Financial Records and Reports

Good decisions begin with good information. Complete and accurate records and reports are essential for a savings association's board of directors and officers to make informed decisions and to clearly understand and support transactions. Also, an association must establish policies, procedures, and controls to ensure that management properly maintains financial reports and records. Inaccurate, incomplete, or unreliable information jeopardizes the safety and soundness of an association because unidentified or undisclosed problems could prevent or delay necessary corrective action and undermine the association's viability.

The Office of Thrift Supervision (OTS), in its role as regulator, must have reliable data to assess and monitor a savings association's financial condition and activities. Your review of an association's books and records, internal reports, and reports to external auditors and regulatory officials should include an assessment of the accuracy and adequacy of that information. Your review allows OTS to rely on the association's records throughout the examination, supervision, and monitoring processes.

LINKS

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Risk-Focused Review

You should direct the focus of your review to assessing the accuracy and adequacy of a savings association's records and reports. Accuracy is essential to properly evaluate and monitor an association's financial condition. This involves obtaining satisfactory explanations of all material variances, trends, or other items and assessing the reasonableness of financial records. You must also evaluate an association's policies and procedures for relevance and sufficiency. You should not spend an inordinate amount of time verifying a minor account if it has a small balance and does not consist of large, offsetting transactions. If you discover minor errors or omissions, you should report it to management. You should be alert, however, if a minor account problem appears to be systemic.

Regulatory Requirements

Pursuant to 12 CFR Part 562 all savings associations and their affiliates must maintain accurate and complete records of all business transactions. The savings association must keep the records in the United States. Upon request by OTS, these records must be readily accessible for examination and other supervisory purposes within five business days at a location acceptable to OTS.

In addition, 12 CFR § 563.170(c) requires each savings association, affiliate, or service corporation to establish and maintain an accurate and complete record of all business that it transacts. An association must establish and maintain such other records as required by applicable statutes or regulations. The

documents, files, and other material or property comprising these records must be available for examination and audit.

Change in Location of Records

Under Section 563.170(d), savings associations must perform the following actions before they transfer the location of general accounting or control records:

- Obtain a board of directors' resolution authorizing the transfer or maintenance.
- Send a certified copy of the resolution to the regional director.

Incomplete or Inaccurate Records

Regions should immediately take enforcement action if an association's books and records are incomplete to make an examination impossible or if they do not provide complete and accurate details on all business transactions. The caseload manager (or equivalent) should promptly meet with the association's board of directors, discuss the problem, and require prompt corrective action. If the association does not correct the deficiency, the caseload manager should refer the matter to OTS's Regional Counsel for initiation of cease-and-desist proceedings.

You should be particularly alert to violations of Part 562 and § 563.170(c), as the presence of incomplete and inaccurate records historically is evidence of severely deficient operating standards and a resultant deteriorating financial condition.

Any savings association that has a class of securities registered with the Securities and Exchange Commission must comply with the enhanced financial disclosure requirements of the Sarbanes-Oxley Act of 2002.

Sarbanes-Oxley Requirements

Any savings association that has a class of securities registered with the Securities and Exchange Commission must comply with the enhanced financial disclosure requirements of the Sarbanes-Oxley Act of 2002 (SOX). Such public savings associations must include in their annual reports to the SEC the following:

- A report of management on the institution's internal control over financial reporting.
- The registered public accounting firm's attestation report on management's assessment as part of the annual report.

These public reporting requirements are similar to the external audit and reporting requirements for certain large institutions under Part 363 of the Federal Deposit Insurance Act. Because the reporting requirements are similar, savings associations and savings association holding companies may choose to prepare a single management report that satisfies both Part 363 and the SOX requirements.

Records and Reports

You may gather data from savings association records, such as:

- General ledger
- Subsidiary ledgers
- Journals
- Vouchers
- Various schedules and reports.

Various schedules and reports that will be useful to you in your review process include the following:

- Internal reports that staff submits to management and the board of directors.
- The Thrift Financial Report (TFR).
- External and internal audit reports.
- Holding company annual reports.
- Securities and Exchange Commission 10Q and 10K filings.

You may also obtain additional information from regional office monitoring activities and work performed by external and internal auditors who attest to the integrity of an association's books and records.

Savings associations should maintain internal systems and procedures to ensure that reporting reflects appropriate regulatory requirements. Clear, concise, and orderly records should support the compilation of various data. Proper documentation provides not only a logical tie between financial report data and an association's records, but also facilitates accurate reporting and verification.

General and Subsidiary Ledgers

Each savings association should have a chart of accounts describing the nature and general content of each general ledger account. You should encourage associations that do not have such charts to develop one. The chart of accounts will not only aid in your review, but will also provide consistency and continuity in an association's accounting department.

You should obtain the general ledger and appropriate subordinate organization (for example, service corporation, operating subsidiary or lower-tier entity as defined in Part 559) ledgers. You should review the individual asset, liability, capital, and income and expense accounts for their history, recent activity,

balance, and propriety. You should investigate any extraordinary items or items that are not self-explanatory, and you should review and reconcile any catch-all accounts (that is, other assets, other liabilities, miscellaneous, or suspense accounts). If your review discloses any errors or omissions, you should determine whether they resulted from inadequate policies, deficient procedures, or practices not in accordance with an association's policies and procedures.

During your review of the general ledger and subsidiary ledgers, you should determine that the account titles accurately reflect the account contents. A title describing an account may not always represent its content. The determination that an account contains the proper items and has a true balance helps to ensure that all line items are being recorded properly on the TFR. If reclassifications are necessary, you should advise management accordingly and follow up to see that the association has done so correctly.

Thrift Financial Reports

OTS requires each insured savings association to file a TFR with the Financial Reporting Division (FRD) office in Dallas on the 30th day following the end of each calendar quarter. Schedules CMR (Consolidated Maturity/Rate) and HC (Thrift Holding Company) are due 45 days following the end of each calendar quarter. "Clean" data are typically available within 45 days following the filing of the reports. OTS uses the TFR to do the following:

- Collect detailed financial information in a consistent format on all regulated savings associations.
- Collect uniform information on industry activities.
- Facilitate supervision.

The TFR discloses an association's financial condition, the results of its operations, and other supplemental data. OTS uses data from this report as the basis for its Financial Reporting System. This report system in turn produces other reports, such as the Uniform Thrift Performance Report (UTPR), the Risk Monitoring System (RMS), and the Report of Examination (ROE) financial pages. Currently, you may access the Financial Reporting System through the ECEF docket selector on the OTS Intranet.

Thrift Financial Report Requirements

Savings associations must file financial reports that use generally accepted accounting principles (GAAP).

Savings associations must complete the financial sections of the TFR on a consolidated basis. You should review the TFRs to ensure that associations are performing consolidations properly and following TFR instructions in completing their reports.

OTS uses the Consolidated Maturity and Rate Information on Schedule CMR to collect detailed information relating to an institution's interest rate risk. A savings association must file Schedule CMR if it meets one of the following criteria:

- Total assets are in excess of $300 million.
- The risk-based capital ratio is less than 12 percent.
- The regional director directs the institution to file the schedule.

Many savings associations that OTS does not require to file Schedule CMRs do so voluntarily. These associations must conform to the same filing deadlines and accuracy requirements as associations that OTS requires to file the schedules.

OTS requires savings associations to file TFRs electronically with the Financial Reporting Division using the OTS Electronic Filing System (EFS).

OTS requires savings associations to file TFRs electronically with the FRD using the OTS Electronic Filing System (EFS). The EFS may interface with the general ledger to create an electronic relationship between the general ledger and the TFR line items. This interface automates the preparation and filing of the TFR and shortens the learning curve when there is a change in an association's report preparer. The software also contains an editing function that helps reduce reporting errors. It is important that you thoroughly review an association's books and records and not rely on the interface reporting capability.

Review of the Thrift Financial Report

You should review the content of the most recent quarterly TFRs for accuracy. You should also reconcile line items shown on the reports to the general ledger, the subsidiary ledgers, and other appropriate sources, such as loan registers. The TFR Instruction Manual provides instructions on the content of TFR line items. The instructions explain, line-by-line and category-by-category, what information is allowable for placement in specific TFR line numbers. OTS revises the instructions quarterly and generally revises the forms annually. Both industry and regulatory personnel must have up-to-date instructions for accurate classifications and reconciliation.

The TFR Instruction Manual is available on the OTS website. Also available are Q & A and News links that are good sources of information when reviewing an institution's TFR.

If you discover any errors or omissions during the TFR review, you should determine whether any association policies, procedures, or deficient or inadequate practices caused them. You should explain and document in the ROE any significant adjustments, including their causal factors. A significant adjustment results in any one of the following:

- Failure of a capital requirement.

- Change in an association's prompt corrective action (PCA) category.
- Change in a component rating.
- A change that is significant for regulatory reporting purposes.

Generally, you should not require that an association amend a prior period TFR unless the adjustment is significant. If the adjustments are not significant, you should direct the association to show the adjustments on its next TFR scheduled filing.

Errors or omissions in one schedule usually have repercussions within other schedules. As a result, when you discover and correct an error in one schedule, you must also amend other schedules affected by the error. For example, if an association classifies a credit in Schedule SC as a mortgage loan, and you subsequently reclassify it as a commercial loan, the association then must make the appropriate changes in Schedule CMR. You must disclose any errors discovered in the TFRs on the proper page(s) in the ROE, including financial report pages.

The accuracy of TFRs is extremely important, because OTS uses information contained in the reports to monitor savings associations between examinations. If associations submit inaccurate data, OTS may not detect changing patterns of behavior or deteriorating trends. When compounded, a distorted picture of the industry condition could result.

Internal Financial Reports to the Board of Directors

Boards of directors have extensive fiduciary responsibilities in guiding the activities of their savings associations. Creditors and depositors have the right to expect that an association's board of directors and officers use safe, sound, and ethical practices.

You should do the following examination procedures:

- Ascertain whether management presents any financial reports to the board besides the required reports, such as the TFR.
- Review the accuracy and adequacy of additional reports.
- Determine whether the submission of inaccurate or inadequate reports is the result of an intentional act by management.

Boards of directors have extensive fiduciary responsibilities in guiding the activities of their savings associations.

At a minimum, financial reports to the board of directors should include the following operational information:

- A summary of significant financial activity.

- Documentation detailing loans granted.
- Delinquencies.
- The status of previously approved ongoing projects (including loan projects).
- The status of any real estate workouts.
- Liquidity reports.
- Profit and loss statements with yearly and year-to-date comparisons.
- Foreclosure status reports.
- Classified asset summaries.
- Any salient trial balance data.

If you discover any material errors or omissions in these reports, you should determine and explain the causal factors in the ROE.

Monitoring Reports

Regional offices monitor savings associations' reports on an ongoing basis. Some regions provide examiners with reports that the regions generate from information gleaned during the surveillance process. If your regional office sends monitoring reports to you, you should review them for any of the following:

- Incipient adverse trends.
- Material deviations from one period to another.
- Extraordinary developments.
- Other matters of concern.

You should follow up on all items deemed worthy of further investigation and obtain satisfactory responses from management that explain specific questionable matters.

REFERENCES

Code of Federal Regulations (12 CFR)

§ 552.11	Books and Records
§ 560.160	Asset Classification
§ 560.172	Re-evaluation of Real Estate Owned
Part 562	Regulatory Reporting Standards
§ 563.170	Examinations and Audits; Appraisals; Establishment and Maintenance of Records

Other References

Office of Thrift Supervision, *Thrift Financial Report Instruction Manual*

Office of Thrift Supervision, *Directors' Guide to Management Reports (October 1999)*

CEO Letter No. 180, SEC's Final Rule Discussing Reports on Internal Control That May Satisfy Both SEC Requirements and the FDIC Part 364 Requirements

U.S. League of Savings Institutions, *Standard Accounting Manual*

Financial Records and Reports Program

EXAMINATION OBJECTIVES

To determine and evaluate the savings association's policies, procedures, and controls for maintaining adequate and accurate reports and records as considered appropriate by standard accounting guidelines and as required by applicable regulations.

To determine the accuracy of the quarterly TFRs filed with OTS and to ascertain if the savings association must file any amended reports.

To determine the accuracy and adequacy of the savings association's internal financial records and reports.

EXAMINATION PROCEDURES

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LEVEL I

1. Review the previous examination report, any off-site monitoring reports, management letter, and Preliminary Examination Response Kit (PERK) information, specifically the internal control questionnaire and the applicable financial data.

2. Review the previous report of examination and all financial records and reports-related exceptions noted and determine if management has taken appropriate corrective action.

3. Review and discuss with management the savings association's policies, procedures, and controls relating to the maintenance of financial records and reports. Include in your discussion the training and support given to the report preparer(s) of the TFR.

4. Review the most recent quarterly TFRs for accuracy. Ensure that the savings association prepared the reports according to TFR instructions. Explain any material reporting errors identified in the examination work papers and in the ROE and discuss them with management. (Determine, based on the guidance in the general

Exam Date:	
Prepared By:	
Reviewed By:	
Docket #:	

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instructions section of the TFR Instructions, whether an amended report is necessary.)

5. Review internal reports provided to management and the board of directors and compare with the TFRs. Identify and explain material variances. Coordinate this review process with the regulator involved in the review of management. If appropriate, determine the frequency and adequacy of the internal reports considering the complexity and level of the savings association's operations.

6. Review Level II procedures and perform those necessary to test, support, and present conclusions derived from performance of Level I procedures.

LEVEL II

1. Review and reconcile TFR line items to the general ledger, appropriate subsidiary ledger, and any other financial records of the savings association. Identify unusual or unexplained activity and material variances. Specifically review nondescriptive accounts such as "other assets" or "other expenses."

2. Ensure that your review meets the Objectives of this Handbook Section. State your findings and conclusions, and appropriate recommendations for any necessary corrective measures on the appropriate work papers and report pages.

EXAMINER'S SUMMARY, RECOMMENDATIONS, AND COMMENTS

Exam Date:	
Prepared By:	
Reviewed By:	
Docket #:	

Operations Analysis

All phases of the regulatory process, from off-site monitoring between examinations to the final Report of Examination (ROE), involve some form of operational analysis. Operational analysis is the interpretation of financial data through careful and questioning study. An analysis of operations should result in a comprehensive review and evaluation of a savings association's past, current, and prospective earnings. To maintain an association's viability and to minimize risks to the Federal deposit insurance funds, it is essential that you recognize and report problems or potential problems, and that the association takes corrective action. This Handbook Section provides guidelines for reviewing and evaluating the financial operations of an association.

Importance of Earnings

Earnings are essential to a savings association's continued viability. An association's earnings determine its ability to absorb losses, ensure capital adequacy, and generate a reasonable return. You should evaluate an association's operations for stability, trend, level, and quality of earnings. You should also analyze additional factors, such as capital level, credit risk, and interest rate risk, to thoroughly evaluate an association's operations.

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Appendix A

Appendix B

Appendix C

Importance of Earnings for Mutuals

Mutuals accumulate capital through earnings. When you determine an Earnings rating for a mutual savings association, you must consider the adequacy of the earnings relative to the need for capital. You should not assume that lower earnings are indicative of a poorly run institution. Mutuals generally have lower earnings than a similarly situated stock association. If management of a well-run mutual with few growth opportunities and an extremely high capital base has low earnings, such earnings, if stable and consistent, may be adequate to maintain capital. Accordingly, mutual thrifts with marginal capital levels or a higher-risk business plan may need to retain more earnings to maintain adequate capital because generally mutuals cannot raise more capital except from retained earnings.

Examination Process

The review of a savings association's operations and financial condition is a continuing process. The preexamination analysis and scoping process identify existing or potential problem areas requiring attention. A comprehensive on-site analysis substantiates and assesses current and prospective earnings. A well-performed analysis not only provides an understanding of an association's operations, but also identifies matters of existing or potential concern. You can use the analysis to facilitate corrective action that will avert problems or prevent existing problems from worsening.

When analyzing financial statements, avoid undue precision or spending excessive time on immaterial amounts. Most importantly, you should constantly maintain a sense of the examination objectives. Since earnings reflect a savings association's overall financial condition, you must be aware when examining an association of the extent of existing or potential problem areas outside the purview of operations analysis. As such, you must maintain a constant flow of communication with individuals working on other examination areas to affect a cohesive and comprehensive review.

Finally, such matters as reporting errors, incomplete information, or deficient accounting procedures may hinder or prevent an accurate evaluation of a savings association's operations. A thorough analysis depends on accurate and reliable information and is an extension of reviews of an association's financial records and reports (Handbook Section 410) and accounting standards.

- Information presented in this Section will enable you to accomplish the following procedures: Establish the scope of the financial analysis aspect of the examination. Section 060, Examination Strategy, Scoping, and Management, provides specific guidance on establishing the scope of the examination.

- Identify practices that are potentially unsafe and unsound and formulate a regulatory response.

- Assess an association's operations and strategies.

- Identify problem areas disclosed by the financial records.

- Obtain satisfactory explanations for all material variances of financial data from prior periods and budgeted amounts.

Information Sources

The basic sources of information for performing an analysis of a savings association's operations include all the following items:

- Thrift Financial Reports (TFRs) filed quarterly with the Office of Thrift Supervision (OTS).

- Financial pages of the previous and current ROE.

- National Financial Monitoring Reports including the following:

  — Uniform Thrift Performance Report (UTPR).

  — Interest Rate Risk Exposure Report (IRRER).

  — Thrift Monitoring System (TMS).

  — Risk Monitoring System (RMS).

- Additional monitoring reports developed at the regional office, if any.
- Independent and internal audit reports.
- Other internal reports to the board of directors, including budget, business plan, earnings reports such as yield and cost analysis, and investment committee reports.
- For publicly traded stock savings associations, 10Q and 10K reports filed quarterly and annually.
- Board minutes.

National Financial Monitoring Reports

OTS staff has access to a variety of reports in its data base systems that serve as the basis for its financial monitoring and analysis of savings associations. These reports are available for individual associations or, in some cases, groups of associations, and provide uniformity in the presentation of financial data for monitoring and analytical purposes. The following is a brief summary of the primary national monitoring reports available to OTS staff:

Uniform Thrift Performance Report (UTPR)

The UTPR is an analytical tool created for monitoring the financial condition of savings associations, both mutual and stock. OTS produces the UTPR every quarter, based on quarterly TFR financial data submitted to it by regulated associations. The report groups associations into seven peer groups based on asset size and peer median data. The UTPR provides an association's percentile ranking within each peer group on virtually all TFR items. The analytical tool that the banking regulators use, the Uniform Bank Performance Report, influenced the format of the UTPR.

The References section at the end of this Handbook Section lists the UTPR sections. This listing provides a comprehensive financial overview of virtually all the major areas of an association's financial condition. This includes an association's relative standing of key financial performance factors measured against peer median levels.

The UTPR presents income information for the current quarter, the prior quarter, the year-to-date, and the two previous years. The UTPR is also available in a format that details the previous five quarters. This provides the opportunity to review the historical condition of one savings association and to analyze the more recent quarterly trends in performance. OTS provides one copy of the report to each regulated association quarterly.

Interest Rate Risk Exposure Report

The IRRER lists OTS's estimates of an association's Net Portfolio Value (NPV) in nine interest rate scenarios. It also provides ratios that you may use to assess an association's interest rate risk and compare it to that of other associations. OTS derives NPV from OTS's Interest Rate Risk Model, using

information derived from quarterly filings of Schedule CMR of the TFR. The model uses certain assumptions, and generates the present values for a savings association's asset, liabilities, and off-balance-sheet items. See Examination Handbook Section 410, Financial Records and Reports, and Examination Handbook Section 650, Interest Rate Risk Management, for additional information.

Thrift Monitoring System

The TMS was developed to provide staff at various levels throughout OTS with the capability of readily viewing selected examination and financial information on savings associations, either on an individual or group basis. A primary attribute of TMS is the flexibility the system provides the user in creating customized analytical reports on groups of associations. The source of the financial information for TMS is the UTPR. TMS presently contains three distinct functions: individual association reports, group query reports and fixed reports.

The TMS individual association report function allows the user to access a summary report on a single association. The summary report contains four quarters of financial information relating to capital adequacy, asset quality, valuation allowances, earnings and interest rate risk, as well as selected examination rating information. Besides such summary information, the report contains a second page that presents a condensed four-quarter balance sheet and operating statement, shown both on a dollar volume and percentage of assets basis. The individual association report is a convenient briefing tool for quickly assessing an association's overall financial condition, as well as for identifying developing financial trends.

The TMS group query report function allows the user to select many examination and financial information items for inclusion in customized reports, and to sort selected information using any selected item as a sort criterion. This function is one of the most powerful aspects of TMS, allowing for a virtually limitless combination of options for creating customized reports to analyze examination and financial information on groups of associations.

The TMS fixed report function allows the user to establish customized threshold tests for analyzing nontraditional asset growth and concentrations in various categories among groups of associations. Users can do this analysis to identify associations that exceed growth or concentration threshold levels in the various categories. This function is particularly useful in providing early identification of associations that are rapidly expanding in high-risk areas. This allows supervisory staff to respond in a timely fashion to potentially adverse trends within a particular association or group of associations.

TMS reports are under the Thrift Monitoring (TM) option, under the Thrift Information Management (TIM) option on OTS's Main Menu. A task force composed of regional and Washington Office representatives reviews existing TMS reports to assess the need for possible updates and works to develop new TMS reports as needed. You should be familiar with how the line items on the aforementioned reports correlate with the line items on the TFR. For additional information and instructions refer to the Thrift Financial Report Instruction Manual, OTS's Net Portfolio Model Manual and TMS online help screens, or contact your regional TMS representative.

Risk Monitoring System

The Financial Monitoring Committee developed RMS to provide regional analysts and examiners with a common, standard tool for identifying worrisome trends and deteriorating financial condition of thrifts. Representatives from all regions and DC comprised the committee.

