Minimizing True-Ups:

A Technical Analysis of Alternative Methods of Applying Forfeiture Assumptions

Executive Summary

In their 2006 fiscal reporting year, companies began recognizing compensation expense under FAS 123(R), now ASC Topic 718, using either a "straight-line" method or the "front-loaded" method prescribed. Each method has its advantages, but the majority of companies adopted the straight-line method.

Issuers, who are responsible for the accuracy of their financial statements, have asked for additional detail regarding the choice between these two methods. In this paper, Fidelity Stock Plan Services and Radford, each of which provides services to Issuers in connection with Issuers' equity compensation plans, analyze two alternatives for incorporating actual forfeitures into expense attribution: as they occur (the Dynamic method) or only at vesting events (the Static method). In addition, we describe the difference between applying the Dynamic method with grant level proration ("Grant at a Time") or proration on the actively vesting tranche only ("Tranche at a Time").

Based on the analysis presented in this paper, both Radford and Fidelity have determined to utilize in their product and service offerings the Dynamic method for applying forfeitures, and we each use the Tranche at a Time approach when calculating expense on a straight-line basis for evenly graded awards with multiple tranches and for most front-loaded awards. This paper explains the mathematics behind our shared approach and the rationale for identifying it as a best practice supported in our product and service offerings. Of course, Issuers should consult with their legal and accounting advisers with respect to the preparation of their own financial statements, and in identifying service providers and offerings and integrating the company's data into its own financial statements.

ASC Topic 718 is silent in a prescribed approach to reconciling actual prevesting forfeitures with earlier estimates, except that it *"shall be revised if subsequent information indicates that the actual number of instruments is likely to differ from previous estimates."*[1] Generally, two methodologies have evolved in practice:

1) Static (sometimes described as True-Up at Vest): Unless a company actively adjusts its assumed forfeiture rate at interim measurement dates, this method treats estimated forfeitures as entirely accurate over the service period. At the point of vesting, a cumulative charge (in the event of continued employment) or a cumulative credit (in the event of termination) will occur to reflect the reconciliation to actual experience.

2) Dynamic (sometimes described as True-up at Termination): This method credits back expense for actual forfeits and adjusts the effect of forfeiture rates for grants that have not forfeited as of each measurement date. The approach therefore systematically incorporates actual forfeiture experience throughout the requisite service period. The mathematics of this approach are provided in Appendix 1.

Turn here®

Published by: Fidelity Stock Plan Services and Radford

Section 1 of this paper provides a summary of the distinction between the Static and Dynamic approaches and specific research highlighting the differences in expense recognition between these two approaches. Ultimately, for many reasons, we believe that most Issuers and their advisers will determine that the Dynamic approach complies more effectively with the standard set in ASC Topic 718 and creates more appropriate expense recognition patterns, and we have adopted that method in our own product and service offerings.

Section 2 discusses the differences between two approaches to applying the straight-line method of expense attribution: (a) applying Dynamic estimates and recognizing expense based on the grant life and (b) applying Dynamic estimates and focusing on the currently vesting tranche only.[2] The latter "Tranche at a Time" approach prorates the awards expected to vest for the currently vesting tranche only, while the "Grant at a Time" approach considers the total awards expected to vest and prorates expense relative to the total vesting life of the grant. We will discuss how these approaches diverge, and the pros and cons of each. For most awards, we believe that most Issuers and their advisers will determine that the Tranche at a Time approach leads to more intuitive and consistent expense amortization throughout the vesting schedule, and we have adopted that approach in our own product and service offerings.

Background: Examples Provided in ASC 718-20-55

In this section, we take a brief look at the expense amortization example provided in the Standard.[3] This example is widely believed to be oversimplified in its treatment of truing up expected and actual forfeitures, and this oversimplification explains the existence of alternative methods for applying estimated forfeitures.

The first example covered in the Standard is an award with three-year cliff vesting. In that example, the company begins with an annual forfeiture assumption of 3% and revises that rate to 6% after two years. The primary simplification in this example is that the eventual vested shares correspond exactly to the revised estimate. Even so, it is worth noting that a Dynamic forfeiture application would yield a 68% smaller adjustment at the end of the second year than the true-up calculated in the example.[4] Section 1 covers in more detail the effect of applying forfeiture rates using a Static versus a Dynamic calculation in situations where actual forfeitures diverge from estimates.

The second example is a back-loaded award in which 25% of the shares vest in the first and second years, followed by 50% of the shares vesting in the third year. This extreme back-loading allows the example to sidestep the issue of true-ups at vesting in the first and second years because the annual expense of $4M is greater than the total expense for all shares scheduled to vest in each of the first two years. In our experience, evenly graded vesting is much more commonly used by Issuers than back-loading, and as Section 2 will cover in detail, prorating expense based on the total grant life generally leads to expected and unnecessary true-ups at vesting events. The methodology we have determined to utilize in our product and service offerings automatically applies Grant at a Time amortization when back-loading demands it, as in this second example, and in most other cases uses Tranche at a Time amortization (see Section 2 for more details).

[1] ASC Topic 718-10-35-3.

[2] "Tranche" is a term frequently used to describe equity awards with graded vesting; a tranche represents a single vesting portion of the full award.

[3] ASC Topic 718-20-55-6 and following.

[4] Assuming actual forfeitures in the second year are 7%, which seems reasonable given the revision to a 6% annual forfeiture rate for the grant life. See Appendix 3 for details.

Section 1: Analysis of Static Versus Dynamic Methods

In this section, we compare the expense accruals produced by the Static and the Dynamic methods when each is applied to two sample grant populations. The Dynamic method credits back expense for actual forfeitures in the period they occur and adjusts the effect of expected forfeitures for active grants based on the time remaining until vest. As we will discuss in Section 2, the Dynamic method can be used at a tranche level or grant level; our analysis uses the Tranche at a Time approach described in detail in Appendix 1. Under either the Dynamic or the Static method, quarterly expense is determined based on the number of days the grant was outstanding in each quarter divided by the number of days in the vesting life of the tranche or tranches considered.

The Static method used in our examples treats expected forfeitures (in the aggregate) as a constant until the actual number of awards to vest is known on the date of vesting. In the period of each vesting event, the expense for each tranche that vests will be trued up to the full grant date fair value of vested awards. If the tranche has forfeited, the expense recorded to date is reversed and no future expense is recognized.

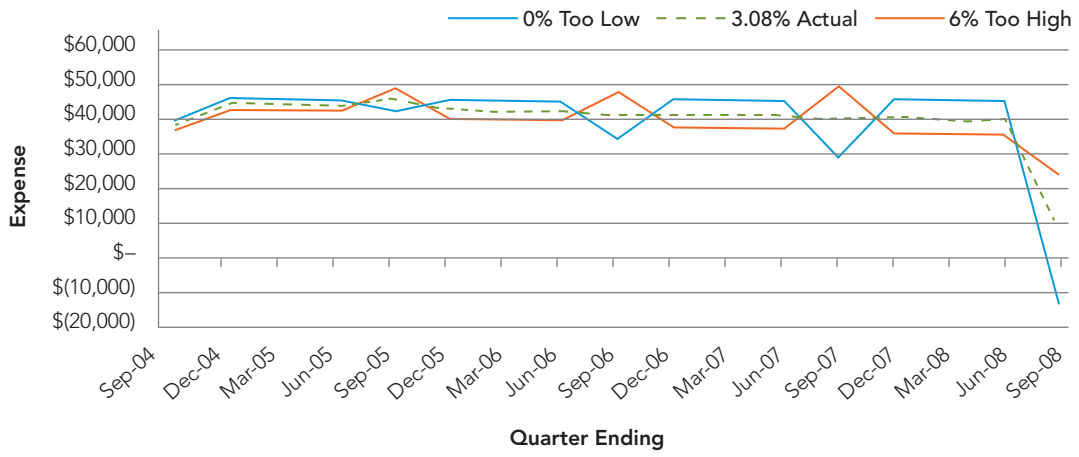
In practice, some companies using the Static method manually revise their forfeiture rates to account for actual forfeitures, allowing the results of the Static method and the Dynamic method to converge to some extent. The following analysis assumes that true-ups take place only at vesting events, since our focus is on which method produces results that will be viewed as appropriate by most Issuers and their advisers without manual intervention. Under either method, we expect that companies would revise forfeiture rates if future forfeiture rates are expected to diverge materially from prior estimates, but our examples hold future forfeiture assumptions constant—both for the sake of simplicity and because our experience shows this to be the most common practice.

