ABEL USER'S MANUAL

Prepared for:

Office of Regulatory Enforcement
Office of Enforcement and Compliance Assurance
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This manual is releasable in its entirety.

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UPDATES and SUPPORT

The most recent model installation files and related materials are available at:

http://www.epa.gov/Compliance/civil/programs/econmodels/index.html

Additional support is available for employees of federal, state or local government environmental agencies via U.S. EPA's enforcement economics toll-free helpline at 888-ECONSPT (326-6778) or benabel@indecon.com.

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A. OVERVIEW

In environmental enforcement cases, the defendant/respondent may claim an inability to pay the penalty or environmental expenditure that the U.S. Environmental Protection Agency (EPA) seeks. With the goal of providing fair and equitable treatment of the regulated community, EPA policy states that the determination of penalty amounts should consider the violators' ability to pay.[1] EPA policy identifies inability to pay as one circumstance of "compelling public concern" under which enforcement may settle a case for less than the economic benefit of noncompliance.[2] EPA policy further explains that such settlements are allowed if "removal of the economic benefit would result in plant closings, bankruptcy, or other extreme financial burden, and there is an important public interest in allowing the firm to continue in business."[3] Nevertheless, if a violator either refuses to comply, has a long history of previous similar violation, or has committed egregious violations, EPA reserves the right to seek penalties that might adversely impact a business.[4]

The ABEL model is a screening tool that assists EPA in assessing a corporation's or partnership's ability to afford a civil penalty, new investments in pollution control equipment, non-Superfund environmental cleanup costs, and Superfund cleanup costs. This manual collectively refers to all of these items as "environmental expenditures." ABEL evaluates a firm's claim

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[1] U.S. EPA, *Policy on Civil Penalties*, February 16, 1984, codified as PT. 1-1 in the General Enforcement Policy Compendium (previously codified as GM-21).

[2] U.S. EPA, *A Framework for Statue-Specific Approaches to Penalty Assessments*, February 16, 1984, Codified as PT. 1-2 in the General Enforcement Policy Compendium (previously codified as GM-22), pp.12-13.

[3] *Ibid.*

[4] U.S. EPA, *Guidance on Determining a Violator's Ability to Pay a Civil Penalty*, December 16, 1986, Codified as PT. 2-1 in the General Enforcement Policy Compendium (previously codified as GM-56).

regarding its ability to pay for such expenditures.[5] Given the firm's incentives to avoid large penalties and investments, many firms will initially claim inability to pay regardless of their financial health.[6]

ABEL is a sophisticated screening tool and, as such, is designed principally for negotiations. The ABEL model is generally not intended for use at a trial or in an administrative hearing. If the Agency will present ability to pay testimony in these settings, it should rely on an expert to provide an independent financial analysis. This independent financial analysis, while consistent with the principles of the ABEL model, may not necessarily be identical to ABEL's methodology.[7]

The ABEL model is part of an ongoing EPA effort to evaluate the financial health of entities involved in enforcement proceedings. In addition to ABEL, the Individual Ability to Pay Model, INDIPAY, evaluates the financial condition of individuals held liable for environmental expenditures (e.g., sole proprietorships, partners). The Municipal Ability to Pay Model, MUNIPAY, evaluates the financial condition of municipalities, including cities, towns, villages, counties, regional authorities, and other local governmental jurisdictions that are liable for environmental expenditures. ABEL may also serve as an adjunct to other enforcement computer programs, such as the BEN Model. BEN calculates the economic benefit a violator derives from delaying and/or avoiding compliance with environmental statutes. As with any of these models, however, the results ABEL provides must be interpreted in a manner consistent with the assumptions within the model. The purpose of this manual is not only to help you operate the program, but also to help you understand the program's assumptions.

The type of analysis ABEL performs is often generically referred to as an "ability to pay" analysis because the program is analyzing a firm's ability to pay for environmental expenditures. When interpreting the results of the ABEL analysis, you must understand what ability to pay means, as no strict definition exists in an economic or financial sense. A firm's ability to finance environmental expenditures depends on the level of financial distress one is willing to impose on the firm. For instance, a very simple measure of a firm's ability to pay might be how much cash or liquid assets (such as certificates of deposit) the firm has immediately available. Other more stringent measures might require the firm to rely on its future earnings to finance an environmental expenditure. Examples of future earnings that could be used to fund these expenditures include

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[5] The burden of proof in ability to pay matters can be a complex legal issue. Government users can obtain advice on this issue by contacting Jonathan Libber, the BEN/ABEL coordinator, at 202-564-6102 or libber.jonathan@epa.gov.

[6] For the purposes of this manual any corporation or partnership that is a defendant in an EPA administrative or judicial enforcement action is referred to simply as a "firm."

[7] For assistance with the selection of an expert on ability to pay and financial analysis, EPA staff should contact Jonathan Libber, the BEN/ABEL coordinator, at 202-564-6102 or libber.jonathan@epa.gov.

internally generated cash flows, loans on unlevered assets, the sale of assets, and the sale of stock.[8] Finally, for cases involving unincorporated businesses, the Agency or a court may look at the personal assets of the owners in determining their ability to meet a penalty assessment.[9]

You should keep in mind three issues when using ABEL to assess a firm's ability to pay: (1) ABEL tends to be conservative in predicting ability to pay; (2) the ABEL analysis primarily focuses on a firm's cash flow; and, (3) ABEL does not consider the quality of the entered data. Consequently, if ABEL determines that a firm can afford to pay, and nothing indicates that the firm's financial status has changed since the time period covered by the last tax return, then Agency personnel do not need to look any further at the issue in settling the case.[10] If the case goes to trial or hearing, the Agency will need to involve an expert financial analyst.[11]

If the model yields an indeterminate answer or determines an inability to pay, however, the user should conduct additional financial analyses before reducing a civil penalty, as even firms with poor cash flow often have sufficient resources to pay for environmental expenditures. These analyses typically involve reviewing additional financial information on the firm including, but not limited to, the firm's financial statements (including balance sheet, income statement, statement of cash flows, and notes), Dun & Bradstreet Reports, and other publically available information. It may also involve analyzing sections of the firm's tax forms not utilized by ABEL and/or a closer evaluation of the firm's assets and liabilities to ensure that the data recorded on the firm's tax returns adequately reflect the firm's current financial condition.