RMS is an Intranet/HTML based monitoring system that uses 51 ratios to screen for exceptions to established limits and parameters. The system assesses a "hit" when an association's ratio exceeds an established limit. There are a maximum of 51 hits with more hits indicating possible supervisory concern. RMS includes features such as the five-quarter report, links to the thrift's home page, links to stock price data and publicly available reports.

You can use RMS to rank or prioritize which thrifts in the region or caseload may need more in depth analyses. In contrast, OTS uses the UTPR for case specific analyses.

There are six major categories of ratios:

- Capital
- Asset quality
- Operations
- Interest rate risk
- Nontraditional assets
- Asset growth

To determine hits, RMS uses the following tools:

- Ratio levels (where a hit is assigned if a ratio exceeds a certain fixed level).
- Ratio changes (where the focus is on quarter or annual change in ratios).
- Percentile rankings (where a hit is assigned if a ratio measures in the worst, either 90th or 10th depending on the ratio, percentile among the peer group).

RMS ratios match UTPR ratios and you can access ratio formulas from the RMS.

OTS bases RMS peer groups on asset size and they are identical to those used in the UTPR with two exceptions:

- The $1-$5 billion asset size group was added to the over $5 billion group.
- All RMS peer groups are national rather than regional.

Off-Site Monitoring

The primary purpose of off-site monitoring is to identify adverse changes in the financial condition and performance of savings associations that may occur between regularly scheduled on-site examinations. OTS has established uniform financial monitoring guidelines to ensure greater consistency in risk assessment and risk detection. These guidelines define the frequency of monitoring, the scope and content of monitoring reviews, and the format for communicating monitoring results.

OTS may use off-site monitoring to accomplish the following other objectives:

- Identify regulatory trends or problems that warrant immediate attention.
- Identify institutions that need to be examined ahead of schedule.
- Identify specific areas within institutions that should be given close scrutiny during on-site examinations.
- Monitor compliance with supervisory directives to correct problems uncovered in prior examinations.
- Monitor adherence to conditions of approval and business plans.
- Monitor compliance with statutory and regulatory limits.
- Modify an institution's examination rating.
- Assemble data, information, and analysis to support on-site examinations.

Each regional office is responsible for monitoring savings associations on a quarterly basis. The regions have discretion in determining the priority of monitoring reviews. Priorities may be based on various factors, such as the severity of deterioration in the financial condition or performance of the institution as evidenced by the RMS-HR (hits report) or any other available information, the number of hits than an institution receives on the RMS-HR, breach of any regulatory limit or Prompt Corrective Action trigger, high-profile status, CAMELS rating, asset size, or the occurrence of a significant event such as a proposed merger or acquisition.

Monitoring of savings associations with high-risk profiles will be more extensive and more frequent than that of nonhigh-risk associations. High-risk associations include those that fail their minimum capital requirements or have a higher overall risk profile based on such factors as asset quality, higher risk asset composition, earnings and operations, liquidity, interest rate risk, or capital. For nonhigh-risk associations, it may be sufficient to limit the review to compliance and summary monitoring reports on a quarterly basis.

For a high-profile association, supervisory staff should incorporate in the association's regulatory profile a summary discussion of the monitoring findings and any resultant corrective action recommended or taken. Supervisory staff should document in the regulatory profile any significant

actions, including the identification of material concerns and recommendations for action. This documentation should provide an understanding of an association's operations and performance and should identify matters of existing or potential concern. Supervisory staff should, when appropriate, reference all violations of law, regulation, policy or supervisory directives

For any association, you should notify appropriate regional staff of any problems or risks identified through monitoring. The department must maintain written documentation of the results of off-site monitoring. Regional offices must initiate corrective action when appropriate. Such action may range from a telephone call or letter to the association, a meeting with management, recommendation for an examination, or, in the case of serious problems, formal enforcement action.

COMPONENTS OF EARNINGS

To obtain a complete and accurate understanding of a savings association's operations, it is essential to understand its operating strategy and the components of earnings. OTS identifies the association's strategy in the regulatory profile, or you can identify it by determining revenue and funding sources. Earnings components include such items as interest income and expense, noninterest income and expense, and core income. The paragraphs below describe each of these components in greater detail.

Interest Income

Interest income consists of interest earned on loans, investment securities, deposits, and mortgage pool securities. Interest income is the most important income component of core income for nonmortgage bankers. Mortgage loan servicing fees and other fees and charges are the most important income component of core income for associations that emphasize mortgage banking.

Interest Expense

Interest expense is the interest that the savings association pays on deposits, subordinated debt, collateralized securities, advances from Federal Home Loan Banks, and other borrowed money.

Net Interest Income

Net interest income (NII) represents the difference between income on interest-earning assets and expense on interest-bearing liabilities. NII is a key component of earnings for most savings associations engaged in traditional activities.

Net Interest Margin

Net interest margin (NIM) represents net interest income divided by average assets. NIM is a key performance/profitability ratio. Prudent management of NIM includes the following:

- Planning and implementing sound growth strategies that include effective cash flow analysis.

- Maintaining minimum acceptable levels of noninterest-earning and/or nonperforming assets.
- Maintaining adequate and reasonable capital levels.
- Managing interest rate risk to minimize NIM volatility due to changes in market interest rates.
- Maximizing low cost funding sources.
- Balancing investment yield and risk (credit risk, interest rate risk, liquidity risk, etc.).
- Managing the mix of interest-earning assets and interest-bearing liabilities.

Interest-Earning Assets

Interest-earning assets (IEAs) consist of investment securities, deposits in other institutions, mortgage-backed securities, mortgage loans, and nonmortgage loans less non-IEA components. Non-IEA components include intangible assets (such as goodwill), nonaccrual loans, real estate owned, and real estate held for investment

Interest-Costing Liabilities

Interest-costing liabilities (ICLs) consist of deposits, FHLBank advances, subordinated debentures, mortgage collateralized securities, other borrowings, any non-ICL components deducted from these categories, and the combined total. The level of equity capital influences the level of ICL. High capital levels will lower ICL as a percentage of total assets.

Net Interest Position

A net interest position (NIP) is the same as a net IEA position (IEAs less ICLs). A shrinking NIP indicates a weakening balance sheet, and a greater reliance on products and investment margins for continued profitability. A NIP that is negative may indicate that interest-costing liabilities are financing noninterest-earning assets, which may be a serious weakness.

Net Interest Spread

Net interest spread is the weighted interest yield on average earning assets less the weighted interest rate paid on average interest paying liabilities.

Noninterest Income

Noninterest income includes loan origination fees, loan servicing fees, late fees, hedging gains and service corporation profits. This item may also contain nonrecurring sources of income such as gains on the sale of assets, income from REO operations and other income sources of earnings that are generally unpredictable and unstable.

Noninterest Expense

The major component of noninterest expense is salaries and compensation. This category also includes rent, depreciation, utilities, marketing, assessments, and professional fees. Controlling costs is a critical management function. A reduction in noninterest expenses will increase core earnings, net income and market value.

Provision for Loan Losses

Weak or deteriorating credit quality can result in the need for higher provision expenses, which can adversely affect the association's earnings. See Examination Handbook Section 261, Adequacy of Valuation Allowances, for examination procedures on evaluating the adequacy of the association's valuation allowances.

Core Income

Core income means only spread income and other sources of recurring and reasonably predictable income. OTS defines core income to be net interest margin plus fees earned from loan servicing and other sources, minus general and administrative expenses. While serving as a useful analytical tool, it is important to realize that even core income can be misleading. For example, if spread income stems from an interest rate risk gamble, or if fee income comes from nonrecurring sources, core income will not be sustainable. It is therefore important to know what percentage of core income consists of interest income. In addition, high-risk loan programs may generate consistently high loan losses. You should consider this when evaluating core income as calculated on the UTPR. See Quality of Earnings Section in this Handbook.

COMPREHENSIVE INCOME

Besides net income, Statement of Financial Accounting Standard No. 130, Reporting Comprehensive Income (SFAS No. 130), may require savings associations to report comprehensive income. Comprehensive income measures all changes in equity that result from recognized transactions and other economic events not related to transactions with owners in their capacity as owners. Comprehensive income consists of net income and other comprehensive income. Other comprehensive income includes, for example, the following amounts, net of income taxes:

- Unrealized gains and losses on available-for-sale debt and equity securities under SFAS No. 115, Accounting for Certain Investments in Debt and Equity Securities.
- Gains and losses related to qualifying cash flow hedges under SFAS No. 133, Accounting for Derivative Instruments and Hedging Activities.
- Minimum pension liability adjustments under SFAS No. 87, Employers' Accounting for Pensions.
- Foreign currency translation adjustments under SFAS No. 52, Foreign Currency Transactions.

SFAS No. 130 does not require a specific format for reporting comprehensive income and its components in the financial statements. However, a savings association should report the total of accumulated other comprehensive income as a separate component of equity capital.

RETURN ON ASSETS AND EQUITY

Return on Assets

Return on assets is net income divided by average assets. Traditionally, return on assets is the primary measure of an association's profitability. You should review the level, trend, and peer comparison of this ratio since it is a critical determinant of long-term viability.

Return on Equity

- Return on equity is net income divided by average equity. Investors and capital markets use the return on equity ratio to determine investment options. Average equity refers to the average of total equity capital: Perpetual preferred stock.
- Common stock.
- Retained earnings.
- Unrealized gains (losses) on available-for-sale securities.
- Other GAAP equity capital defined components.

See Appendix A for the derivation of the return on assets and return on equity ratios.

EVALUATION OF EARNINGS IN DIFFERENT STRUCTURES

Mutual and Stock Associations

The factors relating to stability, trend, and level of earnings apply both to mutual and stock savings associations. Since mutual savings associations do not issue stock certificates, they rarely make capital distributions. Therefore, there is no market pressure on mutual savings associations to increase the value of equity securities. Mutual savings associations, like stock savings associations, must, however, generate sufficient earnings to meet expenses, provide for the payment of interest on deposits, and satisfy regulatory capital requirements.

To avoid shareholder dissatisfaction, stock savings associations have a particular need to meet earnings expectations projected by securities analysts. Further, the earnings of stock savings associations must convince shareholders that the return on equity is satisfactory. Failure to satisfy earnings targets may

result in shareholder attempts to replace management or insist on a sale of the savings association to enhance shareholder value.

Comparisons Between Mutual and Stock Associations

Mutual savings associations generally have lower earnings, lower net interest income, lower noninterest income, a lower net interest margin, and a lower return on equity relative to stock associations. Given these operating results, and comparing a mutual to a stock association, you might criticize the institution for poor earnings. Such criticism, however, may not be appropriate considering the institution's capital position and operating strategy.

Subchapter S Corporations

You must modify operations analysis when you review net income and dividends for savings associations electing Subchapter S corporation status. Typically, Subchapter S corporations pay no federal income tax and possibly no state income tax. Unlike most savings associations (Subchapter C type corporations), Subchapter S savings associations generally report net income that is not reduced by any tax provision. Therefore, certain reported amounts for earnings, income taxes, and dividends are not necessarily comparable to that of a Subchapter C savings association, due to the different tax structures of each type of entity.

Special corporate tax rules treat a Subchapter S corporation as a pass-through entity for federal income tax purposes. The S-Corporation's shareholders normally pay federal income taxes on their proportionate share of the corporation's taxable income, whether the S-Corporation pays a dividend or makes other distributions to the shareholders. OTS and the other federal banking agencies consider S-Corporation distributions that cover the shareholders' personal income tax liabilities to be capital distributions.

A review of a Subchapter S savings association should include an analysis of "reinvested earnings." Reinvested earnings is a term used to describe the amount of earnings reinvested in the company (that is, not distributed). By analyzing reinvested earnings, you should be able to assess the Subchapter S savings association's overall financial health and ability to pay dividends. Otherwise, a strictly traditional evaluation may lead to erroneous conclusions regarding a Subchapter S association's financial strength with regard to its capital growth from earnings.

Without consideration of reinvested earnings, the Subchapter S corporation may appear to pay exorbitant dividends, although it is in the same position as a Subchapter C corporation for its capital growth from earnings. For a Subchapter S corporation, dividends will typically include two components:

- Amounts for its shareholders' taxes that related to all pretax income that passed through to the shareholders on their Subchapter S corporation return.

- Amounts representing a return on investment.

These two components may cause the Subchapter S savings association's dividends to appear inordinately large when compared to those of a Subchapter C savings association.

To review the Subchapter S savings association's financial strength, you should consider the unique aspects of a Subchapter S corporation's taxation and the relevance of reinvested earnings. In analyzing earnings, you may simply analyze reinvested earnings. Another approach is to request that the Subchapter S savings association calculate a pro-forma tax provision as if it had corporate level taxes.

Internet Operations

OTS has several Internet-only savings associations and other associations that operate their Internet activities separately from their brick and mortar operations. Other associations have added transactional web sites as a customer retention strategy. The U.S. Department of the Justice estimates that the number of households using Internet banking services will increase from 7 million at the end of 1998 to 21 million by 2003.

Internet-only banking operations have several distinguishing characteristics related to operations that merit your special attention. In general, Internet-only banks have higher general and administrative expenses than more traditionally operated associations. Regulators (and association management) expected lower than normal expense ratios for Internet operations. Thus far, however, the cost of providing transactional Internet services is high. While the cost per transaction may be low when compared to a traditional operation, expenditures for marketing, consultants, temporary personnel, and computer software are significantly higher.

Internet-only associations pay higher rates for its deposits and those deposits tend to run off quickly and dramatically to competitors with higher rates. Liabilities are rate sensitive. Core deposits may not exist. There are few online lending operations. Most Internet-only associations still buy loans in the wholesale market to operate, and often pay a premium, to meet CRA requirements. Internet banks that originate loans tend to outsource the servicing and customer support services to reduce overhead expenses.

Outsourcing

Some Internet banks outsource many core banking and Internet functions to service providers. Service providers perform a variety of functions, including, but not limited to, the following:

- Performing the due diligence on purchased loans.
- Conducting internal audits.
- Providing consulting advice on investment decisions.
- Operating information systems such as the general ledger.
- Providing bill payment services for customers.

- Providing Internet banking software.
- Hosting the association's Internet web site.
- Online direct and referral loan origination support.

Business Plans

The Regional Office approves the association's business plan upon the application for charter. You must determine whether the association is operating within the parameters of the business plan. Associations must submit a revised business plan to the Regional Office if its projections change substantially. For example, the need for additional capital during the de novo period may require numerous business plan revisions.

Core Operations

You should consider the core business when you examine an Internet-only association. It can sometimes be difficult to determine the cause of losses. Losses can occur not only from operations, but also because of software development and marketing costs for their product if the association does not outsource these functions.

Accounting for Software Costs

AICPA Statement of Position (SOP) 98-1, Accounting for the Costs of Computer Software Developed or Obtained for Internal Use, provides detailed accounting guidance on the treatment of computer software costs. Its effective date is 1999, unless it was adopted earlier.

According to SOP 98-1, institutions must expense computer software costs if the costs fall under the "preliminary project stage" or the "post-implementation/operation stage." The preliminary project stage includes the following activities:

- Determining the performance requirements of the software.
- Evaluating alternative means of achieving the performance requirements.
- Existence of needed technology.
- Final selection of alternatives to complete the project.

The post-implementation/operation stage includes training and application maintenance activities.

SOP 98-1 allows institutions to capitalize only certain costs incurred during the "application development stage" in connection with activities to obtain computer software. Costs eligible for capitalization include external direct costs of materials and services consumed in developing or obtaining internal-use software (fees paid to third parties), payroll, travel, and related costs for

employees directly associated with the project, and interest costs incurred while developing internal-use software.

Although certain exceptions exist, some costs such as maintenance, training, data conversion, or administrative are expensed regardless of when they occur.

Institutions should not make adjustments for remaining internal use software costs either capitalized or expensed prior to the effective date of SOP 98-1.

Profitability

Currently, there are few profitable Internet-only operations. Generally, they have razor thin margins, volatile deposits, too much capital, and sometimes, excessive growth. Gaining market share is key to most business plans and, hoping to ensure their long-term survival, they pursue market share at the expense of profitability. In theory, once Internet operations get past break-even, profits should begin rising quickly with additional business.

EARNINGS ANALYSIS

To make a thorough analysis of earnings you should begin with a review of an association's earnings strategies and its strategic business plans. You should evaluate earnings performance relative to measures appropriate for the dominant type of business the association engages in such as traditional thrift activities, mortgage lending, securitizations, subprime lending, or other activity. Your earnings analysis should not only provide an assessment of why earnings are weak or strong, stable or variable, but also give reasons for the earnings performance relative to the association's business strategy and economic environment. For example, if earnings are poor because of lower gain on sale from mortgage banking activities, do not attribute poor earnings to high general and administrative expenses. Most successful mortgage banking operations generally require higher general and administrative expenses.

Four Key Aspects of Earnings

You should perform an aggregate evaluation of the components of earnings in relation to four key aspects of earnings: stability, trend, level, and quality. We further discuss these four aspects below.

Stability of Earnings

The stability of earnings relates to the quality, composition, and constancy of income and expense flows relative to internal factors such as credit risks, interest rate risks, or accounting practices, and external factors such as general economic or competitive forces.

A savings association's income stability depends on proper management of its sources of income and expense and the influence of internal and external factors on those sources. Recurring income sources, such as net interest on loans or investment portfolios, are usually preferable to nonrecurring income sources, such as income derived from the sale of assets. Relying too heavily on nonrecurring sources of

income could severely affect an association's future viability. See Quality of Earnings Section in this Handbook.

Trend of Earnings

Trend is the general direction of the savings association's earnings relative to previous time periods. Evaluating previous time periods should encourage you to identify and investigate both an association's adverse and positive earnings trends.

Level of Earnings

The level of earnings is the measure of earnings relative to internal factors such as capital position, credit risk, and interest rate risk.

You should perform a comparison to peer groups to determine material variances. In doing so, you may use the standard peer groups based solely on asset size or the more refined peer groups based on charter type (mutual to stock), operational and geographical characteristics, as well as asset size.

You must review additional areas to ensure a comprehensive analysis, since many risks may materially affect earnings. You should therefore review the findings relating to risk analysis that the Asset Quality and Sensitivity to Market Risk Sections of this handbook discuss.

Quality of Earnings

Your examination of a savings association's earnings should include a review of the quality of earnings. The quality of reported earnings, also referred to as accounting quality, may be defined as how well a company's financial statements accurately depict business activities.

Management is responsible for reporting earnings that are consistent with economic substance. GAAP allows management the flexibility and latitude to effectively communicate the financial position and results of a company's operations. Accordingly, management may implement certain reporting strategies, make certain accrual, deferral, or allocation decisions, or exercise other managerial discretion when reporting earnings.

Management should not manipulate earnings or misuse accruals or underlying assumptions of a transaction such that it misreports income, and thus capital, and causes users of the financial statements to change or alter judgments or decisions about the condition of the company.

Accordingly, it is not only important to look at the components of earnings, but also at the techniques and strategies management may be using to report earnings. The strategies management uses should fall within acceptable limits of GAAP, and not mask the economic condition of the company.

When evaluating the quality of an association's earnings, you should also identify key areas of operating performance that affect profitability. For example, if a key area of operation is in securitization transactions, an association may show impressive profitability by reporting nonrecurring gains and revenues such as gains on sales of securitizations or other asset transfers. It is also possible for thrifts to

report impressive profitability ratios and high volumes of income by assuming unacceptable levels of risk. For example, to boost earnings in the short-term, management may seek higher rates on riskier loans and other investments to offset the increased credit risk associated with those assets. However, over the long-term, these assets may not be of a quality to assure either continued debt servicing or principal repayment. Eventually, earnings or capital may suffer when management must recognize the losses in these higher-risk assets.

Aside from any recourse implications that may arise, properly reflecting the quality of earnings is less likely a problem in a generic sale of whole loans than in a securitization or other type of asset sale. For more information on whole loan sales, see Handbook Section 575, Secondary Markets.

Associations may also have various sources of recurring and nonrecurring fee income including late fees from deposit loan accounts and nonrefundable rate lock fees. You should review fees that you consider significant to the statement of operations. There is a discussion of fee income from servicing loans in Examination Handbook Section 572, Profitability.

You should consult your Regional Accountant with questions concerning earnings management issues.

Securitization Transactions

Properly reflecting earnings from securitization transactions or those from mortgage servicing assets may be more difficult because relatively minor changes in the economic environment can significantly affect reporting. In addition to economic influences, financial reporting of securitizations is based on complex accounting standards in SFAS No. 140, Accounting for Transfers and Securitizations of Financial Assets and Extinguishments of Liabilities.

Under SFAS No. 140, an association initially measures and records assets retained in connection with a sale or securitization, based on the relative fair values. That is, the association allocates the previous carrying amount between the sold assets and the retained interests based on their relative fair values. The reported gain is the difference between the net proceeds from the sale and the allocated carrying value of the assets sold. This methodology is often called "gain-on-sale" accounting. While much of the focus on gain-on-sale accounting has been on subprime securitizations, prime securitizations may also take advantage of gain-on-sale accounting.

Because of the subjectivity underlying most assumptions used to determine fair values, management can allocate higher carrying amounts to retained interests. The higher the carrying amount allocated to retained interests, the lower the carrying amount allocated to the sold assets. The lower carrying amount of the assets to be sold results in a higher recorded gain on the assets sold. Thus, reported gains may not be truly reflective of the association's operating performance, or they may be noncash, temporary, or of a nature that the association may never realize them in the future. See CEO Letter No. 156. "Certain Transfers of 'Higher-Risk' Assets," (February 7, 2002).

