ANALYTICAL PROCEDURES EXPECTED VALUE METHODOLOGY

INTRODUCTION

This document includes an analysis of the projection methodology used in Analytical Procedures in calculating expectations for the financial statements. The purpose of this guide is to assist the auditor in understanding the reasoning behind the various underlying assumptions used in the expected value calculation and to assist the auditor in responding to variances identified in the preliminary analytical review process. Included in this guide is a line-by-line reference to the calculation of each expected value. This document should be used as a quick reference for auditors when analyzing the results of the expected values generated in Analytical Procedures.

MODEL FOR PROJECTING EXPECTED VALUES

The expected values generated in Analytical Procedures are based on using the historical periods of financial data to create a one year projection based on a sales growth driven model. Projected sales revenue is the primary driver using this projection model, and changes in sales will have a pervasive impact on the rest of the expected values. This follows from the fact that if sales increases then we typically expect that cost of goods sold, selling expenses, outstanding accounts receivables, inventory carrying amounts, etc. should all increase correspondingly. For many line items, the expected value is not a simple historical trend calculation applied to historical balances, but rather, it is a trend in an underlying ratio, such as days sales in receivables is identified and then applied to the historical sales trend. This methodology is why the expected sales value is so pervasive in this projection model.

HISTORICAL TREND ANALYSIS

The historical trends used in the model are calculated using a statistical regression formula known as Holts-Winters Exponential Smoothing. This form of regression places heavier emphasis on whether or not a particular financial statement line item or ratio appears to trend

in a certain direction over time or if it tends to fluctuate up and down from period to period. In cases where trending is consistent from year to year, more weight is applied to that trend when projecting the current year's expected value. In cases where the account balance oscillates up and down from period to period, very little weight is applied to any trend identified and, therefore, the expected value will conform to a value within a 'corridor' of high and low values. Also, many exceptions have been built into the model to handle special circumstances and to add a level of artificial intelligence to the model. The potential exceptions are too numerous to enumerate; however, in each Analytical Procedures report a complete detail of every calculation made is provided that will document any deviations from the default calculations noted later in this guide. For the purpose of calculating sub-accounts (mappings to general ledger account balances), the calculation applied to the financial statement account line will generally be applied to the sub account as well. Calculation of sub-account expected values are also included in the calculation section of the Analytical Procedures report if further reference is needed.

APPLICATION TO PRELIMINARY ANALYTICAL REVIEW

The most important take-away from this guide for the auditor using Analytical Procedures is the importance of understanding the impact that the expected sales trend will have on the rest of the expected values in the analysis. Underlying the historical trend assumption is the idea that the results that are projected are what would occur if management of the company did not make any changes to the operations of the business during the current period. In reality, this is almost never the case; rather, using historical trend analysis is the starting point for understanding where management may have changed operational characteristics that impact the financial statements. For this reason, the auditor should always start the preliminary analytical review using Analytical Procedures by analyzing the sale revenue expectations. For instances where the sales trend varies materially from the actual, the auditor should stop the analysis and, through inquiry of management and other procedures, obtain an understanding of what is driving the change in sales. From here the auditor can document that understanding and how he or she will address or respond to the variance and any identified risks surrounding revenue. When returning to the preliminary analytical review, the auditor should then override the sales expectation to the actual if they are in agreement with management's initial responses to their inquiries. After the sales expectation is overridden, the Analytical Procedures report will be updated to reflect new expected values that are based on calculations that include sales as a driver. ***If the auditor fails to override the sales expectation, then the remaining expected values will not be comparable to the actual.***

APPLICATION TO SUBSTANTIVE ANALYTICAL PROCEDURES

Once an understanding is gained regarding the methodology behind the projection model used for calculating expectations in Analytical Procedures, the opportunities to apply these expected values to substantive analytical procedures becomes more apparent. One example is the commonly used substantive analytical procedure for calculating interest expense. For smaller organizations where debt may consist of only a few loan balances, it is not uncommon to apply a simple average interest calculation to the average loan balance in developing a judgment about the reasonableness of interest expense during the period. Under the projection model used in Analytical Procedures, an interest rate trend is developed using regression analysis, and this trend is applied to the expected outstanding debt balance. In cases where the company's debt structure is adequately described by this model, the need to perform the separate simple average calculation is eliminated. Depreciation expense is another good example of where this type of substantive analytical procedure can be applied. Within PPC's !udit Program for Property, calculating depreciation as a percentage of the gross fixed asset base is listed a procedure for testing the reasonableness of depreciation expense. Again, this expectation is built into the expected value calculated in Analytical Procedures. If no variances were detected in this area during preliminary analytical review, it is not necessary to recalculate this during substantive fieldwork. In order to develop substantive analytical procedures using Analytical Procedures, it is necessary to understand that for many of the expectations the amount that has been quantified is based on applying the prior period balance or expected sales times an appropriate ratio. From here the auditor can develop the procedure using the following steps:

1. For the account expectation identify the components of the calculation, either:
    a. Historical trends (useful for expense variance analysis), or
    b. Prior year's balance X an applicable ratio (such as interest rate trend), or
    c. Sales Expectation X an applicable ratio (Days sales in receivable for instance)
2. Evaluate the appropriateness of the ratio or trend in the context of the account you are analyzing and the audit evidence that is desired (completeness, existence, etc.)
3. Establish a reasonable (material) range of values from the expected value calculation.
4. Compare the actual amount and determine if it is within the range of reasonable values based on the expectation developed in Analytical Procedures.