An Inconsistency in the Method of Accounting for Changes in Estimate: Variable Stock Plans

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A change in accounting estimate should be accounted for in (a) the period of change if the change affects only that period or (b) the period of change and future periods if the change affects both. Although no examples are given in APB Opinion No. 20 for accounting for a change in accounting estimate, accounting textbooks provide many illustrations. The description of a change in accounting estimate when more than one year is involved indicates that the over or under expense from prior years is allocated over the remaining years.

On the other hand, APB Opinion No. 20 does provide examples of a change in accounting principle. In describing the treatment of a change in accounting principle when more than one year is involved, the over or under expense from prior years is allocated all to the current year. The new annual expense is based on the new method.

FASB Interpretation No. 28 identifies an application-variable stock plans-in which changes in market value are stated to represent a change in accounting estimate. However, the method illustrated in this Interpretation is inconsistent with the method illustrated in APB Opinion No. 20 for accounting for changes in accounting estimate. Rather, the method illustrated in FASB Interpretation No. 28 is similar to the method APB Opinion No. 20 uses to illustrate a change in accounting principle except that the catch-up adjustment is recorded as an element of income from continuing operations rather than as the cumulative effect of a change in accounting principle. An example is presented that highlights this inconsistency.

The accounting process, by its very nature, involves making estimates and selecting methods. The need to make accounting estimates exists because an enterprise is organized for an indefinite future period but must report at designated intervals within its life. Selection of accounting methods is necessary because generally accepted accounting principles provide acceptable alternative methods in many situations. A necessary consequence of making estimates and selecting from among alternative methods is that circumstances may change and thereby necessitate revising an estimate or selecting a different method. APB Opinion No. **20 (APB 20)** refers to these events as accounting changes. The former change is termed a "change in accounting estimate," and the latter change is termed a "change in accounting principle." Currently, there is an inconsistency in accounting for changes in accounting estimates (APB 20) and in accounting for changes in the value of variable stock plans (FASB Interpretation No. 28). This should be addressed by the FASB.

To explain the inconsistency between the accounting for variable stock plans and the accounting for other situations involving changes in accounting estimate, this paper will consider the standards given in **APB 20, APB 25,** and FASB Interpretation 28 (FIN 28). APB 20 identifies three accounting changes and prescribes accounting treatments and measurement approaches for each. APB 25 describes the accounting procedures applicable to various stock plans. FIN 28 considers one specific accounting change - a change in estimate involving variable stock plans. The purpose of this paper is to demonstrate that the measurement approach described for variable stock plans in FIN 28 is inconsistent with the measurement approach described for other changes in accounting estimate described by APB 20.

Associated with either type of accounting change are differences in expense' related to previous accounting periods. APB 20 provides alternative treatments of these expense differences (over or under expense): any over or under expense from prior years is allocated over the remaining affected periods for a change in accounting estimate; any over or under expense from prior years is allocated all to the current year for a change in accounting principle.

FIN 28 identifies an accounting change related to variable stock plans in which the Interpretation calls for a change in estimate but follows the procedure for a change in principle. Hence, the Interpretation's treatment is inconsistent with the treatment described by APB 20 for other changes in estimate. This paper presents an example that highlights this inconsistency and calls for the Financial Accounting Standards Board (FASB) to resolve it. The FASB has issued a discussion document on ways to account for employee stock plans. Although over two years have passed since the comment period on this document ended, the FASB has several times postponed release of an exposure draft. Communication with the FASB indicates that the earliest date at which an exposure draft could be issued on this subject is the final quarter of 1987. The inconsistency between APB 20 and FIN 28 is one aspect of accounting for stock compensation plans that the FASB should address.

CHANGE IN ACCOUNTING ESTIMATE

Recording financial transactions requires estimating the effects of future events. Since future events cannot be perceived with certainty, estimation of those events requires the exercise of judgment. When those estimates must be revised, APB 20 states that a change in accounting estimate has occurred, and this must be recognized in the accounts. A change in accounting estimate should be accounted for in the period of change if the change affects only that period or in the period of change and future periods if the change affects both.

Although no examples are given in APB 20 to illustrate a change in accounting estimate, accounting textbooks provide many illustrations, all of which are essentially the same. According to APB 20, a change in accounting estimate involving more than one year requires that any over or under expense from prior years be allocated to current and future years by adding to or deducting from the expense per year calculated under the new estimate (the prospective method). A shortcut method of calculating the new annual expense is to divide the remaining asset' book value by the estimate of remaining life. Both calculations yield the same new annual expense.

The following example illustrates the prospective method:

> An asset has a cost of $10,000, a zero salvage value, a 10-year estimated life, and is being depreciated on a straight-line basis at the rate of $1,000 per year. In the third year the total estimated life is changed to seven years (five years remaining under the new estimate).

