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ANALYTICAL REVIEW TECHNIQUES FOR AUDITORS*

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INTRODUCTION

Analytical review techniques are among the most versatile and most valuable techniques available to auditors. Yet, beginning auditors, and especially auditing students, rarely feel confident in their abilities to do analytical reviews of financial statements and therefore often fail to appreciate fully the value of review techniques. This lack of confidence is not so much due to a lack of fundamental skills as it is to a lack of a cohesive approach. The purpose of this paper is to provide such a cohesive approach -- one that leads the analyst (auditor) through a series of sensible steps designed to stimulate the right questions and provide a framework for answering them in ways especially relevant to efficient auditing.

One of the roles of analytical review in auditing is that of an early warning system. It may be used early in an audit to identify specific audit risks, thus leading to better audit planning. It may also be used as a substantive test of an account balance later in the audit. In this role it may even provide sufficient audit assurance that the account does not contain a material error, as to make other direct tests of the account balance unnecessary.

Broadly speaking, one of an auditor's primary objectives in an individual engagement is to perform a cost-effective audit. This means that the auditor wants to perform sufficient audit procedures to reduce residual audit risk to an acceptable level and, at the same time, hold the cost of the procedures performed to a sufficiently low level that the audit fee will (1) cover costs (including the cost of capital invested in the practice) and (2) provide appropriate compensation for the residual risk borne. As the center of Exhibit 1 illustrates, residual audit risk is a function of (1) the probability that there is an undetected, material misstatement in the financial statements and (2) the expected loss, given that such an undetected misstatement exists. The surrounding portions of Exhibit 1 illustrate that these two central determinants of residual risk are, in turn, functions of the following:

- (a) the probability of a material misstatement occurring,
- (b) the probability that such a misstatement will go undetected by the audit procedures selected,
- (c) the probability that the client will experience financial distress, leading to an action being brought against the auditor, and
- (d) the potential size of a financial loss (or effect of adverse publicity) resulting from any action taken against the auditor (which is influenced by such things as the size of the client, its capital structure, the composition of its owners and creditors, etc.)

Among all these factors affecting residual audit risk, the ones of greatest concern in planning a specific

engagement are those factors affecting the probability of material misstatements, because, to be effective, audit procedures must be aimed at detecting such misstatements. Other factors, such as capital structure and composition of owners and creditors, may affect the engagement decision and/or fee negotiations (because they may affect such things as third party beneficiary status of certain owners or creditors), but planning of specific audit procedures relates to them only tangentially. On the other hand, potential for financial distress should influence audit planning because actual or impending financial distress is usually the "triggering event" that causes users of financial statements to take legal action against auditors. This is so primarily because claims based on assertions that financial statements are false or misleading usually hinge on proof that the aggrieved "user" of the statements has sustained financial damage.

Moreover, impending financial distress may alter the probability of intentional misstatements and the appropriateness of certain accounting methods (for example, if the going concern assumption is in doubt). Unfortunately, intentional misstatements may be made to cover up symptoms of financial distress and, therefore, may be difficult to detect with analytical review procedures. This emphasizes the importance of auditing "in the context of the client's business and industry," because it may be only in such a context that misstated elements of the financial statements actually appear misstated.

Auditors wishing to use analytical review to plan audits, in effect, become "users of their clients' financial statements" who want to determine the "story" told by the statements and its implications for the audit. Analytical review techniques will be valuable at the general level of audit planning if they help the auditor better understand the client's business and anticipate potential financial distress. In addition, at the more specific level, they should help the auditor allocate audit effort in a cost-effective manner, that is, to accounts and transactions in direct relation to specific risks of material misstatements. Analytical review techniques will be all the more helpful in planing cost-effective audits if they integrate well with other sources of audit efficiency. For example, an auditor who anticipates relying on strengths in the client's internal control system will value analytical techniques that focus on groups of accounts related to specific subsystems of the client's internal control system.

Financial Ratios

The traditional tools of financial analysis are various financial ratios. Several traditional ratio groups (with which readers probably have some familiarity) are illustrated in the case presented later in the paper. To be at least minimally useful, ratios must be individually interpretable; that is, they must be indicative of some relationship or condition relevant to the analysis. However, financial ratios have little more than minimal (diagnostic) value unless they are used in conjunction with some standard of comparison. Some useful standards of comparison are industry averages, local economy averages and national economy averages of the given ratio. Perhaps the best all-around standards of comparison for using ratios to determine what happened to a firm during a given period are the values of the same ratios for the firm for a prior period or date (or several prior periods or dates). Such "time-series" of ratios help determine the direction in which the firm is headed and possibly reveal long-term trends of behavior.

As useful as financial ratios may be, there are problems with the traditional ratio approach. Most importantly, too few analysts, especially beginners, can do anything with it. If the analyst does not have a proven approach to tie the ratios together and to the underlying plans or activities of the business, they are of very little value. For instance, a current ratio that is lower than some standard of comparison can be equally indicative of *either* liquidity problems or efficient utilization of current assets or astute utilization of sources of credit. For example, suppose a firm has a choice between a revolving line of credit related to its eligible accounts receivable (a current liability) and a term loan (a long-term liability) of the same initial maximum. The former may never have to be paid off (or even reduced if eligible accounts receivable do not decline), but the latter will have to be paid off over a specified period, making regular demands on available funds. Yet, if the firm chooses the revolving line of credit, it will have a smaller (and by traditional standards less desirable) current ratio.

Therefore, there is a need for guidelines about how to tell the "story" of the firm's plans or activities from (with) its financial statements, and to address in that story of the relevant questions at issue in the analysis. In this context ratios and industry comparisons may fit in but do not, themselves, tell the story.

The EBV (Evaluating Business Ventures) approach was developed by a banker to solve this problem for other bankers. However, it is easily adapted to the needs of auditors and managers as well. The approach was later refined and a book was written for bankers by W. Keith Henderson (the banker-developer), Robert G. May and Lawrence D. Schall, entitled, *Evaluating Business Ventures* (copyright © 1982 United States National Bank of Oregon). The remainder of this paper presents an approach to analytical review based on the EBV approach but thoroughly adapted to an auditor's perspective. This adaptation is called *Analytical Review Techniques for Auditors* or ARTA.

CONCEPTS UNDERLYING THE ARTA APPROACH

The ARTA approach provides cohesion to an analysis of financial statements by supplying the following elements that are missing from the literature on traditional ratio analysis:

1. A mechanical and conceptual framework that facilitates an analysis aimed at understanding the client's business;
2. A complete conceptual framework for examining potential financial distress; and
3. A logical step-by-step sequence to guide the analysis.

The Mechanical Framework

The mechanical framework is merely a way of viewing the financial statements that facilitates understanding the business and its activities through the statements. ARTA makes full use of the income and funds flow statements, but it uses the classified balance sheet as illustrated in Exhibit 2 as the primary focus of financial analysis. There are several advantages to using the classified balance sheet as a basis for financial statement analysis. First, current assets and current liabilities generally are managed differently from long-lived assets, long-term debt and owners' equity and, in general, are directly affected by short-run changes in volume of activity, i.e., by short-run operating decisions. The classified balance sheet, therefore, is useful in focusing on functional causes and explanations of changes in the composition of financial position over time -- with changes in working capital items being much more a function of operations, and changes in long-lived assets, long-term debt and owners' equity more functionally related to investment and financing decisions.

Second, the dual definition of working capital noted in Exhibit 2 helps interrelate (a) the effects of operations on changes in current assets and operations-related current liabilities with (b) the implications of such changes for long-term financial and investment activities of the firm. For example, if an increase in volume of operations implies an increase in current assets, either current liabilities must increase by an equal amount or working capital must increase. For most firms, that is, firms with more current assets than current liabilities, an increase in current liabilities equal to the increase in current assets represents a greater percentage increase in current liabilities. This means that current liabilities will be utilized to a greater extent relative to the terms offered by current creditors, possibly at a higher relative cost. For example, the firm might achieve the more-than-proportionate increase by reducing the proportion of discounts taken on accounts payable. An increase in working capital, in turn, implies that the difference between (a) long -- term debt and owners' equity and (b) the investment in long-lived assets must increase by a sufficient amount to finance the net increase in investment in current assets. (Note: failing to anticipate such implications is how many firms manage to grow themselves out of business).

Conceptual Framework for Analysis

Accountants, especially accounting students, are accustomed to viewing financial statements through

the medium of the accounting or bookkeeping cycle as illustrated in Exhibit 3. From this perspective, the balance sheet (financial position) of the firm as of a given date is a function of (1) its balance sheet as of some prior date, and (2) the transaction entries, adjusting entries and closing entries made in the intervening period. To understand a business, however, it is necessary to adopt a different perspective -- one that recognizes that the structure of a firm's financial position and changes therein are a function of its marketing, production, administrative, investment and financial plans and activities. The relationships implied by this perspective are the keys to developing a real ability to *decipher* what happened to a firm from its financial statements and to *derive* what is going to happen to a firm as a result of its plans. These relationships are illustrated in Exhibits 4-7.