We studied two historical grant populations using actual data, each with four-year annual graded vesting (25% per year). In selecting grant populations for this study, we applied the following criteria: we wanted a reasonably small population; the final vesting needed to be in the past; we needed access to all history; and we wanted one population with a low forfeiture rate and another with a higher rate. Otherwise, the populations were chosen at random. Company A realized a low annual forfeiture rate (3.08%) and Company B realized a high annual forfeiture rate (11.1%) during the sample periods. In Appendix 4, we have summarized grant and forfeiture data for each company.

Our analysis calculated expense using the Dynamic and Static methods as described above. Expense was calculated in each scenario using multiple forfeiture rate assumptions, since a primary goal of our analysis was to understand the effect on expense when forfeiture estimates are not exactly on target. In the charts following this section, we present two views of the data: The first four charts show quarterly expense under three different forfeiture assumptions; the remaining two charts compare the calculated expense to what would have been recognized if the exact forfeiture rates for each vesting date had been known in advance. **See Appendix 5 for the quarterly expense details of each method.**

We start with charts 1 and 2, which compare quarterly expense results for Company A's grant population, which had a grant date of 7/15/2004 and a four-year, 25% per year graded vesting schedule. Under each method, results are calculated as if the company had assumed a 0%, 3.08% (actual), and 6% expected forfeiture rate.

Chart 1: Quarterly Expense Accruals for Company A Using the Static Method. Note that the spikes in expense correspond with the annual vesting dates. In between vesting events, periodic expense is flat, since all grants are included in expense calculations and assume a constant forfeiture rate. The trail-off at the end represents the final partial quarter expense, where expense has been fully recognized and a final true-up is taken.

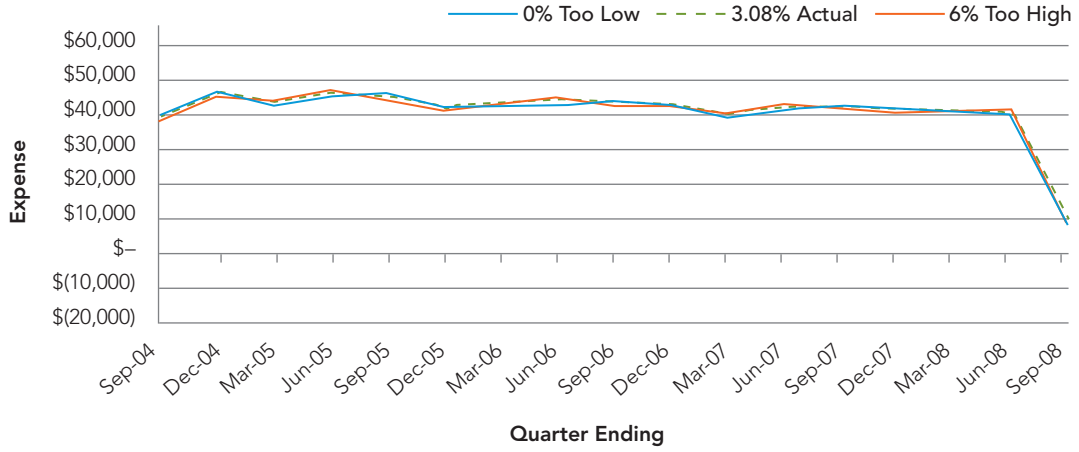


Grant Date: 7/15/2004

Vesting Schedule: four-year 25% graded

Actual Forfeiture Rate: 3.08%

Chart 2: Quarterly Expense Accruals for Company A Using the Dynamic Method. There is some variability due to actual forfeitures or varying days in the period, but otherwise the period expense is consistent from period to period. Expense generally declines from period to period, because each forfeit in a period reduces the total shares expected to vest in all future periods. As before, the final period is a partial period and includes any final true-up.



Grant Date: 7/15/2004

Vesting Schedule: four-year 25% graded

Actual Forfeiture Rate: 3.08%

The next two charts compare quarterly expense results for Company B's grant population, which had a grant date of 7/12/2004 and a four-year 25% graded vesting schedule. Under each method, results are calculated as if the company had assumed a 6%, 11% (actual), and 16% expected forfeiture rate.

Chart 3: Quarterly Expense Accruals for Company B Using the Static Method. As with the scenarios in Chart 1, there are large true-ups at each vesting event in cases where the estimated forfeiture rate is inaccurate.

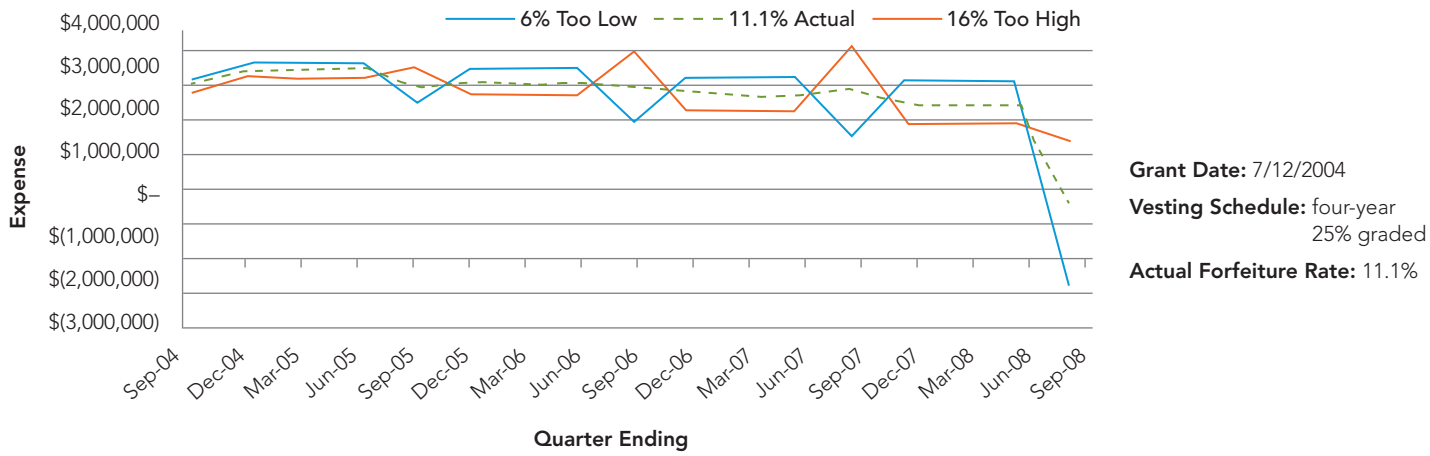
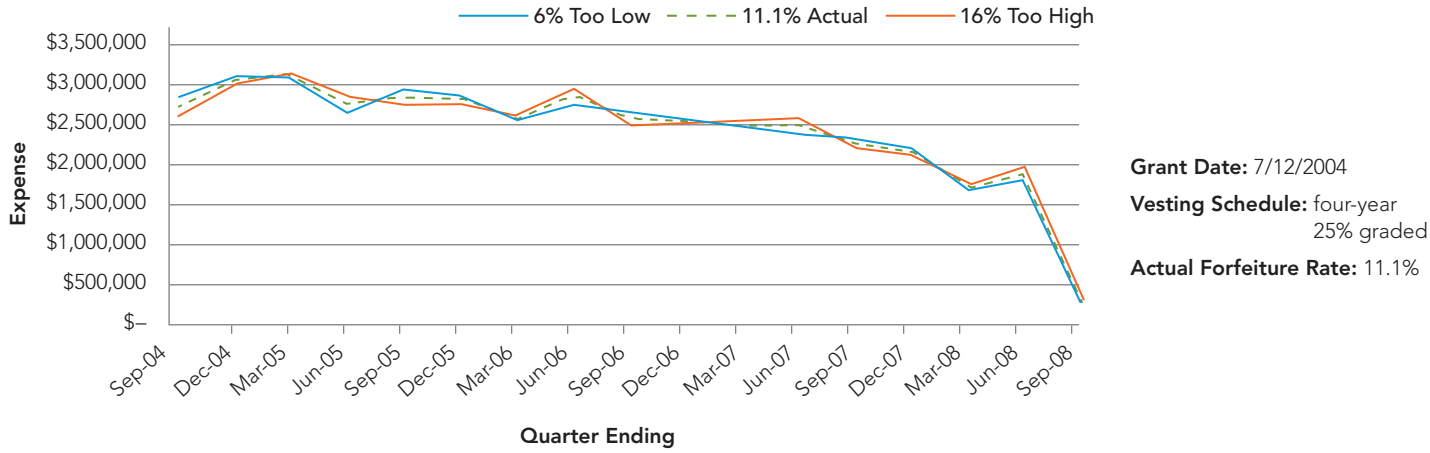


Chart 4: Quarterly Expense Accruals for Company B Using the Dynamic Method. Greater variability in the timing of realizing forfeitures causes more unevenness than in Chart 3, but overall consistency is greater in Chart 3 than in Chart 4. This chart illustrates a primary benefit of the Dynamic method, which is that the impact of inaccurate estimates is greatly reduced relative to the Static method.