Cost	$10,000
Accumulated depreciation for years 1 and 2	2,000
Remaining cost	$ 8,000
Divide by remaining life	5 years
Depreciation per year for remainder of asset's life	$ 1,600

The prospective method is illustrated in this manner' in the following intermediate accounting textbooks:

1 Changes in accounting estimate involving revenues are treated similarly. Without loss of generality, this paper considers only an example involving estimation of expense.

'In some cases, the "remaining amount" may relate to a liability or contributed capital amount.

3The following alternative calculation is equivalent to the shortcut calculation.

Accumulated depreciation for 2 years based on 7-year life $10,000/7 x 2 =	$2,857.14
Accumulated depreciation for 2 years based on 10-year life $10,000/10 x 2 =	$2,000.00
Underdepreciation during first two years	857.14
Divide by remaining life	5 years
Amount to be allocated to each remaining year	171.43
Depreciation per year based on 7 year life $10,000/7 =	1,418.57
Depreciation per year for remainder of asset's life	$1,600.00

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Benjamin, Grossman, Strawser (1987) 575-6
Chasteen, Flaherty, O'Connor (1987) 1016-7
Keiso, Weygandt (1986) 1026-7
Mosich, Larsen (1986) 1097
Welsch, Newman, Zlatkovich (1986) 164
Smith, Skousen (1984) 402

CHANGE IN ACCOUNTING PRINCIPLE

Alternative accounting methods exist which permit an enterprise to select from among alternative treatments. Theoretically, an enterprise selects a particular method based on the individual facts and circumstances. In general, once a particular method is selected, that method should be applied consistently from period to period. However, if the facts and circumstances change, an enterprise may justify changing from one acceptable method to another acceptable method. When such a change is justified and made, prior year differences in expense (over or under expense) between the old method and the new method are identified and aggregated. According to APB 20, this over or under expense from prior years is allocated all to the current year and presented in the income statement as the "cumulative effect of a change in accounting principle" (catch-up method).

The following example illustrates a change in accounting principle:

> An asset has a cost of **$10,000, has a 10-year estimated life, and** is being depreciated on a straight-line (SL) basis at the rate of **$1,000** per year. In the third year the depreciation method is changed to sum-of-the-years' digits (SYD).

Cost	$10, 000
Accumulated depreciation for years 1 and 2-SL method	$ 2, 000
Accumulated depreciation for years 1 and 2-SYD method (10/55 + 9/55) x $10,000	
Underdepreciation during first two years	3,455
	$ 1,455

The underdepreciation of $1,455 is recorded in the current year as a decrease in income. The depreciation expense for the current and future years would be the amounts calculated as if the company had been using SYD from the beginning.

A comparison of the two types of accounting

	Change in Estimate	**Change in Principle**
Over or under expense from prior years	Allocated over remaining life	Recognized in current year
Current and future years' expense	Annual expense calculated (1) as if change had been in effect from inception, plus or minus (2) portion of over or under expense from prior years.	Annual Expense calculated as if change had been in effect from inception

A DISCREPANCY

In an employee stock option plan, compensation expense is measured by the difference between the option price and the market value at the measurement date. Since the market value at the measurement date for a variable stock plan is a value that will be established in the future, an estimate of that value must be made. APB Opinion No. 25 (APB 25) states that the quoted market value at the end of each year should be treated as the estimate of market value at the measurement date. Although APB 25 points out that adjustment of those estimates may be necessary, no examples are given for recording this change in estimate. Thus, a reader may infer that the measurement approach applicable to these changes in accounting estimate would be the prospective method that is applicable to other changes in accounting estimate identified in APB 20. However, FIN 28 employs the catch-up method (normally used only for changes in accounting principle) to illustrate the accounting for this change in estimate.

FIN 28 presents an example of a variable stock plan in which annual adjustments are necessary because of changes in market value

(Footnote continued from page 30)

[3] Characteristic of the prospective method, the underdepreciation of $857.14 is allocated to years 3-7, the current and affected future periods. The depreciation expense for prior years is unaffected by the change in estimate.

[4] Examples of changes in accounting estimate identified in APB 20 include uncollectible receivables, inventory obsolescence, service lives and salvage values of depreciable assets, warranty costs, periods benefited by a deferred cost, and recoverable mineral reserves.

of the stock during the service period or vesting period of stock option awards. This example provides that any adjustment for this "change in estimate" should be recorded in the year of change as an adjustment to compensation expense. This method is not consistent with APB 20's accounting treatment for a change in estimate (prospective method) but is identical to its accounting for a change in principle (catch-up method) except that the over or under expense from prior years is recorded as an element of income from continuing operations rather than as the cumulative effect of a change in accounting principle.