The reader should study the relationships shown in Exhibit 4, representing the influence of marketing plans or activities on components of financial position and income. The relationships (arrows) show that, for example, not only does the price-volume decision of a firm affect sales revenue, but the use of credit granting for sales promotion purposes will also have an effect on interest income and, along with price and volume, will influence the level of accounts receivable. They also illustrate that marketing considerations can affect investment in finished goods inventory (prevention of lost sales) as well as marketing facilities and equipment -- and even investments in affiliated companies (for example, to achieve vertical integration in order to gain access to channels of distribution). As with all other business activities, the volume of marketing activities will determine the volume of purchased goods and services to support those activities. Together with the terms of credit from suppliers, the volume of purchases will determine the level of current liabilities owed to suppliers.

Exhibit 5 similarly shows the relationship between production, administration, and investment activities and the various income and financial position components they influence. Investment activities involve acquisition and retirement of facilities and other assets of all types, with emphasis on optimizing the rate of return on investments in assets for the risks taken. Investment activities, therefore, obviously influence the levels of assets, especially long-lived assets.

Production involves conversion of raw materials into finished goods and thus influences balance sheet and income statement accounts such as inventory, cost of goods sold and production facilities, which reflect acquisition, conversion, and storage of goods for sale. Production, administration and investment activities account for the acquisition of much of the goods and services used by a firm. Therefore, given the terms of credit, these activities are responsible for the bulk of the current liabilities owed to suppliers at any point in time.

Exhibit 6 shows the influences of financing activities which involve optimizing the sources, terms, and timing of acquisitions of capital, returns to capital, and repayments of capital. Financing activities affect all liabilities and owners' equity items, some assets, such as marketable securities, and interest income and expense.

Exhibit 7 shows the influence of the residual elements of income, namely, income tax expense and net income after taxes, on the financial position of the firm.

Conceptual Framework for Financial Distress

Financial distress is a subtle concept. It exists in many variations and to varying degrees. Therefore, it is easier to define what it is not than what it is. Very simply, a firm that is able to pay all its obligations in due course and generate returns that make its owners happy is not in financial distress. Firms that cannot pay their obligations or cannot earn satisfactory returns in the long run are in financial distress to some degree.

Ultimately most cases of financial distress are related to real or apparent lack of profitability. The exceptions are cases of ineptness in financial management and, perhaps, localized inefficiencies in the capital markets. If the capital markets are reasonably efficient and, if a firm is demonstrably able to earn a competitive rate of return on the assets it employs for the risks taken, then it will be able to attract and

retain sufficient funds to finance those assets. On the other hand, if the firm cannot generate a competitive return, the owners, whose returns will definitely reflect the shortfall, at a minimum will be dissatisfied and will wish to disinvest in the firm. This is a form of financial distress in that it threatens the life of the firm. In the extreme, a firm that is unprofitable consumes more funds than are generated by its operations -- a situation which can not persist. Eventually, if the owners do not force a halt to operations, the creditors' interests will be jeopardized and they will begin proceedings which eventually may lead to bankruptcy or reorganization.

Therefore, a substantial part of any overall analysis of financial statements should be an analysis of relative profitability and trends therein. But, while lack of profitability is the ultimate cause of financial distress in most cases, it is difficult to judge profitability from financial statements. Accounting income, for instance, is not identical with so called economic income. In addition, during times of significant inflation or deflation, accounting income probably diverges more and more from economic income. Finally, no one knows for certain what a "competitive" level of profit is. A firm is competitive if it earns as much as any firm could with the same assets employed, considering the risk taken.

These limitations notwithstanding, trends in accounting income are probably significantly correlated with trends in economic income at the individual firm level. Also, within relatively homogeneous industries significant departures from the norm in accounting measures of profitability are probably indicative of a like departure from the norm in economic profitability.

Whereas, lack of profitability is, in the long run, the root of virtually all financial distress, in the short run it is the more immediate net flow of funds that determines whether the firm has moved closer to or farther from the "brink." Thus an examination of the sources and uses of funds for the period is an integral part of an analysis of financial statements. Broadly speaking, a firm that generates more funds than it consumes, is in a better position at the end of the period to meet its obligations and fulfill its plans than it was at the beginning of the period. However, this generalization is subject to a number of qualifications. For instance, net funds generated must be invested efficiently or eventually the firm will not earn competitive profits. Also, this period's sources of funds generally become uses of funds in the future; that is, all sources of funds other than liquidations of assets eventually require some form of servicing. For example, long-term creditors require repayment of principal as well as interest and owners may require dividends or other distributions to keep them happy. The point is that sources of funds may improve the current position of the firm; but if there is no foreseeable way that the firm can satisfactorily service those sources in the future, they merely represent postponement of the inevitable. This ties back to the point that profitability is the key to long-run financial health, and profitability depends on earning a competitive return on all assets employed by the firm. Thus, the short-run flow of funds should be interpreted in the context of profitability, efficient utilization of assets, and ability to service obligations.

Another important part of a conceptual framework for evaluating potential for financial distress is the concept of "reserve funds." A firm has reserve funds if, after planned investments are fully funded, the firm still has either (1) assets that can be liquidated that are not essential to sustain planned operations (e.g., marketable securities), (2) unused creditor commitments, and/or (3) untapped, but identifiable, sources of additional debt or equity capital. Reserve funds represent a "margin of protection" against short-run demands on the firm's funds, in excess of what is generated by its operations or other planned sources.

The first category of reserve funds noted above needs no elaboration. The second category of reserve funds consists of such sources of ready credit as (a) the difference between the firm's accounts payable balance at a given date and what it would be if no discounts had been taken, and (b) the difference between the limit of the firm's revolving line of credit and the actual amount utilized at a given date. The third category of reserve funds is, of course, the most tenuous of all the categories. Firms that experience significant, unexpected demands for funds are not necessarily in good positions to go into the capital market and attract new sources of borrowed or equity funds. Once again, this takes us back

to profitability. Firms with demonstrable, long-run, competitive profit prospects may have little difficulty; but for firms whose profit prospects are dim or very uncertain, seemingly temporary, unexpected demands for funds can precipitate the end of the firm's economic existence.

The final concept in a framework for analyzing potential financial distress is the criterion for recognizing distress when it clearly already exists. A firm clearly is in financial distress if (a) some or all of its obligations are past due, and (b) it has no reserve funds, as defined above, or it has insufficient reserve funds to cover the past-due portion of its obligations.

In summary, to be sensitive to a firm's potential for financial distress, analytical review procedures should include (1) an evaluation of relative profitability and trends therein, (2) an examination of sources and uses of funds, (3) consideration of the efficiency of utilization of net funds generated, and (4) determination of the state of servicing of obligations (the relationship between the manner in which they are being serviced and the creditors' terms), along with an assessment of the reserve funds position of the firm. These steps are included in the ARTA sequence of analysis outlined in the next section.

THE ARTA APPROACH

The ARTA approach to analytical review consists of three stages: first, the mechanics of producing relevant statistics on which to base the analysis; next, an analysis of what happened to the firm during the period under study and its comparative condition at the end of the period; and, finally, an evaluation of the audit implications of unusual or unexpected changes in (or levels of) account balances. This section outlines these stages and the next section illustrates their application to a hypothetical company.

Mechanics

Earlier, it was noted that financial ratios, by themselves, are not very informative about a firm's performance or financial condition. Nevertheless, the financial ratios and other statistics are the basic data on which a financial analyst draws. The steps outlined below represent a reasonably complete, but minimal, set of such statistics on which to base an ARTA-type analysis. However, nothing about the ARTA approach is intended to be restrictive or to discourage the reader from generating other statistics or measurements perceived to be relevant to analyses of businesses, in general, or, especially, an analysis of a particular business. But it is recommended that the following financial statistics be produced as a foundation for further analysis of the financial statement information of any industrial company, large or small:

1. Generate statistics on revenues, expenses, income and relative profitability such as (but not limited to):
Comparative income statement components as percentages of revenues
Growth (decline) percentages in income statement components
Comparative rates of return on, for example, assets and owners' equity
2. Generate statistics on long-lived assets, long-term debt and owners' equity such as:
The sources and uses of funds and the increase or decrease in working capital (hint: the simplest way to prepare a statement of sources and uses of funds is with a block diagram of changes in the classified balance sheet, as illustrated in Exhibit 8)
Unusual changes in long-lived assets, long-term debt and owners' equity accounts relative to prior balances and the client's plans for the period
Timing of payments on long-term debt in relation to terms of credit or indenture agreements Restrictive debt covenants, if any
3. Generate statistics on current assets such as:
Changes and percentage changes in individual current asset accounts Balances in relationship to related income statement accounts (e.g., turn-day ratios, such as the

number of days average sales in the accounts receivable balance)

4. Generate statistics on current liabilities such as:
 - Changes and percentage changes in individual current liability accounts
 - Balances in relationship to related income statement accounts (e.g., turn-day ratios)
 - Balances in relationship to line of credit limits and percentages of collateral, if applicable

Tell the Story Conveyed by the Financial Statements

To be able to tell a cogent story about a firm's performance and its financial condition from its financial statements is no trivial matter. First, it is necessary to examine the various vital statistics calculated in the previous stage and pick out what is truly significant. Second, it is necessary to write a concise narration that captures all of the essentials and is totally uncluttered with nonessentials. This takes discipline, but the guidelines below should help even beginners to do a reasonably creditable job (provided they take seriously the writing limitations included in the guidelines).