Charts 5 and 6 are intended to illustrate tolerance to inaccurate estimates, using deviation from exact knowledge as a measure of variance. The lines for Company A and Company B each represent the standard deviation at each estimated forfeiture rate, where the deviation is calculated as the difference between expense calculated using the assumed rate and expense calculated using actual forfeiture rates for each tranche.

Chart 5: The Impact of the Expected Forfeiture Rate for Company A. Note that the actual annualized forfeiture rate for the grant was 3.08%. The Dynamic method is highly tolerant of inaccurate estimates because it incorporates forfeitures as they take place, and it pulls forfeited awards out of future calculations.

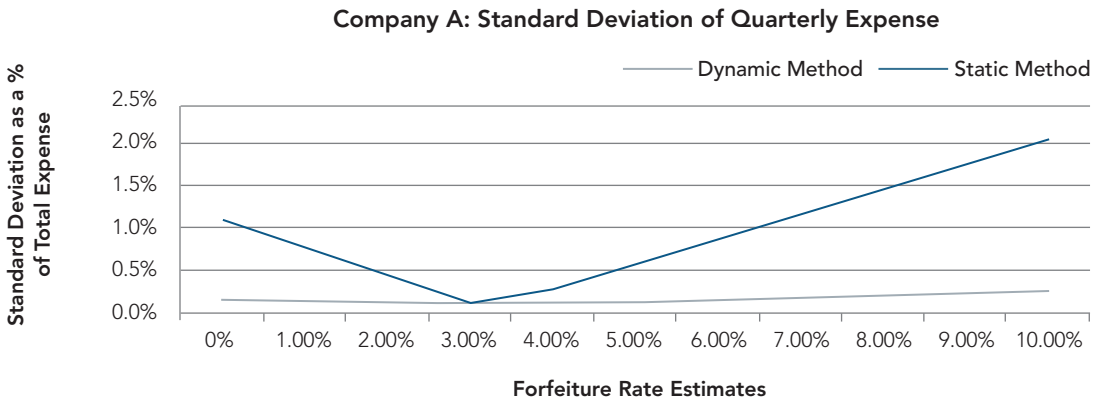
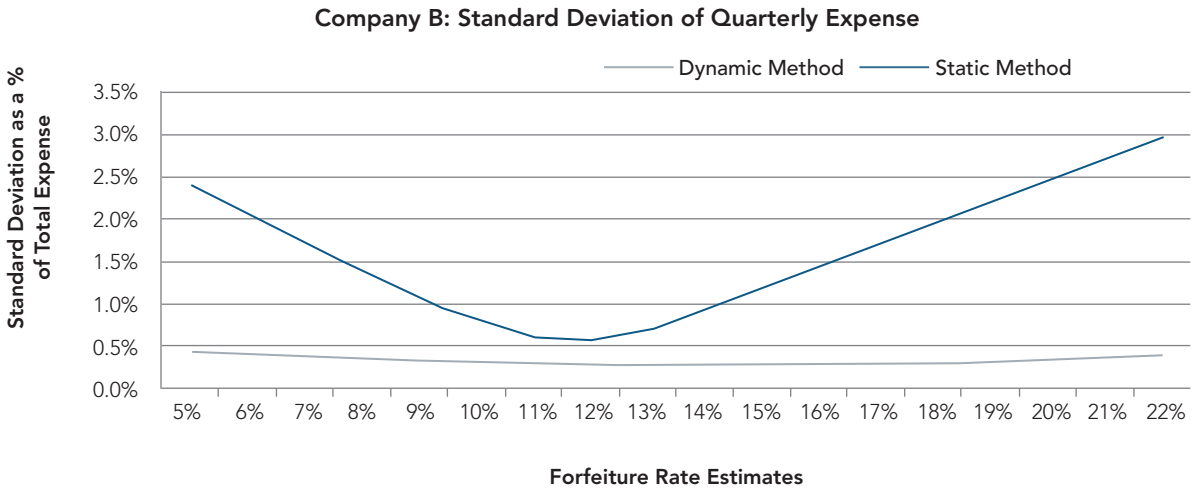


Chart 6: The Impact of the Expected Forfeiture Rate for Company B. Note that the actual annualized forfeiture rate for the grant was 11.08% and that the Dynamic rate again shows a much narrower range of deviation as the estimated forfeitures decrease in accuracy.



Section 1 Summary

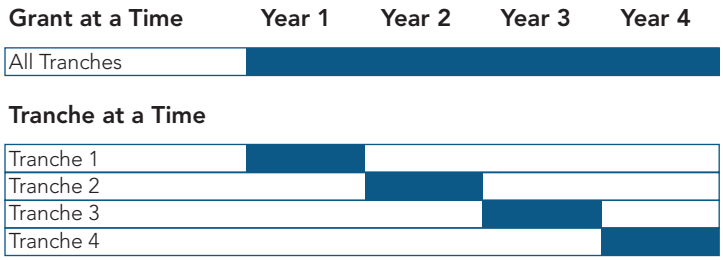
The chart below presents our summary of the pros and cons of the Dynamic and Static methods for reconciling actual forfeitures with estimates.

Methodology	Pros	Cons
Dynamic	• Immediate forfeiture recognition is more intuitive • Provides a more accurate reflection of actual and expected forfeiture experience on an up-to-date, real-time basis • Quarterly expense volatility is minimized, even with inaccurate forfeiture estimates • Mitigates the need to make manual interim adjustments to the assumed forfeiture rate	• Calculation is automated within financial reporting systems but more complicated to reproduce offline
Static	• Forfeiture true-ups upon vest follow simplified example in ASC Topic 718 more closely • Calculation of awards expected to vest is simple • If forfeiture predictions are accurate, they provide predictable expense patterns	• Companies continue to record expense for employees who terminated, possibly up to several years later, depending on the vesting schedule • True-ups upon vesting or interim cumulative catch-ups based on revised forfeiture expectations can be large for inaccurate forfeiture expectations • Companies will have to assess if manual true-ups or assumption changes should occur on a quarterly basis. This assessment involves judgment of materiality and requires potentially complicated analysis

Section 2: Analysis of Dynamic Method for Awards with Graded Vesting

The following section provides greater detail regarding the Dynamic method for graded vesting schedules under two approaches: Grant at a Time and Tranche at a Time. The illustration below shows a sample four-year graded vesting schedule that can be considered in whole (Grant at a Time) or as individual tranches that are expensed sequentially (Tranche at a Time). The two approaches are, of course, identical for awards with cliff vesting because they have only one tranche.

Chart 7: Illustration of Expense Spreading Methods



Approach 1 (Grant at a Time)

The Grant at a Time approach calculates the number of awards expected to vest on a tranche-by-tranche basis for all tranches and totals them. The total shares expected to vest at a grant level, multiplied by the per share value, yields a total expense net of forfeits, which is then prorated based on the total grant-level vesting life to determine a cumulative expense through the period-end. If necessary, the cumulative expense is trued up to at least equal the expense for vested shares at each measurement date. The quarterly expense is the difference between the new cumulative expense and the prior period's cumulative expense.

The main difficulty with this approach is that the effect of forfeitures is averaged forward into earlier years, causing a known or expected true-up at vesting. This is especially visible when vesting schedules are long or estimated forfeiture rates are high. A simple example illustrates why:

Shares	100
Grant Date	01/01/2010
Final Vesting	01/01/2014
Estimated Annual Forfeiture Rate	10%

Vest Dates	Shares	Expected to Vest as of Grant Date
01/01/2011	25	22.50
01/01/2012	25	20.25
01/01/2013	25	18.23
01/01/2014	25	16.40
		77.38

Sample calculation for the third tranche: 25 Shares x (1–10% forfeiture rate) raised to 3 years remaining to vest = 18.23.

The likelihood of vesting decreases as time until vest increases, so later tranches have progressively fewer shares expected to vest for any forfeiture rate >0.

See Appendix 1, Step 1, for details on calculating these numbers.

As of the grant date, 1/31/2010, the total grant level shares expected to vest is roughly 78 shares. Imagine there were 1,000 grants, so that the total shares expected to vest is roughly 78,000. Grant-level straight-line amortization would calculate that 19,500 shares should be expensed over each of the grant's four years of vesting. A separate calculation, however, shows us that 900 grants are expected to remain at the first vesting after 10% of the grants forfeit. At 25 shares per tranche, 900 grants represents 22,500 vested shares—3,000 more shares than the grant-level proration accrues expense for in the first year.