The following management actions may affect the assigned fair value of the assets, and thus affect the quality of reported earnings:

- Management uses optimistic assumptions to calculate asset values. Since allocating a higher carrying amount to retained interests may result in a larger up front gain on the assets sold, management may use optimistic assumptions that over estimate the value of retained interests. The following factors affect estimates underlying valuations and the ability to measure cash flows reliably:

  — Prepayment rates.

  — Credit loss rates.

  — Discount rates (required rate of return).

  — Lack of a reliable market.

- Management assumes a credit loss rate that is too low or inconsistent with existing market conditions. As a result, credit losses may be high if management fails to timely reassess assumptions. Even if the assumed credit loss rate is consistent with existing market conditions, unanticipated losses may still occur if there is an economic downturn. For example, until the year 2001, growth of the subprime sector occurred during a period of economic prosperity and stability. In the event of a recession or a dramatic economic downturn, losses may increase significantly.

- Management assumes a prepayment speed that is too slow for assets such as mortgage servicing assets or other retained interests. For example, a fall in longer-term interest rates will cause an acceleration of payments. If prepayments are faster than expected, then future cash flows may disappear and the value of the servicing asset or retained interest will decline. Even subprime mortgages, once believed largely insulated from prepayment risk, have become more prepayment sensitive as alternatives for subprime borrowers increase.

Goodwill

Institutions may find it challenging to keep abreast of new accounting standards that affect reported earnings, as well as to appropriately and timely implement complex standards into their financial reporting systems. For example, SFAS No. 141, Business Combinations, and SFAS No. 142, Goodwill and Other Intangible Assets, changed how institutions (other than mutuals) account for acquired goodwill and other intangible assets. Institutions no longer amortize goodwill, but must measure the goodwill, if any, for impairment, and make adjustments accordingly. This treatment may create volatility in reported income because impairment losses are likely to occur irregularly and in varying amounts. You should review an association's goodwill, if any, and determine how the association measures and adjusts its goodwill for impairment. You should ensure that the association no longer amortizes goodwill.

Negatively Amortizing Loans

A significant concentration of loans that are negatively amortizing may affect the quality of earnings. A negatively amortizing loan is one in which the contractual amount due (principal and accrued interest) continues to increase over time because the periodic interest charges exceed the minimum periodic payments required. For single-family loans, the stated purpose of such terms is to reduce the borrower's payments, generally for a temporary period of time, usually two to three years.

For example, if an association makes a $100,000 loan at a 7% interest rate for 30 years, then the fully amortizing monthly payment would be $665. If any one of the 360 payments (30 years X 12 months) is less than that fully amortizing amount, then the loan will not be paid-off at the end of the 30 years. The association will recognize interest income based on the 7% interest rate. However if, based on the borrower's ability to pay, the monthly payment is initially set to $500, then the loan will be negatively amortizing. The $500 monthly payment equates to an interest-only payment of 6% [$500 / $100,000 X 12]. The loan will negatively-amortize at approximately 1% per year (7% less 6%). After three years, the contractual amount due will have grown to $103,328, including accrued interest of $3,328 (approximately $100,000 X 1% X 3 years). Then, if the loan is converted to fully amortizing, the monthly payments will be $694 for the remaining 27 years, compared to the original fully amortizing amount of $665.

Depending on the borrower's circumstances and the loan's characteristics, as well as economic conditions, once the association converts the loan to a fully amortized loan, the borrower may be unable to make the higher payments or to pay any additional balance due on the loan at payoff. Thus, the association has reported these amounts as income, but may not be able to recover the full amount.

Regulatory Concerns

In summary, incentives to report higher earnings, the nature of assumptions used in certain transactions, like securitizations, and improper reporting in general may affect reported earnings. Examiners should be alert to the regulatory concerns cited throughout this section, and to the following additional regulatory concerns as well:

- Management may use gains to further leverage the balance sheet. You should consider the quality of capital supporting asset growth to the extent that management based gains on optimistic assumptions or that the value of the retained interest is highly sensitive to accelerating prepayments or declining asset quality.

- Management compensation or dividend payouts may be excessive, and dependent on earnings. Associations often tie compensation and dividends to reported profits. To the extent that reported profits are overstated, these payouts can dissipate assets and capital.

- Management may ignore credit quality. The incentive for profits can override attention to quality of earnings. The potentially significant profit that management can generate by gain-on-sale accounting creates a strong incentive to produce originations, often with little attention to credit quality.

- Later impairment assessments may erase reported gains. Management may have to reverse, in later periods, some or all of the up front gains recorded in a securitization or other transfer of assets because of impairment assessments. For income purposes, management should reflect certain adversely classified and nonperforming assets, especially those where the association does not anticipate future interest payments, on a nonaccrual basis. If management does not place these assets on a nonaccrual status, they may overstate earnings.

- Improper treatment of losses may overstate capital. Management should not create allowances for losses on retained interests. Management should record losses by adjusting the recorded investment in the retained interests. Management should not record such losses in the ALLL. See FASB Emerging Issues Task Force (EITF) Issue No. 99-20, Recognition of Interest Income and Impairment on Purchased and Retained Beneficial Interests in Securitized Financial Assets.

ANALYTICAL TECHNIQUES

Operations analysis involves a review of financial data on a period-to-period basis to substantiate the reasonableness of financial performance without requiring a systematic review of transactions. (This does not preclude a review of transactions, if appropriate.) Through understanding the components of operations analysis you will be able to apply various analytical techniques to assess an association's financial condition. You may use association and peer group ratios to identify discrepancies.

You must be aware of the following weaknesses inherent in the approaches employed in the operations analysis:

- More than one component of the financial data being analyzed cause apparent variances.

- Operations analysis is historical — the financial data that you analyze describes the association at a prior point in time.

- Operations analysis may not answer all questions, but it may raise additional ones.

For example, a common ratio used to evaluate the efficiency of an association's operations is the level of operating expenses expressed as a percentage of operating income. Using this ratio, you may conclude that operating expenses are higher than the peer group and that they have been increasing during the periods under review. The real concern, however, is not that a variance exists, but why it exists.

Interrelationships

Operations analysis requires an awareness of the interrelationships of the data used. For example, an increase in the operating expense to operating income ratio may be due to an increase in actual operating expenses. Also, a decline in revenues that was the result of shrinking assets without a corresponding decline in the fixed operating expenses of the company may cause the variance.

Examination procedures that investigate operating expenses would not explain why the variance occurred if the ratio increased due to a decline in revenues. By understanding the interrelationships of the data, you will be able to focus your analysis to answer the questions raised by the variance.

Basic Approaches

All financial analytical techniques are combinations or adaptations of four basic approaches used to evaluate a savings association's operations. We discuss the fundamental considerations of each of the following four approaches below:

- Structural
- Trend
- Ratio
- Comparative.

Structural Analysis

Structural analysis is a static analysis, where you view the components of a financial statement in relation to the whole financial statement as of a specific date. This technique can provide insight regarding the relative size of a particular line item in comparison to the other components of the financial statement. You can also use structural analysis to determine whether a particular line item is increasing or decreasing in relation to the other components. For example, total assets on a statement of condition and gross revenues on a statement of operations are base figures representing 100 percent. The financial statement presents each line item as a percentage of these base figures. An example of a structural analysis of a statement of condition follows:

Statement of Condition

12/31/XX

Assets			
Cash	$	12,500	0.66%
Marketable Securities		210,000	11.16%
Mortgage Loans		1,275,000	67.75%
Fixed Assets		325,000	17.27%
Prepaid Expenses		50,000	2.66%
Other Assets		9,500	0.50%
Total Assets	$	1,882,000	100.00%
Liabilities			
Accounts Payable		25,500	1.35%
Notes Payable		500,000	26.57%
Deposits		1,100,000	58.45%
Other Liabilities		74,500	3.96%
Total Liabilities		1,700,000	90.33%
Stockholders' Equity			
Capital Stock		100,000	5.31%
Retained Earnings		82,000	4.36%
Total Stockholders' Equity		182,000	9.67%
Total Liabilities and Stockholders' Equity		1,882,000	100.00%

As shown, the statement of condition presents each line item as a percentage of total assets.

Trend Analysis

Trend analysis is the technique of comparing ratios or a financial statement line items over several periods of time. You should make the comparison by using both the dollar variance and the percentage variance methods. The dollar variance method involves calculating the dollar difference in the line item between the various periods. The percentage change in the line item for the periods is the basis for the percentage variance method.

It is important to use both methods. The percentage variance may not readily disclose large dollar changes in line items if the base is also large. The dollar variance method may not disclose large percentage changes in line items. For example, a line item variance could be under 5 percent but still require investigation if the amount of the change is $5 million. Conversely, a $20,000 change in a line

item may not seem to be material. If it represents a 35 percent change from a prior period, however, it may also warrant investigation.

Components of Trend Analysis

We discuss below the three primary components to performing a good trend analysis.

Number of Accounting Periods: The use of three or more accounting periods provides an understanding of what will likely be normal changes in the data. By comparing variances in the data over several accounting periods, patterns of change emerge that you can use to identify any unusual changes in current periods. Another benefit is that you can identify a change that may warrant investigation.

The accounting periods reviewed may include annual, quarterly, or monthly data depending on the purpose of the review. Quarterly or annual data in some instances can mask a month-to- month cash flow problem that an association is experiencing. You must use association records to review monthly figures, as OTS no longer requires associations to file monthly reports.

Sound Judgment: It is necessary to use sound judgment in assessing the materiality of a variance. You must use professional skepticism when evaluating the change, but must also remember that business is dynamic and change is inevitable. You should pursue only those variances that are not reasonable or are of sufficient magnitude to justify additional examination procedures. You must evaluate such variances in relation to the overall financial position of the association. A number of factors may account for variances including cyclical and seasonal factors, changes in accounting practices, and changes in operating strategies. You should identify and explain positive or adverse trends, so that your findings support the overall evaluation.

Volume-to-Rate Variance Analysis: Volume- to-rate variance analysis identifies how much of a change in an income statement line item is due to a change in volume and how much is due to a change in rate. This analysis is especially beneficial in evaluating changes in revenues and expenses associated with interest-bearing assets and interest-costing liabilities. Further, this technique allows you to identify offsetting variances that may otherwise go undetected. For example, although significant changes are occurring, a substantial decline in rate that results in little change in the financial statement line item may offset a large increase in volume. Through this analysis, you can narrow the scope of the examination to focus on the cause of the change in the data. Table 1 illustrates the technique and its benefits.

You can use numerous ratios in a trend analysis. Typical balance sheet ratios include real estate owned to total assets, equity capital to total liabilities, delinquent mortgage loans to net mortgage loans, and subordinate organization investment to total assets. (See Appendix B for a discussion of the latter.) Typical operating ratios include gross income to average assets, operating expense to average assets, net income to average assets, and net interest margin to average earning assets or average costing liabilities.

Table 1

Volume-to-Rate Variance Analysis

	19X1	19X2	Variances
Yield from Mortgage Loans	$400,000	$450,000	$50,000
Average Yield	10.0%	9.0%	
Average Amount of Mortgage Loans Outstanding	$4,000,000	$5,000,000	

Volume Variance	= variance in base times the first year rate
	= ($5,000,000-4,000,000) x 10%
	= $1,000,000 x.10
	= $100,000
Rate Variance	= variance in rate times second year base
	= (9.0%-10.0% x $5,000,000)
	= -1.0% x $5,000,000
	= .01 x $5,000,000
	= -$50,000
Volume	= $100,000
Rate Variance	= -50,000
Net Change in Yield	= $50,000

Ratio Analysis

Ratio analysis is the method of comparing a figure or group of figures in a set of financial statements to another figure or group of figures within the same financial statements. The assumption that there are meaningful relationships between different asset, liability, net worth, income, and expense accounts is the basis for ratio analysis.

Financial analysts have developed numerous standardized ratios for analyzing financial statements. Although it is beyond the scope of this Handbook to provide a listing of all the ratios that you may use to analyze financial statements, the more commonly used ratios include:

- Current assets divided by current liabilities.
- Net income divided by average assets.

- Operating expenses divided by average assets.

You can find these ratios in nearly all intermediate accounting or financial analysis texts. In addition, there are several ratios specific to analysis of financial institutions.

Most traditional lending institutions strive to maintain a relatively stable spread between asset yields and liability costs. Net interest income is a function of interest-earning asset (IEA) yields, interest-costing liability (ICL) costs, and the IEA/ ICL relationship.

When IEA/ICL exceeds 100 percent, the excess of earning assets bolsters net interest income and somewhat mitigates the effect of interest rate volatility on earnings. As the IEA/ICL ratio falls below 100 percent, net interest income obviously becomes impaired and becomes less likely to cover operating expenses.

In general, the net interest margin (NIM) will be greater than the spread if IEA exceeds ICL and less than the spread if ICL exceeds IEA. The difference between the yield on earning assets and the cost of funds provides the net interest spread.

You should compare ratios with historical (trend analysis) and peer group standards (comparative analysis) to identify unusual items.

Comparative or Peer Group Analysis

Comparative analysis is the method of comparing the components of a financial statement with those of a savings association of a similar size or other similar characteristics. You may also use ratio analysis to compare ratios from one firm with that of industry standards or peer group ratios. You should not rely upon peer group information in isolation, but in conjunction with other pertinent evaluation factors. Peer group or other comparative industry data should not be the sole, or even primary, basis for component ratings.

Whenever possible, compare mutuals associations with other mutuals, not stock associations. Beginning February 2001, fourth quarter UTPR data is available for mutuals only. With mutual-only peer ratios, you are better able to review the various financial ratios in an attempt to spot problem trends and outliers.

When it is not possible to compare a mutual with other mutuals, (such as the case with larger mutuals who have very few peers the same asset size), you should not focus exclusively on net income or other performance ratios without taking into account the institution's capital position and overall strategy.

When comparing mutuals and stocks, it is more appropriate to compare a mutual association's net income with a stock association's net income after dividends. Net income after dividends is the bottom line for both types of institutions.

	Stock	Mutual
Net Income	1,000	800
Dividends	-200	0
Reinvested Earnings	800	800

The Uniform Thrift Performance Report

The UTPR provides a savings association's own ratio, the median value of that ratio for an association's peer group, and the percentile ranking of an association's ratio value within the peer group. This enables measurement of the relative performance of an association to a peer group of associations, as well as measurement of the relative performance of the association and its peer group over time.

The UTPR constructs seven peer groups for comparative purposes. Asset size is the basis for the first six groups. The seventh group contains associations whose consolidated equity capital is less than zero or are in conservatorship.

Group 1	Assets less than $50 million.
Group 2	Assets between $50 million and $100 million.
Group 3	Assets between $100 million and $300 million.
Group 4	Assets between $300 million and $1 billion.
Group 5	Assets between $1 billion and $5 billion.
Group 6	Assets over $5 billion.

Except for Group 6, the UTPR includes the peer groups on a regional geographic basis. The UTPR calculates Group 6 (consisting of the largest associations) on a national basis to allow for a larger sample size than would be available in any one region.

Comparative analysis typically uses ratios such as net income to average assets, operating expense to average assets, or cost of funds to average costing liabilities.

FUTURE OPERATING RESULTS

After you review the stability of operating results and identify historic trends of the primary revenues, you can estimate and evaluate an association's probable future operating results.

A key tool in making this evaluation is the budget prepared by management. You should obtain a copy of the budget including projected revenues, expenses, and underlying assumptions. An evaluation of the budget should include all the following comparisons:

- Projections with prior period results.
- Projections with actual results for the same period.
- Projected return on assets and return on equity with prior period results.
- Projected yields for major earning assets with prior period yields.
- Projected operating expenses as a percentage of assets and revenues with prior period data.
- Projected goals and assumptions with trends in market conditions.

Although comparing the operating budget with prior period data is necessary, the key to evaluating the budget is to understand the validity of the underlying assumptions and the probability of projected goals. Prior data does not provide meaningful information if the entire focus of the association is changing. For example, if a portfolio lender begins mortgage-banking operations, the crucial evaluation of the budget would not come from comparison with prior period data. Instead, the focus would be on the reasonableness of projected loan originations and sales compared with current market conditions.

Controlling business risks is one of the primary responsibilities of management. An association's balance sheet and operating statement reflect the types of risk assumed by the association and how well management controls those risks. By analyzing the balance sheet and operating results, and identifying trends in the financial data, you can make a determination whether management's policies benefit or adversely affect an association.

PROFITABILITY ASSESSMENT

An association may assess its own profitability in many ways and at different levels. A thrift may evaluate its profitability as a whole or the particular profitability of branches, products, or types of customers. In whatever way an association assesses its profitability, accurate information is the basis for good decisions.

An association's information requirements depend largely on its size and complexity of its operations. While you should encourage management to develop improved systems and information, associations must be reasonable in their expectations.

CONSOLIDATED FINANCIAL STATEMENTS

Consolidated financial statements summarize the financial position and results of operations for two or more affiliated companies. Associations prepare and present such statements without regard to the separate legal status of either company. The purpose of consolidated financial statements is to present a parent company and its subsidiaries as if they were a single company. Such statements do not include gain or loss on transactions among the companies in the group. Further, consolidation is usually

necessary for a fair presentation when one of the companies in the group directly or indirectly has a controlling financial interest in the other companies.

Savings associations should prepare consolidated financial statements for all GAAP-consolidated subsidiaries in which an association has a controlling financial interest through direct or indirect ownership of a majority voting interest. As a general rule, direct or indirect ownership by one company of over 50 percent of the outstanding voting shares of another company is a condition that suggests consolidation.

In order for the parent and its subsidiaries to be presented as one entity, the institution must consolidate their separate trial balances into one trial balance and eliminate intercompany balances and transactions. The institution must make eliminating entries on consolidating worksheets, but neither the parent nor the subsidiaries are to record them in their general ledgers.

You should review the consolidating entries of intercompany accounts. Typical consolidations include the following eliminating entries:

- Intercompany payables against intercompany receivables.
- Intercompany profit and losses on sales of assets that the parent or subsidiary have not subsequently resold to third parties.
- Investment accounts of first-tier subordinate organizations against the capital accounts of lower-tier subsidiaries.
- Intercompany revenues against intercompany expenses.

See Appendix C, Reconciliation of Intercompany Accounts.

Materiality

OTS defines materiality as an assessment of relative size and importance. You can analyze the materiality of intercompany transactions by:

- Identifying intercompany transactions that frequently occur. Such transactions include:
  - The parent's investment in capital of the subordinate organization.
  - Long-term loans from the parent to the subordinate organization.
  - Short-term accounts receivable (or payable) between the parent and the subordinate organization pertaining to normal operations.
- Assessing activity in intercompany accounts. This involves reviewing general ledger account histories of selected accounts for following items:

— Numerous transactions.

— Correcting entries (original entries posted to the wrong accounts).

— Large dollar amount entries lacking a clear explanation of their purpose.

- Identifying source documents for review if you deem further analysis of specific transactions necessary. Such documents include:

— Cash receipts records (cash receipts journals and bank deposit slips).

— Cash disbursement records (cash disbursement journals and checks issued).

— Journal vouchers for noncash transactions.

REFERENCES

Code of Federal Regulations (12 CFR)

Part 562	Regulatory Reporting Standards

Office of Thrift Supervision Publications

Thrift Financial Report Instruction Manual

Thrift Time Series User's Guide

OTS Net Portfolio Value Model Manual

UTPR Reports:

Section A	Summary Statement
Section B	Detailed Income Statement
Section C	Analysis of Net Interest Income
Section D	Detailed Balance Sheet
Section E	Asset Quality
Section F	Allowances
Section G	Capital Accounts and Requirements

Section H	Changes in Financial Condition
Section I	Lending, Investment, Foreclosure and Restructuring Activity
Section J	Questions, Strategies, New Deposit Yields
Section K	Composition of CMR Portfolio
Section L	Interest Rate Risk Information
Section M	Examiner Support Software Ratios

Financial Accounting Standards Board

Statement of Financial Accounting Standards

No. 52	Foreign Currency Transactions
No. 87	Employers' Accounting for Pensions
No. 115	Accounting for Certain Investments in Debt and Equity Securities
No. 130	Reporting Comprehensive Income
No. 133	Accounting for Derivative Instruments and Hedging Activities
No. 140	Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities
No. 141	Business Combinations
No. 142	Goodwill and Other Intangible Assets
No. 144	Accounting for Long-Lived Assets
No. 146	Accounting for Costs Associations With Exit or Disposal Activities

American Institute of Certified Public Accountants (AICPA)

Statement of Position (SOP)

No. 98-1	Accounting for Costs of Computer Software Developed or Obtained for Internal Use

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Operations Analysis Program

EXAMINATION OBJECTIVES

To evaluate the appropriateness of the association's operating environment and business strategy.

To evaluate the adequacy of policies and procedures, information systems, internal controls, and budgeting processes relating to operations.

To identify, evaluate, and explain positive and negative income and expense trends.

To evaluate the quality and sources of earnings.

To assess the prospective effect on earnings because of changes in the association's activities or strategies.

To evaluate the association's financial performance and ascertain whether it has sufficient profitability to maintain capital through retained earnings.

EXAMINATION PROCEDURES

LEVEL I

WKP. REF.

1. Review prior examination reports, audit reports, monitoring reports, and any off-site analysis to ascertain strengths and weaknesses in the association's operations.

_____

2. Determine whether management corrected deficiencies mentioned in prior examination and audit reports.

_____

3. Review whether the institution provides periodic earnings and impairment reports with adequate information for management and the board of directors to assess earnings performance.

_____

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WKP. REF.

4. Review the association's structure and determine if there are any special considerations, for instance, S Corporation structure, comprehensive income, or nontraditional business operations. For Internet operations, see Level II procedures. For securitization transactions, see Level III procedures.