After providing summary financial statements and analyzing some basic financial ratios that reflect firm liquidity and solvency, ABEL assesses a firm's ability to pay by focusing on projected cash flows. The model explicitly calculates the value of projected, internally generated, cash flows from historical tax information, and compares these cash flows to the proposed environmental

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[8] Internally generated cash flow reflects the income that a firm has generated from ongoing operations, less all cash expenses, including taxes.

[9] For incorporated firms, liability is limited to the value of shareholders' equity.

[10] If the firm establishes that its status has changed, then an analysis beyond the limited ABEL evaluation is needed. This could happen if: 1) the market outlook for the firm's products has changed considerably; 2) the firm incurred a major loss since the time period covered by the most recent tax return; or, 3) the firm faces a major extraordinary expense in the near future (e.g., a balloon payment on a loan).

[11] If the ability to pay issue will be raised at a trial or hearing, the Agency should be prepared to explain where the funds to pay for compliance, cleanup, or penalties are going to come from. You may need to use an expert to accomplish this. Agency personnel are strongly advised against using the ABEL model in a trial or hearing, as it is biased in favor of the firm (it only handles the cash flow part of the analysis) and a trier of fact may not fully comprehend the complex analysis that ABEL performs. A typically more effective strategy for trial or hearing is to identify specific sources of funds that are potentially available to pay for the environmental expenditures.

expenditure(s). ABEL assumes that the near future will resemble the immediate past. That is, the model projects future cash flows by assuming that the firm will continue to perform financially as it has over the recent past. ABEL's measure of ability to pay is more stringent than measures of cash or liquid assets on hand, but less stringent than the legal liability of the firm's owners.

One crucial, but often overlooked, policy matter is that the Agency will not automatically reduce a penalty even when a violator proves conclusively that it cannot afford to pay. The Agency will not reduce the civil penalty for inability to pay in the following situations:

- the violator refuses to comply with pollution control requirements;
- the violator cannot afford to comply with pollution control requirements; or,
- the violator's conduct was egregious (e.g., willful violations, or violations that might have or actually endangered lives).[12]

B. HOW TO USE THIS MANUAL

This manual provides instructions for using the ABEL Model. These instructions illustrate the model with a hypothetical example and demonstrate a typical model run.

Chapter 2 provides an overview of how to use the model, along with installation instructions. Chapter 3 covers data entry. Chapter 4 describes the model's results and output. Appendix A explains the model's calculations in more detail. Appendix B contains a primer on reading and interpreting a firm's financial statements.

Help information is available in the program if you need a variable definition, guidance on information sources, or help with the format required for an input entry. To access help, click the "Help" button located at the base of each screen or press the F1 key. If you need assistance in operating the program or understanding the results, contact EPA's enforcement economics toll-free helpline at 888-ECONSPT (326-6778) or benabel@indecon.com. For policy questions related to Superfund, contact Bob Kenney, Office of Site Remediation Enforcement, Policy and Program Evaluation Division, at 202-564-5127 or kenney.robert@epa.gov. For policy questions related to other statutes, contact Jonathan Libber, the BEN/ABEL Coordinator, at 202-564-6102, or libber.jonathan@epa.gov.

[12] See footnote 4, *supra*.

ABEL is an interactive computer program that runs in the Windows™ operating environment. This chapter contains five sections. Section A describes the computer program's structure. Section B explains the procedures for installing the program on your computer. Section C provides data format requirements and additional helpful hints for entering data at your computer. Section D tells you how to calculate and print results. Section E explains how to exit the program and save files. For an in-depth description of each variable, see Chapter 3. For information on interpreting ABEL's results, see Chapter 4.

A. COMPUTER PROGRAM STRUCTURE

ABEL consists of five different screens: main screen/case creation, tax return data input, financial profile output, ability-to-pay run input, and ability-to-pay run results/output. In general, you start with the main screen, enter data on separate screens, return to the main screen, then view (and print) your output from a final screen. ABEL operates like EPA's BEN, PROJECT, INDIPAY, and MUNIPAY models and any standard Windows™ application. Use the mouse or the Tab and Return keys to move between cells and within a screen. Hold down the Shift key while pressing Tab to return to previous entries. You can access the help system from anywhere within the model by pressing the F1 key, just as in any Windows application.

When you first open ABEL a blank case screen appears. You can obtain a new screen at any time by selecting "New" from the File menu, or using the Ctrl+N shortcut. To toggle between cases, select the appropriate file name under the "Window" menu. You can also save a case in any folder you specify, with the ".abl" extension.

The first inputs on the case screen are office/agency and analyst name. These values are for reference only and do not affect the results. On the left side of the screen, ABEL asks for the firm's name, address, city, state, and zip code. The section for tax return information near the center of the screen asks for the number of years and most recent year of tax data available, the tax form used, and the data entry format that the user would like to use (i.e., dollars, thousands, or millions).

Below these inputs are buttons for entering tax return data and generating the firm's financial profile. The tax return data input screen allows the user to enter financial data for each year in a spreadsheet-type format. You must obtain the three to five most recent years of the firm's federal income tax returns, which must be signed and dated. To prevent the submission of fraudulent tax returns, you can obtain a summary of the firm's tax returns from the IRS via Form 8821.[13]

The financial profile uses the tax return data to generate a pro forma financial statement (i.e., balance sheet, income statement, and cash flow statement), as well as an analysis of five key financial ratios that provide a general indication of the firm's current financial condition.

The right side of the case screen is for ability-to-pay run management. Here you can create a new run, enter or edit run data, copy a run, remove a run, and calculate a run. You can create multiple runs for each case.

The run screen is where you enter the environmental expenditures for which the firm is liable. You must enter all the expenditure data before you can run an affordability analysis. From the run screen you can go to the options screen, which allows you to modify ABEL's standard values for the run parameters. You will never need to use this screen unless you want to customize the default settings.

The output screen displays the results of ABEL's calculation, which estimates the probability that the firm can pay for these costs out of internally generated cash flows. Here you have three options. You can print out a summary of the calculation, save the results as an html file, or return to the run screen.