1. Analyze the profit picture for the current period compared to the past period(s) and plans for the current period, noting the significant components contributing to any change in income or profitability. Describe your findings in two or three sentences.
2. Analyze the significant sources and uses of funds, noting any items of an unusual or unexpected nature or size, and note the net change in working capital. Describe your findings in two or three sentences.
3. Note the changes in current assets and what they imply with respect to efficient utilization of such assets. Describe your findings in two or three sentences.
4. Note: (a) what the change in working capital and the change in current assets implied for the change in utilization of current liabilities; (b) the distribution of the change among the current liability accounts; (c) the apparent manner in which debts were serviced during the period and whether current liabilities are within terms at the end of the period; and (d) the "reserve funds" position of the client as of the end of the review period. Describe your findings in three or four sentences.

Evaluate the Implications for Audit Planning

The same set of statistics that provide a basis for telling the story of the firm's overall performance and financial condition serve as starting points in deriving audit implications from the firm's financial statements. In this stage the auditor should again start with the elements of the income statement, but should focus his/her attention on the related balance sheet accounts, as well. For example, the evaluation of sales should lead directly to a consideration of all the other accounts related to the sales transaction cycle, such as accounts receivable, sales returns and allowances and discounts. The analysis should include the following steps:

Isolate unusual or unexpected items relative to (1) prior periods, (2) plans, and/or (3) industry averages, using a "materiality" criterion as well as raw differences and percentage changes

Explain unusual or unexpected items in terms of:

Possible business explanations,

Possible implicit change(s) in accounting principles or method(s) of application, and/or

Possible types of errors and irregularities that could explain them

Follow the above steps for accounts that are dependent on other accounts as their valuation bases such as the allowance for doubtful accounts which is dependent on accounts receivable for its proper valuation.

Follow the above steps for independent accounts such as marketable securities

Consider the audit implications of the analysis, make follow-up inquiries and make recommendations for subsequent audit procedures (as to both those that should be emphasized and those that should be deemphasized or eliminated)

CASE ILLUSTRATION

In this section the ARTA approach is illustrated using a simplified case. The case is simplified in three respects: (a) the firm illustrated is a small, relatively simple business; (b) plans and industry averages of ratios are not given, thus restricting comparative analysis to time-series comparisons; and (c) as with most case scenarios true follow-up is not possible. While these restrictions are significant they are necessary to prevent the illustration from being overly arduous and difficult for beginners to follow.

Haynes Distributing Company

Haynes Distributing Company is a franchised wholesale distributor of consumer durables in a population center of 650,000 people. The company competes with other distributors, each of which is franchised by manufacturers of different brand names. You are a new member of the audit team on the 19x5 Haynes audit. The firm you work for has audited Haynes for three years. However, this year several new staff members have been added to the audit team, and a discussion with the firm's officers indicates that it has experienced significant growth in volume and profits under the new controller. The in-charge auditor therefore wants you to do a thorough preliminary study of the client's nine-month comparative financial statements. The comparative financial statements are shown in Exhibits 9 and 10.

Through inquiries of the client's personnel, depositories, creditors, etc., you have learned the following, in addition to the information contained in the financial statements:

1. There was no increase or decrease in inventory during the first nine months of 19x4.
2. Property, plant, and equipment dispositions had book values of \$40,000 and \$20,000, net of accumulated depreciation, for the first nine months of 19x5 and 19x4, respectively, and no gains or losses were realized on dispositions (taken as a whole) in either period.
3. Dividends totaling \$9,200 were paid in the first nine months of 19x4. Total assets at 12/31/x3 amounted to \$210,000.
4. The bank loan is a revolving line of credit, secured by accounts receivable. The agreement with the bank limits the loan balance to 100% of eligible accounts receivable, which consist of all accounts that are within terms (\$62,000 as of 9/30/19x5 and \$43,000 as of 9/30/19x4). The bank was satisfied that the line of credit was properly secured at 9/30/x4 and 12/31/x4. The same bank is the lender for the revolving line and the term loan. The line-of-credit agreement requires a current ratio of at least 1.25:1.0. The term loan re-quires that the debt to equity ratio not exceed 6:4 and restricts dividends to retained earnings in excess of \$40,000.
5. All purchases and sales are made on account with terms of 1%, 10 days; net, 30 days for both.
6. Total interest expense, included in "administrative expenses," was \$20,000 and \$35,000, respectively, for the nine months ended 9/30/x4 and 9/30/x5.
7. During the nine months ended 9/30/x5 the company capitalized expenditures previously considered to be routine maintenance expenses because the new controller, upon review of policies, concluded that all such expenditures in some way add to property, plant, and equipment. These expenditures, which amounted to \$10,000, were treated as before for tax purposes (i.e. as current expenses). \$200 in depreciation expenses applied to the capitalized amount during the first nine months

of 19x5. This change represents the only timing difference between the company's financial accounting and tax methods. Heretofore, there have been no timing differences and, therefore, no deferred taxes.

8. The business is basically non-seasonal and the increase in volume during 19x5 took place from the start of the year as a result of increased advertising by the firm and its suppliers and a more reasonable credit granting policy for new customers.
9. During the remainder of 19x5: (a) the firm will take delivery of \$30,000 in additions to plant and equipment requiring immediate payment, (b) the firm must pay a \$10,000 semi-annual installment on the long-term liabilities (bank term loan), and (c) the firm expects the rate of sales to grow another 20% and quarterly net income to be \$20,000 after taxes. If the firm's line of credit is fully utilized, the controller feels that it must maintain an average daily cash balance of \$10,000 to avoid frequent cash shortages.

Haynes' Financial Statistics

1. Statistics on revenues, expenses, income and relative profitability:

(a) Income statement components as percentages of revenues for Haynes' nine-month comparative statements and (b) growth percentages in income statement components between the two statements are presented in Exhibit 11 Comparative rates of return on assets and owners' equity: Return on Beginning Owners' Equity

19x5: $\$43,740 / \$151,500 = 28.9\%$

19x4: $\$27,540 / (\$140,000 - \$27,540 + \$9,200) = 22.6\%$

(Note: alternatively, return on equity may be calculated on the average of beginning and ending equity, giving rates of 21.1% for 19x4 and 29.9% for 19x5.) Return

(pretax income plus interest expense) on Beginning Assets

19x5: $(\$72,940 + \$35,000) / \$225,000 = 48.0\%$

19x4: $(\$51,000 + \$20,000) / \$210,000 = 33.8\%$

(Note: alternatively, return on assets may be calculated on the average of beginning and ending assets, giving rates of 32.6% for 19x4 and 41.5% for 19x5.)

2. Statistics on long-lived assets, long-term debt and owners' equity:

The sources and uses of funds and the decrease in working capital are identified in the block diagram in Exhibit 12, showing the changes in Haynes' classified balance sheet from 12/31/19x4 to 9/30/19x5. These data are also presented in the Statement of Changes in Financial Position in Exhibit 13. Percentage changes in long-lived assets, long-term debt and owners' equity accounts between 12/31/x4 and 9/30/x5 are shown in Exhibit 14. The noteworthy items are the 100% increase in the term loan and the 20.39% decline in retained earnings. Restrictive debt covenants:

Current ratio must exceed 1.25:1.00 Actual current ratio = 1.27

Debt to equity ratio must not exceed 6:4 (1.5) Actual debt to equity ratio = 1.092

Dividends only to the extent retained earnings exceed \$40,000 (actual = \$41,000)

3. Statistics on current assets:

The percentage increases in Haynes' current assets between 12/31/19x4 and 9/30/19x5 are shown in Exhibit 14; the amounts of the changes are shown in Exhibit 12

Cash balance = \$20,000; minimum requirement = \$10,000

Cash declined by \$10,000 from 12/31/19x4 to 9/30/19x5

Number of Days Sales in Accounts Receivable:

(Note: the number of days in nine months is approximately 274)

19x5: $\$82,222 / \$627,800 \times 274 \text{ days} = 35.9 \text{ days}$

19x4: $\$50,000 / \$502,000 \times 274 \text{ days} = 27.3 \text{ days}$

Number of Days Sales in Inventory:

19x5: $\$43,000 / \$398,000 \times 274 \text{ days} = 29.6 \text{ days}$

19x4: $\$27,000 / \$331,500 \times 274 \text{ days} = 22.3 \text{ days}$

4. Statistics on current liabilities:

Changes and percentage changes in individual current liability accounts are shown in Exhibits 12 and 14, respectively Number of Days Purchases in Accounts Payable:

(Note: purchases are estimated using cost of goods sold and the change in inventory, if any)

19x5: $\$54,000 / (\$398,000 + \$18,000) \times 274 \text{ days} = 35.6$

19x4: $\$30,000 / \$331,500 \times 274 \text{ days} = 24.8$

Percent Utilization of Bank Line of Credit:

9/30/x5 $\$50,000 / \$62,000 = 80.7\%$

9/30/x4 $\$20,000 / \$43,000 = 46.5\%$

Haynes Performance and Financial Conditions

Before reading the capsule statement of Haynes Distributing Company's performance over the first nine months of 19x5 and its condition on 9/30/19x5, the reader should make an independent effort to tell the "story" using the guidelines given earlier and drawing on the above statistical summary.

