heat of a deal, there may not be time to analyze, explain, and redraft a dilution formula without testing the patience of the parties. It is therefore best for both counsel and clients to gain a general understanding in advance so that it is easier to understand, evaluate, and refine any specific dilution formula that is used in an actual transaction. 📌

APPENDIX A

Individual Adjustment Formulas vs. Aggregate Adjustment Formulas

Another way to distinguish dilution formulas is by whether:

- They determine the amount of the current adjustment (individual adjustment formulas) and then apply the formula iteratively for future adjustments (i.e., applying the formula each time by adding or subtracting the current adjustment amount to the previously adjusted percentages); or
- They determine the adjusted venture percentage of a member in one fell swoop, without isolating the current adjustment amount (aggregate adjustment formulas).

A.1 Examples. Here are examples of an individual adjustment formula and an aggregate adjustment formula, both of which are shift formulas. As we will see in part A.3 of this Appendix, these two sample formulas are equivalent (i.e., they achieve the same results) based on certain assumptions (including our assumption that contribution percentages equal venture percentages).

A.1.1 Sample Individual Adjustment (Shift) Formula.⁷⁷ The Venture Percentages will be adjusted as follows: (i) The Venture Percentage of the Contributing Member (as it may have been previously adjusted) will be increased by the number of percentage points equal in amount to the percentage determined by dividing (a) the Replacement Contribution multiplied by 150% by (b) the total Capital Contributions made by all the Members to the Company, but such Member's Venture Percentage may not be increased above 100%; and (ii) The Venture Percentage of the Non-Contributing Member (as the same may have been previously adjusted) will be decreased by the percentage determined under clause (i) above.

Sample Individual Adjustment (Shift) Formula
$\text{Adjustment} = \frac{1.5 \times RC}{\text{Total Cs}}$ <i>*Where: RC = the applicable Replacement Contribution of the contributing member; Cs = Contributions (incl. the current RC and all prior RCs); and the bonus or penalty is 50% (so that the contributing member is credited with 150% of the applicable Replacement Contribution); except that the resulting venture percentages may not be less than 0% or more than 100%.</i>

A.1.2 Sample Aggregate Adjustment (Shift) Formula. The Venture Percentage of a Member at any given time equals the percentage equivalent of a fraction, (i) the numerator of which is the amount, if any, by which (a) the sum of all Contributions made by such Member (including Replacement Contributions) and 50% of all Replacement Contributions made by such Member, is greater than (b) 50% of all Replacement Contributions made by the other Member, and (ii) the denominator of which is the sum of all Contributions (including Replacement Contributions) made by the Members; except that such Venture Percentage may not be greater than 100%.

Sample Aggregate Adjustment (Shift) Formula
$\frac{\text{Member's Cs} + [0.5 \times \text{Member's RCs}] - [0.5 \times \text{Other Member's RCs}]}{\text{Total Cs}}$ <i>*Where: RCs = Replacement Contributions; Cs = Contributions (incl. RCs); and the bonus or penalty is 50% (so that each member is credited with 150% of each Replacement Contribution it makes; except that the result may not be less than 0% or more than 100%.</i>

Note that the aggregate adjustment formula above is the same formula that appears in parts 3.4.1 and 3.5.2 in the body of this article.

A.2. Choosing an Aggregate or an Individual Approach. How does one decide whether to use an aggregate or an individual approach?

A.2.1. Faulty Memory Formulas. One problem that plagues many dilution formulas encountered by the author is a failure to take into account prior adjustments. Such formulas appear to be based on the (dangerous) assumption that there will be only application of the formula. This problem can occur, in theory, in both individual adjustment formulas and aggregate adjustment formulas. But this flaw typically occurs only with aggregate adjustment formulas; individual adjustment formulas are less susceptible to this problem because, once the individual adjustment amount is determined, it is natural to apply it to the applicable venture percentage, as adjusted. To illustrate a dilution formula that has this historical blind spot, consider the following rewrite of the aggregate adjustment formula in part A.1.2:⁷⁸

A.2.2 Sample Faulty Aggregate Adjustment (Shift) Formula. The Venture Percentages of the Members will be adjusted as follows: (i) The Venture Percentage of the Contributing Member will equal the percentage equivalent of a fraction, (a) the numerator of which is the sum of all Contributions made by such Member (including the Replacement Contribution) plus 50% of the Replacement Contribution, and (b) the denominator of which is the sum of all Contributions (including the Replacement Contribution) made by the Members (but the resulting Venture Percentage may not exceed 100%); and (ii) The Venture Percentage of the Non-Contributing Member will be reduced by the amount of the increase in the Venture Percentage of the Contributing Member under clause (A) above.

$$\frac{\text{Member's Cs} + [0.5 \times \text{Member's RC}]}{\text{Total Cs}}$$

**Where: RC = the applicable Replacement Contribution; Cs = Contributions (incl. RC and all prior Replacement Contributions made by it); the bonus or penalty is 50% (so that the contributing member is credited with 150% of the applicable Replacement Contribution); except that the result may not be more than 100%.*

Such formulas are not truly “aggregate” formulas because they fail to take into account any prior Replacement Contributions. But this flaw is presumably unintentional, so such faulty formulas do not merit a position in our categories.

A.2.3 Other Considerations. Despite this potential shortcoming of some would-be aggregate adjustment formulas, many practitioners favor aggregate adjustment formulas because:

- Although the algorithm for the adjustment in an individual adjustment formula may appear more compact than the algorithm for an aggregate adjustment formula (when presented algebraically), the actual words used for the entire formula may be less (e.g., compare the word versions of the formulas in parts A.1.1 and A.1.2 above);
- Aggregate adjustment formulas may be easier to understand and draft than their individual adjustment formula counterpart, as explained in part A.4 below in connection with increasing-pie formulas (and as illustrated for some shift formulas in part A.6 below);

- An aggregate adjustment formula may be easier to convert to an individual adjustment formula (as compared to the reverse process – converting an individual adjustment formula to an aggregate adjustment formula), as illustrated in parts A.4 and A.5 below; and
- Aggregate adjustment formulas may be more easily modified to address changes to the relevant assumptions, as discussed in part A.6 below in connection with each of the following two assumptions made in this article: (i) the assumption that contribution percentages are always equal to venture percentages; and (ii) the assumption that the entire (rather than only a portion or none of the) Replacement Contribution is contributed by the contributing member.