   - Determine if sources of earnings are significantly reliant upon nonrecurring gains from the sale of securities, loans, or securitization transactions. If so, see Level III procedures.

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5. Review the findings in examination Program 410, Financial Records and Reports, to ascertain any significant concerns, such as reporting or classification errors, unusual variances, accounting deficiencies or any material inconsistencies in the application of accounting principles that may affect the review of operations.

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6. Review the UTPR financial schedules and the association's financial statements. Identify and explain trends, material variances, and other factors affecting earnings. Note any material reporting errors or items that need further analysis. Include copies in the work papers.

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7. Compare UTPR financial schedules, the association's financial data, and recent earnings trends to the institution's historical results and to standard or customized peer group data and explain material variances.

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8. Review examination findings relating to management assessment and directors' oversight to ascertain whether the association is planning or has initiated any new activities, strategies, or major changes that could materially affect operations.

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9. Review the association's business plan. Compare it to actual operating results and explain any material differences. Determine if the association (rather than an outside consultant) developed the plan and tailored to the association's operating strategies.

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10. Review whether monetary incentives such as bonuses, stock options, or salary increases based on results exist that may create an environment for management to manipulate reported earnings.

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11. Review Level II procedures and perform those necessary to test, support, and present conclusions derived from performance of Level I procedures.

LEVEL II

1. Review the findings of the asset quality review to determine the effect on earnings. For example, consider severity and level of classifications, the need for provisions to ensure the adequacy of allowances for loan and lease losses (ALLL), and loss of interest earnings due to poor quality assets. Consider the cost of carrying nonperforming assets and the effect on earnings stability over the long term. Ensure that the ALLL does not contain any allowances for other types of losses, such as allowances for retained interests. Review write-offs of nonfinancial assets for appropriateness.

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2. Obtain and review the association's current budget. Determine if it is reasonable and supported. Compare the budget to current operations; identify and explain material variances.

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3. Review the findings of the sensitivity to market risk review, particularly the interest rate risk management review. Evaluate the composition of earnings between recurring net interest margin and net noninterest income versus net interest income. Consider the effect on future earnings potential.

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4. Review and evaluate the association's sources and uses of funds since the last examination. This analysis will give insight into the savings association's business operation and the potential risks involved.

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5. Review, if applicable, TFR Schedule CSS, Subordinate Organization Schedule, to determine the extent of the parent association's dependence on a subordinate organization and the adequacy of the parent's return on the investment in the entity. See Appendix B.

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6. Reconcile and determine the materiality of the parent institution and subsidiary inter-company accounts. (For further information, refer to Appendix C, Reconciliation of Intercompany Accounts.)

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7. Examine whether credit losses and suspicious activities reports are high in comparison to peers. If so, discuss concern with asset quality review staff and determine if future earnings will continue to be affected.

   - For subprime lending activities, determine if credit losses relate to underwriting practices, appraisal weaknesses, account management activities, or inadequate collection procedures.

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8. For Internet operations determine if the association:

   - Periodically (at least quarterly) evaluates its Internet operations and marketing plan.
   - Links its strategic planning process to its Internet operations.
   - Projects the effect of its Internet operations on earnings and capital.
   - Performs cost and benefit analyses of Internet banking activities. Consider start-up, operating costs, required upgrades, customer support, and maintenance costs.

9. Ensure that your review meets the Objectives of this Handbook Section. State your findings and conclusions, and appropriate recommendations for any necessary corrective measures, on the appropriate work papers and report pages.

LEVEL III

1. Analyze the current cost of interest-costing liabilities and the yield on interest-earning assets and compare with the previous year. Note: The yields on mortgage loans and mortgage-backed securities are dependent on prepayment rates.

2. Review and evaluate the association's yield spread and compare with the previous year. You should check to ensure that the institution estimates noninterest income and noninterest expense based on normal levels.

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3. Review the statement of operations for nonrecurring gains and losses as well as for nonrecurring revenues and expenses.

   - Review accruals and the timing of reversals for appropriateness.
   - Ensure that the ALLL does not contain any allowances for impairment of long-term assets held for disposal, or for the discontinuation of activities.

4. Determine if the association's earnings or payment of dividends relies on asset sales, securitizations, or any other type of nonrecurring transactions.

   - Determine if earnings are sufficient to pay dividends after considering the potential overstatements of profits using gain-on-sale accounting.
   - Determine whether earnings are sufficient to maintain adequate capital and reserves after considering asset quality and growth rate.
   - Note the degree of reliance on sales of whole loans for profits. If high, review the credit quality of originations.

5. Determine whether the association significantly relies on securitization gains for earnings. Note the findings of the asset quality review of securitization transactions and ensure the review focused on the following areas:

   - The securitization documents (pooling and service agreements). Does the institution limit its post-sale credit support to that specified in the terms and conditions of the securitization contract?
   - Valuation of retained assets. Does management conservatively value its retained interests, and periodically review its valuation models for soundness?
   - Credit loss assumptions. Are management's credit loss assumptions that support retained interest valuations appropriate?
   - Management's methods for assessing impairment.

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— Are the factors management uses to estimate fair value similar to those used by the institution's peers?

— Are impairment adjustments comparable to adjustments made for similar types of securitizations, servicing assets, or other types of transactions?

- Calculate the percentage of retained interests to Tier 1 capital; and consider the reasonableness of the percentage.

EXAMINER'S SUMMARY, RECOMMENDATIONS, AND COMMENTS

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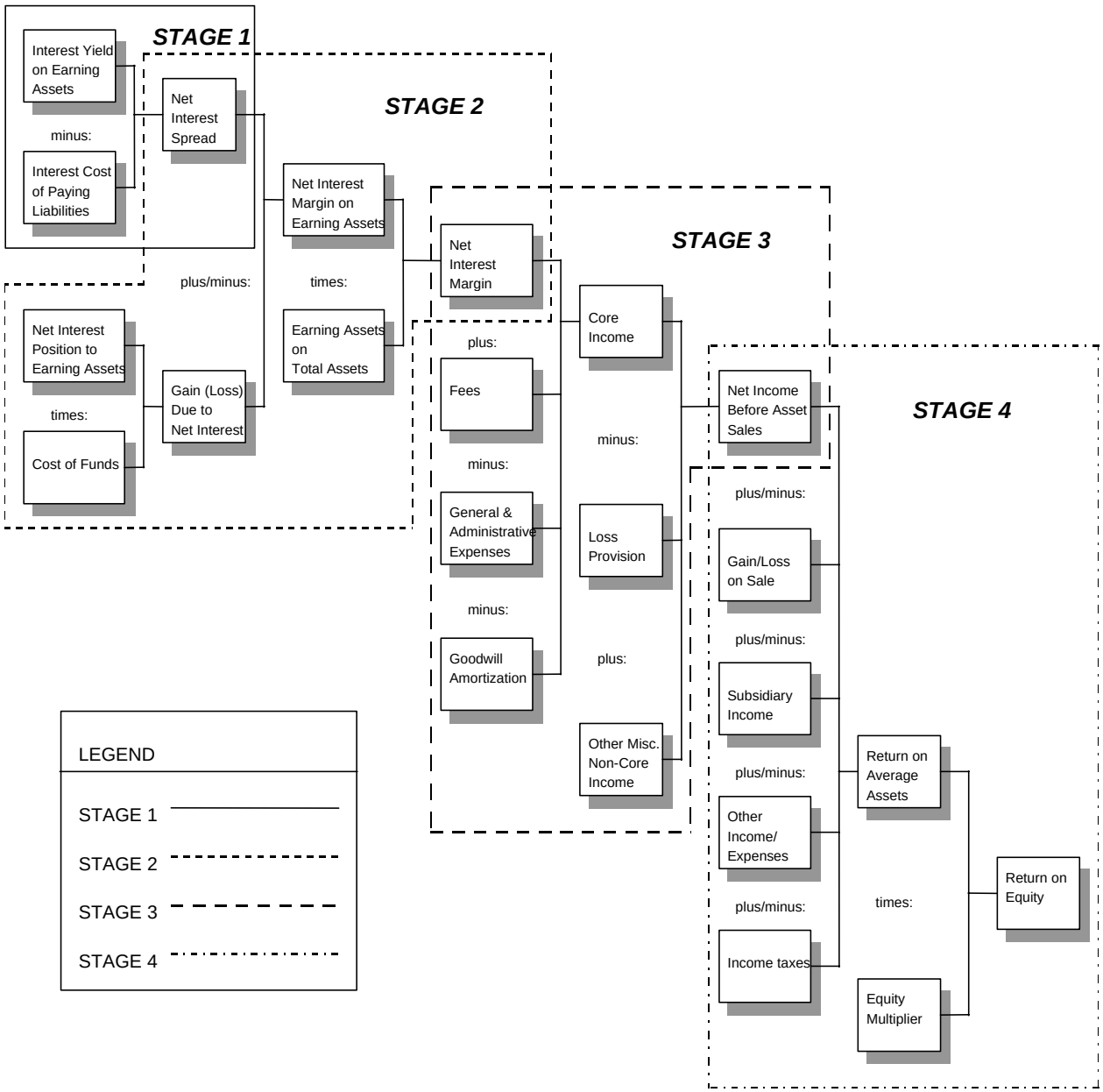
Derivation of Return on Assets and Return on Equity



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ADEQUACY OF RETURN ON INVESTMENT

One of the primary objectives for investing in subordinate organizations (operating subsidiaries, service corporations, and their lower-tier entities) is to generate earnings. Since parent savings associations operate on a relatively small interest margin, the need to maximize returns on assets is important. The larger the investment in subordinate organizations, the greater is the need for an adequate return on that investment.

Many factors influence investors when choosing alternative investments. The most significant of these factors are the cost of the funds used to make the investment and the desire to maximize yield and minimize risks. In evaluating the adequacy of the return on a parent association's investment in a subordinate organization(s), you must determine whether the:

- Return provides a reasonable margin in excess of the parent association's cost of funds.
- Yield is reasonable for the risks assumed.

Return versus Cost of Funds

In evaluating the savings association's return on an investment in a subordinate organization, you must determine the amount by which the return differs from the cost of funds. The Uniform Thrift Performance Report (UTPR) provides historical data that you can use to facilitate the analysis.

The following procedures provide a systematic approach for analyzing the margin generated by the investment in the subordinate organizations:

- Determine whether a positive or negative margin is being generated by the investment in the subordinate organization. (See step 1 of the following example.)
- Calculate the dollar effect based on the margin ratio and the investment in the subordinate organization. (See step 2 of following example.)
- Identify or calculate the parent's net income before taxes and nonoperating items as a percentage of average assets. (See step 3 of following example.)
- Calculate earnings of the parent without the contribution or detriment of the subordinate organization investment. (See step 4 of following example.)
- Determine how investment in the subordinate organization affects the parent's net income before taxes and nonoperating items. (See step 5 of following example.)

The materiality of the subordinate organization investment should guide you in applying any or all of these procedures. If the investment in the subordinate organization provides an adequate return with minimal risks, then these procedures would not warrant your use.

For example, Association A has a nominal investment in a subordinate organization. The subordinate organization operates an electronic data processing center that services several clients. The yield on the association's investment averages approximately 15 percent while the average cost of funds is 7 percent. In this example, the above procedures would not warrant your use.

	Association A (000's Omitted)			
	12/31/XX	9/30/XX	6/30/XX	3/31/XX
Total Assets[1]	$987,535	$946,916	$1,019,578	$937,562
Net Income Before Taxes and Nonoperating Items[1]	3,073	2,475	2,842	4,647
Investment in Subordinate Organization	25,484	25,485	23,359	23,446
Income from Subordinate Organization	1.95%	3.82%	0.26%	47.84%
Cost of Funds1 (As a % of Average Total Assets Annualized)	7.78%	7.57%	7.57%	8.35%

[1] Obtained from UTPR.

1. Calculate the margin between yield on investment in the subordinate organization and the cost of funds.

Return on Subordinate Organization	1.95%	3.82%	0.26%	47.84%
Cost of Funds	7.78%	7.57%	7.57%	8.35%
Margin	- 5.83%	- 3.75%	- 7.31%	39.49%

2. Calculate the dollar effect of margin.

Beginning Investment Subordinate Organization	$25,485	$23,359	$23,446	$23,378
Ending Investment Subordinate Organization	+25,484	+25,485	+23,359	+23,446
Total	$50,969	$48,844	$46,805	$46,824
Average Investment Subordinate Organization	$25,485	$24,422	$23,403	$23,412
(Average investment equals the sum of beginning and ending investments divided by 2)				
Margin	-5.83%	-3.75%	-7.31%	39.49%
Annual Effect of Margin (Margin times average investment)	- $1,486	- $ 916	- $1,711	$ 9,245
Quarterly Effect of Margin (Annual margin divided by 4)	$ -372	$ -229	$ -428	$ 2,311

3. Calculate parent ratio of net income before taxes and nonoperating items (NOI) to average assets.

Beginning Assets	$ 946,916	$1,019,578	$ 937,562	$928,567
Ending Assets	987,535	946,916	1,019,578	937,562
Total	$1,934,451	$1,966,494	$1,957,140	$1,866,129
Average Assets	$ 967,226	$ 983,247	$ 978,570	$ 933,065
(Average assets equal the sum of beginning and endingassets divided by 2)				
NOI	$ 3,073	$ 2,475	$ 2,842	$ 4,647
NOI/Average Assets	1.27%	1.01%	1.16%	1.99%
(NOI divided by average assets times 4)				

4. Calculate parent ratio of net income before taxes and nonoperating items (NOI) and exclude effect of the subordinate organization margin above or below cost of funds to average assets.

NOI	$3,073	$2,475	$2,842	$4,647
Quarterly Effect of Investment	(-372)	(-229)	(-428)	(2,311)
NOI Excluding Effect of Investment	$3,445	$2,704	$3,270	$2,336
Net Income Before Taxes, Nonoperating Items & Effect of Investment/Average Assets	1.42%	1.10%	1.34%	0.93%
(Ratio was annualized by multiplying by 4)				

5. Determine how investment in the subordinate organization affects the parent's net income before taxes and nonoperating items.

Investment's Dollar Effect	-$1,486	- $916	- $1,711	$9,245
Percent of Average Assets	-0.15%	-0.09%	-0.18%	0.99%
Net Income Before Taxes, Nonoperating Items & Effect of Investment/Average Assets	1.42%	1.10%	1.34%	0.93%
Percentage Effect of Investment on NOI	-10.56%	-8.18%	-13.43%	106.45%

(Dollar effect of subordinate organization investment stated as a percentage of average assets/parent institution's net income before taxes, nonoperating items, and the effect of investment stated as a percentage of average assets, i.e., -0.15%/1.42% = -0.1056 or -10.56%)

You also should compare data from period to period to identify any trends. You can compare quarterly data for all quarters of the review period, and annual data for the three previous years to identify the cause(s) of any negative trends.

Although historical data provides useful information for evaluating the return on investment, you must also consider management's projected return. Using the preceding example, if you had done an analysis of the return on the investment as of March 31 of that year, your conclusion might have been that the subordinate organization was extremely profitable. Although this may have been true then, a realistic operating budget would have tempered the assessment of profitability based on the return for the remainder of the year. A comprehensive analysis of the adequacy of the return on the investment should include the following determinations and comparisons:

- Determining the projected return on investments in subordinate organizations by reviewing management's operating budget(s).

- Comparing the projected return with historical data and investigating differences from historical patterns by interviewing management and reviewing the budget(s) assumptions for reasonableness.

- Comparing the most recent cost of funds ratio for the parent association with the projected yield on the investment in subordinate organizations.

- Determining the significance of any projected negative margins, by comparing the dollar amount of the negative margin to the capital and projected net income of the parent association.

It is equally important to determine the reasons for changes in the return on investment and whether the changes are a safety and soundness concern. You must determine whether a change is the result of sale of assets, accounting changes, market collapse, etc.

Risk Versus Return

Once you have determined the margin, you should evaluate the level of risk assumed to generate the margin. Generally, the higher the return, the higher the risk. Subordinate organizations, like all other businesses, assume certain types of business risk in the process of generating earnings. Determining the types of risk associated with the subordinate organization's activities and comparing the return on investment with the yield on other earning assets establishes a foundation for evaluating the organization's risk and reward position.

A return on investments that is significantly higher than yields on other earning assets may indicate that the subordinate organization(s) has assumed an excessive level of risk. A return that is lower than other earning assets may indicate an inefficient use of investment funds. By understanding the characteristics of all earning assets, you can establish a subjective correlation between yields and risks. You can then use this subjective correlation to evaluate the level of risk assumed or to evaluate the adequacy of the yield earned. For example, investors would expect an investment in a mortgage banking subordinate organization to yield more than the parent's investment in short term investment securities. This higher

expected yield is due to the higher level of business risk assumed. On the other hand, if a subordinate organization activity yields more than the parent's investment in commercial loans, that activity is likely to be more risky than commercial lending.

You can compare the yield from a parent's investment in a subordinate organization(s) with the parent's return on the following accounts:

- Mortgage loan portfolio
- Other loan portfolio
- Investment portfolio.

Tax considerations can distort the risk reward correlation. If the parent and the subordinate organization do not file consolidated tax returns, there is an incentive to record income for the parent (which has a lower tax rate) instead of the subordinate organization. For example, the subordinate organization may pay an above market rate on a loan from the parent. To avoid a distorted analysis, you should make comparisons over several periods. As a guide, you should make the comparison for each quarter of the examination review period. You can further enhance your analysis by comparing returns over the two previous years. In addition to making the comparison with a weighted return for the other assets, you should be alert to current yields on new investments in these assets. You can use this data to evaluate new investments in subordinate organizations. Examination Handbook Section 650, Interest Rate Risk Management, provides further assistance in identifying and evaluating the risk assumed by subordinate organizations.

You must exercise sound judgment in evaluating the risk and reward position of the subordinate organization(s) since the risk and reward position involves many variables. For instance, ancillary business obtained by the parent as the result of the subordinate organization's activities may be a valuable source of business to the parent. Even though the return on a subordinate organization of this nature may be lower than other assets, the overall benefit to the parent may be significantly greater due to this ancillary business.

RECONCILIATION OF INTERCOMPANY ACCOUNTS

Overview

One of the most basic steps in evaluating the propriety of a parent savings association's accounting for its investment in subordinate organizations is to reconcile certain reciprocal accounts. Examples of this are the parent's loans receivable and investment accounts reconciled to loans payable and capital accounts of the subordinate organizations. The reconciliation of reciprocal accounts verifies that the parent association properly reflects on its accounting records adjustments in the investment carrying value. Also, the reconciliation process is an important step in ascertaining if the accounting for the subordinate organizations is in accordance with generally accepted accounting principles (GAAP).

The parent's books should reflect the various tiers of subordinate organizations in accordance with the appropriate GAAP method. The parent's percentage of ownership interest largely determines the method. As discussed in more detail below, a parent may record an investment in a subordinate organization under either the consolidated, equity, or cost methods of accounting, consistent with GAAP.

The term subordinate organization, which 12 CFR § 559.2 defines, includes a federal thrift's operating subsidiaries, service corporations, and their lower-tier entities (that is, entities owned directly or indirectly by a first-tier subordinate organization). A subordinate organization does not include entities in which a savings association invests in as a pass-through investment authorized under § 560.32. (Refer to Handbook Section 730 for a detailed discussion of subordinate organization examinations, or Section 230 for an overview of an association's pass-through investment authority.)

In a multi-tier organizational structure, the entities' intercompany accounts should be reconciled to reflect the operations of all subordinate organizations that have a material effect on the parent association's financial condition. It would be of little benefit to reconcile the accounts of the parent and a first-tier subordinate organization if the subordinate had not recognized a $1 million loss sustained by its lower-tier business venture. As part of the reconciliation process, a responsible party should first reconcile lower-tier entities' intercompany investments that have a material effect on the accounts of the association up through the subordinate organization corporate structure. Reconciliation of the lower-tier entities should precede reconciliation of the parent's records to the first-tier subordinate organization.

Consequently, the reconciliation process should begin with an identification of all subordinate organizations and their relationship to each other. Data necessary to accomplish this identification is available in the TFR Schedule CSS (Subordinate Organization Schedule) and in the Preliminary Examination Response Kit (PERK).

Before addressing the actual reconciliation process, a responsible party should identify some of the causes of differences between the parent's general ledger accounts and the subordinate organization's accounts. Differences in account balances can result from many circumstances. The more common reasons for differences include the following causes:

- Delays by the parent savings association in recognizing its proportionate share of the subordinate organization's net income or loss.
- Posting errors.
- Inadequate or improper accounting procedures.
- Differences in methods of accounting for payables and receivables.

The example that follows illustrates differences that result from delays in recognizing income or losses.

Example:

A common problem encountered in the accounting for investment in subordinate organizations is the timeliness of recording the results of the operations of subordinate organizations in the parent association's investment account. By delaying recognition of a subordinate organization's losses at year-end, the parent may try to shift the losses into the next accounting period. However, it is important that the results of a subordinate organization's operations be recognized in the appropriate accounting period to allow for a proper evaluation of the financial trends of the parent. In any case, the parent association should record the results of the subordinate's operations at least quarterly to provide complete and accurate reports to the regulatory agencies. (Monthly posting of the subordinate's operations is preferable to quarterly.)

A one-month delay in accounting for the investment in a subordinate organization is a common practice. Generally, financial data for the subordinate organization will not be available until several days past the end of a month. As a result, the parent does not know the necessary financial data at the time the parent makes the posting. If the recognition of the results of the subordinate organization's operations is consistently posted one month late and there are no material changes in the unposted month, you need not take exception. If monthly net income or losses are material to the financial condition of the parent, you should recommend that management make an accrual for month-end financial statement presentation based on an estimate of the most recent month's operations.