The "Story"

Sales during the first nine months of 19x5 increased by 25% over the comparable period of 19x4.

Although administrative expenses rose more than proportionately, cost of goods sold, selling expenses and income tax expense rose less than proportionately, causing net income to increase by 59%. The rates of return on average assets and equity increased from 32.6% to 41.5% and from 21.1% to 29.9%, respectively.

Acquisitions of property, plant and equipment, dividend payments and term loan payments required more funds than were provided by dispositions of assets, proceeds of new term loans and operations, causing working capital to decline by \$24,500.

The investment in current assets grew by \$36,000 (33%), with growth in accounts receivable of \$25,000 (51%) and growth in inventory of \$18,000 (72%), partially offset by a \$10,000 (33%) decline in cash. The turnovers of both accounts receivable and inventory have slowed considerably.

The decline in working capital, coupled with the increased investment in current assets, required an increase in utilization of current liabilities of \$60,500 or 113%. The principal sources of the overall increase were accounts payable, which increased by \$26,500 (96%), and the bank line of credit, which increased by \$30,000 (150%).

All restrictive covenants were being met, and all liabilities were within terms as of 9/30/19x5, except accounts payable, which equaled approximately 36 days purchases at average rates. The past-due portion of approximately \$9,000 can be covered by either the \$10,000 excess of the cash balance over the minimum cash requirement, or the \$12,000 in un-used credit under the revolving line. However, these are the firm's only apparent reserve sources of funds. With expenditures on operations exceeding \$60,000 per month and current liabilities exceeding \$100,000, the firm does not appear to be in a good immediate position to withstand unforeseen funding requirements. (Note: this latter conclusion might be moderated by the results of follow-up inquiries of management.)

Audit Implications

Sales, Accounts Receivable and Allowance for Doubtful Accounts Management has indicated that 19x5 sales volume was up (25%) from the very beginning of 19x0 due to increased firm and supplier advertising and a change in credit policy. However, in light of the less-than-proportionate increase in selling expenses, it would appear that supplier advertising and Haynes' softening of credit policy were more significant in explaining the increase in sales.

The softening of the credit policy for new customers is reflected in the significant increase in the number of days sales in accounts receivable, which increased from 27.3 days as of 9/30/x4 to 35.9 days as of 9/30/x5 (this corresponds to 51% increase in accounts receivable on a sales increase of 25%). The slowdown in turnover raises a question as to whether there has also been a change in expected collectability, as well. The allowance for doubtful accounts, on the other hand, is the same percentage of accounts receivable at 9/30/x5 as at 9/30/x4, raising the issue of appropriate valuation.

Therefore, in planning the audit procedures in the sales transaction area and direct tests of the related accounts, special attention should be given to (a) the client's new credit policy for new customers, (b) the client's recent experience in collecting from new customers, (c) the client's aging and write-off policies, (d) the client's projected collectability for each age category, and (e) the client's rate of allowance for doubtful accounts for each age category.

Cost of Goods Sold and Inventory

Although sales for the first nine months of 19x5 increased by 25% over the comparable period of 19x4, cost of goods sold increased by only 20%, declining to 63.4% of sales from 66%. If cost of goods sold had remained 66% of sales, the 19x5 nine-month total would have been \$16,500 greater. This would have reduced before-tax income by a like amount or 23%, which is clearly material.

At the same time, inventory increased by 72% from 12/31/x4 to 9/30/x5, and slowed down in turnover from 22.3 to 29.6 days sales on hand, between 9/30/x4 and 9/30/x5. The significant increase in inventory and the material decline of cost of goods sold as a percent of sales may be related through inventory errors. Therefore, extra attention should be given to (a) observation of the physical count, especially in reviewing and observing the client's methods of detecting obsolescence and damage, (b) inventory costing policy, method of application and accuracy, and (c) procedures for detecting unrecorded purchases (unrecorded liabilities).

Other Expenses and Related Accounts

There was a disproportionate (38.22%) increase in administrative expenses. One readily identifiable cause of this significant increase in expenses is a probable loss of discounts on purchases and an increase in interest costs on other debt. Between 12/31/x4 and 9/30/x5, the client's total liabilities increased by more than 100%. This led to a 75% increase in total interest expense, which is one component of total administrative expenses. When interest expense is backed out of total administrative expenses, the latter increased by only 19% or less than the percentage increase in sales.

At the same time there is at least one source of possible understatement in administrative (and, perhaps, selling) expenses, namely, the change in accounting for maintenance expenditures. Since the effect of the new policy on maintenance expenditures was to reduce current expenses by as much as \$9,800, total administrative expenses may be understated by this amount. If such an amount were added, and interest expenses were disregarded, total administrative expenses would have grown by 44.6% or more than in proportion to sales. Moreover, pretax income would have been 13.4% less, which is very likely material.

Income tax expense declined from 46% to 40% of income before taxes; that is, while pretax income increased by a greater percentage than sales, income tax expense increased in proportion to sales. This suggests an understatement of income tax expense, probably due to the divergence (for the first time)

between the accounting and tax treatment of maintenance expenditures and the apparent failure to allow for deferred taxes thereon.

Therefore, the new policy on treatment of maintenance expenditures should be reviewed thoroughly for propriety. If the new accounting method is appropriate, then income tax expense is understated due to the divergence of accounting and tax methods. Thus, an adjustment will be necessary either to expense a larger amount (perhaps all) of the maintenance expenditures of the year or to recognize the appropriate amount of income tax expense and to set up a deferred taxes account.

APPLICATION OF ARTA TECHNIQUES TO FINANCIAL PLANS

In addition to wanting to derive audit implications from actual (annual or interim) financial statements, auditors have a natural interest in evaluating the client's plans for (a) the duration of the fiscal year under audit and the period subsequent to the audit. In the former case, the interest is in refining the assessment of audit implications and modifying audit plans accordingly. In the latter case, the interest is in projecting the assessment of the probability of financial distress into the future, and getting a feel for how the statements under audit might look in light of expected subsequent events. A corollary benefit to an ARTA evaluation of the client's plans is that the auditor may be able to advise the client of any difficulties he/she sees in the plans, thus offering an extra element of client service to the audit.

To evaluate formal financial plans of a client (meaning plans set forth in a balance sheet and articulating income statement), the same steps should be followed as for actual financial statements. Then, the auditor should consider the following four factors of success:

1. Management's ability to carry out the plans;
2. Consistency of the plans with expected environmental conditions;
3. The operational practicality of the plans; and
4. The adequacy of supporting funds.

Adequacy of supporting funds is a matter of judgment. However, the concept of adequacy of supporting funds can be defined and is important to anyone concerned with financial analysis and/or planning. Supporting funds are adequate when there are sufficient funds to provide for the total investment in assets implied by a firm's plans and also to provide a margin for error in case the plans do not turn out as favorably as expected. A margin for error exists if, after planned investments are fully funded, the firm will still have some significant amount of reserve funds.

An analysis of a firm's plans also should include consideration of questions raised by the plans, e.g., threats to financial well-being, new types of transactions, changes in accounting entity, reorganizations, changes in organization structure or control systems, etc.

Haynes' Plans for the Duration of 19x5

The Haynes case illustrates the slightly more complex process that the auditor must follow before evaluating the less formal plans that are especially characteristic of small clients. Recall Haynes' plans for the duration of 19x5 contained in the supplemental information given earlier. They consisted of minimal details of a sales and profit plan, plus a few expected financing and investment activities. To work with such plans the auditor must fill in the gaps with appropriate assumptions (preferably with the help of the client) and determine the financial consequences of the more complete picture. For this purpose, it is recommended that the auditor fill in a block diagram of the various balance sheet changes implied by the client's informal plans. Basically, this technique involves considering each current and noncurrent asset, liability and equity account and determining what the plans (as stated) imply for that account. (Note if the plans are silent about a particular account or there are no implicit changes to be expected, it may be ignored.) Such a diagram is illustrated in Exhibit 15, based on the plans of Haynes Distributing Company for the duration of 19x5 plus the following assumptions and derived amounts:

a. It is assumed that the cash balance will not be driven down unless the bank line of credit is first fully utilized. (See b below.)

b. It is assumed that accounts receivable, inventory, accounts payable and the bank loan will grow in proportion to sales.