A.2.4 Comparing Aggregate and Individual Formulas. When one has an aggregate or individual adjustment formula, one can find the individual or aggregate adjustment counterpart simply by solving the following equation:

$$VP' = VP + IA$$

where VP = the venture percentage of a member immediately before the applicable capital call (which is the only one of three percentages that is always known), VP' = the adjusted venture percentage of such member immediately after such capital call is satisfied using the aggregate adjustment formula, and IA is the individual adjustment amount using the individual adjustment formula (i.e., $IA = VP' - VP$). IA is positive for the contributing member and negative for the non-contributing member.

If one starts with an aggregate adjustment formula, then one solves for IA (after spelling out the details for VP' using the aggregate adjustment formula).

If one starts with an individual adjustment formula, then one solves for VP' (after spelling out the details for IA using the individual adjustment formula).

But this approach may be deceptively simple. As we will see, the solution may hide one or more assumptions that do not reflect the facts (i.e., when the assumptions change).

A.3 Equivalent Formulations – Shift Formulas. Consider, for example, the individual adjustment formula in A.1.1 and the aggregate adjustment formula in A.1.2, which are both shift formulas.⁷⁹ It is relatively easy to prove (based on the assumptions below) that these two formulas are equivalent.

A.3.1 Continued Proportionality Equivalence. A key concept in verifying this equivalence is what we call the continued proportionality equivalence:

$$\frac{a}{b} = \frac{a + \frac{a}{b} c}{b + c}$$

The continued proportionality equivalence is an algebraic way of saying that, if a member's venture percentage is $\frac{a}{b}$, where b represents all contributions to date, then that venture percentage is preserved if such member contributes its then share (i.e., $\frac{a}{b}$) of a new contribution c, and the member gets credit in the numerator for its share of that contribution (i.e., $\frac{a}{b} c$) and the denominator is increased by the new contribution (i.e., c).

A.3.2 Proof. If we start with the aggregate adjustment formula in part A.1.2, here is a sketch of the proof that the equivalent individual adjustment formula is the formula in part A.1.1. This proof is based on

our assumption that the contribution percentage of a member always equals the venture percentage of that member, and the following additional assumptions and notation:

- The members contribute their original venture percentages of the first capital call;
- Immediately before the applicable capital call (in the amount of c), the venture percentage of the member in question equals $\frac{a}{b}$, where b equals the sum of all prior contributions by both members; and
- There are three potential alternative responses to such capital call, namely, (x) each member contributes its share, (y) the member in question contributes 100 percent, or (z) the other member contributes 100 percent.

Given these assumptions and this notation, we will show that under the assumed aggregate adjustment formula, the resulting individual adjustments match the results under the assumed individual adjustment formula. In each of the three alternative scenarios described above, there is a corresponding result (under the assumed individual adjustment formula) for the individual adjustment to the venture percentage of the member in question:

(x) no change;

(y) adding $\frac{1.5 (1 - \frac{a}{b}) c}{c}$; or

(z) subtracting $\frac{1.5 \frac{a}{b} c}{c}$.

First Alternative: Under the first alternative, the member in question contributes its share of the capital call (i.e., $\frac{a}{b} c$) and we want to show that, when we determine the individual adjustment using the aggregate adjustment formula, it equals zero. This result follows immediately from the continued proportionality equivalence, but we will spell out the details. According to the aggregate adjustment formula, the adjusted venture percentage of the member in question may be written as follows:

$$\frac{a + \frac{a}{b} c}{b + c}$$

Based on the continued proportionality equivalence, this fraction may be rewritten as follows:

$$\frac{a + \frac{a}{b} c}{b + c} = \frac{a}{b} + 0$$

Therefore, the adjustment amount is zero.

Second Alternative: Under the second alternative, the member in question contributes 100 percent of c . So, the aggregate adjustment formula provides for a new venture percentage of the member in question as follows:

$$\begin{aligned}\frac{a + c + 0.5 \left(1 - \frac{a}{b}\right) c}{b + c} &= \frac{a + \left(\frac{a}{b} c + \left[1 - \frac{a}{b}\right] c\right) + (0.5 \left[1 - \frac{a}{b}\right]) c}{b + c} \\ &= \frac{\left(a + \frac{a}{b} c\right) + 1.5 \left(1 - \frac{a}{b}\right) c}{b + c} \\ &= \frac{a + \frac{a}{b} c}{b + c} + \frac{1.5 \left(1 - \frac{a}{b}\right) c}{b + c} \\ &= \frac{a}{b} + \frac{1.5 \left(1 - \frac{a}{b}\right) c}{b + c}\end{aligned}$$

Note that:

- $\frac{a}{b}$ (in the final line above) equals the first of the two fractions in the line above it based on the continued proportionality equivalence; and
- The second of the two fractions in the final line above reflects the adjustment contemplated by the individual adjustment formula.

Third Alternative: Under the third alternative, the other member contributes 100 percent of c and the analysis is basically the same as (and follows from) the analysis for the second alternative.⁸⁰ The aggregate formula provides for a new venture percentage of the member in question as follows:

$$\begin{aligned}\frac{a + 0 c - 0.5 \frac{a}{b} c}{b + c} &= \frac{a + \left(\frac{a}{b} c - \frac{a}{b} c\right) - 0.5 \frac{a}{b} c}{b + c} \\ &= \frac{\left(a + \frac{a}{b} c\right) - 1.5 \frac{a}{b} c}{b + c} \\ &= \frac{a}{b} - \frac{1.5 \frac{a}{b} c}{b + c}\end{aligned}$$

Note that:

- $\frac{a}{b}$ (in the final line above) equals the first of the two fractions in the line above it, based on the *continued proportionality equivalence*; and
- The second of the two fractions in the final line above reflects the adjustment contemplated by the individual adjustment formula.