You should consider the assessment of the financial condition complete only after verifying that the parent association has properly recognized and timely recorded the financial effect of the subordinate organization. However, you must use judgment in evaluating the importance of a variance in account balances. The key factor to consider is whether the variance misrepresents the financial condition of the parent association. Another factor to consider is the cause of the account variance. Was the cause human error, inappropriate accounting procedures, or intentional misrepresentation? You should bring any account variances to the attention of management for resolution. However, you should pursue for examination purposes only those variances that misrepresent the financial condition of the parent association or appear to result from inappropriate procedures or intentional misrepresentation.

Overview of Reconciliation Process

Initially, you should determine if the internal accounting staff has already made a reconciliation of accounts. You should test the reconciliation for accuracy. Generally, the reconciliation process involves two basic categories of accounts, namely, investment and reciprocal capital accounts, and intercompany payable and receivable accounts. In many instances, the reconciliation of these accounts is part of the internal or administrative control procedures for the subordinate organization or savings association.

The actual reconciliation process is relatively mechanical. The first step is to identify all capital accounts on the working trial balance for the subsidiary. These generally include the following accounts:

- Common and preferred stock.
- Paid-in-capital.
- Undistributed current earnings.
- Retained earnings or deficit.

You can also identify investment accounts from the parent's working trial balance. Examples include the following accounts:

- Common stock of subsidiary.
- Investment in subsidiary.
- Investment in service corporation.
- Investment in joint venture.
- Investment in operating subsidiary.

Next, total all the investment accounts and the related capital accounts and compare the totals. You should investigate any material differences to determine the reason for the variance.

The following examples illustrate the reconciliation process under the consolidated and equity methods of reporting. The following also provides a discussion of the cost method. The cost method, however, does not involve the reconciliation of intercompany accounts, other than to ensure that the parent's books reflect as income dividends received from subordinate organizations.

Reconciliation of Investments and Capital Accounts

Consolidation

When a savings association owns more than 50 percent of a subordinate organization's outstanding common stock, GAAP generally requires the association to consolidate the subordinate's assets on its financial reports. In a consolidation, the association's financial reports reflect the financial position,

operating results, and cash flows of both the parent and subordinate as if they were a single business entity. Consolidation occurs even though the entities maintain their separate corporate identities. In preparing consolidated reports, the reconciliation process involves the elimination of intercompany accounts. For example, in a consolidated financial statement, the entities eliminate intercompany loans between the parent and subordinate organization. They do this by crediting the parent's note receivable from the subordinate on the parent's books and by debiting the note payable to the parent company on the subordinate's books. From a consolidated entity viewpoint, an intercompany loan transaction simply results in the transfer of cash from one part of the entity to another and does not cause a receivable or payable.

Consolidations are usually complex. Because of this, the parent and subordinate generally prepare worksheets to support the consolidation of assets, liabilities, and income items and certain elimination and adjustment entries. Typical intercompany elimination entries pertain to intercompany stock ownership, intercompany debt, and intercompany revenue and expenses. This includes open account balances, security holdings, sales and purchases, interest, dividends, gain or loss on transactions among companies in the consolidated group, and intercompany profit or loss on assets remaining within the group.

When a subordinate organization is majority (but not wholly) owned by a parent association, the subordinate separately reports the minority interest of shareholders owning less than 50 percent of outstanding voting common stock. The minority shareholders have an interest in the subordinate's net assets and in earnings or losses.

You should consult Accounting Principles Board Opinion (APB) No. 16, Business Combinations, when there are complex consolidation matters, such as intercompany profits in assets, goodwill, and income taxes on undistributed earnings.

The following example illustrates the consolidation of a parent company and its subordinate organization, ABC Company. Assume the parent owns 60 percent of ABC Company. By owning more than 50 percent of ABC's outstanding voting common stock, the parent combines its assets and liabilities with 100 percent of ABC's assets and liabilities. However, an entry to eliminate the parent's investment in ABC is necessary to keep from double counting the investment.

Assume that common stock and paid in capital ($1,500,000) plus retained earnings ($500,000) total $2,000,000. The accounting entry will eliminate the parent's $1,200,000 investment account in ABC and ABC's stockholders'equity accounts on the combined parent company and subsidiary working trial balance sheet. The entry to record the minority interests is as follows:

(000's omitted)

	debit (credit)
Common Stock and Paid-in Capital – ABC Company	$1,500
Retained Earnings and Undistributed Income – ABC Company	$500
Investment in ABC Company	($1,200)
Minority Interest	($ 800)

The $800,000 represents the remaining 40 percent interest that the parent company does not own. Technically, minority interests are not liabilities since there is no payment obligation to anyone. In practice, however, a parent's consolidated balance sheet may show minority interests as liabilities, but the usual practice is to show minority interests between liabilities and stockholders' equity.

The parent company stockholders' equity accounts do not change. For example, as the following summary format shows, the parent company stockholders' equity and retained earnings accounts total $4,400,000 before and immediately after the consolidation. Thus, consolidation does not affect these account balances.

After the parent eliminates the subordinate organization's investment accounts and makes other accounting entries to eliminate the intercompany debt and receivables, the parent combines its remaining assets and liabilities with the subsidiary's remaining assets and liabilities. These entries also combine the parent company stockholders' equity account, including the minority interests, for the consolidated financial statements, as shown below in summary format.

(000's omitted)

	Parent	Subsidiary	Eliminating Entries	Consolidated
Assets	$ 51,100	15,100	($ 1,200)	$ 65,000
Liabilities	(46,700)	(13,100)	--	(59,800)
Minority Interests	--	--	(800)	(800)
Stockholders' Equity	(4,400)	(2,000)	2,000	(4,400)

Equity Method

When a parent savings association owns between 20 and 50 percent of a subordinate organization's outstanding voting common stock, the parent should generally reflect the investment on its books under the equity method. The parent initially records its investment in the entity at cost. The parent makes subsequent adjustments to the carrying value to reflect its share of the subordinate's earnings or losses in the period that the subordinate reports its operating results. Also, the parent adjusts its investment to reflect dividends received from a subordinate organization. Under the equity method, the parent does not report a subordinate organization's dividends as income, but rather as cash dividends that reduce the subordinate's net assets (and stockholders' equity). Accordingly, the parent should record a proportionate decrease in its investment account for dividends received from the subordinate organization.

The equity method may require other adjustments to the investment account similar to those made in preparing consolidated statements. These include eliminating intercompany gains and losses and to account for any differences between the parent and the subordinate organization in the measurement of the subordinate's expenses (for example, depreciation).

In the following illustration of the equity method, assume that a review of the subordinate organization's records establishes that the savings association owns 40 percent of ABC. Accordingly, the association's investment should reflect 40 percent of the net book value of ABC. However, after examining the working trial balance for the parent association shown below, the investment account for ABC is $10,000 short ($2,000,000 x .40 = $800,000 and $800,000 - 790,000 = $10,000). It is apparent that the investment accounts on the parent's general ledger do not balance with the capital accounts of the subordinate organization.

	(000s omitted)	
Capital Stock of ABC	$	700
Share of ABC Income		90
Total	$	790

The working trial balance for ABC Corporation contains the following capital accounts:

	(000s omitted)	
Common Stock	$	500
(500 Shares, $1000 Par)		
Paid-in Capital		1000
Undistributed Current Earnings		200
Retaining Earnings		300
Total	$	2000

You must determine the cause of the difference to complete the reconciliation. One common cause of such a variance is a delay in the posting of the subordinate organization's monthly income to the parent's investment account. By reviewing the previous month's financial statement for ABC, you determine that net undistributed income was $175,000 for the prior month. This indicates that the net income of ABC for the most recent month was $25,000 ($175,000 + 25,000 = $200,000, the amount of ABC's undistributed current earnings). The parent savings association's share of the net income was $10,000 ($25,000 x .40). The reconciliation should appear as follows:

(000's omitted)

Parent's Total Investment	$	790
Plus: Parents Share of Current Month Income Recognized After Month's End		10
Parent's Proportionate Share of ABC's Total Capital	$	800

You may consult APB No. 18, The Equity Method of Accounting for Investments in Common Stock, for more detail on the equity method.

Reconciliation of Intercompany Payables and Receivables for Consolidated Financial Statements

You should identify all intercompany payables and receivables that the parent must reconcile. The parent should reconcile such intercompany transactions prior to eliminating them on the consolidated financial statements. Examples of intercompany payables and receivables include the following accounts:

- Loans and advances
- Income tax payables and receivables
- Accounts payable and receivable.

Generally, the parent association or subordinate organization reconciles only those accounts that are material in relation to their financial position. The parent or subordinate may, however, reconcile routine accounts payable and receivable even though they may not warrant reconciliation due to their small amounts.

You can identify intercompany payables and receivables by reviewing the working trial balances of the subordinate and the parent. In cases where the general ledger account name is inconclusive, you should interview the accounting staff. Also, in some instances it may be necessary to use general ledger subordinate organization records to identify the accounts that you must reconcile. For example, in most instances a parent association will not segregate a mortgage loan to a subordinate organization on its general ledger. In such cases, you must use the parent's mortgage loan trial balance in the reconciliation process.

After you identify the accounts, you must total each of the intercompany payables and receivables accounts and compare the related totals. You should investigate any material differences to determine the reason for the variance. An example of a common reconciliation of intercompany payables and receivables follows:

ABC Corporation has two loans shown as payable to its parent on its general ledger trial balance as follows:

	(000's omitted)	
Note Payable Parent	$	540
Mortgage Loan Payable		927

A review of the general ledger trial balance for the parent association reveals an account entitled Unsecured Note Receivable ABC for $540,000. However, the parent does not segregate the mortgage loan on its general ledger trial balance. You must therefore obtain the mortgage loan trial balance to reconcile the mortgage loan payable. After you obtain the loan number from subordinate organization personnel, you can identify the loan on the parent association's mortgage loan trial balance. However, the trial balance lists the loan balance as $1,200,000.

To reconcile this difference quickly and efficiently, you must be aware of the types of activities conducted by the subordinate organization. If the entity engages in any construction activities, review the loans-in-process balance. Information about loans-in-process may be part of the mortgage loan trial balance or a completely different report. The loans-in-process balance for this particular loan was $245,000, which gives a net loan balance of $955,000, or $28,000 more than reported by ABC. A common cause for this type of variance is a timing difference in recording disbursements between the parent and the subordinate organization. To identify timing differences, you should review the loans-in-process transaction history and the subordinate organization's mortgage loan payable general ledger account history near the end of the month when the entity usually reconciles accounts.

You should look for disbursements that the mortgage loan payable account does not reflect, or repayments by the subordinate that the loans-in-process account does not reflect, until after the end of the month. In this instance, the subordinate made a disbursement of $47,000 on the last day of the month but did not post it to the mortgage loan payable account until the first of the next month. Also, the subordinate closed a sale of a developed residential building lot on the last day of the month and issued a check for $19,000 to the parent to replenish the loans-in-process account. ABC posted this check to its mortgage loan payable account on the last day of the month but the parent did not post it until the second day of the next month. The reconciliation of the mortgage loan payable should be as follows:

	(000's omitted)
Mortgage Loan Receivable Per Parent Trial Balance	$ 1,200
Adjustments:	
Less: Loans-in-Process	(245)
Less: Disbursements Posted After Month's End	(47)
Correct Total for Parent Trial Balance	$ 908
Mortgage Loan Payable Per ABC's Trial Balance	$ 927
Adjustments:	
Less: Repayments Posted After Month's End	(19)
Correct Total For ABC's Trial Balance	$ 908

Cost Method of Reporting

Under the cost method, the parent records its investment at cost, and recognizes as income subsequent dividends received that are distributed from net accumulated earnings of the organization. However, OTS considers dividends received in excess of earnings subsequent to the date of investment as a return of investment. Parent associations, consequently, should record dividends that the subordinate pays it in excess of its share of earnings, as a decrease in the cost of the investment. To determine whether a dividend payment is a "liquidating" dividend or an ordinary dividend, you can compare cumulative earnings and dividends.

Reporting Examination Findings

As previously noted, you should investigate only those variances that are material in relation to the parent savings association or the subordinate organization. Compare the variance with the capital and net income of the parent entity to determine the materiality of the variances for the individual subordinate organizations. You should document any material differences in the examination work papers with an explanation for the cause of the discrepancy. You should also identify the appropriate treatment or necessary adjustments within the same work papers. If necessary, initiate refilings of the appropriate regulatory financial reports by the subordinate organization and parent association.

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Present Value Analysis

Effective management decision making means making the best possible choices from the available investment alternatives consistent with the amount of funds available for reinvestment. To make the best choices consistently, however, a basis for analysis must exist that can provide a common denominator for various investment alternatives. Each alternative will have a different contract rate, maturity, minimum amount requirement, and method of payback.

One idea that both management and regulators use in the thrift industry is "present value analysis," based on the time value of money. In this Section we specifically provide information about present value analysis. Through a detailed set of problems, the Section provides assistance in performing present value analysis computations to arrive at conclusions regarding sound institutional investments.

LINKS

Appendix A
Appendix B

A word of caution is in order. Many business transactions involve considerations other than those governed by present value theory and its applications. Consequently, there will be instances where other considerations will temper management's and regulators' positions.

The primary objectives of this Section are:

- To understand and apply the concept of present value analysis in management decision making within the framework of the regulatory process.
- To evaluate the true effect of actual business transactions and decisions on the overall financial condition of a thrift institution.
- To ensure that savings associations adjust financial statements to reflect present value where necessary.

Examination Considerations

Financial intermediaries, including thrift institutions, attempt to channel funds effectively and efficiently from depositors to worthwhile borrowers. Institutions buy and sell financial claims. Financial assets and financial liabilities, however, have a time value. Customers present deposits in return for a promise of future deposit withdrawal plus interest. The ability to acquire and retain savings deposits from surplus sources is a function of the interest rate, the interest-compounding interval, and the deposit maturity.

Conversely, institutions lend present funds to borrowers in exchange for a promise of future interest and principal repayment. Savings associations evaluate such financial transactions based on present value analysis. Institutions sell interests in previously originated mortgages; you must be able to understand the underlying valuation mechanics. In addition, real estate owned financing requires present value application knowledge. The following guidelines show the user how to compute the future value, present value, and prospective rate of return of various investment opportunities. Simply stated, the worth of one dollar tomorrow is different from the worth of one dollar today.

COMPOUND ACCUMULATION

Compounding an Initial Deposit

Simple interest is the receipt or payment of interest upon principal; compound interest also includes interest upon interest. General compound accumulation involves determining some future value based upon an initial deposit. Calculation of a future value sum derives from the stated annual interest rate (r), the time period funds are deposited (n), the compounding interval (m), and the amount of the initial deposit (PV). The future value increases as the deposit, interest rate, number of compounding intervals, and time period increase. Equation 1 represents the proper notational relation of these elements.

Computation of future sums becomes unwieldy in Equation 1 whenever *n* or *m* becomes large. Normally, the compounding interval, *m*, is annual (*m*=1), semiannual (*m*=2), quarterly (*m*=4) or monthly (*m*=12). Compound value tables simplify the task, as the amount, $[1 + (r \div m)]^{nm}$, is known as "future value of $1." You may solve a compound accumulation problem whenever four of the five elements of Equation 1 are known. The present value tables in Appendix A assume a deposit is made at the beginning of each period.

Equation 1

$$Sum = PV\left[1+\left(\frac{r}{m}\right)\right]^{nm}$$

Appendix B to this section provides Hewlett-Packard HP-12C calculator keystroke sequences and solutions for each of the following problems. The solutions presented throughout this Section incorporate the tables found in Appendix A to facilitate the reader's comprehension of present value concepts. Once the principles of cash flow, timing, and interest compounding are assimilated, use of the calculator will become easy. For a detailed discussion of the calculator's basic financial functions, refer to pages 36 through 78 of the HP-12C *Owner's Handbook and Problem Solving Guide*. Examples follow:

Problem 1

If a depositor places $2,000 in an account, how much will the deposit grow in 20 years assuming a 6% interest rate, compounded annually?

Answer: $Sum = PV(1.06)^{20}$. Future value of $1, compounded annually at 6% for 20 years, is 3.2071. Sum = $2,000(3.2071) = $6,414.20. The initial deposit would grow to $6,414.20, assuming the depositor maintains all interest in the account.

Problem 2

A depositor wishes to accumulate $5,000 within 10 years. Assume a 4% rate of return, compounded annually. How much must the depositor place in the account to attain the savings goal?

Answer: $Sum = PV(1.04)^{10}$. Here, the present deposit, PV, equals the desired *sum* divided by the interest factor. PV = $5,000 ÷ (1.4802) = $3,377.92. Thus a deposit of $3,377.92, earning 4%, compounded annually for 10 years, will generate the desired $5,000.

Problem 3

A depositor places funds in an 8% annually compounded account and wishes to determine the necessary length of time to double the deposit.

Answer: $Sum = PV(1.08)^{n}$. Solve for the future value factor, which equals the desired *sum* divided by the initial deposit, PV. $(1.08)^{n} = Sum ÷ PV = 2 ÷ 1 = 2.000$. The 8% annually compounded interest factor that approximates 2.00 is found at nine years. Thus, a deposit doubles in nine years when compounded annually at 8%.

The first three examples all assume annual compounding (i.e., $m = 1$). Some tables include an appropriate future value factor for shorter compounding periods, which facilitate numerical computations. When multiple compounding interval tables are not available, determine the appropriate factor by using an interest rate that equals the annual interest rate divided by the compounding interval factor (r/m), and using an annual period that equals the maturity times the compounding interval factor (n x m). For example, the future value factor of $1 compounded quarterly at 16% for five years is equal to the annual factor of 4% (16% ÷ 4) for a period of 20 years (5 x 4). Note that the quarterly compounded factor of 2.1911 exceeds that of 2.1003 for annual compounding applicable to 16% over five years. The quarterly compounding provides more interest on interest.

Problem 4

How much extra interest would a depositor receive on a 7%, four-year $1,000 certificate of deposit if the institution compounded interest semiannually rather than annually?

Answer: $Sum = PV(1.07)^4$. The future value factor for a 7%, four-year note compounded annually equals 1.3108. $Sum = PV[1 + (.07 \div 2)]^{2x4}$. $Sum = PV(1.035)^8$. The future factor for the semiannual compounding equals 1.3168 (found directly from a semiannual table or from an annual table using 3.5% and eight years.) For each $1,000 deposit, the semiannual compounding increases future value by $6 at the end of four years [$1,000(1.3168-1.3108)].

The user should be able to determine various unknowns within a compounding framework. The illustrations relate primarily to computation of the receipt or payment of interest upon an initial deposit.

Compounding a Constant Deposit Each Period

Another compound accumulation process involves a constant amount invested each period for a number of years. For example, what sum will result if $1,000 is deposited each year for three years at 6% interest? Of course, it is possible to solve the problem by parts. Determine the future value of $1,000 deposited each year for three years at 6% ($1,000 x 1.1910), plus $1,000 deposited for two years at 6% ($1,000 x 1.1236) plus $1,000 deposited one year at 6% ($1,000 x 1.06). The total of the three parts equals $3,374.60 at the end of three years. Fortunately, some tables include a factor for a "future value of $1 each period." For example, the problem above may be solved directly by multiplying the $1,000 annual deposit by a factor of 3.3746, located in the annually compounded, 6% Future Value of $1 Each Period Table found in Appendix A. Obviously, the inclusion of such factors greatly simplifies future value calculation when a constant amount is deposited each period.

PRESENT VALUE ANALYSIS

Discounting a Future Amount

Present value analysis provides a common denominator for the evaluation of various income and expense streams. Simply, all dollar flows and sums are based at one point in time. That time is generally today; hence, the name of present value. A dollar received or paid one year hence is worth something different from a dollar received or paid 10 years hence. At a minimum, a dollar may be invested in an institution and earn some rate of return. In fact, present value analysis is the inverse of compounding. Remember, compounding determines what a dollar deposited today will be worth in the future. Present value determines the current value of a future dollar transaction. Because of this inverse relation, the mathematical representation of present value in Equation 2 is quickly found by dividing Equation 1 by the interest factor.

Equation 2

$$PV = \frac{Sum}{\left[1 + \frac{r}{m}\right]^{nm}}$$

Because of normal presentation of present value tables and the cumbersome interest factor of Equation 2, a notational convention has been adopted: *Sn/m/r*. The S represents a present value or discounting procedure, *n* represents the period in which the transaction is effected, *m* represents the compounding time intervals involved, and *r* is the interest rate of discount. As in compounding, the discount factor is multiplied by the dollars involved. For example, the present value notation of $1 to be received five years hence at an 8% annual discount rate is *S*5/1/8% and equals .6806. The present value of $1 received five years hence discounted at 8% is $.68. A dollar received in the future is worth less today. Alternatively, $.68 deposited for five years at an 8% annually compounded rate grows to $1 at period termination. ($.68 x 1.4693 = $1). Compounding and discounting are inverse processes.

Problem 5

A service corporation anticipates a tract of land will be worth $250,000 four years hence. If the corporation requires a 12% annual rate of return on investment, what is the maximum price that the service corporation should pay for the land?

Answer: *PV* = *Sum*(*S*4/1/12%). The present value factor of $1 four years hence discounted at 12% is .6355 and the *sum* to be received is $250,000. Thus, the maximum price for the land is $158,875 ($250,000 x .6355). Conversely, $158,875 invested today at 12% interest compounded annually will equal $250,000 at the end of four years ($158,875 x 1.5735).

Problem 6

In January 1983, an investor purchased the stock of an institution for $30 per share. In January 1998, the investor sold the institution stock for $70 per share. The institution paid no dividends. What was the annual compound rate of return on investment?