Accounts receivable: $\$82,222 \times .2 = \$16,444$

Allowance for D. A.: $\$-8,222 \times .2 = \$-1,644$

Inventory: $\$43,000 \times .2 = \$8,600$

Accounts payable: $\$54,000 \times .2 = \$10,800$

Bank loan: $\$50,000 \times .2 = \$10,000$

c. The income tax liability is assumed to go up in proportion to profits:

$\$10,000 \times ((\$20,000 / (43,740 / 3)) - 1) = \$3,717$

d. Depreciation for the last three months of 19x5 is assumed to be in proportion to the first nine months:

$\$25,000 / 3 = \$8,333$

After filling in a block diagram such as Exhibit 15, the auditor can readily determine whether the firm's financial plans are feasible and/or efficient, and whether they foretell potential financial distress. The test for financial feasibility or efficiency is an application of the dual definition of working capital mentioned earlier. If the working capital change implied by all the individual changes in current assets and current liabilities is greater than the working capital change implied by all the changes projected for long-lived assets and long-term debt and equity, then the plans are not financially feasible. If, on the other hand, the latter projected change is significantly greater than the former, then the plans contain potential inefficiency, in that projected funds to be generated significantly exceed planned uses. The auditor judges the potential for financial distress exhibited by plans in the same way he/she judges such potential from actual financial statements, namely, by assessing the reserve funds position implied by the plans.

Implications of Haynes' Plans

The lower half of the block diagram in Exhibit 15 shows that the firm's expected sources and uses of funds for the remaining three months of 19x5 is such that working capital will decline by \$11,667. At the same time, if accounts receivable, inventory, accounts payable and the bank loan expand proportionately with sales (and the tax liability with profits), working capital can decline by only \$1,117. This means that either cash must decline toward the minimum, or current liabilities will have to expand to absorb the additional projected decline in working capital of \$10,550. Therefore, more pressure will be placed on current liabilities, probably using a portion of the remaining unused line of credit or causing greater delinquency in accounts payable. Thus, if growth continues, the firm may be headed for a period of financial distress, unless more long-term financing is arranged or the bank or suppliers increase the short-term credit available to the company. If the projected growth in sales is accompanied by a further slowing of collections or deterioration in collectability (which was not assumed above), this could increase the probability of distress, accelerate its occurrence, or both.

SUMMARY

The ARTA approach supplies a systematic way for auditors to (a) generate relevant statistics from a client's financial statements, (b) tell the "Ed story" of the client's performance and financial condition as it should appear to any user of the statements, (c) assess the client's potential for financial distress, (d) determine the implications of financial statement items for planning the audit, and (3) evaluate even the most informal financial plans (to satisfy the same purposes as the evaluation of actual statements).

The techniques are grounded on the use of the income statement, the statement of changes in financial

position, and the classified balance sheet (the principal statements available to other users), and on the concept of "auditing in the context of the business." The ARTA approach also outlines concrete concepts of potential financial distress, including:

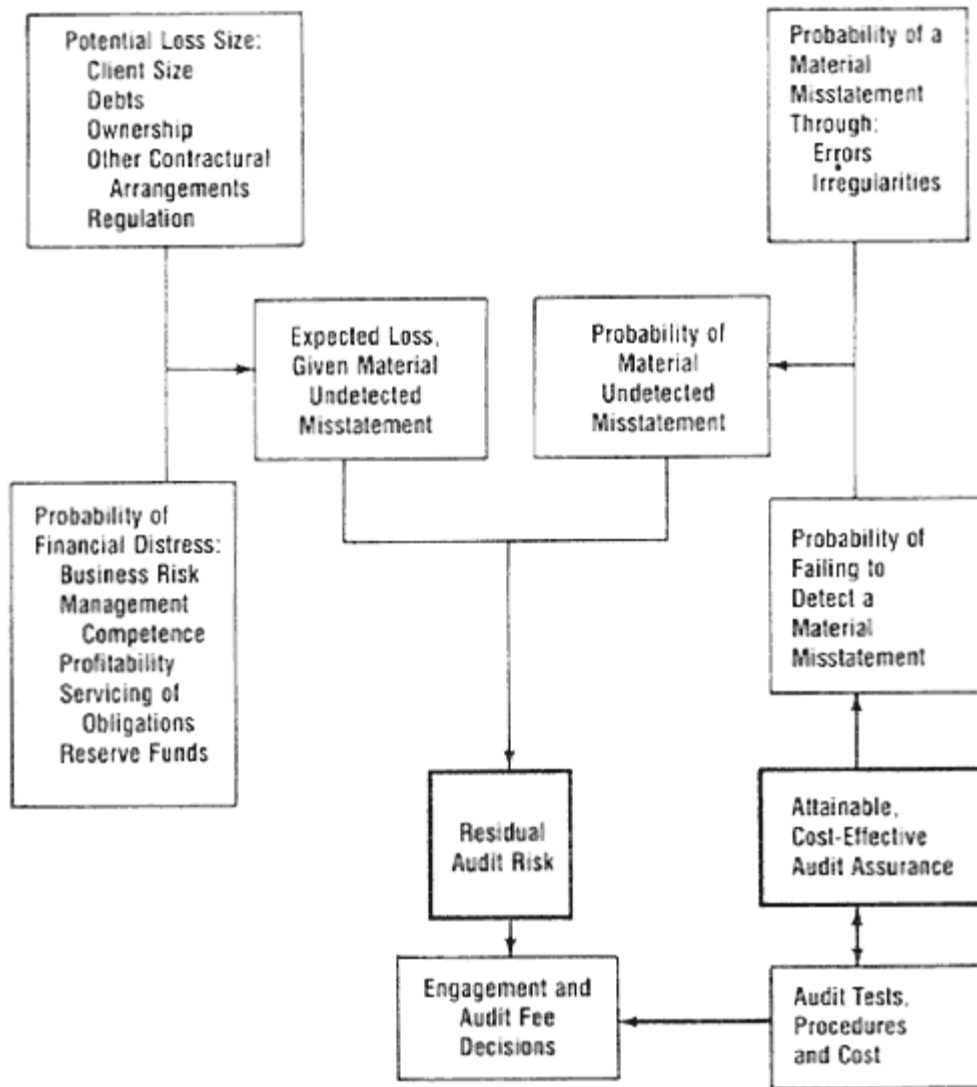
- Relative profitability,
- The flow of funds,
- Servicing of debt, and
- Reserve funds

The ARTA approach provides step-by-step guidelines for each stage of analytical review, including identification of specific audit risks and determining their implications for audit planning. So even a relative beginner can do a creditable job of analyzing a client's financial statements.

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Exhibit 1

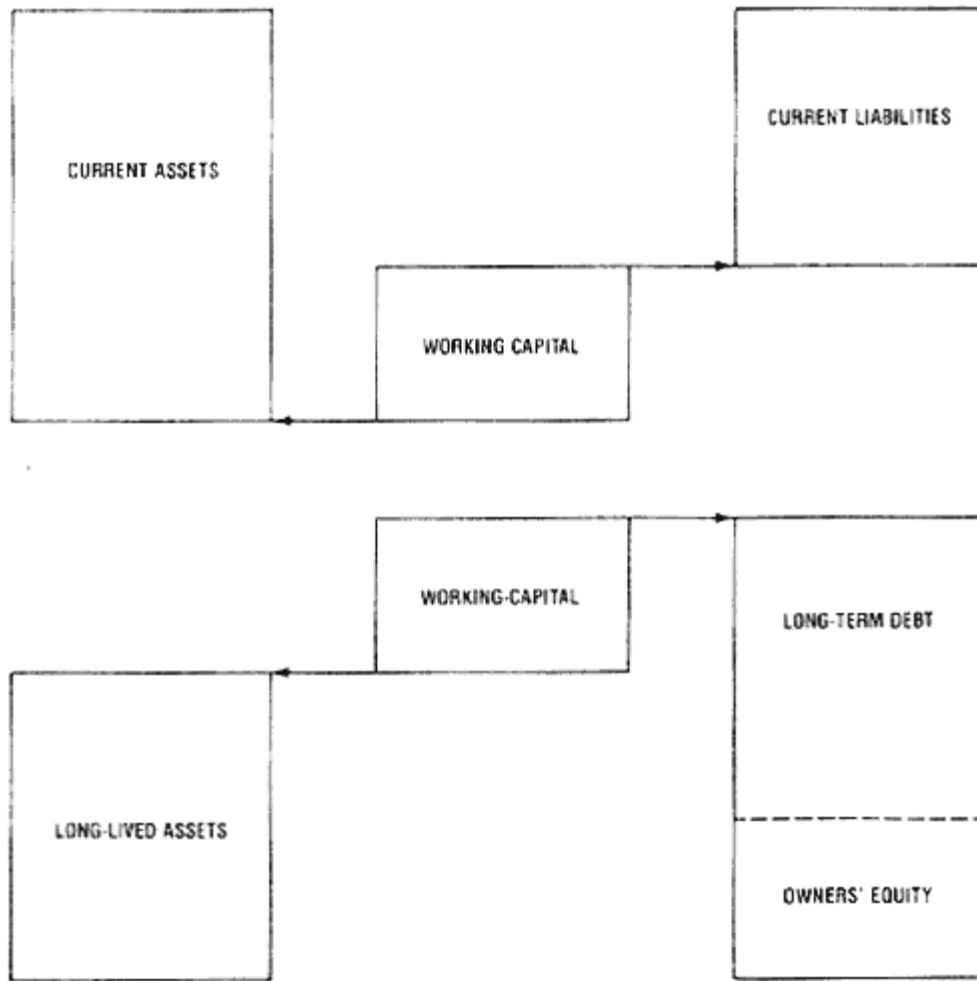
AUDIT RISK, ASSURANCE AND THE ENGAGEMENT DECISION



Source: Robert G. May, Ernst and Whinney Professor of Accounting, University of Texas at Austin.