A.4 Equivalent Formulations—Increasing-Pie Formulas. However, in the case of an increasing-pie formula, it may not be possible to construct an equivalent individual adjustment formula that does not result in confusion. Consider the following formula (which is the same formula that appears in part 3.4.2 of the body of this article):

A.4.1 Sample Aggregate Adjustment (Increasing-Pie) Formula. The Venture Percentage of a Member at any given time equals the percentage equivalent of a fraction, (i) the numerator of which is the sum of (a) all Contributions made by such Member (including Replacement Contributions), and (b) 50% of the sum of all Replacement Contributions made by such Member, and (ii) the denominator of which is the sum of (a) all Contributions (including Replacement Contributions) made by the Members, and (b) 50% of the sum of all Replacement Contributions made by the Members.

Sample Aggregate Adjustment (Increasing-Pie) Formula
$\frac{\text{Member's Cs} + [0.5 \times \text{Member's RCs}]}{\text{Total Cs} + [0.5 \times \text{Total RCs}]}$
* Where: RCs = Replacement Contributions; Cs = Contributions (incl. RCs); and the bonus or penalty is 50% (so that the contributing member is credited with 150% of each Replacement Contribution).

A.4.2 Individual Adjustments. To appreciate the difficulty of constructing an individual adjustment formula that is equivalent to this aggregate adjustment formula, assume that each member contributes its venture percentage of the first capital call, and let’s adopt the following notation (assuming the relevant time is immediately prior to a subsequent capital call):

- a* = the sum of the contributions made by the member in question plus 50 percent of the sum of Replacement Contributions made by such member;
- b* = the sum of the contributions made by all members plus 50 percent of the sum of Replacement Contributions made by all members (so that, under the aggregate adjustment formula in part A.4.1, the venture percentage of the member in question equals $\frac{a}{b}$);
- c* = the total amount of the subsequent capital call;
- p* = the other member’s venture percentage immediately before the subsequent capital call (so that $p = 1 - \frac{a}{b}$); and
- R* = pc, which (because of our assumption that contribution percentages always equal venture percentages) is the other member’s share of the subsequent capital call and is contributed by the member in question (i.e., *R* is the Replacement Contribution for the subsequent capital call).

Given these assumptions and this notation, and the increasing-pie formula in A.4.1, the venture percentage of the member in question is adjusted as follows after the subsequent capital call is satisfied by such member:

$$\begin{aligned}
 &= \frac{a + c + 50\% R}{b + c + 50\% R} \\
 &= \frac{a + \left(\frac{a}{b} c + R\right) + 50\% R}{b + c + 50\% R} && \text{because } c = \frac{a}{b} c + R \\
 &= \frac{\left(a + \frac{a}{b} c + R\right) + \left(\frac{a}{b} 50\% R + \left[1 - \frac{a}{b}\right] 50\% R\right)}{b + c + 50\% R} && \text{by breaking } 50\% R \text{ into two parts} \\
 &= \frac{a + \frac{a}{b} c + \frac{a}{b} 50\% R}{b + c + 50\% R} + \frac{R + \left(1 - \frac{a}{b}\right) 50\% R}{b + c + 50\% R} && \text{rearranging some terms and using } \frac{x+y}{z} = \frac{x}{z} + \frac{y}{z} \\
 &= \frac{a + \frac{a}{b} (c + 50\% R)}{b + (c + 50\% R)} + \frac{R + p 50\% R}{b + c + 50\% R} && \text{by regrouping on the left and using } p = \left(1 - \frac{a}{b}\right) \text{ on the right} \\
 &= \frac{a}{b} + \frac{R + p 50\% R}{b + c + 50\% R} && \text{by the } \textit{continued proportionality equivalence}
 \end{aligned}$$

Thus, we see that the individual adjustment amount after the subsequent capital call is satisfied is:

$$= \frac{(1 + 50\% p) R}{b + c + 50\% R}$$

If one lets $S = b + c$, which represents the total contributions (including Replacement Contributions) through (and bonus amounts prior to) the subsequent capital call, then the individual adjustment amount might seem relatively manageable:

$$= \frac{(1 + 50\% p) R}{S + 50\% R}$$

But there is too much information packed into this formula to make it easy to state in words. Indeed, a description in words of the numerator and denominator is likely to frustrate many readers because it is both awkward and non-intuitive: the percentage equivalent of a fraction, (i) the numerator of which is the product of (a) the sum of (1) 100% and (2) 50% of the non-contributing member's venture percentage immediately before the capital call, and (b) the current Replacement Contribution, and (ii) the denominator of which is the sum of (a) all contributions, including Replacement Contributions, and (b) 50% of all Replacement Contributions. And this is not the end of the calculation because this individual adjustment must then be added to or subtracted from the existing venture percentages. It is not surprising that the author has never encountered an individual adjustment (increasing-pie) formula that works!

A.5 Sometimes There is No Clear Equivalence. Some individual adjustment formulas are not equivalent to an aggregate adjustment formula—at least not without significant complications. For example, some dilution formulas adjust a member's venture percentage by one percent (or other fixed percentage) for each \$500,000 (or other fixed dollar amount) of the relevant Replacement Contribution. Such formulas may be viewed as an aggregate adjustment formula in which the bonus (or penalty) factor increases as the total contributions increase (and may be negative until a certain threshold is met).⁸¹

A.6 Equivalence May Depend on Assumptions. If our assumptions change, an individual adjustment formula may no longer be equivalent to the aggregate adjustment formula from which it was derived. For example, the shift formulas in parts A.1.1 and A.1.2 may not be equivalent if we change our assumptions as follows:

A.6.1 Fixed Contribution Percentages. Assume that the contribution percentages remain fixed (i.e., they are not adjusted when venture percentages are adjusted).