The reason that the Grant at a Time approach often results in true-ups at vesting is that it averages across tranches, even though future tranches have multiple years of compounded forfeiture rates. The above calculations would be fine if all that mattered was the expense target as of the final vesting. And, in fact, we recommend and use this approach for straight-line expensing of back-loaded awards like the example discussed in ASC Topic 718-20-55-32. For evenly graded and most front-loaded vesting schedules, however, most Issuers and their advisers have determined that the expected vested shares at the next upcoming vesting date matters most, since the guidance mandates that cumulative expense should at least equal the expense for vested shares. This consideration has driven us to adopt in our product and service offerings the Tranche at a Time approach discussed below to calculate straight-line expense for awards with evenly graded vesting schedules and for most awards with front-loaded vesting schedules.

900 grants are expected to remain at the first vesting after 10% of the grants forfeit. At 25 shares per tranche, 900 grants represents 22,500 vested shares—3,000 more shares than the grant-level proration accrues expense for in the first year. The reason that the Grant at a Time approach often results in true-ups at vesting is that it averages across tranches, even though future tranches have multiple years of compounded forfeiture rates.

Approach 2 (Tranche at a Time)

The Tranche at a Time approach prorates expense only for the tranche that is vesting at the time of the expense calculation. Expense for vested tranches is known, and tranches vesting after the upcoming vest date are ignored. Between the grant date and the first vesting date, for example, the Tranche at a Time approach considers only the shares in the first tranche in applying the forfeiture assumption and calculating the expense to recognize at each period-end. When the first tranche vests, the second begins to be expensed. By focusing on expected forfeitures for the currently vesting tranche only, the Tranche at a Time approach eliminates the need for known or expected true-ups at vesting.

As discussed above, there are times when multiple tranches should be aggregated and prorated as one unit. The back-loaded example in ASC Topic 718-20-55-32 has been mentioned; a less obvious example of back-loading is a grant where 50% vests after two years and 50% vests after three years. In each of these cases, that grant should be expensed as one unit. A more complex example is a grant where 25% vests in year 1, 50% in year 2, and 25% in year 3. In our product and service offerings, we have adopted the approach that the first two tranches would be expensed together, followed by the third on its own.

In their product and service offerings, Radford and Fidelity have adopted generally equivalent hybrid solutions for their expense recognition platforms: each uses the Tranche at a Time approach for most grants and the Grant at a Time approach for grants with back-loaded vesting schedules.

Methodology	Pros	Cons
Tranche at a Time Proration	• Predictable, intuitive expense amortization results • Eliminates known or expected true-ups that would otherwise result at each vest date	• Deviates from the simplified example in ASC Topic 718, though it is still compliant
Grant at a Time Proration	• Most consistent with simplified example provided in ASC Topic 718 and classic straight-line attribution • Required when back-loaded vesting schedules demand it	• Requires known or expected true-ups at vesting events and, therefore, volatility of expense recognition within each vesting tranche and over the total vesting life of the grant, even if the assumed forfeiture rate is accurate

Conclusion

There are multiple decisions to be made when establishing a compliant process to amortize equity compensation, and best practices have evolved since the initial release of FAS 123(R). The two primary decisions involve choosing a method for truing up to actual forfeitures—either Static or Dynamic—and choosing whether to calculate expense for graded vesting schedules using the Grant at a Time or the Tranche at a Time approach.

Fidelity and Radford have each adopted the Dynamic method in their product and service offerings, based upon their judgment that most Issuers and their advisers will determine that this method provides the least volatile expense while also minimizing the impact of having an inaccurate forfeiture rate. Although the swings in expense associated with the Static method may be diminished with a series of manual interim adjustments to the forfeiture rate or by having multiple grants spread throughout the year, we believe most Issuers and their advisers will find that the Dynamic method delivers more reliable and consistent results with less manual effort, and that this method will therefore become a clear best practice in the marketplace.

We have further concluded that most Issuers and their advisers will determine that Tranche at a Time proration of evenly graded vesting awards reduces true-ups while meeting ASC 718 minimum level of recognition requirements under a straight-line allocation methodology, and we have therefore adopted that methodology in our product and service offerings. At the same time, however, we believe that most Issuers and their advisers will determine that Grant at a Time allocation is still more appropriate for back-loaded vesting schedules, but since the majority of awards are evenly graded, Tranche at a Time proration should be used in most cases, and we have therefore adopted those methodologies in our product and service offerings. We believe that most Issuers and their advisers will determine that a hybrid approach using Tranche at a Time whenever possible and Grant at a Time when necessary delivers expense accruals that are as even as possible under the requirements of ASC 718.

Appendix 1—Mathematical Formulas Behind Dynamic Forfeiture Rates

In 2007, Radford published the mathematics behind Dynamic forfeiture reconciliation using the Grant at a Time approach in Steps 1 through 3 of the white paper linked here: http://www.radford.com/home/ccg/valuation_services/Whitepaper_Aon_Expense_Allocation_082207.pdf. The current Appendix summarizes the mathematics for the Tranche at a Time approach. Note that both Radford and Fidelity use this expense recognition pattern for our respective client bases.[5]

Step 1: Determining the Expected Awards to Vest

The first step in the process is determining the expected number of awards to vest. This determination should consider all relevant characteristics, such as vesting schedules, change in control provisions, retirement eligibility, and other provisions.

To calculate the compensation expense at any *Measurement Date (MD)* at time *t* after grant date, the projected awards to vest, PV_t, must be estimated. Further, the vested shares, VS_t, at time *t* can be determined, and the fair value per share (FV) is assumed to be known. As mentioned earlier and in ASC 718-10-35-8, at no time can the expense recognized be less than the aggregate fair value of vested awards, and therefore VS_t x FV can be viewed as a minimum expense floor.

Again, this calculation should consider the possibility of early vesting (when the award becomes non-forfeitable) for reasons such as retirement eligibility. Therefore, if awards become non-forfeitable upon retirement eligibility, and the nominal service *Vesting Date (VD)* is in a period later than the retirement eligibility date, the expected awards to vest should reflect this. It may be necessary to calculate an adjusted *Vesting Date (VD)* to reflect an early recognition of vesting provisions. For simplicity purposes, the forthcoming examples do not adjust the *Vesting Date (VD)* to reflect any early vesting provisions.

For each vesting tranche *i* at a particular *Measurement Date* (MD_t), PV_t^i should be estimated as:

$$PV_t^i = \left(\text{Number of Options in Tranche } i \times (1 - \text{Forfeiture Rate})^{\frac{\text{Max}\ (VD^i - MD_t, 0)}{365.25}} \right)$$

The above formula could be skipped for vested tranches, since vested shares is generally a known quantity. The formula will work for vested tranches, though, since the exponent resolves to zero when MD_t is after the vesting date.

[5] Please note that the exact formulas follow Radford's calculations, which were used to generate the data in the examples used. Fidelity uses 365 days per year instead of 365.25, and is grant date exclusive, while the formulas shown are grant date inclusive. Note also that the process calculates expense at the individual award level. This differs from the standard display of examples in the accounting guidance but is in our understanding the standard and preferred practice for all major providers. It is beyond the scope of this paper to analyze possible methods for calculating expense schedules at an aggregate level and how that could affect results.

Step 2: Expense Recognition

For each *Measurement Date (MD_t)* the projected required expense is based on the shares expected to vest times a cumulative amortization ratio for that date. This calculation will be at the tranche level or an aggregate level, depending on whether the Tranche at a Time or the Grant at a Time approach is used. A complicated variety of formulas is needed, but the concept is simple: determine the period over which each block of shares should be amortized and calculate a *Cumulative Amortization Ratio (CAR)* for each measurement date based on where it falls relative to the overall service period for the block of shares. If MD_t is before the amortization period's start date, then CAR_t will be equal to 0%; if after the amortization period's end date, then CAR_t will be equal to 100%; and otherwise CAR_t will be between 0% and 100%. The level at which the *CAR* is calculated will vary depending on the vesting schedule and the expense recognition policy (straight-line or FIN28).