B. INSTALLATION

ABEL requires a personal computer running the Windows operating system (Windows 95 or higher). In addition, for optimal formatting of various data entry screens, set your display in the control panel to the "small fonts" option. ("Small fonts" is the Windows default, so unless your display settings have been altered, your computer should be set appropriately.)

To install the model, go to:
http://www.epa.gov/Compliance/civil/programs/econmodels/index.html

Screens with instructions will guide you through each step of the process. Note that you have the option to install all the models or only a subset. Also, once you have run the installation, you can run it again at a future point to modify your setup.

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[13] Copies of Form 8821 are available at www.irs.gov: first, complete the form (indicating which tax return years are needed); next have the firm's representative sign the form and return it to you; then, mail the form to the IRS within 60 days of the firm's signature.

After installing the model, you may wish to create a subdirectory for storage of all your case files. Alternatively, you may also choose to save your case files in any pre-existing directories corresponding to different cases or projects.

C. DATA ENTRY

Like other Windows™-based programs ABEL uses the mouse or the Enter and Tab keys to move from entry to entry or from screen to screen. Hold down the Shift key while pressing Tab to return to previous entries. Each screen has several options and spaces for input.

ABEL will accept several entry formats. Numerical values can include but do not require commas. Monetary values should be entered as whole numbers; they should not contain decimals. They may be entered with or without dollar signs. Negative dollar amounts should be entered with a minus sign before the amount, rather than parentheses around the amount; e.g., "-45600" rather than "(45600)." Rates or percentages should be entered as a decimal number without a percent symbol (e.g., enter 0.25 to represent 25 percent). If you type "25" for a percentage rate, ABEL will read it as a rate of 2500 percent.

ABEL converts all dates to a "1-Jan-2000" format, but can understand almost any sensible format. If you enter an atypical date format, be sure to check that ABEL has interpreted it as you intended.

Be careful to use only number keys to enter numerical values. A frequent mistake is typing the lowercase letter **L** instead of a number **1**. Another error occurs when the letter **O** is typed instead of the number **0** (zero).

ABEL will tell you if the format for an entry is incorrect. If this happens, correct the number and enter it again. Some inputs are limited to a range of values. If an entered value falls out of this range, ABEL will display an error message with the allowable range of values. Other error messages will appear if you did not enter data in a required field.

After typing your entry you might discover that you have typed an incorrect letter or number. Typing errors are easy to correct: simply return to the relevant value and type over the mistake.

Like all computer programs, ABEL follows the GIGO protocol: "Garbage In, Garbage Out." Verifying your data inputs is therefore extremely important. You may do so by examining them on the screen as well as comparing the written input summary with the firm's tax forms. Most people find that they can perform a better audit by checking the written summary than they can by checking the input window on the computer screen. For that reason, the model includes a data summary in its printout. To generate this summary, select the **[Print]** button located at the bottom of the "Tax Return Data" screen, and then click the **[Summary]** button at the lower left hand corner of the resulting data summary screen.

D. CALCULATING AND PRINTING RESULTS

To generate a firm's financial profile, click the button for this, located on the lower- middle part of the main screen.

To perform an affordability analysis, select the desired run title from the list on the main screen and press **[Calculate]**. If you have entered data for only one run, you will have only one run to choose.

On the calculate screen, you can view the summary, or also choose to print the firm's financial profile as well. The **[Summary]** print button will print only the information from the first screen. The **[Detail]** option will print both screens.

For more information on interpreting results see Chapter 4, as well as the detailed calculations in Appendix A, or call EPA's toll-free enforcement economics support helpline at 888-ECONSPT (326-6778).

Although printing is done from the output screen, the printer setup is controlled by the pull-down menu on the main screen. The printer setup allows you to shift between landscape and portrait printing, as well as choose more advanced options.

ABEL also allows you to save the calculation summary or details by using the print-to-file option. To do so, click on the **[File]** button in the lower left hand corner before clicking the appropriate print button. ABEL will ask you to choose a name and folder for the resulting output file. The data is saved in an html file and can be viewed using a web browser (e.g. Netscape Navigator™ or Microsoft Explorer™). To switch back to printer mode after printing to a file, click on the **[Printer]** button in the lower-left corner.

E. EXITING AND SAVING

You exit ABEL just like any other standard Windows application. From the main screen, select Exit under the File pull-down menu at the top left corner of your screen, or click on the **[x]** button at the top right corner of your screen, or double-click on the ABEL icon at the top left corner of your screen. ABEL will ask you if you want to save your work before you exit.

Be sure to save your case(s) before you exit. You save a case by selecting "Save" under the File menu (or give the case a new name by selecting "Save As…"), or using the Ctrl+S shortcut. ABEL cases are automatically saved with the extension ".abl" and can be accessed using the "Open" command under the File menu or the Ctrl+O shortcut. You can save cases in any folder, and switch between different folders at any time. Runs are automatically saved as part of a case.

ABEL evaluates the capability of corporations to pay a specified penalty or environmental cleanup contribution. Depending on the type, corporations will file a Form 1120, 1120 A, or 1120 S federal income tax return. Under some circumstances you may wish to use ABEL to evaluate the ability to pay of a partnership, which files Form 1065. (For more details, see Chapter 4, Section E.)

ABEL accepts data directly from Forms 1120, 1120 A, 1120 S, and 1065. The firm's most recent tax data is necessary to produce a reliable analysis. If the firm re-filed any forms for the years that you are using, you should obtain the most up-to-date version of these forms. In addition, all returns submitted for an ABEL analysis must be signed. One of the key advantages of using tax returns is that the firm has stated, under the penalty of perjury, that the information provided on the tax form is true. Without the signature, you have no guarantee that this information is accurate. If the firm no longer has signed copies, the firm can obtain these from the IRS. Alternatively, you may obtain a summary of a firm's tax returns directly from the IRS if you obtain the firm's permission via Form 8821.[14] EPA advises enforcement personnel to ask the firm to submit a Form 8821 even if you receive signed returns due to the marked increase in the submission of fraudulent tax returns. The analyst can use the tax returns provided by the firm to assess its preliminary ability to pay a Superfund contribution or environmental penalty. However, the analyst should confirm the accuracy of the returns submitted by the firm against the returns that the IRS provides.