Example A.6.1A (Individual Adjustment Formula). Assume the following facts: (i) The venture agreement contains *the* individual adjustment formula in part A.1.1 but (as noted above) the dilution formula does not change contribution percentages; (ii) Venture percentages are initially 50 percent each; (iii) The initial capital call is \$40X and the initial contributions are \$20X and \$20X; and (iv) Member A defaults in failing to respond to the second capital call, which is in the amount of \$20X, and Member B funds 100 percent. At that point in time, there is an adjustment equal to 25 percent $15/60^{82}$ so that the venture percentages are as follows:

Member	Adjusted %	Calculation
A	25%	$(50\% - 25\%)$
B	75%	$(50\% + 25\%)$

Now, assume that at the time of the third capital call, the roles are reversed and Member B defaults in failing to respond to the third capital call, which is again in the amount of \$20X, and Member A funds 100 percent. At this later point in time, each member has contributed \$40X (the sum of two \$20X contributions) and each member has had a \$10X default. The second adjustment would be 18.75 percent $(3/16^{83})$ and the resulting Venture Percentages would be as follows:

Member	Adjusted %	Calculation
A	43.75%	$(25\% + 18.75\%)$
B	56.25%	$(75\% - 18.75\%)$

Let's compare what happens under these facts when using the aggregate adjustment formula in part A.1.2.

Example A.6.1B (Aggregate Adjustment Formula). Assume the same facts as Example A.6.1A, except that the aggregate adjustment formula in part A.1.2 is used. The results for the first adjustment are the same:

Member	Adjusted %	Calculation
A	25%	$(15/60)^{84}$
B	75%	$(45/60)^{85}$

But the results for the second adjustment are different:

Member	Adjusted %	Calculation
A	50%	$(40/80)^{86}$
B	50%	$(40/80)^{87}$

Thus, the individual adjustment formula in part A.1.1 is not equivalent to the aggregate adjustment formula in part A.1.2 when the contribution percentages do not change with the venture percentages. Indeed, when the contribution percentages are fixed, the individual adjustment amount that corresponds to the aggregate adjustment formula in A.1.2 is complicated:⁸⁸

$$\frac{(1 - \frac{a}{b})c + 0.5pc}{b + c}$$

where the notation above matches the notation in part A.3 above and p = the contribution percentage of the non-contributing member (which is fixed). But if the contribution percentages were instead equal to the venture percentages (as originally assumed in the body of this article), then p would equal 1, and the adjustment amount above would match the adjustment amount in the individual adjustment formula in part A.1.1 above:

$$\begin{aligned} &= \frac{(1 - \frac{a}{b})c + 0.5(1 - \frac{a}{b})c}{b + c} \\ &= \frac{1.5(1 - \frac{a}{b})c}{b + c} \\ &= \frac{1.5R}{C} \end{aligned}$$

where R = the Replacement Contribution and C = the total contributions to date.

A.6.2 Allowing Partial (or No) Replacement Contribution. Assume that the contributing member may contribute only a portion (including none) of the non-contributing member's share (rather than withdraw its contribution) if it is unwilling to contribute the entire share of the non-contributing member. But continue to assume that the non-contributing member must withdraw a partial contribution. It should be obvious that the following formula for the adjustment amount (based on the formula in part A.1.1 above) does not work (using the above notation):

$$\frac{1.5R}{C}$$

To illustrate the problem, imagine that there is no Replacement Contribution (i.e., $R = 0$) but the contributing member contributes (and does not withdraw) its share of the current capital call and the other member contributes no portion of the current capital call. In that event, there should be some adjustment, but the above formula would obviously result in no adjustment at all (because $R = 0$)! When the contributing member may contribute all or a portion of the non-contributing member's share, the individual adjustment amount is again complicated:⁸⁹

$$\frac{(1 - \frac{a}{b})(\frac{a}{b} + q)c + 0.5qc}{b + (\frac{a}{b} + q)c}$$

using the same notation as used above in this part A.6 and letting q equal the percentage of the applicable capital call that the contributing member elects to contribute on behalf of the non-contributing member so that $0 \leq q \leq 1 - \frac{a}{b}$.

If, as originally assumed in the body of this article, $q = 1 - \frac{a}{b}$, then the individual adjustment amount would match the adjustment amount determined by the individual adjustment formula in A.1.1 above:

$$\begin{aligned}
 &= \frac{\left(1 - \frac{a}{b}\right) \left(\frac{a}{b} + \left[1 - \frac{a}{b}\right]\right) c + 0.5 \left(1 - \frac{a}{b}\right) c}{b + \left(\frac{a}{b} + \left[1 - \frac{a}{b}\right]\right) c} \\
 &= \frac{\left(1 - \frac{a}{b}\right) c + 0.5 \left(1 - \frac{a}{b}\right) c}{b + c} \\
 &= \frac{R + 0.5 R}{b + c} \\
 &= \frac{1.5 R}{b + c}
 \end{aligned}$$

One can further generalize by allowing (or requiring) that a partial contribution by the non-contributing member remain in the venture. The special case in this part A.6.2 (where such partial contribution is zero) indicates that there may be no simple individual adjustment formula that is equivalent.

APPENDIX B

What does the Bonus Formula Adjust?

Dilution formulas typically adjust the venture percentages. Under our assumptions, this adjustment would affect both contribution percentages and residual (i.e., third level) distributions. But some dilution formulas may do less or more.

B.1 Venture Percentages versus Contribution Percentages. Some dilution formulas (whether pro-rata or bonus) do not change the contribution percentages. While a reduction of the contribution percentages may seem like an inappropriate reward to a defaulting member, fixing the contribution percentages may be surprisingly harsh. For example, if the venture percentage of a 50% Member were diluted to 10 percent, then it may come as a shock that it is still contributing 50 percent but is getting only 10 percent of the residual distributions. Also, as indicated in Examples A.6.1A and A.6.1B, fixed contribution percentages may under some circumstances lead to a disparity between an individual adjustment formula and an aggregate adjustment formula that might otherwise be equivalent. As indicated at the outset, we assume that contribution percentages are adjusted to match the adjusted venture percentages.