Using a straight-line attribution method for even or front-loaded vesting schedules, the vesting dates are used to determine the current *CAR* for each tranche:

$$CAR_t^i = \text{Maximum}(\text{Minimum}(\left(\frac{MD_t - Maximum(GD, VD^{i-1}))+1}{(VD^i - Maximum(GD, VD^{i-1}))+1}\right), 100\%), 0\%)$$

Vested tranches will have a *CAR* of 100% so no extra work is needed to ensure that all vested shares are expensed at any time *t*. For a grant with *n* tranches, the grant level *Amortized Expense (AE_t)* to be accrued through MD_t is calculated as:

$$AE_t = \sum_{n}^{i=1} CAR_t^i \times PV_t^i \times FV$$

Using a straight-line attribution method, for back-loaded vesting schedules, the *CAR* is calculated for the grant as a whole, consistent with the Grant at a Time approach.[6]

$$CAR_t = \text{Maximum}(\text{Minimum}(\left(\frac{MD_t - GD+1}{VD_{Max} - GD+1}\right), 100\%), 0\%)$$

For a back-loaded grant with *n* tranches, expected forfeitures could push calculated expense below vested expense, so the grant level AE_t is calculated as:

$$AE_t = \text{Maximum}\left\{\sum_{n}^{i=1} CAR_t \times PV_t^i \times FV, \sum_{n}^{i=1} VS_t^i \times FV\right\}$$

Using a front-loaded attribution method, it will be necessary to calculate the *CAR* for each respective vesting tranche *i* from the *Grant Date (GD)*:

$$CAR_t^i = \text{Maximum}(\text{Minimum}(\left(\frac{MD_t - GD+1}{VD^i - GD+1}\right) 100\%), 0\%)$$

The grant level AE_t is calculated as the sum of the expense for each of the grant's *n* tranches:

$$AE_t = \sum_{n}^{i=1} CAR_t^i \times PV_t^i \times FV^i$$

[6] For simplicity, we have focused on a fully back-loaded grant. As discussed in Section 2, there are much rarer examples, such as a grant where 25% vests in year 1, 50% in year 2, and 25% in year 3. Such grants would be expensed using the same process as with even vesting schedules, but grouping two or more tranches together (the first and second tranches in the example mentioned).

For all methodologies, AE_t represents the total amortized expense to be recognized through date t, so the expense for the current financial reporting period Current Expense (CE_t), is calculated as AE_t minus AE_{t-1}, where AE_{t-1} is the total expense recognized through the prior financial reporting period:

$$CE_t = AE_t - AE_{t-1}$$

Example 1 illustrates the calculation of expense for multiple grants with various vesting schedules.

Example 1

The following example illustrates the recognition of expense for evenly graded vesting schedules. During the January 1, 2010–March 31, 2010 (Q1) fiscal period, Company ABC issued 9,000 options on various grant dates. Options have various four-year graded vesting schedules (25% annually, monthly over four years, and 12.5% after six months and monthly thereafter). Company ABC's forfeiture analysis led them to select an annual forfeiture rate of 5%.

Company ABC intends to recognize the compensation expense using a straight-line basis. Assuming all options are outstanding as of March 31, 2010, the following chart summarizes expense during Q1, and a forecast of expected expense for Q2–Q4 for currently outstanding grants:

Measurement Date: 3/31/2010
Forfeiture Rate: 5.00%

Name	Options Granted	GD Grant Date	Vesting Schedule	Fair Value	AV_1 Accrued Vest	PV_1 Projected To Vest	Expense Recognition: Actual 1/1/2010 3/31/2010	Projected 4/1/2010 6/30/2010	Projected 7/1/2010 9/30/2010	Projected 10/1/2010 12/31/2010
Grant 1	1,000	1/10/2010	4-Yr Graded Annual	$5.00	0	891.07	$266.51	$299.42	$302.71	$302.71
Grant 2	1,000	2/12/2010	4-Yr Graded Annual	$5.00	0	886.95	$157.20	$298.03	$301.31	$301.31
Grant 3	1,000	3/27/2010	4-Yr Graded Annual	$5.00	0	881.58	$16.28	$296.24	$299.49	$299.49
Grant 4	1,000	1/10/2010	4-Yr Monthly	$5.00	41	912.17	$279.41	$311.28	$303.38	$305.32
Grant 5	1,000	2/12/2010	4-Yr Monthly	$5.00	20	908.17	$167.63	$311.05	$303.40	$305.54
Grant 6	1,000	3/27/2010	4-Yr Monthly	$5.00	0	902.45	$16.07	$305.20	$307.66	$302.97
Grant 7	1,000	1/10/2010	4-Yr 12.5% Cliff	$5.00	0	911.07	$275.76	$309.80	$302.96	$305.32
Grant 8	1,000	2/12/2010	4-Yr 12.5% Cliff	$5.00	0	906.91	$162.66	$308.37	$304.74	$305.54
Grant 9	1,000	3/27/2010	4-Yr 12.5% Cliff	$5.00	0	901.14	$16.56	$301.39	$304.40	$302.97
Total	**9,000**				**61**	**8,101.50**	**$1,358.08**	**$2,740.77**	**$2,730.04**	**$2,731.15**

Expense Recognition for the January 1–March 31 Interim Reporting Period

To summarize the mathematics of the previous example, we first need to calculate the expected number of options to vest as of the *Measurement Date*, 3/31/2010. We have illustrated this example for Grant 1.

As of 3/31/2010, the first vesting tranche of Grant 1 has 285 days until vesting, 91 from the 2nd quarter, 92 from the 3rd quarter, 92 from the 4th quarter, and 10 from the 1st quarter of 2011). Therefore, the expected number of options to vest can be determined to be 240.19, based on the following formula:

$$PV_1^1 = \left(\text{Number of Options in Tranche 1} \times (1 - \text{Forfeiture Rate})^{\frac{\text{Max}\,(VD^1 - MD_1, 0)}{365.25}}\right) = \left(250 \text{ Options } \times (0.95)^{\frac{285}{365.25}}\right) = 240.19 \text{ Options}$$

Note: In the formula above, the time component is represented as "1", indicating the first fiscal period-end after grant date, whereas 3/31/2010 would be a more accurate replacement for time t. The continuation of this example will preserve the simplification of replacing the period-end date with a relative number representing the sequence of period-end dates after the grant date.

Using a similar approach for each of the vesting tranches determines that 891.07 options are expected to vest.

Vest Date	Days Until Vesting	Applied Forfeiture Rate	Options Granted	Expected To Vest
1/10/2011	285	3.92%	250	240.19
1/10/2012	650	8.72%	250	228.19
1/10/2013	1,016	13.30%	250	216.76
1/10/2014	1,381	17.63%	250	205.93
Total			**1,000**	**891.07**

For purposes of calculating the first period of expense, only the first tranche will be used, since this is an evenly graded award and the other three tranches have a vesting start date after the measurement date. Put differently, the CAR_1 for the latter three tranches is 0%. As for the first tranche: from *Grant Date* to *Vest Date*$_1$, there are 365 days. As of the *Measurement Date* of 3/31/2010, 81 days have expired, and therefore the *Cumulative Amortization Ratio* to date is determined as:

$$CAR_1^1 = \text{Maximum}(\text{Minimum}(\frac{81}{365}, 100\%), 0\%) = 0.221918$$

Given this, the required *Amortized Expense* that needs to be recognized on 3/31/2010 is equal to $266.51:

$$AE_1 = CAR_1^1 \text{ x } PV_1^1 \text{ x } FV = 0.221918 \text{ x } 240.19 \text{ x } \$5.00 = \$266.51$$

Since no expense has been recognized in prior reporting periods, the entire expense, (AE_1), needs to be recognized during Q1:

$$CE_1 = AE_1 - AE_0 = \$266.51 - \$0.00 = \$266.51$$

Following a similar pattern for each of the above grants dictates that as of 3/31/2010, $1,358.08 should be recognized during Q1.