To evaluate a firm's financial condition using ABEL, you must understand its relationship to other business entities. For instance, a firm may be the subsidiary of a large parent corporation, or may be one of several closely related "sister" firms. While the firm may be filing its own tax returns, it is easy for another entity to make the firm look artificially poor by manipulating the firm's finances. In these situations, Agency personnel should insist on seeing tax returns and other relevant financial reports from all related firms.

[14] Copies of Form 8821 are available at www.irs.gov: first, complete the form (indicating which tax return years are needed); next have the firm's representative sign the form and return it to you; then, mail the form to the IRS within 60 days of the firm's signature.

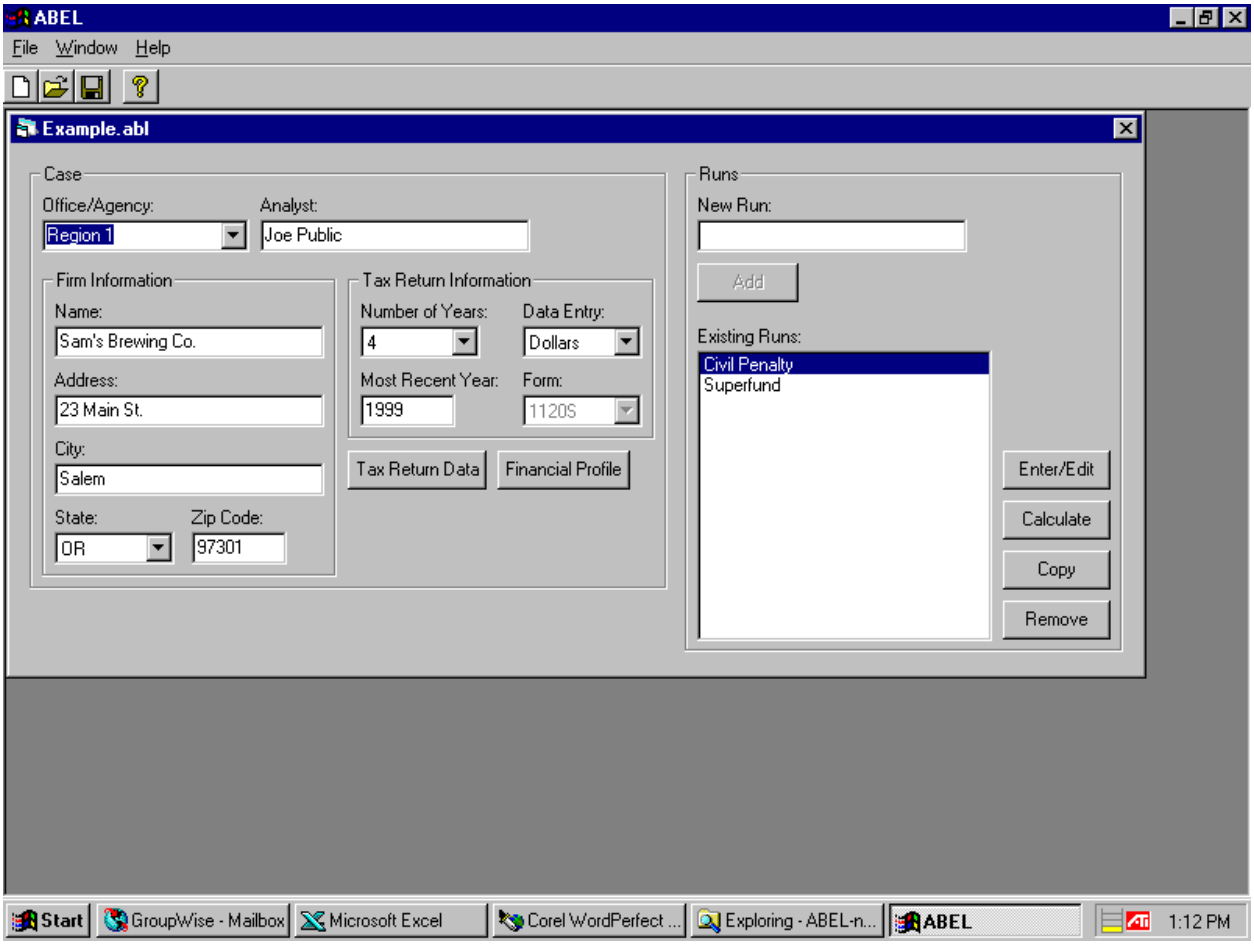
This chapter provides a screen-by-screen explanation of the model with screens from a hypothetical case accompanying the discussion. Section A describes the main case screen. Section B discusses the entry screen for the firm's tax return data, and explains how to generate the financial profile. Sections C and D describes the procedures for creating an ABEL ability-to-pay run. The next chapter explains how to interpret ABEL's analysis.

A. CASE SCREEN

Upon opening the ABEL Model, the main case screen will appear, as shown on the following page. On the left-hand side of the screen, you first enter the office/agency and analyst name: these are for reference purposes only and do not affect the calculations. They can be any length with letters, spaces, punctuation, and numbers (although they may not be left blank). Office/agency also provides a pull-down menu for all ten EPA regions, EPA headquarters, and "other."

The next entries are the firm's name and mailing address. Except for the state (which ABEL uses to determine the appropriate marginal tax rate), these entries are for reference purposes only and do not effect the ability-to-pay calculations.

You must also enter certain information describing the tax return data: number of years and most recent year (for tax returns the firm submitted), data entry (the units in which you will enter data, i.e., dollars, thousands of dollars, or millions), and tax form (i.e., 1120, 1120A, 1120S, 1065). If you revisit a case after a year has passed and new tax returns have become available, you can increase the value for number of years and update the value for most recent year.