Answer: *PV* = *Sum*(*S*15/1/*r*/). In this case, all variables are known except *r*. What *r* will generate an interest factor that equates the *PV* of $30/share to the sum of $70/share? *PV*/*Sum* = (*S*15/1/*r*) $30 ÷ $70 = .4286 = (*S*15/1/*r*). An interest rate between 5.75% and 6.00% generates a present value factor for a 15-year annual compounding approximately equal to .4286. Thus, the return is between 5.75% and 6.00%.

Discounting a Constant Amount Per Each Period

A common time value technique applicable to institution investment is discounting a stream of equal future payments. Most residential mortgage contracts amortize a loan completely from equal monthly repayments. Payments include both interest and principal. Tables are available to account for

discounting a stream of equal cash flows, known as *PAY*, which are assumed to occur at the end of each period. *PV* = *PAY* (*An*/*m*/*r*). For example, what is the present value of $1 to be paid at the end of each year for three years discounted annually at 9%? Note the three $1 payments. Because these three payments occur in the future, the present value should be less than a simple summation. The discount annuity factor for (*A*3/1/9%) from the Present Value of an Annuity of $1 Per Period Table of three years and 9% equals 2.5313. Because the annual cash flow, *PAY*, equals $1, the present value of the stream is $2.53 ($1 x 2.5313). Alternatively, the problem could be solved by parts, one period at a time. The present value of $1 discounted annually at 9% equals .7722 from the third year, .8417 from the second year, and .9174 from the first year. The addition of each of the three present values equals 2.5313. As you can see, when equal payments are involved, use of present value of an annuity of $1 per period considerably facilitates computation.

Problem 7

An institution may purchase a mortgage that will be fully paid in equal annual payments of $700 for the next nine years (that is, there are nine payments remaining.) If the institution requires a 10% return on investment, what is the highest price the institution should pay?

Answer: *PV* = *PAY* (*A*9/1/10%). The appropriate present value factor of $1 for each year for nine annual payments at 10% is 5.7590. The institution will receive not $1, but $700 each year, so the maximum price the institution should pay is $4,031.30 ($700 x 5.7590). Alternatively, an individual depositing $4,031.30 today could withdraw $700 per year for nine years if the account earned 10% on each year's remaining deposit.

Problem 8

A bank offers you terms of 9 1/2% and 20 years for a residential mortgage. If you must borrow $40,000, what will be the equal monthly payments?

Answer: *PV* = PAY (*A*20/12/9.5%). The appropriate present value factor that accounts for the 240 monthly payments is 107.2810. The loan amount is $40,000. Therefore, PAY equals *PV* divided by the interest factor. PAY = $40,000/107.2810 = $372.85. Monthly payments of $372.85 will amortize the $40,000 loan over 20 years.

Alternatively, you can compute the monthly payments directly by multiplying the initial loan times the appropriate factor within the Present Value of an Annuity of $1 Per Month for *n* Years Table. Tables that include this factor ease payment calculations. For example, the installment factor equals .00932131 for the given problem. In this case, the monthly payment equals $372.85 ($40,000 x .00932131).

The problems identified above provide the core for mortgage investment analysis.

Discounting Mixed Types of Cash Flows

Some investment opportunities have a stream of equal payments plus a single large payment at the conclusion. The coupon bond form of contract is an example. The standard bond has a face value (par) of $1,000, a stated maturity and a stated coupon rate. For a bond with a 10-year term to maturity and a

coupon rate of 6%, the annual return would be $60 (6% of $1,000) for 10 years, at which time the face amount of $1,000 would be repaid. The coupon interest payments constitute the annuity portion, and the principal repayment is the large single payment. Bond price evaluation follows in a present value formula. *PV* = PAY (*An*/*m*/*r*) + *Sum* (*Sn*/*m*/*r*).

Problem 9

An institution has the opportunity to purchase a $1,000 bond with a 6% coupon rate and 10 years remaining to maturity. Because of a cyclical increase in interest rates, bonds such as this one are selling at a price to yield 9% to maturity. At what price should the bond sell?

Answer: Discount the promised future payments to the present at a 9% rate.

PV = PAY (*A*10/1/9%) + *Sum* (*S*10/1/9%)

PV = $60 (6.4177) + $1,000 (.4224)

PV = $385.06 + $422.40 = $807.46

A current price of $807.46 will generate a 9% return to an investor over a 10-year period.

Whenever the rate of return (discount rate) is equal to the bond coupon rate, the present value is the face value of the bond. Whenever the rate of return is higher than the bond coupon rate, the present value is less than face and trades at a discount (as in Problem 9). Conversely, whenever the rate of return is lower than the bond coupon rate, the present value is more than face and trades at a premium.

MORTGAGE INVESTMENT ANALYSIS

Many present value applications exist within mortgage investment analysis. Institutions lend present funds in exchange for future interest and principal repayment. Effective investment yields may be increased by numerous mechanics including points, prepayment penalties, buying and selling of whole loans and wraparound loans. The following examples illustrate the numerical mechanics of these various mortgage investments.

The Basic Mortgage Loan

The basic mortgage loan is a primary financial asset of thrift institutions. A mortgage instrument normally involves disbursement of a lump sum that is subsequently paid off in level, equal payments. Obviously, heavy use is made of present value annuity tables within the heading "Present Value of an Annuity of $1 per Month." Knowledge of the previously presented material is hereafter assumed.

Problem 10

An institution offers terms of 10% for a 30-year- maturity mortgage of $50,000. What monthly payment will amortize the loan?

Answer: PV = PAY ($An/m/r$)

$50,000 = PAY ($A$30/12/10%)

$50,000 = PAY (113.9508)

$50,000 ÷ 113.9508 = PAY

$438.79 = PAY

Thus, monthly payments of $438.79 for 30 years will completely amortize the loan and provide the lender with a 10% return on the outstanding balance.

Selling and Purchasing Whole Loans

Thrift institutions use the secondary market to buy and sell previously originated mortgage loans. In these transactions, the monthly payment and maturity do not vary as a result of a change in mortgage ownership. The market value and the effective investment return may differ from the book value and stated contract rate.

Problem 11

Assume five years have elapsed for the hypothetical loan stated in Problem 10. The loan represents a monthly stream of level $438.79 payments for 5 years. Thus, 300 payments remain (25 years x 12 months/year.) At what price should the institution sell the loan so that a buyer receives an 8.75% return? Compare the selling price with the book value of the loan (that is, the value obtained with a 10.0% return).

Answer: First, compute the loan value at the market yield, 8.75%.

PV = PAY x ($An/m/r$)

PV = $438.79 x ($A$25/12/8.75%)

PV = $438.79 x 121.6332

PV = $53,371.43

Second, compute the loan book value at the contractual yield, 10.0%.

PV = $438.79 x (*A*25/12/10.0%)

PV = $438.79 x 110.0472

PV = $48,287.61

Thus, the loan principal has been repaid by $1,712 with the previous five years of monthly payments ($50,000 - $48,288 = $1,712). As a result of an interest decline, however, the institution may sell the loan for $53,371, which represents a profit of $5,083.82 over book value ($53,371.43 - $48,287.61).

The decision to buy or sell loans is not solely a function of being able to sell at a profit. For example, in the problem above, the institution books a "profit" at the expense of reinvesting funds at a lower interest rate than is applicable to the initial loan. Buying and selling mortgages enable institutions to coordinate the assets portfolio with funds flow.

Discount Points

The effective investment yield of a mortgage may be increased by the imposition of discount points from the face value of the mortgage loan at the time of disbursement. For example, a $50,000 mortgage loan bearing four points and an interest rate of 7% results in a disbursement of $48,000, which is 4% less than anticipated. The monthly payment and loan pay-off, however, are based on the full face amount of the loan. Because of the influence of points, the yield on such a loan will be higher than the contractual rate. Indeed, the earlier a mortgage loan bearing points is paid off, the greater the effect of points on the yield.

Problem 12

What is the effective investment yield of a $50,000 mortgage loan at a 7% rate with the imposition of four points? Assume the loan is not paid off until the final maturity of 30 years.

Answer: First determine the monthly payments on the basis of the full face amount of the loan.

PV = PAY x (A30/12/7%)

$50,000 = PAY x 150.3076

$332.65 = PAY

However, the payments are received for a disbursement of $48,000, not $50,000. Thus, determine that rate that equates the present value of the level payment to the actual disbursement.

$48,000 = $332.65 x (*A*30/12/*r*)

144.2958 = A30/12/r

A yield of 7.4% approximates that interest factor necessary to equate the monthly payment stream of $332.65 with the actual loan disbursement of $48,000.

Problem 13

Recompute the investment yield from Problem 12 by assuming the loan is repaid at par in five years, and not at maturity.

Answer: The loan payments of $332.65 per month and the initial loan disbursement of $48,000, remain constant. In this case, however, you must calculate the loan value at the end of five years. Twenty-five years of monthly payments remain.

PV = $332.65 x (*A*25/12/7%)

PV = $332.65 x 141.4869

PV = $47,065.62

Now compute the investment yield. Note that the problem includes a mixed type of cash – both an annuity for five years and a lump sum at the end of the fifth year.

PV = PAY (*A*5/12/*r*) + *Sum*(*S*5/12/*r*)

$48,000 = $332.65 (*A*5/12/*r*) + $47,065.62(*S*5/12/*r*)

The problem may not be solved through the usual division and factor location within a discount of discount annuity table. Rather, you must locate, via trial and error, the interest rate that equates the loan disbursement to the present valued annuity and lump sum. At a minimum, the appropriate rate should exceed the 7.4% of Problem 12 because the institution's advantage of points is realized much sooner. Therefore, try a higher rate; say 7.5%.

$48,000 = $332.65(49.9053) + $47,065.62 (.6881)

$48,000 = $16,601.00 + $32,385.85

$48,000 = $48,986.85

Because the loan disbursement is considerably less than the present valued payments at a discount rate of 7.5%, try a higher rate; say 8.0%.

$48,000 = $332.65 (49.3184) + $47,065.62 (.6712)

$48,000 = $16,405.77 + $31,590.44

$48,000 = $47,996.21

A discount rate of 8% approximately equates the funds flow. Thus, the effective yield is slightly less then 8% as the problem indicates.

Points increase a yield, which is further increased with a loan repayment before maturity.

Prepayments and Penalties

Prepayments represent early payments on loans; they usually occur at the discretion of the borrower. The timing and amount of prepayments are of concern to the liquidity management of institutions. Prepayments tend to move inversely to the interest rate level. When interest rates are low, borrowers benefit by refinancing a mortgage (that is, prepaying the loan). Conversely, when rates are high, housing sales slow and individuals selling houses are not motivated to prepay; rather, they allow the buyers to assume the loan to facilitate the sale. Prepayments run counter to the pro table investment of funds.

Some mortgage loan contracts contain a prepayment penalty. For example, a mortgage loan contract may specify a penalty of six months' interest on the amount of the loan principal outstanding at the time the loan is prepaid. The effect the prepayment penalty has on the effective yield of a mortgage loan depends upon the period of time until the loan is prepaid.

Similar to points, the effective yield from penalties increases as a loan is prepaid more quickly.

Problem 14

Determine the effective yield from a $50,000, 30-year mortgage with a 10% rate that is prepaid at the end of five years. The prepayment penalty is six months' interest.

Answer: Problems 10 and 11 solved portions of the problem. First, the monthly payments are $438.79. Second, the book value of the loan after five years is $48,287.61. The prepayment penalty of 6 months' interest (1/2 year) is $2,414.38 ($48,287.61 x 1/2 x 10%). The effective yield is determined by a process similar to that used in points. Discount the cash inflow by the rate that equates the inflow to the original loan disbursement.

PV = PAY (*A*5/12/*r*) + *Sum*(S5/12/*r*)

Note that the sum includes both the loan repayment and prepayment penalty ($48,287.61 + $2,414.38). $50,000 = $438.79 (*A*5/12/*r*) + $50,701.99 (*S*5/12/*r*).

Try a discount rate of 10.75%. (Remember, this is by trial and error.)

$50,000 = $438.79 (46.2578) + $50,701.99 (.5856)

$50,000 = $20,297.46 + $29,691.09

$50,000 = $49,988.55

A discount rate of 10.75% approximately equates the inflow with the loan disbursement. The penalty increases the effective yield to 10.75% from the original 10% loan. The penalty partly compensates the institution for the need to reinvest funds, which will probably be at a lower current rate. Institutions may substantially increase yields by the imposition of both points and a prepayment penalty in addition to simply charging a higher rate. To a large extent, market forces maintain a competitive rate.

Wraparound Loans

A wraparound loan enables an institution to lend an existing borrower an additional amount over and above the unpaid balance on an old loan. Even at higher rates, some customers may be interested in the opportunity to refinance old loans into new loans with larger balances or longer maturities. A portion of the payments on the wraparound loan continues to amortize the initial loan, while the residual portion pays off the new principal. The effective investment yield of a wraparound is calculated by the interest rate that equates the present valued incremental payment stream to the additional funds disbursed. Generally, the yield to the institution declines as the amount of new dollars lent increases and as the maturity of the loan is lengthened.

Problem 15

Fifteen years ago, a borrower received a $30,000 mortgage at a 5% rate and a 20-year maturity. Therefore, monthly payments of $197.99 remain for five years. An institution offers a wraparound loan for $1,000 more than the unpaid mortgage at a rate of 8% with a five-year maturity. What is the effective investment yield for the institution on the loan?

Answer: First, determine the unpaid loan balance.

PV = PAY x ($A$5/12/5%)

PV = $197.99 x 52.9907

PV = $10,491.63

The institution offers to lend $1,000 over and above the loan at a rate of 8% for five years. Determine the new payments that will amortize the wraparound loan.

$11,491.63 = PAY x ($A$5/12/8%)

$11,491.63 = PAY x 49.3184

$233.01 = PAY

The institution receives $233.01 per month, of which $197.99 per month covers the initial loan. Thus, $35.02 per month is available for the amortization of the incremental $1,000 lent. Determine the yield that equates the loan with the payments.

PV = PAY x ($A$5/12/r)

$1,000 = $35.02 x $A$5/12/r

28.56 = $A$5/12/r

The annuity factor represents an interest rate of about 34%. Note that the wraparound payments include a higher rate on both the incremental and the existing loan. The institution receives interest on funds not additionally disbursed. As you can see, when a small amount of money is lent, the resulting return can be astronomical. The institution must ensure that appropriate consumer safeguards and disclosure are properly met.

EXAMINATION PROBLEMS

This section builds upon the present value and mortgage investment analysis foundation of the previous sections. Specifically, this section presents the numerical mechanics necessary for various phases of the examination process.

Real Estate Owned Financing

To facilitate the sale of real estate owned (REO), an institution may lend funds to a purchaser at submarket interest rates. Such a financing procedure induces a purchaser to pay a higher price for the REO. However, the actual monthly cash disbursement by the purchaser remains constant, more for the property and less for the financing. The purchaser, except for tax benefits, is indifferent as long as the payment remains unchanged.

It is an unsound practice for an institution to fail to recognize losses based on the market value of consideration received when that price is inflated due to favorable lending terms. Failure to recognize such losses results in overstatement of an institution's net worth and net income. Though there is no legal objection to facilitating the sale of REO by favorable terms, the financial records should properly reflect the present value of consideration received. In addition, the institution should factor in the impact of points since points effectively raise the interest rate. The institution must evaluate the cash flows it receives at a market discount rate and compare the results with the book value of property.

Problem 16

Assume the book value of REO for an institution is $20,000. The institution may sell the REO for $22,000 with no money down and monthly payments sufficient to amortize a 6% loan over 10 years. The market rate for such a loan approximates 9%. The institution plans to credit $2,000 to the account "unearned profit on real estate owned." Obviously, the institution cannot directly credit the profit

because it has not received a down payment. However, does the institution actually stand to profit by $2,000, the difference between book value and selling price?

Answer: Determine monthly payments necessary to amortize the $22,000 loan at the contract rate.

PV = PAY x (*A*10/12/6%)

PAY = $22,000 ÷ 90.073453

PAY = $244.25

Discount the monthly payments at the market rate.

PV = $244.25 x (*A*10/12/9%)

PV = $244.25 x 78.941693

PV = $19,281.51

Thus, the present value of the promised payments discounted at a market rate is $19,281.51. The more favorable interest rate offered the purchaser results in a $2,718 present value loss from the $22,000 "selling" price. The actual loss from book value is $718 ($20,000 - $19,282), not a $2,000 gain.

The $2,000 differential price gain reflects the benefit of receiving lower financing charges. You may determine the gain or loss by the following alternative but analogous method:

Determine monthly payments necessary to amortize the $22,000 loan at a market rate.

PV = PAY x (*A*10/12/9%)

PAY = $22,000 ÷ 78.941693

PAY = $278.69

The institution should receive $278.69 per month. To facilitate the sale of REO, however, the institution accepted $244.25 per month. The financing benefit amounts to $34.44 per month ($278.69 - $244.25). Evaluate the present value of that cash flow stream lost.

PV = PAY x (*A*10/12/9%)

PV = $34.44 x 78.941693

PV = $2,718.75

The loss on the REO financing may be seen more clearly when viewed from the cash flow per month not received. By either analytical method, the loss to book remains the same. In this case, the $2,718.75

represents the present value of the interest lost that the institution would have received had it made a loan at the current market interest rate.

The institution should record the transaction on its books as follows:

Account	Debit	Credit
Mortgage loans	$22,000	
Real estate owned		$20,000
Loss on sale of REO	718	
Unamortized discount on loans to facilitate		2,718

The discount (or imputed interest) should be accredited to interest income. Importantly, the institution must consider any financing benefit offered to sell REO so as to maintain the financial record's integrity.

Problem 17

In some cases, the interest rate charged for a loan facilitates changes over the period of the loan. For example, assume the institution in Problem 16 requests a 6% rate for four years and an 8% rate for the remaining six years. Because a portion of the new loan has an interest cost closer to the market rate of 9%, the computed adjustment to book value is bound to be less. The present value of consideration received may be solved by a recursive process.

Answer: First, determine the monthly payments necessary to amortize the entire loan of $22,000 at the interest rate initially applicable, 6%. We completed this step in Problem 16. Payments necessary to amortize the loan on a monthly basis for 10 years at 6% are $244.25.

Second, determine the loan's outstanding balance at expiration of the first interest rate charged. In this case, monthly payments of $244.25 remain for six years.

PV = PAY x ($A$6/12/6%)

PV = $244.25 x 60.339514

PV = $14,737.93

The loan balance of $14,737.93 must be paid over the remaining years of the loan. Determine the monthly payments necessary to amortize the existing loan balance at an 8% basis for six years. Because the interest rate is higher, the monthly payments should increase.

PV = PAY x (*A*6/12/8%)

PV = $14,737.93 x .017533

PV = $258.40

Instead of receiving the monthly amount of $278.69 applicable to the market rate of interest as determined in Problem 16, the institution should receive monthly payments of $244.25 for four years and $258.40 for six years. The monthly financing concession amounts to $34.44 for four years ($278.69 - $244.25) and $20.29 for six years ($278.69 - $258.40). Next, discount the payments not received at the market rate. Note the mechanics necessary to evaluate the last six years of payments.

PV = $34.44 (*A*4/12/9%) + $20.29

[(*A*10/12/9%) - (*A*4/12/9%)]

PV = $34.44 (40.184782) + $20.29

[78.941693 - 40.184782]

PV = $1,383.96 + $20.29 (38.756911)

PV = $1,383.96 + $786.38

PV = $2,170.34

As expected, the present value of consideration not received is less when a portion of the loan to facilitate carries a higher interest rate. Again, though the process is not simple, you may compute the present value by stages.

Renegotiation of Existing Loans

Sometimes institutions offer attractive financing terms to current or prospective borrowers on existing loans. That is, an institution may renegotiate a loan such that the underlying property is not foreclosed into REO. Regardless of the financing advantage (that is, no interest, low interest, longer maturity, payment forbearance), determination of the appropriate accounting treatment is necessary as indicated by Statement of Financial Accounting Standards Nos. 15, 114, 118, and 121. For a more detailed discussion of this topic, turn to Handbook Section 240, Troubled Debt Restructurings.

Unsold Real Estate Owned

There are a number of instances in which real estate owned is not sold immediately after acquisition. Often, an institution acquires a land development project before completion, and it must invest additional funds before the property can be sold. Apartments and office rental units may be held until the occupancy ratio has increased sufficiently to reduce the income risk. Finally, the market may not be capable of absorbing the property, and the institution may have to wait until it improves. No matter

what the reason, the important point is that the institution should consider a holding period in analyzing the property.

Prudent REO management practices and applicable regulations require that the institution have all pieces of REO appraised at the time of acquisition to determine whether or not the institution should establish reserves for potential losses. An appropriate method for estimating the value of income-producing property, and one that the institution should consider in the appraisal process, is to discount the forecasted cash flows at an appropriate rate. This rate should earn an internal rate of return comparable with projects with similar risk.

Partly Developed Real Estate Owned (Requiring Capital Additions)

Problem 18

Assume that the institution foreclosed on a piece of property with a current loan balance of $7,000,000. The property is not completely developed, and cost estimates for completion are as follows:

Year 1: $45,000 per month, or $540,000 per year

Year 2: $30,000 per month, or $360,000 per year

Year 3: $16,000 per month, or $192,000 per year

At the end of three years, the completed project can be sold for $10,000,000.

Should the institution establish a valuation allowance, and if so, how much?

For this example, assume that the required internal rate of return for projects with similar risk is 10%.

Step 1 - Determine discount cash inflows.

Sales Price = $10,000,000

$PV = Sum$ x $(Sn/m/r)$

PV = $10,000,000 x $(S3/12/10\%)$

PV = $10,000,000 x .741740

PV = $7,417,400

Step 2 - Determine discount cash outflows.