Expense Recognition for the April 1–June 30 Interim Reporting Period

Assume that during the 2nd quarter (April 1–June 30), no options have been forfeited. Also, note that a new grant occurred on 4/2/2010. A summary of all grants as of 6/30/2010 is as follows:

Measurement Date: 6/30/2010
Forfeiture Rate: 5.00%

Name	Options Granted	*GD* Grant Date	Vesting Schedule	Fair Value	AV_1 Accrued Vest	PV_1 Projected To Vest	Expense Recognition: Actual 1/1/2010 3/31/2010	Actual 4/1/2010 6/30/2010	Projected 7/1/2010 9/30/2010	Projected 10/1/2010 12/31/2010
Grant 1	1,000	1/10/2010	4-Yr Graded Annual	$5.00	0	902.53	$266.51	$306.70	$306.60	$306.60
Grant 2	1,000	2/12/2010	4-Yr Graded Annual	$5.00	0	898.35	$157.20	$303.89	$305.18	$305.18
Grant 3	1,000	3/27/2010	4-Yr Graded Annual	$5.00	0	892.91	$16.28	$300.26	$303.35	$303.35
Grant 4	1,000	1/10/2010	4-Yr Monthly	$5.00	104	922.93	$279.41	$313.99	$307.28	$309.25
Grant 5	1,000	2/12/2010	4-Yr Monthly	$5.00	83	919.17	$167.63	$313.76	$307.31	$309.47
Grant 6	1,000	3/27/2010	4-Yr Monthly	$5.00	62	913.77	$16.07	$307.88	$311.61	$306.86
Grant 7	1,000	1/10/2010	4-Yr 12.5% Cliff	$5.00	0	922.78	$275.76	$317.33	$306.86	$309.25
Grant 8	1,000	2/12/2010	4-Yr 12.5% Cliff	$5.00	0	918.57	$162.66	$314.43	$308.66	$309.47
Grant 9	1,000	3/27/2010	4-Yr 12.5% Cliff	$5.00	0	912.73	$16.56	$305.48	$308.31	$306.86
Grant 10	1,000	4/2/2010	4-Yr Graded Annual	$6.00	0	892.16	$0.00	$355.80	$363.71	$363.71
Total	**10,000**				**249**	**9,095.90**	**$1,358.08**	**$3,139.50**	**$3,128.86**	**$3,129.99**

Note that the expense recognition for Q1 has not changed, as the amount accrued was fixed.

Again, it is necessary to calculate the expected number of options to vest, given the experience to date. As of 6/30/2010, the first vesting tranche of Grant 1 has 194 days until vesting. Therefore, the expected number of options can be determined to be 243.28, based on the following formula:

$$PV_2^1 = \left(\text{Number of Options in Tranche 1} \times (1 - \text{Forfeiture Rate})^{\frac{\text{Max}\,(VD^1 - MD_2, 0)}{365.25}}\right) = \left(250 \text{ Options} \times (0.95)^{\frac{194}{365.25}}\right) = 243.28 \text{ Options}$$

Using a similar approach for each of the vesting tranches determines that 902.53 options are expected to vest. (Note that after three months of experience, 11.46 *more* options are expected to vest, due to decreased risk of forfeiture.)

Vest Date	Days Until Vesting	Applied Forfeiture Rate	Options Granted	Expected To Vest
1/10/2011	194	2.69%	250	243.28
1/10/2012	559	7.55%	250	231.12
1/10/2013	925	12.18%	250	219.55
1/10/2014	1,290	16.57%	250	208.58
Total			**1,000**	**902.53**

Again, only the first tranche will be considered in the second period's expense calculation. From *Grant Date* to *Vest Date*$_1$, there are 365 days. As of the *Measurement Date* of 6/30/2010, 171 days have expired, and therefore the *Cumulative Amortization Ratio* to date is determined as:

$$CAR_2^1 = \text{Maximum (Minimum } (\frac{172}{365}, 100\%), 0\%) = 0.471233$$

Therefore, as of 6/30/2010, the required *Amortized Expense* that needs to be recognized is equal to $573.21.

$$AE_2 = CAR_2^1 \times PV_2^1 \times FV = 0.471233 \times 243.28 \times \$5.00 = \$573.21$$

Since during Q1 (see page 14), $266.51 was accrued, then the current expense required to be recognized is equal to $306.70.

$$CE_2 = AE_2 - AE_1 = \$573.21 - \$266.51 = \$306.70$$

Following a similar pattern for each of the above grants, $3,139.50 should be recognized during Q2.

Reconciliation of Actual Q2 Expense against Projected Q2 Expense

During Q1, it was projected that Q2 expense would be equal to $2,740.77. As of 6/30/2010, we now see that Q2 expense is equal to $3,139.50. Why the difference? Following our approach for reconciling changes in expense, we note:

Reconciliation of (Gain)/Loss from Prior Estimate to Current Expense	
2010 Q1 Projection for 2010 Q2	$2,740.77
Increase Due to New Grants	$355.80
Change Due to Forfeiture Experience	$42.93
Actual Expense for 2010 Q2	$3,139.50

Note that an additional $355.80 of current expense was recognized in Q2 due to a new grant, which was not projected in Q1. Further, an increase of $42.93 was recognized to reflect that 102.24 more options are now expected to vest in the aggregate (9,095.90 options expected during Q2 *less* the new grant of 892.16 *less* the prior estimate of 8,101.50).

$$9{,}095.90 - 892.16 - 8{,}101.50 = 102.24$$

To verify this reconciliation, we can look at each grant and compare the prior estimation of vested options to the new estimate. (Note that we have excluded the new grant during Q2.)

		Estimated	Estimated	Reconciliation				Alternative Reconciliation		
Name	Options Granted	EV_2 3/31/2010	EV_2 6/30/2010	Incremental Options	Fair Value	Total Expense	Amortized Expense	Prior CE_2	New CE_2	Additional Expense
Grant 1	1,000	891.07	902.53	11.46	$5.00	$57.30	$7.28	$299.42	$306.70	$7.28
Grant 2	1,000	886.95	898.35	11.41	$5.00	$57.04	$5.86	$298.03	$303.89	$5.86
Grant 3	1,000	881.58	892.91	11.34	$5.00	$56.69	$4.02	$296.24	$300.26	$4.02
Grant 4	1,000	912.17	922.93	10.75	$5.00	$53.77	$2.71	$311.28	$313.99	$2.71
Grant 5	1,000	908.17	919.17	10.99	$5.00	$54.95	$2.71	$311.05	$313.76	$2.71
Grant 6	1,000	902.45	913.77	11.32	$5.00	$56.58	$2.68	$305.20	$307.88	$2.68
Grant 7	1,000	911.07	922.78	11.72	$5.00	$58.59	$7.53	$309.80	$317.33	$7.53
Grant 8	1,000	906.91	918.57	11.66	$5.00	$58.32	$6.06	$308.37	$314.43	$6.06
Grant 9	1,000	901.14	912.73	11.59	$5.00	$57.95	$4.09	$301.39	$305.48	$4.09
Total	**9,000**	**8,101.50**	**8,203.74**	**102.24**		**$511.20**	**$42.93**	**$2,740.77**	**$2,783.70**	**$42.93**

The chart above illustrates the original 8,101.50 shares expected to vest on 3/31/2010, the refined estimate of 8,203.74 on 6/30/2010, and the incremental difference of 102.24 options. The total expense required to be recognized over the requisite service period is equal to $511.20. However, only $42.93 needs to be recognized as of 6/30/2010, and the remaining expense of $468.27 is recognized over the remaining service period.

Appendix 2—Glossary of Symbols and Terms

Term	Symbol	Definition
Measurement Date	MD_t	Representative of the date at which the expense is being calculated
Grant Date	GD	The initial date of grant, the beginning of the requisite service period
Vesting Date	VD^i	The date at which the awards vest. There may be multiple tranches *i*, and therefore multiple vest dates in a single award.
Projected to Vest	PV_t^i	At a given measurement date, *t*, the projected number of awards that will vest for each vesting tranche *i* at a given measurement date, *t*
Vested Shares	VS_t^i	The number of vested awards for each vesting tranche *i* at a given measurement date, *t*
Fair Value per Share	FV	The fair value of the award, expressed as a per share value
Cumulative Amortization Ratio	CAR_t	The pro rata portion of projected expense for a grant or tranche that needs to be recognized at a given measurement date, *t*
Amortization Expense	AE_t	At a given measurement date, *t*, the cumulative amount of expense for a grant that needs to be expensed
Current Expense	CE_t	The amount of expense that needs to be recognized during the current financial reporting period

Appendix 3—ASC Topic 718 Example

This example shows year-end cumulative expense calculated via the Static and the Dynamic methods for the example used in ASC Topic 718-20-55. The first section of the illustration shows the calculations supporting the Static method, before and after the forfeiture rate is changed to 6%. The second section shows the same information for the Dynamic method. In each case, the shares expected to vest and the cumulative expense is expressed at a grant level and then the totals are shown. More explanatory information is given after the illustration.