ABEL
File Window Help
Example.abl
Case
Office/Agency:
Region 1
Analyst:
Joe Public
Firm Information
Name:
Sam's Brewing Co.
Address:
23 Main St.
City:
Salem
State:
OR
Zip Code:
97301
Tax Return Information
Number of Years:
4
Data Entry:
Dollars
Most Recent Year:
1999
Form:
1120S
Tax Return Data
Financial Profile
Runs
New Run:
Add
Existing Runs:
Civil Penalty
Superfund
Enter/Edit
Calculate
Copy
Remove
Start
GroupWise - Mailbox
Microsoft Excel
Corel WordPerfect ...
Exploring - ABEL-n...
ABEL
1:12 PM

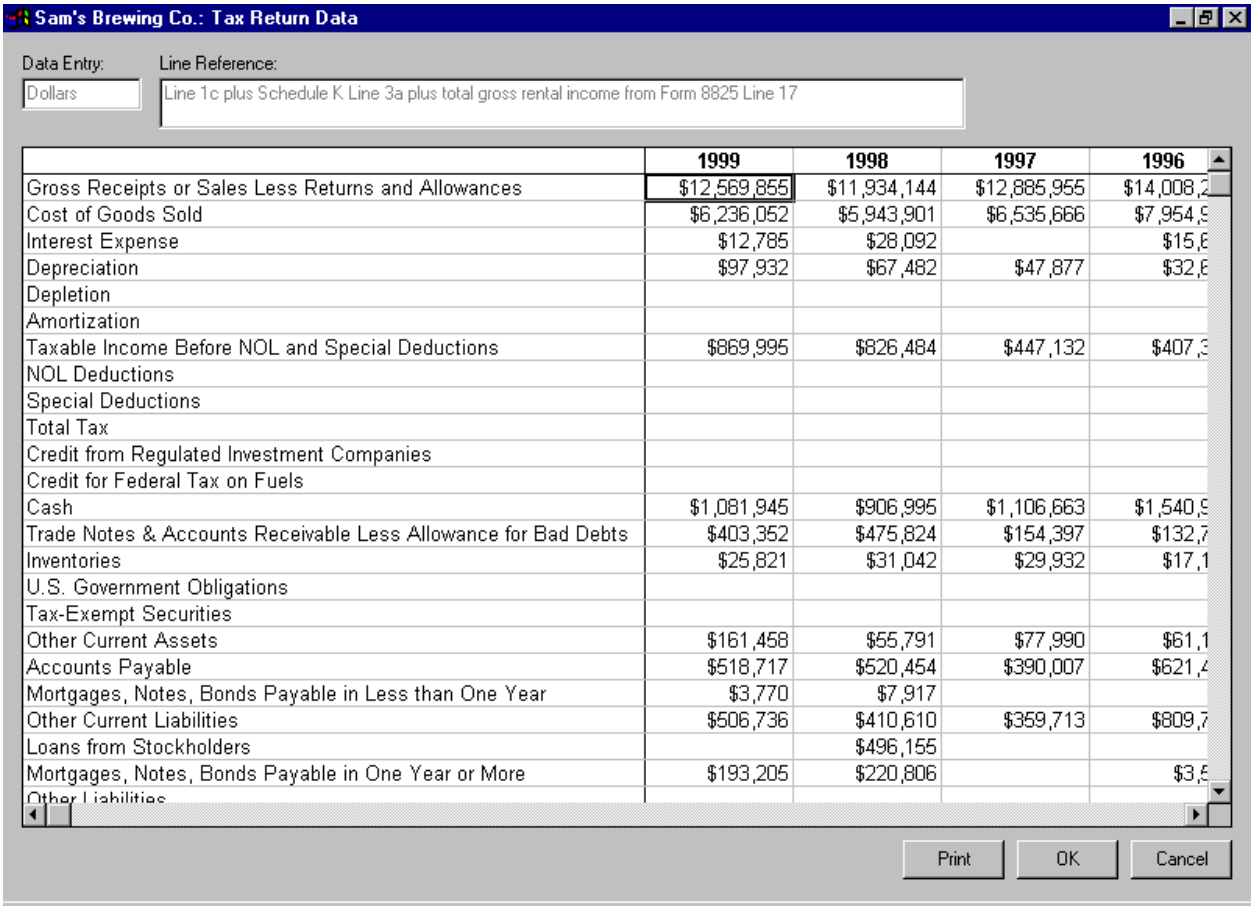
B. TAX RETURN DATA

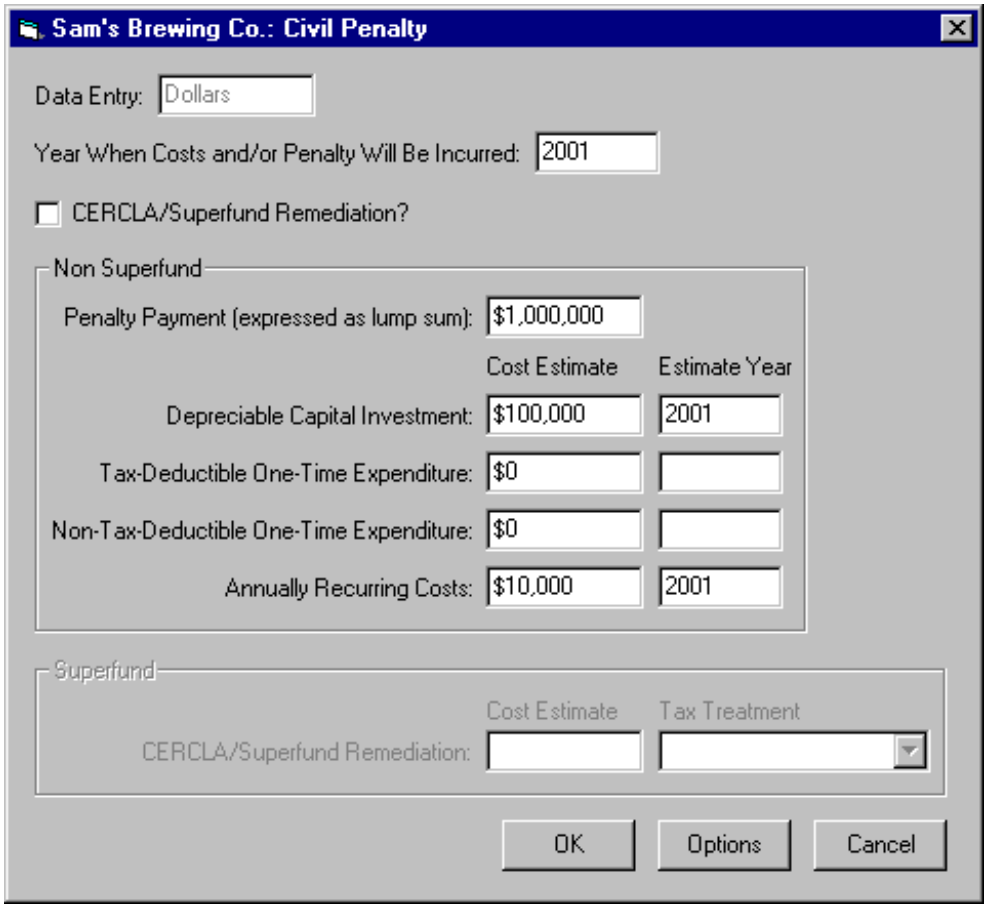
Clicking the **[Tax Return Data]** button on the case screen takes you to the input screen shown on the following page. The grid-like format allows you to enter all tax inputs for all years on a single screen. Remember to enter data in the units you specified on the case screen: the box at the top left of the screen reminds you whether to use dollars, thousands of dollars, or millions of dollars. If the firm's tax return is blank for a particular item, then leave that item blank in ABEL.