B.2 Capital Accounts. Any time there is an additional capital contribution, there is a corresponding increase in the contributing member's capital account. But what about the hypothetical (or artificial) contribution that, for purposes of determining the new venture percentages, is in effect (for purposes of recalculating venture percentages) deemed contributed by the contributing member (e.g., what about the extra 50 percent when the contributing member gets credit for 150 percent of a Replacement Contribution it makes)? Typically, this hypothetical contribution is not added to (i.e., it does not adjust) the contributing member's capital account. More generally, the artificial contribution represented by the bonus amount is typically relevant only for adjusting the venture percentages (and the contributing member is not deemed to have made that artificial contribution for any other purpose, including recouping capital, calculating returns, or determining IRR hurdles). But not always. Sometimes the bonus amount is treated as a capital contribution for other purposes, including increasing the contributing member's capital account in the same way as an actual capital contribution (with a corresponding reduction of the non-contributing member's capital account); this alternative treatment could affect the first and second (in addition to the third) distribution levels of our initially assumed distribution waterfall. And, if capital is effectively shifted from the non-contributing member to the contributing member, that capital shift may have immediate tax consequences.⁹⁰ We assume that any bonus amount is not added to the contributing member's capital account (and is not treated as a capital contribution for any purpose other than adjusting the venture percentages).

Notes

- 1 The views expressed (which may vary depending on the context) are not necessarily those of the individuals, Holland & Knight LLP, the other firms and companies mentioned above, or the publication. This article is not intended to provide legal advice. It is important to remember that every transaction is different and what is appropriate for one transaction may not be appropriate for another. Any errors are those of the author.
- 2 It is possible to allow for partial Replacement Contributions (including none); but, unless otherwise indicated, we assume for simplicity that, when a member fails to contribute its share of a capital call, the other members either withdraw their contributions or also contribute the entire share of the non-contributing member. See part A.6.2 of Appendix A to this article for complications with some dilution formulas when this assumption is not made.
- 3 These alternative rights may include an interest-bearing loan to the non-contributing member, an interest-bearing loan to the venture, or a preferred contribution to the venture that earns a preferred return. The interest rate or rate of return will depend on whether or not the failure to contribute capital constitutes a default. In the case of a default, there may be additional remedies (e.g., a change in voting rights) beyond the alternative rights. But these alternative rights (other than the right to dilution under a dilution formula) and additional remedies are beyond the scope of this article. See following footnote.
- 4 For additional reading on this subject, as well as some alternative rights if one member fails to contribute its share of a capital call, see, e.g., Stevens A. Carey, *Squeeze-Down Formulas: Do They Work the Way You Think They Do?*, Real Est. Fin. J. (Fall 1997) [hereinafter, the 1997 Article]; Stevens A. Carey, *Partner Loans to Fund Capital Call Shortfalls in Real Estate Partnerships: Loan to Non-Contributing Partner vs. Loan to Partnership*, Bloomberg BNA Real Estate Law & Industry Report (2012) [hereinafter, the 2012 Article]; Stevens A. Carey, Daniel B. Guggenheim, and Michael D. Soejoto, *Contribution Default Remedies in a Real Estate Joint Venture, Bus. Entities* (Nov./Dec. 2013) [hereinafter, the 2013 Article].
- 5 For a more comprehensive explanation of promotes (also known as carried interests), see, e.g., Stevens A. Carey, *Real Estate Ventures: Formulating and Interpreting Promote Hurdles and Distribution Splits*, Ch. 1 (2016) [hereinafter the 2016 Book] §§ 1.2–1.4.
- 6 In Delaware, real estate ventures, in the form of a limited liability company or a limited partnership, have significant latitude to create dilution remedies without some of the enforceability concerns (e.g., whether the dilution formula is an unenforceable liquidated damages clause because it is unreasonable) that may exist in other jurisdictions. See, e.g., 6 Del. C. § 18-306, which allows for penalties when a member is in default, and Del. C. § 18-502, which specifically addresses contribution defaults and states that a limited liability company agreement may provide that, in the event of a contribution default, the defaulting member member's proportionate interest may be reduced or even eliminated.
- 7 Under our assumptions, venture percentages are percentages used for determining: (i) the proportions in which contributions are to be made; and (ii) the allocation of non-promote profit distributions under the final distribution level.
- 8 For example, if the Promote Percentage were 20 percent, then 20 percent of each third level distribution would be made to the sponsor as a promote, and the remaining 80 percent would be distributed to the members (both the investor and the sponsor) in accordance with their venture percentages.
- 9 Another step taken in this article to simplify many (but not all) of the examples is to assume that there are only two capital calls to acquire two separate assets; by limiting the second capital call to the acquisition of a separate asset (at a market price), we avoid complications associated with determining the corresponding value created by the second capital call. While some of the problems identified in these simplified examples may seem attributable to the fact that the venture has two separate assets, many if not most of the problems could be recreated with a venture having a single asset (or multiple related assets, such as a building and outparcels or excess land), although perhaps not as simply. Finally, we frequently assume that there is no leverage (to make venture equity and hypothetical liquidations more readily apparent); but it should be kept in mind that the magnitude of the dilution adjustment is often if not usually (but not always – see deemed equity dilution formula discussed later) inversely proportional to the total contributions to date, that leverage reduces the amount of total capital contributions, and consequently that leverage may result in a more severe application of a dilution formula.
- 10 See, e.g., Whitmire, Nelson, McKee, & Brodie, *Structuring and Drafting Partnership and LLC Agreements*, ¶ 3.06[7] at 16 (Thomson Reuters/WG&L, 4th ed. 2021, with updates through May 2024), available at www.checkpoint.thomsonreuters.com (“The dilution provision illustrated in Exhibit 3-22 [operates as follows:] ... In exchange for making the delinquent contribution, all distributions that would otherwise have gone to the delinquent partner are made to the partners who voluntarily made the delinquent contribution, until such time as those partners have received total distributions [from the delinquent partner's share of distributions] equal to a specified multiple of the contributions. The effect of Exhibit 3-22 is to treat the contributing partners as though they had made a nonrecourse loan to the delinquent partner.”).
- 11 In some circumstances (namely, when the non-contributing member's venture percentage is entirely forfeited), it is possible to view a dilution formula, in effect,

as a discounted buy-out (with a 100 percent discount) of a portion of the interest of the non-contributing member (i.e., the portion of the non-contributing member's interest that is based on its venture percentage, which under our facts would be all or a portion of its profits interest). But, unless otherwise indicated, we generally assume that the non-contributing member's capital interest is not directly transferred under a dilution formula.