PV = Pay x (*An*/*m*/*r*) x (*Sn*/*m*/*r*)

Year 1 *PV* = $45,000 x (*A*1/12/10%)

PV = $45,000 x 11.374508 *PV* = $511,853

Year 2 *PV* = 30,000 x (*A*1/12/10%) x (*S*1/12/10%)

PV = 30,000 x 11.374508 x .905212

PV = $308,890

Year 3 *PV* = 16,000 x (*A*1/12/10%) x (*S* 2/12/10%)

PV = 16,000 x 11.374508 x .819410

PV = $149,126

Total Discounted Cash Outflow =

$511,853 + $308,890 +$149,126 = $969,869

Step 3 - Determine net present value of property.

NPV = *PV* Inflows - *PV* Outflows

NPV = $7,417,400 - $969,869

NPV = $6,447,531 say $6,447,500

Step 4 - Compare net present value of property with the outstanding balance of the loan.

Loan Balance $7,000,000

NPV 6,447,500

$ 552,500

Because the property's estimated value is only $6,447,500, the institution should establish a valuation allowance of $552,500. The institution should reevaluate the project periodically and make adjustments to the valuation allowance account.

Fully Developed Real Estate Owned (Holding Until the Market Improves)

Problem 19

A second type of project an institution may acquire is one in which the occupancy ratio is increasing and that will not be sold until the ratio levels out at the expected ratio.

Institution XYZ acquired a completed apartment building with a book value of $6,750,000. The occupancy ratio is not sufficiently high to attract a buyer. The building has 400 units available for rental at $250 per month. Projected occupancy ratios and operating expense/gross operating income ratios are as follows:

Year	Occupancy Ratio	Operating Expense Ratio
1	50%	45%
2	85%	40%
Thereafter	95%	35%

The effective remaining life of the property is 50 years, giving a straight-line recapture rate of 2%. The institution expects a return on the investment of 10% and will sell the property after the second year.

Step 1 - Determine cash flows.

Year 1 Gross Income = No. Units x Monthly Rental x Occupancy Ratio = 400 x $250 x .50 = $50,000 per month

Net Operating Income = Gross Income x (1 - Operating Expense Ratio) = $50,000 x (1 - .45) = $27,500 per month

Year 2 Gross Income = $400 x 250 x .85 = $85,000 per month

Net Operating Income = $85,000 x (1 - .40) = $51,000 per month

After Year 2 GI = $400 x 250 x .95 = $95,000 per month

Net Operating Income = $95,000 x (1 - .35) = $61,750 per month

Capitalization Rate = .12

Annualized Net Operating Income = $61,750 x 12 = $741,000

Sales Price = (AN. NOI) ÷ (CAP. RATE) = $741,000/.12 = $6,175,000

Step 2 - Determine discount cash flows.

Again, the discount rate was determined to be 10%.

Year 1 *PV* = 27,500 x (*An*/*m*/*r*) = 27,500 x (*A*1/12/10%) = 27,500 x 11.374508 = 312,799

Year 2 *PV* = 51,000 x (*A*1/12/10%) x (*S*1/12/10%) = 51,000 x 11.374508 x. 905212 = 525,113

PV = $6,175,000 x (*S* 2/12/10%)

PV = $6,175,000 x .819410

PV = $5,059,857

Total *PV* = $312,799 + $525,113 + $5,059,857 = $5,897,769 say $5,898,000

Step 3 - Compare book value with the present value.

Book Value	$6,750,000
PV	5,898,000
Loss	852,000

Because the present value is less than the book value, the institution should establish an $852,000 valuation allowance.

In appraising real estate owned, the method of discounting forecasted cash flows should be considered. It identifies the cash inflows to be received and the outflows to be paid and accounts for the holding period before a project can or will be sold.

Portfolio Valuation

According to the Accounting Principles Board (APB) No. 16 Business Combinations as amended, an acquiring corporation using the purchase accounting method should allocate the cost of an acquired company to the identifiable individual assets acquired and liabilities assumed based on their relative fair values.

APB No. 16 also provides general guidelines for assigning amounts to individual assets acquired. These guidelines include the valuation of receivables "at present values of amounts to be received determined at appropriate current interest rates, less allowances for uncollectibility and collection costs, if necessary." Given the high proportion of receivables for thrift institutions, accurate valuation is important. Generally, the loan portfolio of an acquired institution is revalued when the portfolio's average yield is different from the current required yield.

Problem 20

Assume the institution is acquiring a loan portfolio with a $1,000,000 book value. The average yield of the portfolio is 7.5%, and the current market yield is 9.0%. The average remaining contractual life of the portfolio is 25 years.

Because of prepayments, however, the projected average life of the portfolio is only 10 years. What is the current market value of the loan portfolio?

Based upon these assumptions, sufficient data exist for the proper evaluation of the loan portfolio. In effect, determine what price an investor would pay so that the investor earns a current market yield on the investment.

As indicated by APB No. 16, first determine the cash flow "amounts to be received." A loan portfolio represents an equal monthly stream of payments that include both interest and principal amortization for the life of the contract. Prepayment assumptions, however, shorten the contract life and are recognized as a large lump sum payment in a future period.

Step 1 - Determine cash flows.

Monthly payments

PV = PAY($An/m/r$)

PAY = PV ÷ ($A$25/12/7.5%)

PAY = $1,000,000 ÷ 135.319613

PAY = $7,389.91

Monthly payments of $7,389.91 would amortize a $1,000,000 loan over 25 years and return a 7.5% yield to the lender.

Payoff balance

PV = PAY ($An/m/r$)

PV = $7,389.91 x ($A$15/12/7.5%)

PV = $7,389.91 x 107.873427

PV = $797,174.92

The book value of the loan as of the tenth year is $797,174.92. As indicated, the book value is simply the discount of the remaining 15 years of payments at the portfolio rate of interest, 7.5%. Because the repayment occurs in the future, the amount is known as a sum in the following market valuation.

Step 2 -Discount cash flows at current market rate.

PV = PAY (*An*/*m*/*r*) + *Sum* (*Sn*/*m*/*r*)

PV = $7,389.91(*A*10/12/9.0%) + $797,174.92(*S*10/12/9%)

PV = $7,389.91(78.941693) + $797,174.92(0.407937)

PV = $908,569.15

The market value of the loan portfolio is $908,569.15. This figure is the present value of the 10 years of monthly loan payments plus the present value of the loan repayment, all discounted at the desired current yield of 9%.

When revaluation is warranted, the discounted cash flow method embodies the intended thrust of APB No. 16. However, the institution must exercise care in the use of qualifying assumptions. Rarely is a loan portfolio homogeneous in yield, maturity, and risk. Obviously, changes in the assumed portfolio yield, average remaining life, average remaining projected life, and current required market yield affect the current market value. Within this framework, however, the discounted cash flow method generates an accurate fair value.

SALE/LEASEBACK EVALUATION

The Theory

A sale/leaseback is a variation of a financial lease. Financial leases provide a lessee with many values otherwise associated with outright ownership. The period of the lease generally approximates the remaining economic life of the asset. The lessee contractually commits to the lessor payment of funds that cumulatively exceed the current market price of the property. Although the lessee may terminate an operating lease, such as telephone service, upon proper notice, the lessee many not cancel a financial lease. In effect, a financial lease provides a financing vehicle for the lessee and is so regarded by accounting theorists.

In a sale/leaseback, the prospective lessee receives current funds in exchange for the asset. Simultaneously, the lessee receives the continued use of the asset in consideration for future lease payments. The sale/leaseback is a contrast between current funds inflow and anticipated funds outflow. A decision model must capture the timing of the after-tax funds flow. Next year's dollar is worth something less than today's. In simplest terms, the "cost" of a sale/leaseback is the rate of interest that equates future payments to the current sales receipt. As lease payments increase relative to a given sale price, the cost of the lease increases. That is, only a higher rate of discount forces the equation between inflow and higher outflows. For a sale/leaseback to be considered advantageous, the cost of the lease should be less than an appropriate benchmark criterion. The benchmark depends on the use of the sale price: after-tax cost of funds for a contracting institution, and after-tax investment return for an expanding institution.

Cost of Leasing

Before-Tax

Equation 3

$$\text{Sales Price} = \sum_{1}^{n} \frac{n\ \text{Lease Pay}\ t}{(1+r)^t}$$

The before-tax cost of leasing is the rate, *r*, that forces equation of the sale price to the annual lease payments paid until year *n*. The advantages of leasing, however, are heavily dependent upon avoidance of taxes.

After-Tax

Equation 4

$$\text{Sales Price} = \sum_{1}^{n} \frac{n\,\text{Lease Pay}\ t}{(1+r)^t} + \sum \frac{n(\text{Lease Pay}\ t - \text{Depr}\ t)\,\text{tax rate}}{(1+r)^t}$$

Estimate cash flows on an after-tax basis by determining the legitimate expenses incurred by leasing and those expenses missed as a result of not owning. Lease payments provide an effective tax shield because annual taxes are reduced by lease payments times the tax rate. On the other hand, the right to depreciate property that is not owned is lost. To the extent that lease payments exceed depreciation charges, an effective tax shield is generated. The tax shield reduces the after-tax cash payments and accordingly lowers the after-tax cost of the sale/leaseback.

Problem 21

Assume an institution currently owns an office building and land carried at respective book values of $800,000 and $200,000. Management considers the value of such property will be negligible after 20 years if demolition costs equal the land's residual value. A prospective lessor approaches the institution and offers $1 million cash in exchange for 20 annual payments of $117,454.

Equation 5

$$\$1{,}000{,}000 = \sum_{1}^{20} \frac{\$117{,}454}{(1+r)^t}$$

PV = PAY (*An*/*m*/*r*)

$1,000,000 = $117,454 (*A*20/1/*r*)

8.514 = (*A*20/1/*r*)

r = 10%, the before-tax cost of leasing

After-Tax

Assume a tax rate of 25% and "lost" depreciation charges of $40,000 per year ($800,000 ÷ 20 years.) The depreciation base is limited to $800,000 since land is excluded from consideration.

Equation 6

$$\$1{,}000{,}000 = \sum_{1}^{20} \frac{\$117{,}454}{(1+r)^t} + \sum_{1}^{20} \frac{(\$117{,}454 - \$40{,}000).25}{(1+r)^t}$$

PV = PAY (An/m/r)

$1,000,000 = ($117,454 - $19,364)(A20/1/r)

$1,000,000 = $98,090 (A20/1/r)

10.195 = A20/1/r

r = 7.49%, the after-tax cost of leasing

The after-tax cost of leasing, r, increases as the sales price declines, the tax rate declines, the missed depreciation charges increase, or the lease payments increase. Is the sale/leaseback a good deal for the institution? That depends. If the institution uses the sales price to retire debt with an after-tax cost of less than 7.49%, the answer is no. If the institution uses the funds to expand investments earning greater than 7.49% after taxes, the answer may be yes.

Why the qualified answer? To this point, the example contains simplifying and, to a certain extent, unrealistic assumptions. Most institutions would use an accelerated depreciation. The reduction of early-term avoidance of taxes and higher time value of money increases the cost of leasing. Many properties have an expected residual value that affects depreciation schedules. Also, any residual values belong to the lessor, not the lessee, and increase the cost of leasing. Alternatively, the sales price in the sale/leaseback may be less than actually stated. For example, if an institution provides the lessor with purchase money at less than market rates, the lessor must similarly reduce the effective sale price. The institution must consider the effects of such refinements to either the right side or the left side of the equation.

Sale/Partial Leaseback After Taxes

In some instances, an institution owns a building far larger than internal requirements dictate. Consequently, the institution may prudently lease part of the office space to other tenants. If the institution subsequently decides to sell its building and leases back only a portion of the office space, the effective cost of the sale/partial leaseback may still be calculated. The sales price reflects the sum of the seller's partial leaseback and the lease payments of the other tenants. Computation of the cost of the sale/partial leaseback is analogous to the previously discussed sale/leaseback. The cost is the rate of discount that equates the sales price to a discounted sum of the seller's annual partial lease payments, plus the other tenant's annual lease payments, minus the annual tax shield. Again, as a result of not owning, the prospective lessee loses the opportunity to depreciate. On the other hand, taxable expenses are increased by the lease charges, and taxable income is reduced by not including the other tenants' lease payments.

In fact, the cost of a sale/partial leaseback should be similar to that of a sale/leaseback if other tenants are paying the market price for leasing. Continuing the previous example, assume other tenants were leasing office space at $90,000 per year and will continue to lease regardless of the building's owner. Further, the institution contract calls for annual lease payments of $27,454.

Equation 7

$$\$1{,}000{,}000 = \sum_{1}^{20} \frac{\$27{,}454}{(1+r)^t} + \sum_{1}^{20} \frac{\$90{,}000}{(1+r)^t}$$

$$+ \sum_{1}^{20} \frac{[(\$27{,}454 - \$40{,}000 + \$90{,}000).25]}{(1+r)^t}$$

PV = PAY ($An/m/r$)

$1,000,000 = ($117,454 - 19,364)($A20/1/r$)

$1,000,000 = $98,090 ($A20/1/r$)

10.195 = ($A20/1/r$)

r = 7.49%, the after-tax cost of the sale/partial leaseback

In some cases, the other tenants do not lease at a current market rate. As a result, the purchaser either pays a lower sales price or requires higher lease payments from the seller. Of course, either action increases the effective cost of the sale/ partial leaseback. The higher costs may indicate the economic reality of the present value of the tenants' lease payment, as opposed to a poor managerial decision by institution management.

Statement of Financial Accounting Standards No. 13, as amended, discusses the accounting implications for sale/leaseback transactions.

REFERENCES

Financial Accounting Standards Board, Statement of Financial Accounting Standards

No. 13	Accounting for Leases
No. 15	Accounting by Debtors and Creditors for Troubled Debt Restructurings
No. 114	Accounting by Creditors for Impairment of a Loan
No. 118	Accounting by Creditors for Impairment of a Loan – Income Recognition and Disclosure
No. 121	Accounting for the Impairment of Long-Lived Assets and Long-Lived Assets to be Disposed of

Accounting Principles Board (APB) Opinions

No. 16	Business Combinations

Present and Future Values

Sum of an Annuity of $1 Per Period for n Periods

Period	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
2	2.040	2.050	2.060	2.070	2.080	2.090	2.100	2.120	2.140	2.150
3	3.122	3.153	3.184	3.215	3.246	3.278	3.310	3.374	3.440	3.473
4	4.246	4.310	4.375	4.440	4.506	4.573	4.641	4.779	4.921	4.993
5	5.416	5.526	5.637	5.751	5.867	5.985	6.105	6.353	6.610	6.742
6	6.633	6.802	6.975	7.153	7.336	7.523	7.716	8.115	8.536	8.754
7	7.898	8.142	8.394	8.654	8.923	9.200	9.487	10.089	10.730	11.067
8	9.214	9.549	9.897	10.260	10.637	11.028	11.436	12.300	13.233	13.727
9	10.583	11.027	11.491	11.978	12.488	13.021	13.579	14.776	16.085	16.786
10	12.006	12.578	13.181	13.816	14.487	15.193	15.937	17.549	19.337	20.304
11	13.486	14.207	14.972	15.784	16.645	17.560	18.531	20.655	23.045	24.349
12	15.026	15.917	16.870	17.888	18.977	20.141	21.384	24.133	27.271	29.002
13	16.627	17.713	18.882	20.141	21.495	22.953	24.523	28.029	32.089	34.352
14	18.292	19.599	21.015	22.550	24.215	26.019	27.975	32.393	37.581	40.505
15	20.024	21.579	23.276	25.129	27.152	29.361	31.772	37.280	43.842	47.580
16	21.825	23.657	25.673	27.888	30.324	33.003	35.950	42.753	50.980	55.717
17	23.698	25.840	28.213	30.840	33.750	36.974	40.545	48.884	59.118	65.075
18	25.645	28.132	30.906	33.999	37.450	41.301	45.599	55.750	68.394	75.836
19	27.671	30.539	33.760	37.379	41.446	46.018	51.159	63.440	78.969	88.212
20	29.778	33.066	36.786	40.995	45.762	51.160	57.275	72.052	91.025	102.444
21	31.969	35.719	39.993	44.865	50.423	56.765	64.002	81.699	104.768	118.810
22	34.248	38.505	43.392	49.006	55.457	62.873	71.403	92.503	120.436	137.632
23	36.618	41.430	46.996	53.436	60.893	69.532	79.543	104.603	138.297	159.276
24	39.083	44.502	50.816	58.177	66.765	76.790	88.497	118.155	158.659	184.168
25	41.646	47.727	54.865	63.249	73.106	84.701	98.347	133.334	181.871	212.793
26	44.312	51.113	59.156	68.676	79.954	93.324	109.182	150.334	208.333	245.712
27	47.084	54.669	63.706	74.484	87.351	102.723	121.100	169.374	238.499	283.569
28	49.968	58.403	68.528	80.698	95.339	112.968	134.210	190.699	272.889	327.104
29	52.966	62.323	73.640	87.347	103.966	124.135	148.631	214.583	312.094	377.170
30	56.085	66.439	79.058	94.461	113.283	136.308	164.494	241.333	356.787	434.745
40	95.026	120.800	154.762	199.635	259.057	337.882	442.593	767.091	1342.025	1779.090
50	152.667	209.348	290.336	406.529	573.770	815.084	1163.909	2400.018	4994.521	7217.716
60	237.991	353.584	533.128	813.520	1253.213	1944.792	3034.816	7471.641	18535.130	29219.990

Present Value of an Annuity of $1 Per Period for n Periods

Number of Payments	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696
2	1.8861	1.8594	1.8334	1.8080	1.7833	1.7591	1.7355	1.6901	1.6467	1.6257
3	2.7751	2.7232	2.6730	2.6243	2.5771	2.5313	2.4869	2.4018	2.3216	2.2832
4	3.6299	3.5460	3.4651	3.3872	3.3121	3.2397	3.1699	3.0373	2.9137	2.8550
5	4.4518	4.3295	4.2124	4.1002	3.9927	3.8897	3.7908	3.6048	3.4331	3.3522
6	5.2421	5.0757	4.9173	4.7665	4.6229	4.4859	4.3553	4.1114	3.8887	3.7845
7	6.0021	5.7864	5.5824	5.3893	5.2064	5.0330	4.8684	4.5638	4.2883	4.1604
8	6.7327	6.4632	6.2098	5.9713	5.7466	5.5348	5.3349	4.9676	4.6389	4.4873
9	7.4353	7.1078	6.8017	6.5152	6.2469	5.9952	5.7590	5.3282	4.9464	4.7716
10	8.1109	7.7217	7.3601	7.0236	6.7101	6.4177	6.1446	5.6502	5.2161	5.0188
11	8.7605	8.3064	7.8869	7.4987	7.1390	6.8052	6.4951	5.9377	5.4527	5.2337
12	9.3851	8.8633	8.3838	7.9427	7.5361	7.1607	6.8137	6.1944	5.6603	5.4206
13	9.9856	9.3936	8.8527	8.3577	7.9038	7.4869	7.1034	6.4235	5.8424	5.5831
14	10.5631	9.8986	9.2950	8.7455	8.2442	7.7862	7.3667	6.6282	6.0021	5.7245
15	11.1184	10.3797	9.7122	9.1079	8.5595	8.0607	7.6061	6.8109	6.1422	5.8474
16	11.6523	10.8378	10.1059	9.4466	8.8514	8.3126	7.8237	6.9740	6.2651	5.9542
17	12.1657	11.2741	10.4773	9.7632	9.1216	8.5436	8.0216	7.1196	6.3729	6.0472
18	12.6593	11.6896	10.8276	10.0591	9.3719	8.7556	8.2014	7.2497	6.4674	6.1280
19	13.1339	12.0853	11.1581	10.3356	9.6036	8.9501	8.3649	7.3658	6.5504	6.1982
20	13.5903	12.4622	11.4699	10.5940	9.8181	9.1285	8.5136	7.4694	6.6231	6.2593
25	15.6221	14.0939	12.7834	11.6536	10.6748	9.8226	9.0770	7.8431	6.8729	6.4641
30	17.2920	15.3725	13.7648	12.4090	11.2578	10.2737	9.4269	8.0552	7.0027	6.5660
40	19.7928	17.1591	15.0463	13.3317	11.9246	10.7574	9.7791	8.2438	7.1050	6.6418
50	21.4822	18.2559	15.7619	13.8007	12.2335	10.9617	9.9148	8.3045	7.1327	6.6605
60	22.6235	18.9293	16.1614	14.0392	12.3766	11.0480	9.9672	8.3240	7.1401	6.6651