Exhibit 2

THE CLASSIFIED BALANCE SHEET*



*Source: W. Keith Henderson, Robert G. May and Lawrence D. Schall, EVALUATING BUSINESS VENTURE (Portland: United States National Bank of Oregon, 1982).

Exhibit 3

FINANCIAL STATEMENT RELATIONSHIPS THE ACCOUNTING CYCLE

	ACCOUNTS*					
	Assets	= Liab	+ Owner's Equity			
Cycle Components	Assets	= Liab	+ Pic	+ Re	+ R	- E
Beginning Balances	\$	\$	\$	\$	0	0
Transactions:						
Purchases	+	+				

Payments	-	-				
Sales	+				+	
Out-of-pocket expenses	-	+				-
Contributed capital	+		+			
Liquidations	-		-			
Borrowings	+	+				
Repayments	-	-				
Dividends	-			-		
Adjustments:						
Accrued revenues	+				+	
Accrued expenses	-	+				-
Depreciation expense	-					-
Closing Entry:						
Revenue and expense						
accounts closed to						
retained earnings				+ -	-	+
Ending Balances	\$	\$	\$	\$	0	0

*PIC = paid-in capital; RE retained earnings; R = revenue; and, E = expense.

Exhibit 4

PLANS(ACTIVITIES), PROFITABILITY AND FINANCIAL STRUCTURE