- 12 Capital, in this context, is shorthand for capital contribution (as it is when one refers to capital calls). Given the varied meanings of capital, a contribution-based formula might be more descriptive. We refer to capital-based formulas both for the sake of brevity and to conform to terminology in some prior articles. But our focus is on capital contributions, with the understanding that non-cash capital contributions must be monetized in order to apply the capital-based dilution formula. The monetization process may vary. It could involve a value determination or a cost determination or something in between. But, for our purposes, even in the case of an initial value determination when a non-cash capital contribution is made, there is no further valuation of that non-cash contribution (i.e., the initial valuation is fixed) in connection with the application of the capital-based dilution formula due to the failure to make a future capital contribution.
- 13 There are some dilution formulas that are neither capital-based nor value-based formulas. For example, the author has encountered formulas providing that venture percentages are always proportionate to capital accounts (where the capital accounts are not adjusted to reflect changes in value). Sometimes this approach is not intended because the parties are thinking instead of unrecouped capital (not realizing that capital accounts also take into account tax allocations of profits and losses). But sometimes it is intended. See, e.g., Bradley T. Borden, LLCs and Partnerships: Law, Finance, and Tax Planning § 8.04[D][i], at 8-64–8-70 (2019). However, in the context of a venture between one institutional investor and one sponsor (under facts similar to our assumed facts), these alternative dilution formulas are extremely rare in the author's experience and the two branches, namely, capital-based and value-based formulas, seem helpful for a big picture overview of key choices.
- 14 Sometimes a capital-based formula is based on both contributions and the distributions that recoup them, in which event, we call it a net-capital formula. Net-capital formulas are discussed in part 3.2.2 below.
- 15 $\$10X = \$0X + \$5X + (50\% \text{ of } \$10X)$.
- 16 $\$10X = \$0X + \$5X + (50\% \text{ of } \$10X)$.
- 17 $\$7.5X = \$0X + (\$5X + \$0X) + (25\% \text{ of } \$10X)$.
- 18 $\$22.5X = \$0X + (\$5X + \$10X) + (75\% \text{ of } \$10X)$.
- 19 19 Whitmire et al., supra note 10, ¶ 3.06[7] at 15 (footnote omitted).
- 20 See, e.g., Whitmire et al., supra note 10, ¶ 3.07, Example 3–4; Borden, supra note 13, § 8.04[D][ii]–[iii].
- 21 See, e.g., Whitmire et al., supra note 10, ¶ 3.06[7] at 15 ([T]he entity's property is typically revalued for book purposes at the time of each [voluntary] contribution, and

the partners' or members' capital accounts and interests in future profits and appreciation are adjusted accordingly." (footnote omitted)).

- 22 See, e.g., Borden, supra note 13, § 8.04[D][i], Table 8.04-1 at 8-58 (which includes a "Market-Value Denominated Interests" formula in which a "Member's Percentage Interest" equals the "Value of Member's Interest + Add'l Contrib." divided by "Entity Value + Total Add'l Contrib.").
- 23 $10/30 = [\$10X + \$0X] / [\$10X + \$20X]$.
- 24 $20/30 = [\$10X + \$10X] / [\$10X + \$20X]$.
- 25 $\$10X = \$0X + \$5X + (50\% \text{ of } \$10X)$.
- 26 $\$10X = \$0X + \$5X + (50\% \text{ of } \$10X)$.
- 27 $\$8.33X = \$0X + (\$5X + \$0X) + (33-33\% \text{ of } \$10X)$.
- 28 $\$21.67X = \$0X + (\$5X + \$10X) + (66-2/3\% \text{ of } \$10X)$.
- 29 While it is theoretically possible to use a value-based formula in connection with a contribution default (where there is a bonus or penalty factor) in a Multi-Distribution-Level Venture, we have not encountered a value-based formula in that context (presumably because the parties did not want a default remedy that is susceptible to dispute and delay).
- 30 The net amount may be calculated in different ways. For example, the net (or unrecouped) amount of contributions of a member might be the amount by which the total contributions of such member exceed the total distributions to such member under the second level of distributions in our assumptions. For simplicity, we assume that the net (or unrecouped) amount of contributions by a member is the amount by which the total contributions of such member exceed the total distributions to such member (regardless of the distribution levels involved).
- 31 $0/10 = [\$5X + \$0X - \$5X] / [\$20X - 10X]$.
- 32 $10/10 = [\$5X + \$10X - \$5X] / [\$20X - 10X]$.
- 33 A method to avoid the result in this example would be to use a hybrid formula that takes into account all contributions except for contributions attributable to assets that have been sold. But similar problems could occur in a single asset deal. For example, assume the members are able to finance out all their equity and then proceed with phase two of the project and only one member funds its share of the cost of phase two.
- 34 See, e.g., Joshua Babbitt et al., Joint Venture Agreements: Key Issues, NYC Bar, City Bar Center for Continuing Legal Education (May 11, 2016) ("A [dilution formula] may be non-punitive or "dollar for dollar" (or "1 to 1") (i.e., with dilution based solely on the amount of cash contributed by the Members) or punitive (i.e., with a multiple applied to the capital contributed by the non-defaulting Member on behalf of the defaulting Member).").
- 35 Example 3.2.3 is another example in which the non-contributing member is hurt under a pro-rata formula.
- 36 $\$3X = \$0X + (50\% \text{ of } \$6X) + \$0X$.
- 37 $\$3X = \$0X + (50\% \text{ of } \$6X) + \$0X$.
- 38 $\$4X = \$0X + (25\% \text{ of } \$16X) + \$0X$.
- 39 $\$4X = \$0X + (75\% \text{ of } \$16X) + \$0X$.