The input labels in the left-most column stay the same regardless of the tax form and year. However, the line reference window at the top of the screen is customized for each item, year, and tax form. For C corporations (i.e., tax form 1120 and 1120 A) the line references are very straightforward. For S corporations (i.e., tax form 1120 S) and partnerships (i.e., tax form 1065), the line references are more complicated, and may involve combining together several figures from the tax return: for such items, ABEL allows you to enter a mathematical expression. Certain items might not be applicable to S corporations and partnerships: leave those items blank in ABEL.

If you would like to enter the data on paper prior to running ABEL, you can print up the necessary forms (complete with line references) by selecting this option under the File menu on the case screen.

Once you have finished entering the tax return data, then you can generate the financial statements and a ratio analysis by clicking the **[Financial Profile]** button on the screen. Chapter 4 and Appendix B describe the financial profile in more detail.


Sam's Brewing Co.: Tax Return Data
Data Entry:
Dollars
Line Reference:
Line 1c plus Schedule K Line 3a plus total gross rental income from Form 8825 Line 17
1999 1998 1997 1996
Gross Receipts or Sales Less Returns and Allowances $12,569,855 $11,934,144 $12,885,955 $14,008,2
Cost of Goods Sold $6,236,052 $5,943,901 $6,535,666 $7,954,9
Interest Expense $12,785 $28,092 $15,8
Depreciation $97,932 $67,482 $47,877 $32,8
Depletion
Amortization
Taxable Income Before NOL and Special Deductions $869,995 $826,484 $447,132 $407,3
NOL Deductions
Special Deductions
Total Tax
Credit from Regulated Investment Companies
Credit for Federal Tax on Fuels
Cash $1,081,945 $906,995 $1,106,663 $1,540,9
Trade Notes & Accounts Receivable Less Allowance for Bad Debts $403,352 $475,824 $154,397 $132,7
Inventories $25,821 $31,042 $29,932 $17,1
U.S. Government Obligations
Tax-Exempt Securities
Other Current Assets $161,458 $55,791 $77,990 $61,1
Accounts Payable $518,717 $520,454 $390,007 $621,4
Mortgages, Notes, Bonds Payable in Less than One Year $3,770 $7,917
Other Current Liabilities $506,736 $410,610 $359,713 $809,7
Loans from Stockholders $496,155
Mortgages, Notes, Bonds Payable in One Year or More $193,205 $220,806 $3,5
Print
OK
Cancel


Sam's Brewing Co.: Civil Penalty
Data Entry:
Dollars
Year When Costs and/or Penalty Will Be Incurred:
2001
CERCLA/Superfund Remediation?
Non Superfund
Penalty Payment (expressed as lump sum):
$1,000,000
Cost Estimate
Estimate Year
Depreciable Capital Investment:
$100,000
2001
Tax-Deductible One-Time Expenditure:
$0
Non-Tax-Deductible One-Time Expenditure:
$0
Annually Recurring Costs:
$10,000
2001
Superfund
Cost Estimate
Tax Treatment
CERCLA/Superfund Remediation:
OK
Options
Cancel

C. RUN INPUTS

You must create a run before you can perform an ability to pay analysis. To add a new run, enter the run name under "New Run:" and press **[Add]**. ABEL will save the new run and list it under "Existing Runs." Run names can be any length and include any letter, punctuation, or number. Each case may contain multiple runs.

To copy an existing run, select the run you wish to copy from the list of existing runs and press **[Copy]**. A window will appear asking you to enter a name for the new run. No two runs can have the same name. Enter the new name and press **[OK]** to save the new run or **[Cancel]** to delete it. The copy will contain all of the information from the original. Copies are particularly useful when making only minor changes in cost information from run to run, because they can carry over consistent data.

To remove a run select it from the existing run window and press **[Remove]**. A window will appear asking you if you are sure: press **[Yes]** to confirm the deletion. Remember that ABEL does not have a "trash bin" to hold deleted runs, so you will have no way to retrieve a run once you have removed it.

To access the run input screen, as shown on the preceding page, select a run and press **[Enter/Edit],** or simply double click on the run name. The first box reminds you of the data entry format you specified on the case screen, i.e., dollars, thousands of dollars, or millions of dollars. You must then specify the year when the environmental expenditures will be incurred. (If the firm will pay the penalty in multiple installments, enter the year in which the firm will make its first payment.) The inputs for the environmental expenditures are split into two sections: NonSuperfund, and Superfund. ABEL's default is NonSuperfund, but you can override this by clicking in the box the left of "CERCLA/Superfund Remediation?" Once you have finished with this screen, you can either click **[OK]** to save your data or click **[Options]** to view/edit the optional run inputs.

1. NonSuperfund Cases

For cases other than Superfund, first enter the proposed lump-sum settlement penalty (if any). Then enter any of the following pollution control expenditures that may apply to the case, or $0 for expenditure types that are not present. For amounts other than $0, you must also enter an estimate year, which will typically be either the year when the estimate was made or when the expenditures will be incurred.