Future Value of $1 at the End of n Periods

Period	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000	1.1200	1.1400	1.1500
2	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100	1.2544	1.2996	1.3225
3	1.1249	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310	1.4049	1.4815	1.5209
4	1.1699	1.2155	1.2625	1.3108	1.3605	1.4116	1.4641	1.5735	1.6890	1.7490
5	1.2167	1.2763	1.3382	1.4026	1.4693	1.5386	1.6105	1.7623	1.9254	2.0114
6	1.2653	1.3401	1.4185	1.5007	1.5869	1.6771	1.7716	1.9738	2.1950	2.3131
7	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487	2.2107	2.5023	2.6600
8	1.3686	1.4775	1.5938	1.7182	1.8509	1.9926	2.1436	2.4760	2.8526	3.0590
9	1.4233	1.5513	1.6895	1.8385	1.9990	2.1719	2.3579	2.7731	3.2519	3.5179
10	1.4802	1.6289	1.7908	1.9672	2.1589	2.3674	2.5937	3.1058	3.7072	4.0456
11	1.5395	1.7103	1.8983	2.1049	2.3316	2.5804	2.8531	3.4785	4.2262	4.6524
12	1.6010	1.7959	2.0122	2.2522	2.5182	2.8127	3.1384	3.8960	4.8179	5.3503
13	1.6651	1.8856	2.1329	2.4098	2.7196	3.0658	3.4523	4.3635	5.4924	6.1528
14	1.7317	1.9799	2.2609	2.5785	2.9372	3.3417	3.7975	4.8871	6.2613	7.0757
15	1.8009	2.0789	2.3966	2.7590	3.1722	3.6425	4.1772	5.4736	7.1379	8.1371
16	1.8730	2.1829	2.5404	2.9522	3.4259	3.9703	4.5950	6.1304	8.1372	9.3576
17	1.9479	2.2920	2.6928	3.1588	3.7000	4.3276	5.0545	6.8660	9.2765	10.7613
18	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599	7.6900	10.5752	12.3755
19	2.1068	2.5270	3.0256	3.6165	4.3157	5.1417	6.1159	8.6128	12.0557	14.2318
20	2.1911	2.6533	3.2071	3.8697	4.6610	5.6044	6.7275	9.6463	13.7435	16.3665
21	2.2788	2.7860	3.3996	4.1406	5.0338	6.1088	7.4002	10.8038	15.6676	18.8215
22	2.3699	2.9253	3.6035	4.4304	5.4365	6.6586	8.1403	12.1003	17.8610	21.6447
23	2.4647	3.0715	3.8197	4.7405	5.8715	7.2579	8.9543	13.5523	20.3616	24.8915
24	2.5633	3.2251	4.0489	5.0724	6.3412	7.9111	9.8497	15.1786	23.2122	28.6252
25	2.6658	3.3864	4.2919	5.4274	6.8485	8.6231	10.8347	17.0001	26.4619	32.9190
26	2.7725	3.5557	4.5494	5.8074	7.3964	9.3992	11.9182	19.0401	30.1666	37.8568
27	2.8834	3.7335	4.8223	6.2139	7.9881	10.2451	13.1100	21.3249	34.3899	43.5353
28	2.9987	3.9201	5.1117	6.6488	8.6271	11.1671	14.4210	23.8839	39.2045	50.0656
29	3.1187	4.1161	5.4184	7.1143	9.3173	12.1722	15.8631	26.7499	44.6931	57.5755
30	3.2434	4.3219	5.7435	7.6123	10.0627	13.2677	17.4494	29.9599	50.9502	66.2118
40	4.8010	7.0400	10.2857	14.9745	21.7245	31.4094	45.2593	93.0510	188.8835	267.8635
50	7.1067	11.4674	18.4202	29.4570	46.9016	74.3575	117.3909	289.0022	700.2330	1083.6600
60	10.5196	18.6792	32.9877	57.9464	101.2571	176.0313	304.4816	897.5969	2595.9200	4384.0000

Present Value of $1

Period	4%	5%	6%	7%	8%	9%	10%	12%	14%	15%
1	0.9615	0.9524	0.9434	0.9346	0.9259	0.9174	0.9091	0.8929	0.8772	0.8696
2	0.9246	0.9070	0.8900	0.8734	0.8573	0.8417	0.8264	0.7972	0.7695	0.7561
3	0.8890	0.8638	0.8396	0.8163	0.7938	0.7722	0.7513	0.7118	0.6750	0.6575
4	0.8548	0.8227	0.7921	0.7629	0.7350	0.7084	0.6830	0.6355	0.5921	0.5718
5	0.8219	0.7835	0.7473	0.7130	0.6806	0.6499	0.6209	0.5674	0.5194	0.4972
6	0.7903	0.7462	0.7050	0.6663	0.6302	0.5963	0.5645	0.5066	0.4556	0.4323
7	0.7599	0.7107	0.6651	0.6227	0.5835	0.5470	0.5132	0.4523	0.3996	0.3759
8	0.7307	0.6768	0.6274	0.5820	0.5403	0.5019	0.4665	0.4039	0.3506	0.3269
9	0.7026	0.6446	0.5919	0.5439	0.5002	0.4604	0.4241	0.3606	0.3075	0.2843
10	0.6756	0.6139	0.5584	0.5083	0.4632	0.4224	0.3855	0.3220	0.2697	0.2472
11	0.6496	0.5847	0.5268	0.4751	0.4289	0.3875	0.3505	0.2875	0.2366	0.2149
12	0.6246	0.5568	0.4970	0.4440	0.3971	0.3555	0.3186	0.2567	0.2076	0.1869
13	0.6006	0.5303	0.4688	0.4150	0.3677	0.3262	0.2897	0.2292	0.1821	0.1625
14	0.5775	0.5051	0.4423	0.3878	0.3405	0.2992	0.2633	0.2046	0.1597	0.1413
15	0.5553	0.4810	0.4173	0.3624	0.3152	0.2745	0.2394	0.1827	0.1401	0.1229
17	0.5134	0.4363	0.3714	0.3166	0.2703	0.2311	0.1978	0.1456	0.1078	0.0929
18	0.4936	0.4155	0.3503	0.2959	0.2502	0.2120	0.1799	0.1300	0.0946	0.0808
19	0.4746	0.3957	0.3305	0.2765	0.2317	0.1945	0.1635	0.1161	0.0829	0.0703
20	0.4564	0.3769	0.3118	0.2584	0.2145	0.1784	0.1486	0.1037	0.0728	0.0611
25	0.3751	0.2953	0.2330	0.1842	0.1460	0.1160	0.0923	0.0588	0.0378	0.0304
30	0.3083	0.2314	0.1741	0.1314	0.0994	0.0754	0.0573	0.0334	0.0196	0.0151
40	0.2083	0.1420	0.0972	0.0668	0.0460	0.0318	0.0221	0.0107	0.0053	0.0037
50	0.1407	0.0872	0.0543	0.0339	0.0213	0.0134	0.0085	0.0035	0.0014	0.0009
60	0.0951	0.0535	0.0303	0.0173	0.0099	0.0057	0.0033	0.0011	0.0004	0.0002

Present Value of $1 at a Stated Annual Interest Rate Compounded Monthly

Number of Years	4%	5%	6%	7%	8%	9%	10%	11%	12%	14%
1	0.9609	0.9513	0.9419	0.9326	0.9234	0.9142	0.9052	0.8963	0.8874	0.8701
2	0.9232	0.9050	0.8872	0.8697	0.8526	0.8358	0.8194	0.8033	0.7876	0.7570
3	0.8871	0.8610	0.8356	0.8111	0.7873	0.7641	0.7417	0.7200	0.6989	0.6586
4	0.8524	0.8191	0.7871	0.7564	0.7269	0.6986	0.6714	0.6453	0.6203	0.5731
5	0.8190	0.7792	0.7414	0.7054	0.6712	0.6387	0.6078	0.5784	0.5504	0.4986
6	0.7869	0.7413	0.6983	0.6578	0.6198	0.5839	0.5502	0.5184	0.4885	0.4338
7	0.7561	0.7052	0.6577	0.6135	0.5723	0.5338	0.4980	0.4646	0.4335	0.3774
8	0.7265	0.6709	0.6195	0.5721	0.5284	0.4881	0.4508	0.4164	0.3847	0.3284
9	0.6981	0.6382	0.5835	0.5336	0.4879	0.4462	0.4081	0.3733	0.3414	0.2857
10	0.6708	0.6072	0.5496	0.4976	0.4505	0.4079	0.3694	0.3345	0.3030	0.2486
11	0.6445	0.5776	0.5177	0.4641	0.4160	0.3730	0.3344	0.2998	0.2689	0.2163
12	0.6193	0.5495	0.4876	0.4328	0.3841	0.3410	0.3027	0.2687	0.2386	0.1882
13	0.5950	0.5228	0.4593	0.4036	0.3547	0.3117	0.2740	0.2409	0.2118	0.1637
14	0.5717	0.4973	0.4326	0.3764	0.3275	0.2850	0.2480	0.2159	0.1879	0.1425
15	0.5494	0.4731	0.4075	0.3510	0.3024	0.2605	0.2245	0.1935	0.1668	0.1240
20	0.4499	0.3686	0.3021	0.2476	0.2030	0.1664	0.1365	0.1119	0.0918	0.0618
25	0.3685	0.2872	0.2240	0.1747	0.1362	0.1063	0.0829	0.0647	0.0505	0.0308
30	0.3018	0.2238	0.1660	0.1232	0.0914	0.0679	0.0504	0.0374	0.0278	0.0154

Present Value of an Annuity of $1 per Month for n Years

Number of Years	4%	5%	6%	7%	8%	9%	10%	11%	12%	14%
1	11.7440	11.6812	11.6189	11.5571	11.4958	11.4349	11.3745	11.3146	11.2551	11.1375
2	23.0283	22.7939	22.5629	22.3351	22.1105	21.8891	21.6709	21.4556	21.2434	20.8277
3	33.8708	33.3657	32.8710	32.3865	31.9118	31.4468	30.9912	30.5449	30.1075	29.2589
4	44.2888	43.4230	42.5803	41.7602	40.9619	40.1848	39.4282	38.6914	37.9740	36.5945
5	54.2991	52.9907	51.7256	50.5020	49.3184	48.1734	47.0654	45.9930	44.9550	42.9770
6	63.9174	62.0928	60.3395	58.6544	57.0345	55.4768	53.9787	52.5373	51.1504	48.5302
7	73.1593	70.7518	68.4530	66.2573	64.1593	62.1540	60.2367	58.4029	56.6485	53.3618
8	82.0393	78.9894	76.0952	73.3476	70.7380	68.2584	65.9015	63.6601	61.5277	57.5655
9	90.5718	86.8261	83.2934	79.9598	76.8125	73.8394	71.0294	68.3720	65.8578	61.2231
10	98.7702	94.2814	90.0735	86.1264	82.4215	78.9417	75.6712	72.5953	69.7005	64.4054
11	106.6476	101.3737	96.4596	91.8771	87.6006	83.6064	79.8730	76.3805	73.1108	67.1742
12	114.2167	108.1209	102.4747	97.2402	92.3828	87.8711	83.6765	79.7731	76.1372	69.5833
13	121.4895	114.5397	108.1404	102.2417	96.7985	91.7700	87.1195	82.8139	78.8229	71.6793
14	128.4776	120.6461	113.4770	106.9061	100.8758	95.3346	90.2362	85.5392	81.2064	73.5029
15	135.1921	126.4552	118.5035	111.2560	104.6406	98.5934	93.0574	87.9819	83.3217	75.0897
20	165.0219	151.5253	139.5808	128.9825	119.5543	111.1450	103.6246	96.8815	90.8194	80.4168
25	189.4525	171.0600	155.2069	141.4869	129.5645	119.1616	110.0472	102.0290	94.9466	83.0730
30	209.4612	186.2816	166.7916	150.3076	136.2835	124.2819	113.9508	105.0063	97.2183	84.3973

Keystrokes

Hewlett-Packard HP-12C calculator keystroke sequences and solutions for problems 1 though 21:

Problem 1

	Keystrokes			*Display*
1.	2,000	CHS	PV	-2,000.00
2.	20	n		20.00
3.	6	i		6.00
4.		FV		$6,414.27

Problem 2

	Keystrokes		*Display*
1.	5,000	FV	5,000.00
2.	10	n	10.00
3.	4	i	4.00
4.		PV	-$3,377.82

Problem 3

	Keystrokes			*Display*
1.	8	i		8.00
2.	1	CHS	PV	1.00
3.	2	FV		2.00
4.		n		10.00 years

Due to a rounding error, the calculator solution to problem three is ten years. The precise answer is somewhere between nine and ten years; however, the calculator is programmed to round the periods up since interest would not be credited until the end of each compounding period.

Problem 4

	Keystrokes			*Display*
1.	1,000	CHS	PV	-1,000.00
2.	7	ENTER		7.00
3.	2	÷	i	3.50
4.	4	ENTER		4.00
5.	2	x	n	8.00
6.		FV		1,316.81
7.		STO	1	1,316.81
8.	0	FV		0.00
9.	4	n		4.00
10.	7	i		7.00
11.		FV		1,310.80
12.		RCL	1	– -$6.01

Problem 5

	Keystrokes		*Display*
1.	250,000	FV	250,000.00
2.	4	n	4.00
3.	12	i	12.00
4.		PV	-$158,879.00

Problem 6

	Keystrokes			*Display*
1.	30	CHS	PV	30.00
2.	70	FV		70.00
3.	15	n		15.00
4.		i		5.81%

Problem 7

	Keystrokes			*Display*
1.	700	PMT		700.00
2.	9	n		9.00
3.	10	i		10.00
4.		PV		-$4,031.32

Problem 8

	Keystrokes			*Display*
1.	9.5	g	i	0.79
2.	20	g	n	240.00
3.	40,000	PV		40,000.00
4.		PMT		-$372.85

Problem 9

	Keystrokes				*Display*
1.	60	PMT			60.00
2.	10	n			10.00
3.	9	i			9.00
4.		PV			-385.06
5.		STO	1		-385.06
6.	0	PMT			0.00
7.	1,000	FV			1,000.00
8.		PV			-422.41
9.		RCL	1	+	-$807.47

Problem 10

	Keystrokes			*Display*
1.	10	g	i	0.83
2.	30	g	n	360.00
3.	50,000	CHS	PV	-50,000.00
4.		PMT		-$438.79

Problem 11

	Keystrokes				*Display*
1.	10	g	i		0.83
2.	30	g	n		360.00
3.	50,000	CHS	PV		-50,000.00
4.		PMT			438.79
5.	5	g	n		60.00
6.		FV			48,287.16
7.		STO	1		48,287.16
8.	0	FV			0.00
9.	25	g	n		300.00
10.	8.75	g	i		0.73
11.		PV			-53,370.94
12.		RCL	1	+	-$5,083.78

Problem 12

	Keystrokes		*Display*		
1.	50,000	CHS	PV		-50,000.00
2.	7	g	i		0.58
3.	30	g	n		360.00
4.		PMT			332.65
5.		RCL	PV		-50,000.00
6.	4	%		–	-48,000.00
7.		PV			-48,000.00
8.		i			0.62
9.		g	n		7.41 %

Problem 13

	Keystrokes			*Display*
1.	50,000	PV		50,000.00
2.	7	g	i	0.58
3.	30	g	n	360.00
4.		PMT		-332.65
5.	5	g	n	60.00
6.		FV		-47,065.79
7.		CHS	STO 1	47,065.79
8.	0	FV		0.00
9.	30	g	n	360.00
10.	48,000	PV		48,000.00
11.		i		0.62
12.	5	g	n	60.00
13.		FV		-45,375.34
14.		RCL	1 PV	47,065.79
15.		i		0.66
16.		g	n	7.89 %

Problem 14

	Keystrokes			*Display*
1.	50,000	CHS	PV	-50,000.00
2.	30	g	n	360.00
3.	10	g	i	0.83
4.		PMT		438.79
5.	5	g	n	60.00
6.		FV		48,287.16
7.	0.5	x		24,143.58
8.	0.1	x		2,414.36
9.		RCL	FV +	50,701.52
10.		FV		50,701.52
11.		i		0.90
12.		g	n	10.74 %

Problem 15

	Keystrokes			*Display*	
1.	30,000	CHS	PV	-30,000.00	
2.	5	g	i	0.42	
3.	20	g	n	240.00	
4.		PMT		197.99	
5.		STO	1	197.99	
6.	15	g	n	180.00	
7.		FV		10,491.46	
8.	1,000	+		11,491.46	
9.		CHS	PV	-11,491.46	
10.	0	FV		0.00	
11.	8	g	i	0.67	
12.	5	g	n	60.00	
13.		PMT		233.01	
14.		RCL	1 –	35.00	
		(to amortize the incremental $1,000 loaned)			
15.		PMT		35.02	
16.	1,000	CHS	PV	-1,000.00	
17.		i		2.86	
18.		g	n	34.26 %	*(yield on incremental $1,000 loaned)*

Problem 16

	Keystrokes			*Display*
1.	22,000	CHS	PV	-22,000.00
2.	6	g	i	0.50
3.	10	g	n	120.00
4.		PMT		244.25
5.	9	g	i	0.75
6.		PV		-19,281.12
7.		STO	1	-19,281.12
8.	22,000	+		2,718.88
	(present value loss from selling price)			
9.	20,000	ENTER		20,000.00
10.		RCL	1 +	$718.88
	(loss from book value)			

You can also use the following approach to calculate the loss per monthly payment and the present value loss:

	Keystrokes			*Display*
1.	22,000	CHS	PV	-22,000.00
2.	10	g	n	120.00
3.	9	g	i	0.75
4.		PMT		278.69
5.		STO	1	278.69
6.	6	g	i	0.50
7.		PMT		244.25
8.		RCL	1 –	-34.44
	(loss per monthly payment.)			
9.		PMT		-34.44
10.	9	g	i	0.75
11.		PV		$2,718.88
	(present value loss)			

Problem 17

	Keystrokes			*Display*
1.	22,000	CHS	PV	-22,000.00
2.	10	g	n	120.00
3.	6	g	i	0.50
4.		PMT		244.25
5.	4	g	n	48.00
6.		FV		14,737.63
7.		CHS	PV	-14,737.63
8.	0	FV		0.00
9.	8	g	i	0.67
10.	6	g	n	72.00
11.		PMT		$258.40

The institution should receive monthly payments of $244.25 for four years and $258.40 for six years. The monthly financing concession amounts to $34.44 for four years ($278.69 - $244.25) and $20.29 for six years ($278.69 - $258.40). To discount the payments received at a sub-market rate:

	Keystrokes			*Display*
1.	4.44	PMT		34.44
2.	4	g	n	48.00
3.	9	g	i	0.75
4.		PV		-1,383.96
5.		STO	1	-1,383.96
6.	20.29	PMT		20.29
7.	6	g	n	72.00
8.		PV *(present value at beginning of year 5)*		-1,125.63
9.		CHS	FV	1,125.63
10.	0	PMT		0.00
11.	4	g	n	48.00
12.		PV		-786.38
13.		RCL	1 +	-$2,170.34

Problem 18

Step 1 - Discount Cash Inflows:

	Keystrokes			*Display*
1.	10,000,000		FV	10,000,000.00
2.	10	g	i	0.83
3.	3	g	n	36.00
4.		PV		-7,417,397.04
5.		STO	9	-$7,417,397.04

Step 2 - Discount Cash Outflows (using the cash flow function):

	Keystrokes			*Display*
6.		f	FIN	
	(to clear the Financial registers.)			
7.	45,000	g	CFj	45,000.00
8.	12	g	Nj	12.00
9.	30,000	g	CFj	30,000.00
10.	12	g	Nj	12.00
11.	16,000	g	CFj	16,000.00
12.	12	g	Nj	12.00
13.	10	g	i	0.83
14.		f	NPV	$969,869.36

Step 3 - Determine Net Present Value of the property:

	Keystrokes			*Display*
15.	RCL		9 +	-$6,447,527.67
	(Net Present Value)			

Step 4 - Compare Net Present Value of property to outstanding balance of the loan:

	Keystrokes		*Display*
16.	7,000,000	+	$552,472.33
	(valuation allowance should be established)		

Problem 19

Step 1 - Determine cash flows:

The cash flows as previously determined in this section are $27,500/month in year one, $51,000/month in year two, and a capitalized cash flow of $6,175,000 after year two.

Step 2 - Discount cash flows:

	Keystrokes			*Display*
1.	27,500	g	CFj	27,500.00
2.	12	g	Nj	12.00
3.	51,000	g	CFj	51,000.00
4.	11	g	Nj	11.00
5.	6,175,000	ENTER		6,175,000.00
6.	51,000	+		6,226,000.00
7.		g	CFj	6,226,000.00
8.	10	g	i	0.83
9.		f	NPV	$5,897,766.58
		(Present Value)		

Step 3 - Compare Book Value to the Present Value:

	Keystrokes		*Display*
10.	6,750,000	-	-$852,233.42
		(valuation allowance should be established)	

Problem 20

Step 1 - Determine the cash flows:

	Keystrokes			*Display*
1.	1,000,000	PV		1,000,000.00
2.	25	g	n	300.00
3.	7.5	g	i	0.63
4.		PMT		-$7,389.91

Pay-off balance after 10 years:

5.	10	g	n	120.00
6.		FV		-797,175.11
7.		STO	1	-$797,175.11

Step 2 - Discount the cash flows at the current market rate:

	Keystrokes			*Display*
8.	0	FV		0.00
9.	9	g	i	0.75
10.		PV		583,372.14
11.		STO	2	583,372.14
12.		RCL	1 FV	-797,175.11
13.	0	PMT		0.00
14.		PV		325,197.47
15.		RCL	2 +	$908,569.61
		(market value of loan portfolio)		

Problem 21

Before-Taxes:

	Keystrokes			*Display*
1.	1,000,000	PV		1,000,000.00
2.	117,454	CHS	PMT	117,454.00
3.	20	n		20.00
4.		i		10.00%

After-Taxes:

	Keystrokes		*Display*	
1.	117,454	ENTER	117,454.00	
2.	40,000	–	77,454.00	
3.	0.25	x	19,363.50	
4.	117,454	–	-98,090.50	
5.		PMT	-98,090.50	
6.	1,000,000	PV	1,000,000.00	
7.	20	n	20.00	
8.		i	7.50 %	*(after-tax cost of leasing)*

Sale/Partial Leaseback After-Taxes:

	Keystrokes			*Display*
1.	27,454	ENTER		27,454.00
2.	90,000	+		117,454.00
3.		STO	1	117,454.00
4.	27,454	ENTER		27,454.00
5.	40,000	–		-12,546.00
6.	90,000	+		77,454.00
7.	0.25	x		19,363.50
8.		RCL	1 –	-98,090.50
9.		PMT		-98,090.50
10.	1,000,000	PV		1,000,000.00
11.	20	n		20.00
12.		i		7.50 %

(after-tax cost of sale-partial leaseback)