- 40 Observe that this shift in loss would occur, under our assumed facts, regardless of what dilution formula (assuming only venture percentages are adjusted) is chosen (even if the formula is so punitive that it wipes out the non-contributing member's venture percentage and regardless of whether it is capital-based or value-based): Under our assumed distribution waterfall, only the final level of distributions is affected by a change in venture percentages; and given the loss in our example, there are no distributions under the final level of distributions.
- 41 See also, discussion of Entire Base/Shift formulas in 1997 Article, *supra* note 4.
- 42 Observe that the Venture Percentage cannot be less than zero percent because "the amount, if any, by which X exceeds Y" (where X and Y are non-negative amounts) is a non-negative amount in common parlance.
- 43 $2.5/20 = [\$5X + \$0X - (50\% \text{ of } \$5X)]/[\$20X]$.
- 44 $17.5/20 = [\$5X + \$10X + (50\% \text{ of } \$5X)]/[\$20X]$.
- 45 Observe that, unlike the sample shift formula above, there is no need to provide that the contributing member's adjusted venture percentage is not more than 100%. It can't reach 100%, let alone exceed it: if a venture percentage is x/y , then $x/y < 1 \Rightarrow x < y \Rightarrow [x + C] < [y + C] \Rightarrow [x + C]/[y + C] < 1$ (where x, y and C are positive amounts, of course).
- 46 $5/22.5 = [\$5X + \$0X]/[\$10X + \$10X + (50\% \text{ of } \$5X)]$.
- 47 $17.5/22.5 = [\$5X + \$10X + (50\% \text{ of } \$5X)]/[\$10X + \$10X + (50\% \text{ of } \$5X)]$.
- 48 See, also, 1997 Article, *supra* note 4, Example 16 at 55–56.
- 49 $35/65 = [\$10X + \$20X + (50\% \text{ of } \$10X)]/[\$30X + \$30X + (50\% \text{ of } \$10X)]$.
- 50 $20/65 = [\$10X + \$10X]/[\$30X + \$30X + (50\% \text{ of } \$10X)]$.
- 51 $10/65 = [\$10X + \$0X]/[\$30X + \$30X + (50\% \text{ of } \$10X)]$.
- 52 One might try to solve this problem by not adjusting the non-defaulting member's venture percentage (by having the formula determine an individual adjustment for the contributing member that reduces only the defaulting member's venture percentage); but see discussion of individual vs aggregate adjustments in Appendix A (which explains the difficulty of constructing an individual adjustment increasing-pie formula). One might instead provide a separate bonus to Member B to ensure that Member B retains its 1/3 interest (no more and no less), but this may also lead to complications. The author has not encountered any increasing-pie formulas that took extra steps to preserve the interest of a non-defaulting member who doesn't make a Replacement Contribution.
- 53 The same objection (as to an unintended penalty) applies in the case of increasing pie formulas, although it may not be as dramatic, due to the disproportionate impact to a minority member.
- 54 $111/120 = [\$90X + \$20X + (50\% \text{ of } \$2X)]/[\$120X]$.
- 55 $9/120 = [\$10X + \$0X - (50\% \text{ of } \$2X)]/[\$120X]$.
- 56 $120/120 = [\$90X + \$20X + (50\% \text{ of } \$20X)]/[\$120X]$.
- 57 $0/120 = [\$10X + \$0X - (50\% \text{ of } \$20X)]/[\$120X]$.
- 58 $83-1/3\% = 5/6 = \$10X/\$12X$.
- 59 However, if there is a subsequent contribution default by the defaulting member, then the difference will be greater (assuming no contribution defaults by the contributing member) because the contributing member's venture percentage may be greater at the time of the subsequent contribution.
- 60 $111/120 = [\$90X + \$20X + (50\% \text{ of } \$2X)]/[\$120X]$.
- 61 $9/120 = [\$10X + \$0X - (50\% \text{ of } \$2X)]/[\$120X]$.
- 62 $120/120 = [\$90X + \$20X + (50\% \text{ of } \$20X)]/[\$120X]$.
- 63 $0/120 = [\$10X + \$0X - (50\% \text{ of } \$20X)]/[\$120X]$.
- 64 To be clear, the penalty under either formula is significant, but when the 90% Member defaults, the difference between the two results for the 90% Member (and the difference between the two results for the 10% Member) is less than one percent. By contrast, when the 10% Member defaults, the difference between the two results for the 90% Member (and the difference between the two results for the 10% Member) is 7.5% (which is a very large portion of the 10% Member's venture percentage).
- 65 $81/120 = ([\$90X + \$0X - (50\% \text{ of } \$18X)]/[\$120X])$.
- 66 $39/120 = ([\$10X + \$20X + (50\% \text{ of } \$18X)]/[\$120X])$.
- 67 $80/120 = [\$90X + \$0X - (50\% \text{ of } \$20X)]/[\$120X]$.
- 68 $40/120 = ([\$10X + \$20X + (50\% \text{ of } \$20X)]/[\$120X])$.
- 69 For a brief explanation of reverse waterfalls, see, e.g., 2016 Book, *supra* note 5, at § 1.15.4.
- 70 All the provisions of the venture agreement should be taken into account, including the distribution provisions, which may differ from our assumptions. See, e.g., 2013 Article, *supra* note 4, § 3.2.3 at 15, which provides three examples involving the same dilution formula that yield three different results because of differing distribution provisions (loss of profit and capital for defaulting partner; loss of profit only for defaulting partner; and no loss for defaulting partner).
- 71 Although one potential tax consequence is mentioned in part B.2 of Appendix B, the tax consequences of dilution formulas are beyond the scope of this article. For a discussion of tax consequences, see, e.g., Whitmire et al., *supra*, note 10, at ¶¶ 3.06, 3.07; Borden, *supra* note 13, at § 8.09[A] and [B].
- 72 For example, dilution resulting from repeated defaults in connection with multiple capital calls may be less than the dilution resulting from a default in connection with a single aggregate capital call (where the single aggregate capital call equals the sum of the multiple capital calls), because, after each dilution, the non-contributing member may have a smaller contribution percentage; so a cash-strapped member may try to convert a capital call into several smaller ones. For further explanation, see, e.g., 1997 Article, *supra* note 4, at 57.
- 73 See, e.g., *id.*, at 56–57.
- 74 Cliff Ernst, Planning, Drafting and Implementing Capital Call Provisions, 26, CLE at the University of Texas School of Law (July 23–24, 2009).
- 75 For a discussion of alternative remedies, see, e.g., 1997 Article, *supra* note 4, at 57; 2012 Article, *supra* note 4; 2013 Article, *supra* note 4; Borden, *supra* note 13, at § 8.07.