Depreciable Capital Investment should include pollution control equipment that wears out over a number of years, e.g., groundwater monitoring system, air pollution control device. The cost figure should include the purchase cost of the equipment as well as the installation costs, but exclude any associated nondepreciable costs (e.g., land).

Tax-Deductible One-Time Expenditure should include costs that are not depreciable yet still deductible from taxable income, e.g., site cleanup, record keeping system, or one-time employee training program.

Non-Tax-Deductible One-Time Expenditure should include costs that are not depreciable and also not deductible from taxable income, e.g., land purchase.

Annually Recurring Costs are typically for operating and maintaining the required pollution control equipment or for monitoring a site. The figure should reflect the average annual incremental costs associated with monitoring and/or maintaining the required environmental equipment, including any cost changes in labor, power, water, raw materials, supplies, annual employee training, insurance premiums, lease payments, and annual property taxes. Be sure to exclude any annualized capital recovery, interest payments, or depreciation. The annually recurring costs can be partially or even wholly offset (i.e., a negative entry) by operation and maintenance savings that arise from heat or product/byproduct recovery, e.g., a reduction in sludge disposal costs.

2. Superfund Cases

For Superfund cases, ABEL requires only a cost estimate and its tax treatment, but the determination of these inputs can be more difficult than for the run inputs in other types of cases, as the following sections explain.[15]

a. Cleanup Cost Estimate

The cleanup cost estimate should include all Superfund site costs the firm will incur, or has incurred, after the end of the most recent year for which you have entered tax return data. Do not, for example, enter cleanup costs incurred in 1999 if you have tax returns for 1999, as the 1999 data that you have already entered will reflect those costs.

ABEL will calculate a company's total capability based on recent historical financial information. It does not automatically account for a firm's total Superfund liabilities (existing or contingent) that may exist beyond the site under consideration. If you are involved with a firm that may have additional Superfund liabilities, you should investigate whether these potential obligations might affect the financial resources available to the firm.

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[15] For a detailed discussion on Superfund ability to pay policy, see U.S. EPA, Office of Site Remediation Enforcement, *General Policy on Superfund Ability to Pay Determinations*, September 30, 1997. ABEL's analysis of Superfund costs is designed to be consistent with this guidance.

b. Tax Treatment

ABEL allows you to specify whether the cleanup cost is tax-deductible (the default), depreciable (i.e., a portion may be deducted each year, just like a capital investment), or entirely non-deductible.[16] Internal Revenue Service (IRS) rulings have not fully addressed the federal income tax treatment of Superfund (and other environmental) cleanup costs. In some instances parties have been able to deduct remediation expenditures as ordinary and necessary business expenses, while others have been required to capitalize and depreciate costs over time.

The only IRS revenue ruling dealing directly with this issue concerns a manufacturing plant owner who bought the property in a clean condition, contaminated its soil and groundwater with hazardous waste, and then restored it to its original physical condition. The ruling allows the owner to deduct soil remediation costs and ongoing groundwater treatment expenditures, but requires him to depreciate over time the cost of constructing a groundwater treatment facility.[17] The revenue ruling assumes that the owner will either continue manufacturing operations at the site or will discontinue them and hold the land in an idle state.

An IRS private letter ruling (which cannot be used or cited as precedent by other parties) to a Superfund site owner allowed legal and consulting fees to be deducted as ordinary and necessary business expenses that were related to issuance of a consent order, listing on the National Priority List (NPL) of a site that a predecessor company contaminated, and development of a remedial investigation/feasibility study (RI/FS).[18] The IRS found that these costs did not create or enhance an asset and that they did not produce a long-term benefit for the property owner.

These rulings do not address all the possible scenarios for sites' current owner/operators, particularly where a previous owner contaminated a site. They also do not address how remediation may increase property value or when property will be put to a new use. Furthermore, IRS rulings do not address tax treatment for former owner/operators, generators, and transporters. For parties who are not current owner/operators, however, cleanups will typically be deductible in the year expended or incurred if the expenditures are related to carrying on a trade or business or can be characterized as an investment expense. But a deduction may not be allowable if the party is an individual who cannot make either type of demonstration.

Because of the significant uncertainty and the importance of case-specific facts, the IRS has issued Revenue Procedure 98-17, which provides (for a two-year trial period) special procedures for

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[16] For depreciable cleanups, ABEL uses a seven-year depreciation schedule, which typically applies to capital investments with useful lives between 10 and 25 years. If the depreciation schedule for the cleanup costs you are assessing is significantly higher or lower than this figure, and/or you choose to consider more than five years of future cash flow, contact the EPA Helpline, as the ABEL result may be slightly inaccurate.

[17] Rev. Rul. 94-38, 1994-1 C.B. 35.

[18] Priv. Ltr. Rul. 96-27-002.

a party to obtain an IRS letter ruling on environmental cleanup tax treatment.[19] The procedures apply to any costs associated with the assessment, mitigation, or remediation of environmental hazards, whether such hazards are on the property of the party requesting the ruling or on some other property.