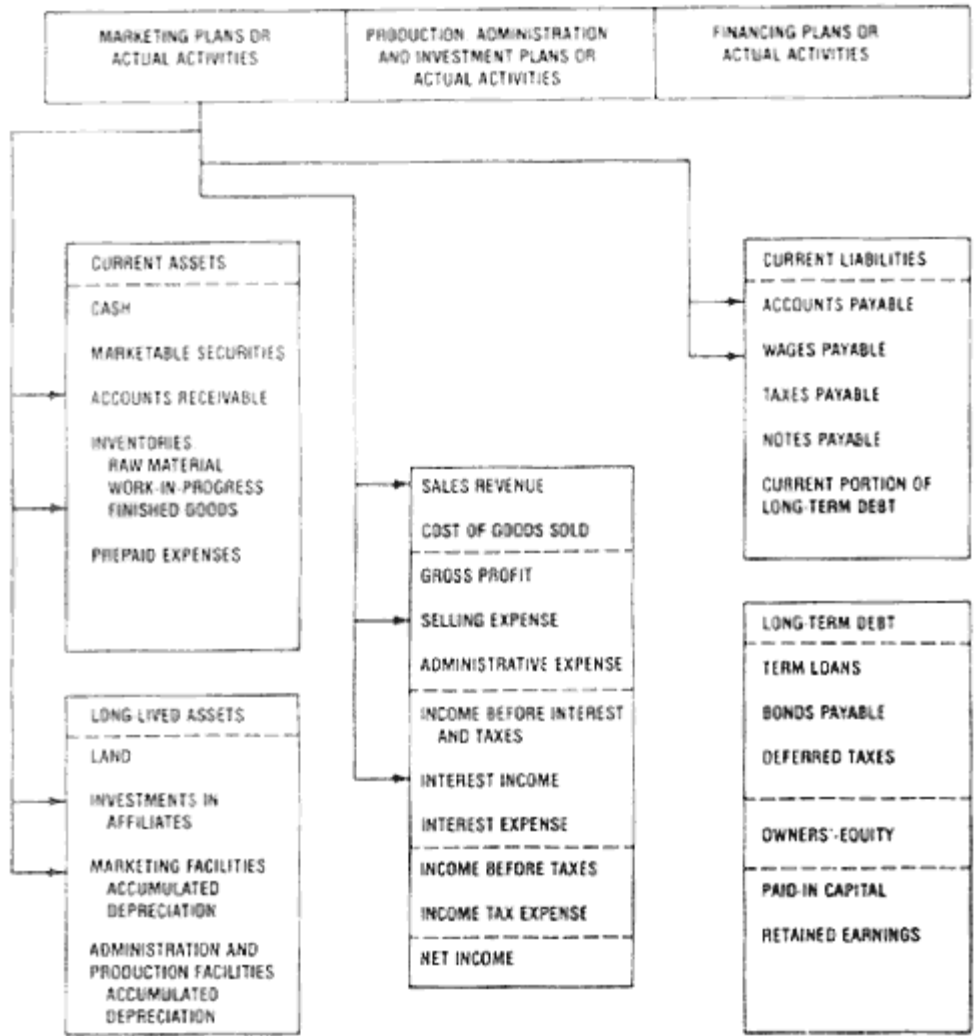


Exhibit 5

**PLANS(ACTIVITIES), PROFITABILITY
AND FINANCIAL STRUCTURE**

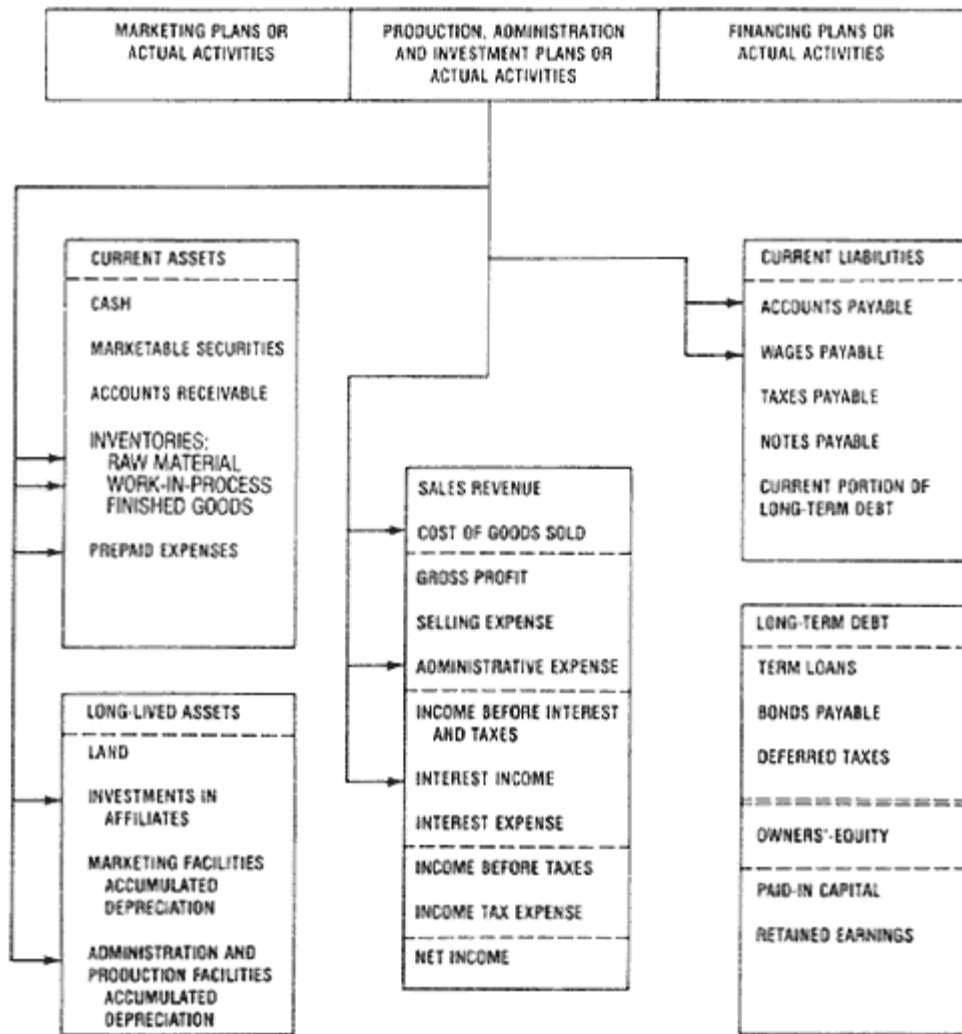


Exhibit 6

**PLANS(ACTIVITIES), PROFITABILITY
AND FINANCIAL STRUCTURE**

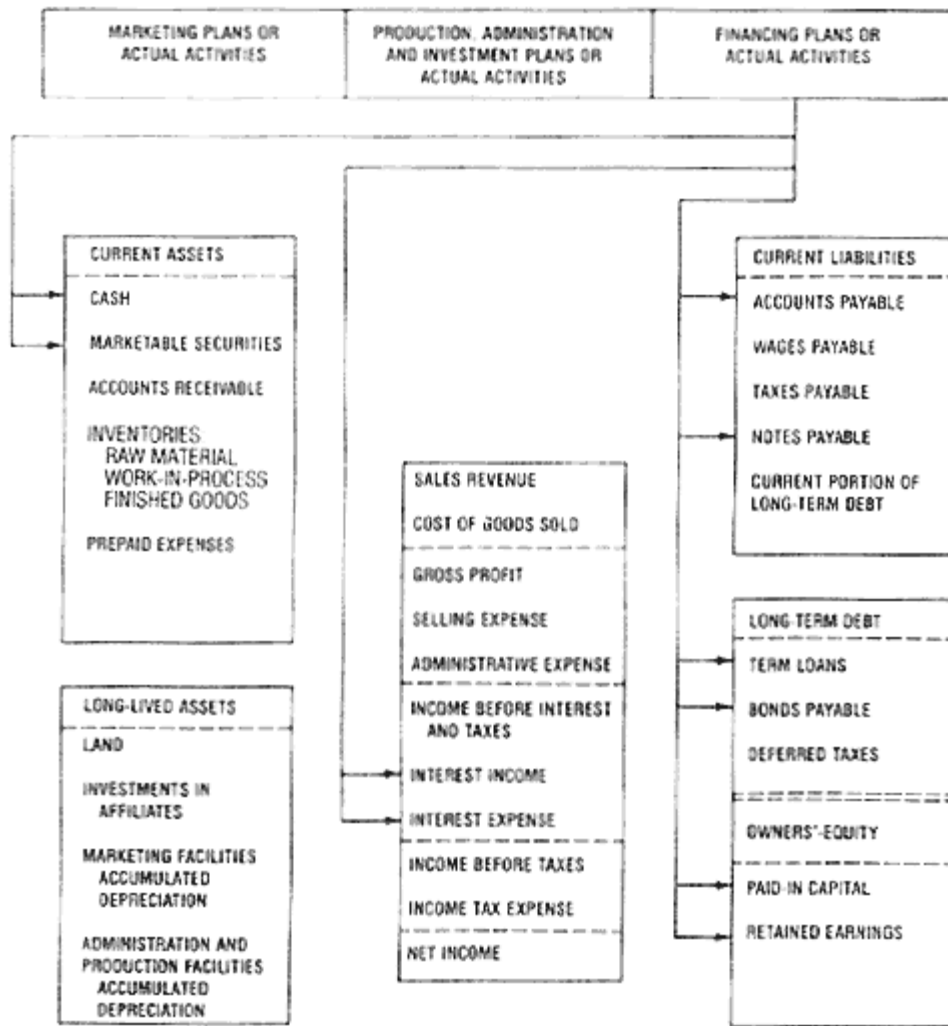


Exhibit 7

**PLANS(ACTIVITIES), PROFITABILITY
AND FINANCIAL STRUCTURE**

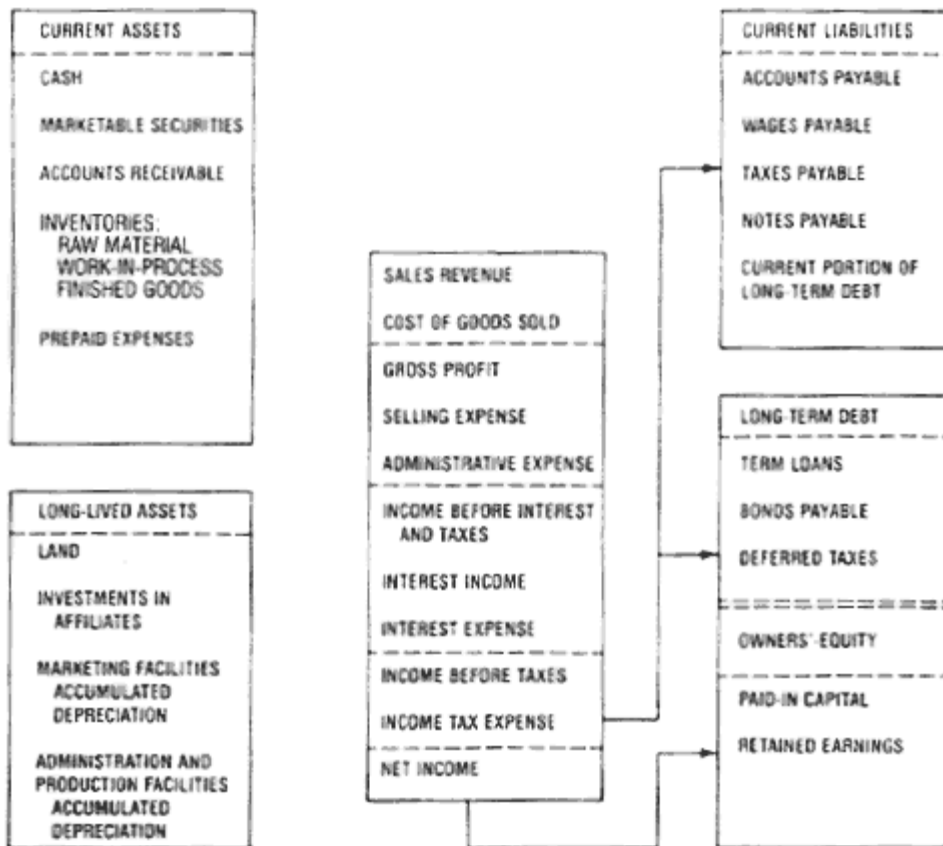
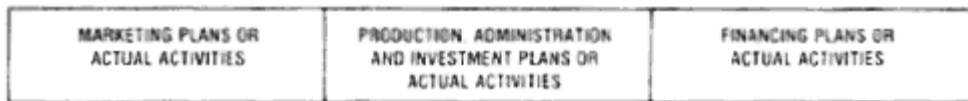


Exhibit 8

**PREPARING A STATEMENT OF CHANGES
IN FINANCIAL POSITION FROM A BLOCK DIAGRAM
OF BALANCE SHEET CHANGES**

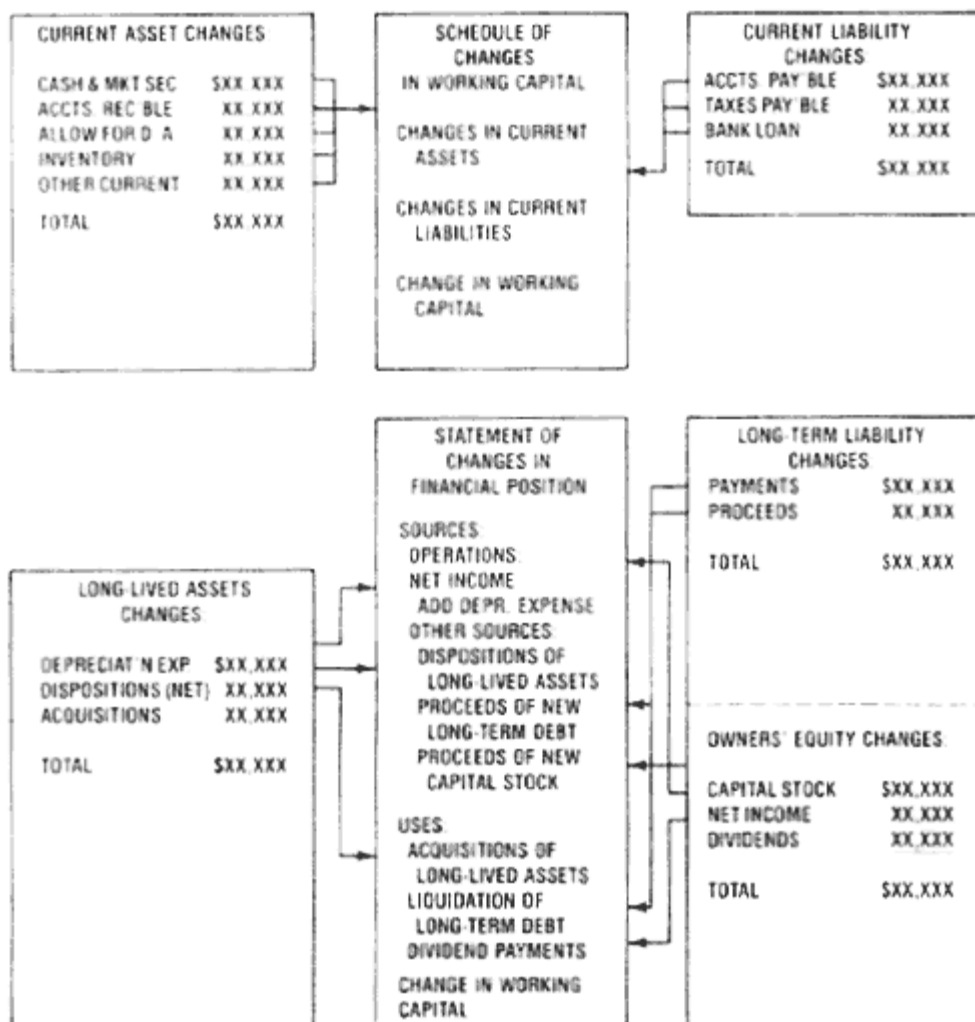


Exhibit 9

HAYNES DISTRIBUTING COMPANY

COMPARATIVE INCOME STATEMENTS FOR THE NINE MONTHS ENDED SEPTEMBER 30, 19x5 and 19x4

	19x4	19x5
Net Sales	\$502,000	\$627,800
Cost of goods sold	331,500	398,000
	<hr/>	<hr/>
Gross margin	\$170,500	\$229,800
Selling expenses*	61,000	76,000
Administrative expenses*	58,500	80,860
	<hr/>	<hr/>
Income before taxes	\$ 51,000	\$ 72,940