- 76 If the dilution remedy is the only remedy specified in the venture agreement for the failure to contribute capital, then an exclusive remedy clause could be dangerous because the contributing member may be stuck with a dilution remedy that doesn't work under the circumstances. Even in the absence of an exclusive remedy clause, if there is only a dilution remedy specified and no non-exclusive remedy clause, then there may be a risk of a court holding that no other remedy (e.g., damages) is available. See, e.g., *Canyon Creek Dev., LLC v. Fox*, 46 Kan.App.2d 370, 383 (2011) involving a Kansas statute similar to the applicable Delaware statute ("We conclude that failing to specify in the operating agreements so fundamental a remedy as damages when a member fails to contribute additional capital to the venture is not an oversight but rather the expression of a clear intent that damages cannot be assessed against a member who fails to contribute additional capital to the venture after it is up and running."). For further discussion of this issue, see, e.g., Bradley T. Borden and Thomas E. Rutledge, *Interest Dilution and Damages as Contribution-Default Remedies in Failing LLCs and Partnerships*, Bus. Law Today (ABA Nov. 6, 2018).
- 77 An equivalent formula (but with a 100% bonus factor rather than a 50% bonus factor) appears in Scott A. Lindquist, Eric M. Schiller, *A Real Estate Lawyer's Guide to Equity Investment (with Forms) Does Your Client Want to Obtain Private Equity Capital (or Provide It)? If so, Here Is an Overview of How to Do It*, Prac. Real Est. Law. 41 (2009), Appendix 1.
- 78 For a sample of a flawed increasing-pie formula, see, e.g., 1997 Article, *supra* note 4, Example 13, at 53–54, which illustrates how the results under such a formula may not make sense (e.g., a defaulting member's venture percentage after a second contribution default could be higher than its venture percentage after its first contribution default (even though there has been no intervening contribution default by the other member)).
- 79 Exhibit 15 of the 1997 Article, *supra* note 4, at 64, identifies formulations of the adjustment amount for some aggregate adjustment formulas.
- 80 If the other member contributes 100% of c , then the other member is the contributing member, and has a venture percentage of $\left[\frac{b}{q}\right] = \left[1 - \frac{a}{b}\right]$, so that $\left[1 - \frac{b}{q}\right] = \left[\frac{a}{b}\right]$. With this information in mind, we can easily apply the results of the second alternative (with the roles reversed): $\frac{1.5(1 - \frac{b}{q})c}{b+c} = \frac{1.5 \frac{a}{b} c}{b+c}$. But it is sufficient to prove the result once for the contributing member; the result for the non-contributing member should follow immediately because it is merely the additive inverse (i.e., the same absolute amount but negative). We also spell out a direct proof in the body of this Appendix.
- 81 See, e.g., discussion of deemed equity dilution formula in 1997 Article, *supra* note 4, Example 12, at 52–53.
- 82 $15/60 = [1.5 \times \$10X]/[\$60X]$.
- 83 $3/16 = 15/80 = [1.5 \times 10]/[\$80X]$.
- 84 $15/60 =$ [the amount by which \$20X plus \$0X exceeds \$5X]/[\$60X].
- 85 $45/60 =$ [the amount by which \$40X plus \$5X exceeds \$0X]/[\$60X].
- 86 $40/80 =$ [the amount by which \$40X plus \$0X plus \$5X exceeds \$5X]/[\$80X].
- 87 $40/80 =$ [the amount by which \$40X plus \$5X plus \$0X exceeds \$5X]/[\$80X].
- 88
$$\frac{a+c+.5pc}{b+c} = \frac{a+\frac{a}{b}c+(1-\frac{a}{b})c+.5pc}{b+c} = \frac{a}{b} + \frac{(1-\frac{a}{b})c+.5pc}{b+c}$$
- 89
$$\frac{a+(\frac{a}{b}+q)c+.5qc}{b+(\frac{a}{b}+q)c} = \frac{a+\frac{a}{b}(\frac{a}{b}+q)c+(1-\frac{a}{b})(\frac{a}{b}+q)c+.5qc}{b+(\frac{a}{b}+q)c} = \frac{a}{b} + \frac{(1-\frac{a}{b})(\frac{a}{b}+q)c+.5qc}{b+(\frac{a}{b}+q)c}$$
- 90 See, e.g., Whitmire et al., *supra* note 10, ¶ 3.06[7] at 15 ("[T]he partners or members can be expected to argue that the transaction [i.e., the application of a dilution formula that shifts the partners' or member's interests in unrealized appreciation or book capital] has no tax consequences, reflecting a mere adjustment of their interests in the entity. This approach is hard to justify in the context of a shift in book capital but has some merit if the shift is restricted to unrealized and unbooked appreciation." (endnote omitted); James B. Sowell, *Concepts and Context in Partnership Capital Shifts*, Taxes: The Tax Magazine (Mar. 2023), 113 at 149-152.