Consider the following example from FIN 28 to illustrate this discrepancy:

> Stock appreciation rights are granted on January 1, 1981 for 5,000 shares at an option price of $10 per share. These rights are exercisable beginning January 1, 1985 based on current market value when exercised. Market values are $11, $12, $15 and $14 at December 31, 1981-1984, respectively.

Calculation of Total Estimated Cost of Stock Appreciation Rights:

	1981	1982	1983	1984
Market value end of year:				
$11 x 1,000	$11,000			
$12 x 1,000		$12,000		
$15 x 1,000			$15,000	
$14 x 1,000				$14,000
Option price $10 x 1,000	10,000	10,000	10,000	10,000
Total estimated expense	$ 1,000	$ 2,000	$ 5,000	$ 4,000

Calculation of Annual Expense if FIN 28 is Applied:

	1981	1982	1983	1984
Total Estimated Cost $1,000 (above)	$2,000	$5,000	$4,000	$5,000/4 =
Percentage Accrued-to-date	25%	50%	75%	100%
Expense-to-date based on new estimate	$ 250	$1,000	$3,750	$4,000
Previously expensed	0	250	1,000	3,750
Expense for year	$ 250	$ 750	$2,750	$ 250

Calculation of Annual Expense if Prospective Method is Applied:

	1981	1982	1983	1984
Total Estimated Cost $1,000 (above)		$2,000	$5,000	$4,000
Previously expensed	0	250	833	2,917
Remaining Cost	$1,000	$1,750	$4,167	$1,083
Divide by Remaining life	4 years	3 years	2 years	1 year
Expense for year	250	583	$2,084	$1,083

The schedule below shows the discrepancy for each year between the two applications:

Difference in Annual Expense Between FIN 28 Method and Prospective Method:

	1981	1982	1983	1984	TOTAL EXPENSE
FIN 28	$ 250	$ 750	$2,750	$ 250	$4,000
Prospective Method	250	583	2,088	1,079	4,000
Difference in expense $	0	$ 167	$ 662	$ (829)	$ -0-

As stated previously, the method of FIN 28 actually reflects use of the catch-up method of accounting for changes in accounting principle except that the over or under expense is recognized entirely in the year of the change as an element of income from continuing operations rather than as the cumulative effect of a change in accounting principle. The analysis below illustrates the catch-up method which produces the same result as the FIN 28 method:

Calculation of Annual Expense if Catch-up Method is Applied:

		1981	1982	1983	1984
Estimated cost divided by years $1,000/4		$ 250			
Newly Estimated cost divided by years less previously estimated cost divided by years					
$2,000/4 =	500		$ 500		
$1,000/4 =	250				
Over expense 250			250		
			750		
1,250			$1,250		
$2,000/4 =	500				
Over expense	750 x 2			1,500	
				$2,750	
$4,000/4 = 1,000					$1,000
$5,000/4 = 1,250					
Over expense(250) x 3					(750)
					250

FIN 28 lacks consistency with APB 20 because the catch-up method, which is used in APB 20 only for a change in accounting principle, is applied to illustrate a change in accounting estimate. As illustrated in the comparison above, different and potentially material and misleading information may result from this inconsistency.

CONCLUSION

The accepted method of accounting for a change in accounting estimate requires that any over or under expense related to years prior to that change be allocated to current and affected future periods. A change in accounting principle requires that any over or under expense related to years prior to that change be recognized in the year of change.

Variable stock plans require estimation of a future market price-the market value at the measurement date. The amount of this estimate may change each year. FIN 28 uses the catch-up method (as for a change in accounting principle) to account for these changes over the service period or vesting period of stock option awards. However, this treatment is not consistent with the treatment applied to other changes in accounting estimate as discussed in APB 20. Should changes in accounting estimate related to variable stock plans be accounted for using the prospective method? This would seem to be more consistent with previous rules of GAAP *(i.e.,* APB 20). However, perhaps there is a more fundamental issue to consider - the usefulness of a measurement approach in reporting an event and its ability to achieve consistent and comparable measures of income.

Currently, the FASB is planning to issue an exposure draft on accounting for stock compensation plans. However, over two years have passed since the comment deadline passed on this discussion document, and release of an exposure draft on the subject was postponed each quarter during 1986. As the FASB continues to study this issue, it should consider the position it stated in paragraph 16 of FIN 28: "the method of measuring compensation for stock appreciation rights and other variable plan awards should not be changed without a comprehensive reexamination of the measurement principles underlying APB Opinion No. 25." We believe that FASB should reexamine the entire issue of measurement, including the method applied and the circumstances under which that method best reflects operating income when variable stock options are used as compensatory rewards. This review should include APB 20 and the relative importance of consistency among approaches used versus other considerations such as the matching of costs and income measurement.