Income tax expenses	23,460	29,200
	<hr/>	<hr/>
Net income	\$ 27,540	\$ 43,740

*Total depreciation included in selling and general and administrative expenses was \$25,000 and \$20,000 for the nine months ended 9/30/19x5 and 9/30/19x4, respectively.

Exhibit 10

HAYNES DISTRIBUTING COMPANY COMPARATIVE BALANCE SHEETS

	9/30/x4	12/31/x4	9/30/x5
Assets			
Cash and marketable securities	\$ 25,000	\$ 30,000	\$ 20,000
Accounts receivable	50,000	54,400	82,222
Allowance for doubtful accounts	(5,000)	(5,400)	(8,222)
Inventory	27,000	25,000	43,000
Other current assets	6,000	5,000	8,000
Property, plant, and equipment	200,000	210,000	265,000
Accumulated depreciation	(78,000)	(94,000)	(115,000)
	<hr/>	<hr/>	<hr/>
Total assets	\$225,000	\$225,000	\$295,000
Equities			
Accounts payable	\$ 30,000	\$ 27,500	\$ 54,000
Federal income tax payable	5,000	6,000	10,000
Bank loan	20,000	20,000	50,000
Long-term liabilities	30,000	20,000	40,000
Common stock	100,000	100,000	100,000
Retained earnings	40,000	51,500	41,000
	<hr/>	<hr/>	<hr/>
Total equities	\$225,000	\$225,000	\$295,000

Exhibit 11

HAYNES DISTRIBUTING COMPANY COMPARATIVE INCOME STATEMENTS FOR THE NINE MONTHS ENDED SEPTEMBER 30,19x5 and 19x4

	19x4		19x5	19x4-x5	
19x4	% Sales	19x5	% Sales	% Chnge	
Net Sales	\$502,000	100.00	\$627,800	100.00	25.06
Cost of goods sold	\$331,500	66.04	\$398,000	63.40	20.06
Gross margin	\$170,500	33.96	\$229,800	36.60	34.78
Selling expenses	61,000	12.15	76,000	12.11	24.59
Administration expenses	58,500	11.65	80,860	12.88	38.22
Income before taxes	\$ 51,000	10.16	\$ 72,940	11.62	43.02
Income tax expense	\$ 23,460	4.67	29,200	4.65	24.46
Net income	\$ 27,540	5.49	\$ 43,740	6.97	58.82
Depreciation expense	\$ 20,000	3.98	\$ 25,000	3.98	25.00

Exhibit 12

Haynes Distributing Company

BLOCK DIAGRAM OF BALANCE SHEET CHANGES

12/31/19x4 TO 9/30/19x5

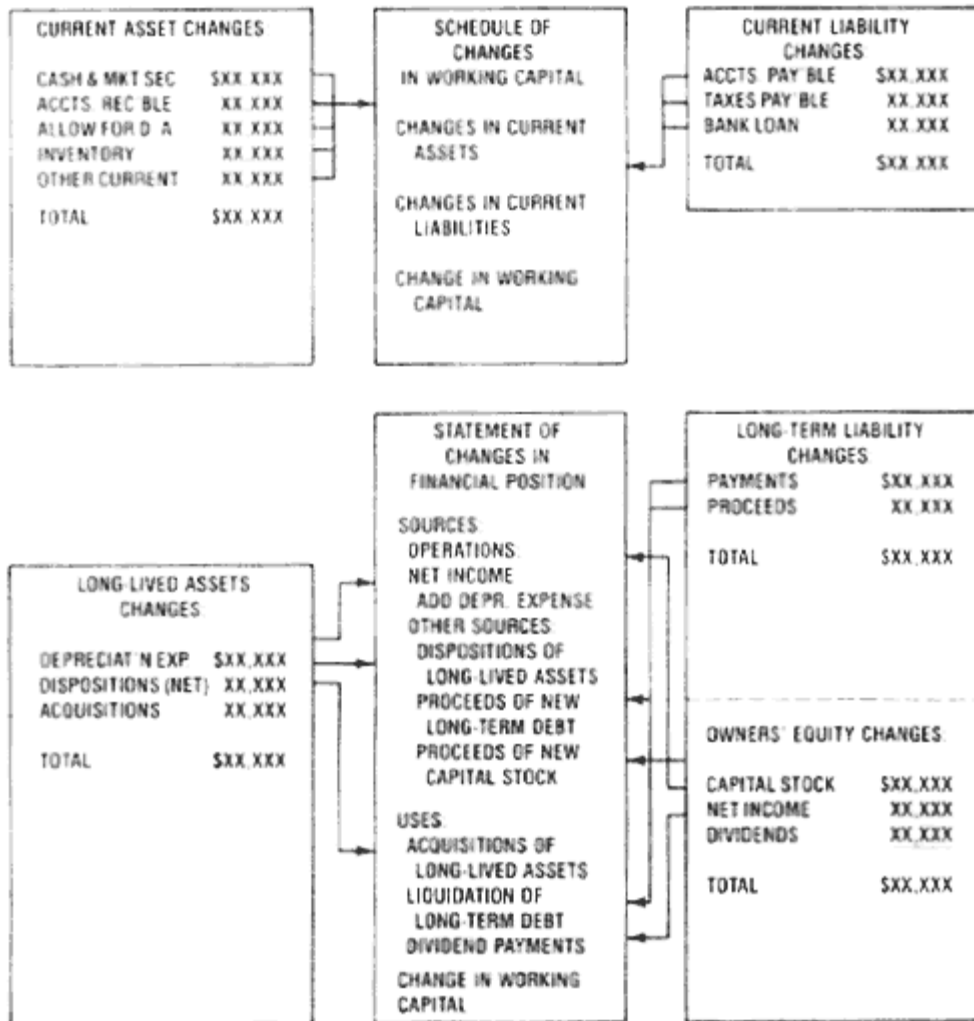


Exhibit 13

HAYNES DISTRIBUTING COMPANY

**STATEMENT OF CHANGES IN FINANCIAL POSITION
FOR THE NINE MONTHS ENDED SEPTEMBER 30, 19x5**

Uses of Working Capital:

Aquisitions of property, plant and equipment	\$99,000
Dividends	54,240
Payments on long-term liabilities	10,000

Total, all uses \$163,240

Sources of Working Capital:

Operations:	
Net income	\$43,740
Add back depreciation expense	25,000

	Total from operations	\$68,740
Dispositions of property, plant and equipment	40,000	
Proceeds of new long-term liabilities	30,000	
	Total, all sources	\$138,740
Decrease in Working Capital		\$24,500

Exhibit 14

HAYNES DISTRIBUTING COMPANY COMPARATIVE BALANCE SHEETS

	12/31/x4	9/30/x5	% Change
Assets			
Cash and marketable securities	\$ 30,000	\$ 20,000	-33.33
Accounts receivable	54,400	82,222	51.14
Allowance for doubtful accounts	(5,400)	(8,222)	51.14
Inventory	25,000	43,000	72.00
Other current assets	5,000	8,000	60.00
Property, plant, and equipment	210,000	265,000	26.19
Accumulated depreciation	(94,000)	(115,000)	22.34
	Total assets	\$225,000	\$295,000
			31.11
Equities			
Accounts payable	\$ 27,500	\$ 54,000	96.36
Federal income tax payable	6,000	10,000	66.67
Bank loan	20,000	50,000	150.00
Long-term liabilities	20,000	40,000	100.00
Common stock	100,000	100,000	0.00
Retained earnings	51,500	41,000	-20.39
	Total equities	\$225,000	\$295,000
			31.11

Exhibit 15

Haynes Distributing Company

BLOCK DIAGRAM OF BALANCE SHEET CHANGES

9/30/19x5 TO 12/31/19x5