ASC Topic 718-20-55-6 through 718-20-55-17 Example

Grant Date	1/1/05	Initial Employees	3,000	FV	$14.69
Ultimate Vest Date	12/31/07	Shares per Employee	300		

ASC Topic 718 Actual Example

		12/31/05	12/31/06	12/31/07
Static Method Forfeiture Rate = 3%	Expected to Vest per grant	274	**274**	274
	Total Expense Net of Forfeitures per grant	$4,022	**$4,022**	$4,022
	Cumulative (Prorated) Expense per grant	$1,341	**$2,681**	$4,022
	Number of grants included as active	3,000	**3,000**	3,000
	Total Cumulative Expense	$4,022,150	**$8,044,300**	$12,066,450
	Annual Expense	$4,022,150	**$4,022,150**	$4,022,150
		12/31/05	**12/31/06**	**12/31/07**
Revised Forfeiture Rate to 6% at End of Year 2	Expected to Vest per grant	274	**249**	249
	Total Expense Net of Forfeitures per grant	$4,022	**$3,660**	$3,660
	Cumulative (Prorated) Expense per grant	$1,341	**$2,440**	$3,660
	Number of grants included as active	3,000	**3,000**	3,000
	Total Cumulative Expense	$4,022,150	**$7,320,767**	$10,981,151
	Annual Expense	$4,022,150	**$3,298,617**	$3,660,384
	True-Up		**($723,532)**	

3% Forfeiture Rate Applied
6% Forfeiture Rate Applied

ASC Topic 718 Example Using Dynamic Method

		12/31/05	12/31/06	12/31/07
Dynamic Method Forfeiture Rate = 3	Expected to Vest per grant	282	**291**	300
	Total Expense Net of Forfeitures per grant	$4,147	**$4,275**	$4,407
	Cumulative (Prorated) Expense per grant	$1,380	**$2,849**	$4,407
	Number of grants included as active	2,850	**2,651**	2,492
	Total Cumulative Expense	$3,932,017	**$7,550,102**	$10,981,151
	Annual Expense	$3,932,017	**$3,618,084**	$3,431,049
		12/31/05	**12/31/06**	**12/31/07**
Revised Forfeiture Rate to 6% at End of Year 2	Expected to Vest per grant	282	**282**	300
	Total Expense Net of Forfeitures per grant	$4,147	**$4,143**	$4,407
	Cumulative (Prorated) Expense per grant	$1,380	**$2,760**	$4,407
	Number of grants included as active	2,850	**2,651**	2,492
	Total Cumulative Expense	$3,932,017	**$7,316,593**	$10,981,151
	Annual Expense	$3,932,017	**$3,384,576**	$3,664,558
	True-Up		**($233,508)**	
	Difference in True-Ups		**67.73%**	

3% Forfeiture Rate Applied
6% Forfeiture Rate Applied

The 12/31/2006 column (in bold) is significant since that represents the annual period-end at which the forfeiture rate was changed. The key item to note is that the true-up under the Dynamic method is approximately 68% smaller than under the Static method. It is also worth noting that the two methods generate approximately the same expense accrual at the end of 2006, once the forfeiture rate is revised. This is to be expected, since the new rate is consistent with actual experience, so the estimated final expense from the Static method aligns with the Dynamic method's reflection of actual forfeitures.

The difference in the true-up is due to the fact that the Static method produces a higher cumulative expense amount under the 3% forfeiture assumption. Under both methods, of course, the shares expected to vest is overstated using the original forfeiture assumption of 3%:

- The Static method applies the forfeiture assumption to all grants over the entire grant life and, therefore, with a 3% rate it generates a static calculation of 274 shares expected to vest for each grant, versus 249 shares at 6%.
- The Dynamic method adjusts the time remaining to vest in applying the forfeiture assumption, so with a 3% rate it calculates that 291 shares are expected to vest for each grant at the end of 2006, versus 282 shares at 6%.

In each case, then, the shares expected to vest are overstated prior to the forfeiture adjustment, but the Dynamic method produces a lower total cumulative expense under the 3% assumption. This is because it effectively ignores all grants that have already forfeited by reducing their expense to zero: the 12/31/06 calculation includes only 2,651 grants under the Dynamic method, not the 2,823 grants that a 3% forfeiture rate would have predicted to be active on that date.[7] The Static method, on the other hand, includes all 300 grants, so the effect of the inaccurate forfeiture assumption is greater.

[7] As mentioned previously in footnote 4 above, this calculation assumes actual forfeitures in the second year are 7%, which seems reasonable given that 5% of the grants forfeited in year 1 and that the recalculated annual forfeiture rate for the grant life is 6%. As for the prediction of total grants at 3%, the calculation is as follows: Assuming forfeitures are evenly distributed, 90 grants would forfeit in year 1 (3,000 x 3%) and 87 grants would forfeit in year 2 (2,910 remaining grants x 3%), leaving 2,823 grants.

Appendix 4—Company A: Grant, Forfeiture, and Vesting Data

Example Company	A	Vesting Schedule	4-year 25% Graded
Grant Date	7/15/2004	Options Granted	196,147

Period Ending	Unvested Beginning of Period	Forfeited During Period	Forfeiture Rate	Vested During Period	Unvested End of Period
Q3 2004	196,147	0	0.00%	0	196,147
Q4 2004	196,147	0	0.00%	0	196,147
Q1 2005	196,147	3,544	1.81%	0	192,603
Q2 2005	192,603	0	0.00%	0	192,603
Q3 2005	192,603	1,519	0.79%	48,151	142,934
Q4 2005	142,934	5,484	3.84%	0	137,449
Q1 2006	137,449	0	0.00%	0	137,449
Q2 2006	137,449	0	0.00%	0	137,449
Q3 2006	137,449	0	0.00%	45,816	91,633
Q4 2006	91,633	844	0.92%	0	90,789
Q1 2007	90,789	1,856	2.04%	0	88,933
Q2 2007	88,933	506	0.57%	0	88,427
Q3 2007	88,427	253	0.29%	44,213	43,960
Q4 2007	43,960	253	0.58%	0	43,707
Q1 2008	43,707	0	0.00%	0	43,707
Q2 2008	43,707	506	1.16%	0	43,201
Q3 2008	43,201	0	0.00%	43,201	0
Aggregate	196,147	14,766	7.53%	181,381	
Annualized			**3.08%**	**96.92%**	

Appendix 4—Company B: Grant, Forfeiture, and Vesting Data

Example Company	B	Vesting Schedule	4-year 25% Graded
Grant Date	7/12/2004	Options Granted	9,615,100

Period Ending	Unvested Beginning of Period	Forfeited During Period	Forfeiture Rate	Vested During Period	Unvested End of Period
Q3 2004	9,615,100	203,200	8.19%	0	9,411,900
Q4 2004	9,411,900	332,000	13.38%	0	9,079,900
Q1 2005	9,079,900	140,400	6.04%	0	8,939,500
Q2 2005	8,939,500	494,000	20.34%	0	8,445,500
Q3 2005	8,445,500	76,950	3.60%	2,109,641	6,258,909
Q4 2005	6,258,909	101,774	6.35%	0	6,157,135
Q1 2006	6,157,135	279,300	16.95%	0	5,877,835
Q2 2006	5,877,835	87,812	5.84%	0	5,790,023
Q3 2006	5,790,023	77,500	5.25%	1,925,191	3,787,332
Q4 2006	3,787,332	81,100	8.29%	0	3,706,232
Q1 2007	3,706,232	84,392	8.80%	0	3,621,840
Q2 2007	3,621,840	105,916	11.19%	0	3,515,924
Q3 2007	3,515,924	111,100	12.05%	1,755,963	1,648,861
Q4 2007	1,648,861	57,324	13.20%	0	1,591,537
Q1 2008	1,591,537	151,250	32.93%	0	1,440,287
Q2 2008	1,440,287	61,300	15.97%	0	1,378,987
Q3 2008	1,378,987	4,600	1.33%	1,374,387	0
Aggregate	9,615,100	2,449,918	25.48%	7,165,182	
Annualized			**11.10%**	**88.90%**	

Appendix 5—Company A: Expense Amortization Exhibit

Expensing Method Company A (3.08% Forfeiture Rate)	7/1/2004 9/30/2004	10/1/2004 12/31/2004	1/1/2005 3/31/2005	4/1/2005 6/30/2005	7/1/2005 9/30/2005	10/1/2005 12/31/2005	1/1/2006 3/31/2006	4/1/2006 6/30/2006	7/1/2006 9/30/2006	10/1/2006 12/31/2006	1/1/2007 3/31/2007	4/1/2007 6/30/2007	7/1/2007 9/30/2007	10/1/2007 12/31/2007	1/1/2008 3/31/2008	4/1/2008 6/30/2008	7/1/2008 9/30/2008
Hindsight[1]	**$ 38,125**	**$ 44,968**	**$ 43,990**	**$ 44,479**	**$ 43,510**	**$ 42,671**	**$ 42,208**	**$ 42,208**	**$ 41,965**	**$ 41,291**	**$ 40,393**	**$ 40,842**	**$ 40,938**	**$ 40,345**	**$ 39,468**	**$ 39,907**	**$ 6,578**
Dynamic Expense[2]	$ 37,880	$ 45,333	$ 42,722	$ 45,408	$ 44,254	$ 40,828	$ 42,433	$ 43,092	$ 42,560	$ 41,640	$ 39,266	$ 41,032	$ 40,893	$ 40,210	$ 40,144	$ 39,415	$ 6,776
Variance	$ (245)	$ 365	$ (1,269)	$ 928	$ 744	$ (1,843)	$ 225	$ 884	$ 595	$ 349	$ (1,127)	$ 190	$ (45)	$ (135)	$ 676	$ (491)	$ 198
Static Expense[2]	$ 37,880	$ 44,137	$ 43,421	$ 43,903	$ 45,924	$ 42,899	$ 42,432	$ 42,432	$ 41,435	$ 41,692	$ 40,786	$ 41,239	$ 39,461	$ 40,409	$ 39,530	$ 39,970	$ 6,336
Variance	$ (245)	$ (831)	$ (570)	$ (576)	$ 2,414	$ 227	$ 225	$ 225	$ (530)	$ 401	$ 392	$ 397	$ (1,477)	$ 64	$ 62	$ 63	$ (242)

[1] Hindsight represents the quarterly expense assuming the actual number of awards to vest at the end of the first year is amortized during the first year and so on for each vesting tranche.
[2] Static and dynamic expense numbers represent what would have been booked under each method if an assumed forfeiture rate of 3.08% (the actual rate) was used.

Appendix 5—Company B: Expense Amortization Exhibit

Expensing Method Company B (11.10% Forfeiture Rate)	7/1/2004 9/30/2004	10/1/2004 12/31/2004	1/1/2005 3/31/2005	4/1/2005 6/30/2005	7/1/2005 9/30/2005	10/1/2005 12/31/2005	1/1/2006 3/31/2006	4/1/2006 6/30/2006	7/1/2006 9/30/2006	10/1/2006 12/31/2006	1/1/2007 3/31/2007	4/1/2007 6/30/2007	7/1/2007 9/30/2007	10/1/2007 12/31/2007	1/1/2008 3/31/2008	4/1/2008 6/30/2008	7/1/2008 9/30/2008
Hindsight[1]	**$ 2,622,975**	**$ 2,979,182**	**$ 2,914,417**	**$ 2,946,800**	**$ 2,782,233**	**$ 2,718,706**	**$ 2,659,604**	**$ 2,689,155**	**$ 2,537,852**	**$ 2,479,727**	**$ 2,425,820**	**$ 2,452,773**	**$ 2,027,600**	**$ 1,935,586**	**$ 1,914,547**	**$ 1,914,547**	**$ 252,468**
Dynamic Expense	$ 2,668,971	$ 2,995,768	$ 3,063,223	$ 2,700,929	$ 2,789,590	$ 2,755,270	$ 2,529,979	$ 2,795,506	$ 2,516,484	$ 2,476,549	$ 2,447,874	$ 2,443,656	$ 2,213,436	$ 2,094,931	$ 1,671,177	$ 1,834,268	$ 256,382
Variance	$ 45,996	$ 16,586	$ 148,806	$ (245,871)	$ 7,357	$ 36,564	$ (129,625)	$ 106,351	$ (21,368)	$ (3,178)	$ 22,055	$ (9,117)	$ 185,836	$ 159,345	$ (243,370)	$ (80,279)	$ 3,914
Static Expense	$ 2,657,224	$ 3,018,081	$ 2,952,471	$ 2,985,276	$ 2,601,371	$ 2,683,288	$ 2,624,956	$ 2,654,122	$ 2,591,268	$ 2,385,608	$ 2,333,747	$ 2,359,677	$ 2,547,134	$ 2,114,338	$ 2,091,356	$ 2,091,356	$ (437,280)
Variance	$ 34,248	$ 38,899	$ 38,054	$ 38,477	$ (180,862)	$ (35,418)	$ (34,648)	$ (35,033)	$ 53,417	$ (94,119)	$ (92,073)	$ (93,096)	$ 519,534	$ 178,751	$ 176,809	$ 176,809	$ (689,747)

[1] Hindsight represents the quarterly expense assuming the actual number of awards to vest at the end of the first year is amortized during the first year and so on for each vesting tranche.
[2] Static and dynamic expense numbers represent what would have been booked under each method if an assumed forfeiture rate of 11.10% (the actual rate) was used.

About the Authors

Matt Roberts is the Vice President of Financial Reporting and Industry Relations with Fidelity Stock Plan Services LLC (SPS). He has managed SPS's financial reporting service offering since its inception in 2003. Within the equity compensation industry, Matt serves on the GEO Boston Chapter Advisory Board and the Certified Equity Professional Institute's (CEPI) Advisory Board. Matt has supported the CEPI's efforts in educating Issuers, Service Providers, and Consultants by serving on the Technical Oversight Committee for each of the Guidance Procedures and Systems (GPS) publications.

Derek Sanger is a Director of Product Management within the Fidelity Stock Plan Services group. He has oversight of a number of product offerings, primarily the Financial Reporting offering. He has led the design and rollout of SPS's Financial Reporting capabilities for the past four years, including the development of the methodology outlined in this paper and the development of end-to-end capabilities supporting acquired grants, modifications, option exchanges, and performance plan accounting.

Terry Adamson serves as the National Practice Leader for Radford Valuation Services (RVS), the equity consulting group of Radford. In this role, Terry leads the Topic 718 practice and advises over 300 public companies with regard to equity design, valuation, and accounting. Terry was on the FASB Round Table on Employee Share Options, is the Chairperson of the Society of Actuaries task force on stock option valuation, and is on the Curriculum Committee of the Certified Equity Professional Institute (CEPI).

Liz Stoudt, ASA, CEP, is the Director of Operations for Radford Valuation Services (RVS), the equity valuation group of Radford. She has more than eight years of benefit and compensation consulting experience. In addition to overseeing workflow for the consulting team, she is a project leader responsible for quarterly valuations and producing financial reporting information under Topic 718. Liz has attained the Associate of the Society of Actuaries (ASA) and CEP designations. Since becoming a CEP in 2007, Liz has volunteered on numerous test development activities for the CEPI.

Jacob Peters, CEP, is a Senior Consultant with Radford Valuation Services (RVS). He has more than five years of benefits and compensation consulting experience. Jacob consults on a variety of employee benefits and compensation issues, including valuation and accounting for Employee Stock Option plans, Employee Stock Purchase plans, and other equity-based compensation under Topic 718; valuation of compensatory arrangements for purposes of a change in control under IRC 280G; and valuation and accounting for equity programs in mergers, acquisitions, and divestitures under Topic 805.

About Fidelity

Fidelity Investments is one of the most trusted providers of lifetime financial solutions. Our Stock Plan Services bring you industry-leading, global outsourcing solutions for Stock Option, Restricted Stock, Stock Appreciation, and Employee Stock Purchase plans.

One single, consolidated platform for all your equity compensation plans, total benefits, and personal finance means you can easily access and manage all your programs anytime, anywhere with real-time, free upgrades. Our online tools help you turn your plan data into useful information, and help your employees make smart equity compensation decisions.

Our proven solutions can help you meet your financial reporting and Sarbanes-Oxley compliance obligations, reduce plan administration costs, and realize a higher return on your plan investment.

As a leading equity solutions provider, Fidelity Stock Plan Services provides recordkeeping and administrative services for over 225 clients, representing over 1.4 million participants, located in more than 150 countries.* For more information on Fidelity Stock Plan Services, please visit www.Fidelity.com/workplace.

* As of December 31, 2010.

About Radford

For more than 35 years, Radford has provided compensation market intelligence to the technology and life sciences industries. Global survey databases, which include 4.2 million incumbents, offer current, reliable data to nearly 2,000 clients. Leveraging Radford survey data, our thought-leading global Radford Consulting team creates tailored solutions for the toughest global business and compensation challenges facing companies at all stages of development. In addition to our consulting team, we also offer tailored equity award solutions via Radford Valuation Services, with expertise spanning the design, valuation and financial reporting for equity awards. Radford's suite of surveys includes the Global Technology, Sales, and Life Sciences Surveys, as well as the Pre-IPO/Venture-Backed Survey and the US Benefits Survey. For more information on Radford, please visit http://www.radford.com/.

FOR PLAN SPONSOR USE ONLY.

Radford and Fidelity Investments are not affiliated.

Investment and workplace savings plan products and services offered directly to investors and plan sponsors are provided by Fidelity Brokerage Services LLC, Member NYSE, SIPC, 900 Salem Street, Smithfield, RI 02917.

583810.2.0

1.923339.101
Radford/Fidelity-White-Paper-0811

Turn here®

Fidelity INVESTMENTS®