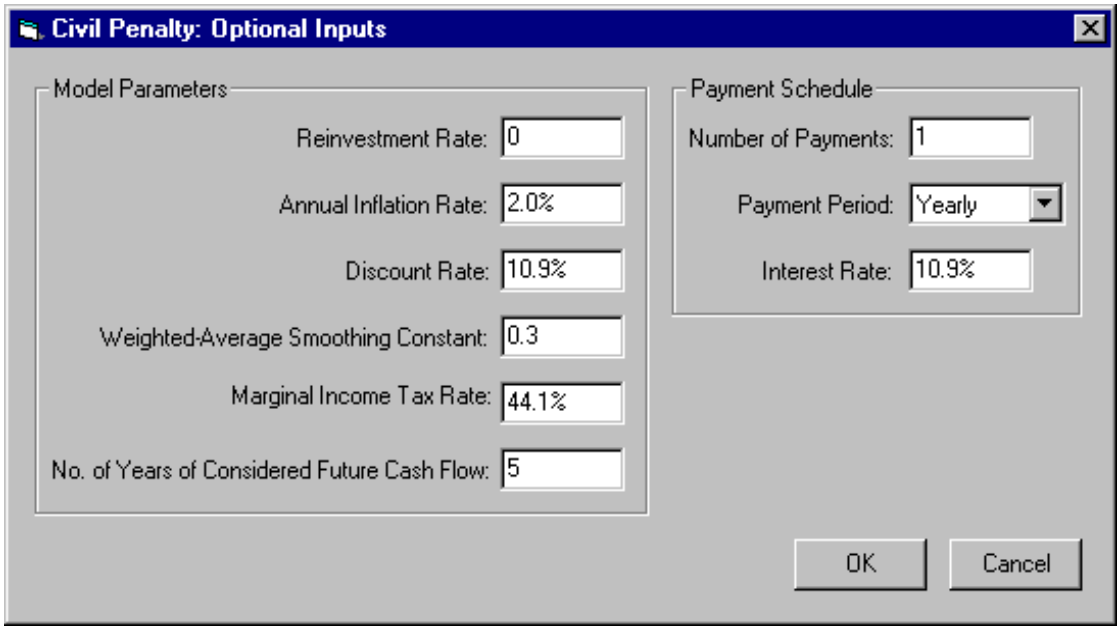
Because most parties are unlikely to be current owner/operators and because most of their cleanup costs are expected to be deductible as ordinary and necessary business expenses for federal income tax purposes, ABEL's default is that costs are fully deductible in the incurred year. But if the factors of a particular case and/or the status of a party indicate that cleanup costs will be treated otherwise (i.e., they will have to be capitalized and depreciated over time or they will not be deductible at all), you should adjust the tax treatment input accordingly. For current owner/operators of Superfund sites, particular situations in which a different tax treatment may apply include:

(1) A previous owner caused the contamination;
(2) The expenditure is for a facility that will have value over time, such as a groundwater treatment facility;
(3) The site will be put to a new use after the cleanup; and/or,
(4) The value of the site will increase after the cleanup, compared to its value prior to contamination.

For other types of parties, deductibility may be a problem if the party is an individual who does not have a business or investment relationship to the expenditure. For example, suppose a PRP owned and operated a dry cleaning business for 30 years, but is now retired after closing the business. This individual may not be able to deduct the Superfund contribution as an ordinary and necessary business expense since the business is no longer operating. Similarly, the expense is probably not investment-related. Instead, the individual may have to pay the contribution using personal after-tax cash flow. In circumstances such as these, you should use the Individual Ability to Pay (INDIPAY) model since the entity under examination is an individual, not a corporation.

You might also investigate whether a party has received a private letter ruling (or other communication) from the IRS concerning the tax treatment of its Superfund-related expenditures. For additional assistance, you can contact Bob Kenney of the EPA Office of Site Remediation Enforcement, Policy and Program Evaluation Division, at 202-564-5127 or kenney.robert@epa.gov.

[19] Rev. Proc. 98-17, 1998-5 I.R.B. 21.


Civil Penalty: Optional Inputs
Model Parameters
Reinvestment Rate:
0
Annual Inflation Rate:
2.0%
Discount Rate:
10.9%
Weighted-Average Smoothing Constant:
0.3
Marginal Income Tax Rate:
44.1%
No. of Years of Considered Future Cash Flow:
5
Payment Schedule
Number of Payments:
1
Payment Period:
Yearly
Interest Rate:
10.9%
OK
Cancel

D. OPTIONAL RUN INPUTS

Clicking **[Options]** on the optional run inputs screen takes you to the screen shown on the preceding page. Some of model parameters on the left-hand side of the screen are based on EPA policy, whereas other model parameters reflect current economic conditions and are updated annually. **You should not adjust any of these values unless you have a strong reason for doing so, and you have consulted with the EPA Helpline or another expert.** The following sections describe the various parameters in detail, while the table below summarizes their impact upon the ability to pay results.

Parameter	Impact on Ability to Pay of Parameter Increase
Reinvestment Rate	Decrease
Marginal Tax Rate	Increase (provided tax deductible expenditures are required)
Inflation Rate	Increase
Discount Rate	Decrease
Weighted-Average Smoothing Constant	Depends on specific pre-tax cash flow and income figures
Number of Years of Future Cash Flow Considered in Ability to Pay	Increase

The optional run inputs screen also allows you, on its right-hand side, to set up a payment schedule. This will not affect the affordability results, but will calculate for you the installment that is the equivalent of the lump-sum amount, given the number of payments (with the first installment due at the beginning of the first period), payment period (i.e., yearly, quarterly, or monthly), and interest rate that you specify. For Superfund cases the default interest rate is set at the Superfund interest rate (as reported at http://www.epa.gov/ocfo/finstatement/superfund/int_rate.htm), and for other cases is set at the discount rate.

1. Reinvestment Rate

The reinvestment rate determines the portion of a firm's future cash flow that is allocated for reinvestment in depreciating assets. Typically, firms reinvest a portion of their earnings to replace machinery and equipment as it wears out. However, the more a firm reinvests, the less cash it will have available for payment of environmental expenditures.

The reinvestment rate determines the fraction of the firm's depreciation expense that you assume the firm will reinvest. ABEL uses a standard value of zero for the reinvestment rate, meaning that no depreciation expenses are allocated to reinvestment. This standard value is based

on the assumption that a firm required to pay environmental expenditures should not be constrained from meeting those obligations by the need to replace machinery and equipment. Because ABEL forecasts only five years into the future, the firm is not permanently prevented from replacing such assets; a five-year period of reduced investment should not jeopardize the long-run solvency of most firms. In addition, the firm could continue to reinvest by reducing other expense items, like salaries or marketing expenses.

Under certain circumstances you may wish to alter the reinvestment rate. For example, if you are examining a manufacturer in an industry with rapidly changing technology, such as a microchip producer in the computer industry, the manufacturer may need to reinvest aggressively in new plant and equipment to remain competitive. You might consider changing the reinvestment rate to 1.0 to allow the manufacturer to invest at the same rate it has purchased plant and equipment in the past. A 1.0 value will specify full replacement of the depreciated portion of the existing assets in the ABEL calculations, taking inflation into account. Any reinvestment rate between zero and 1.0 allows the manufacturer to use a portion of future estimated future available cash flow for reinvestment. Implicitly, you are allowing for partial replacement of the depreciated portion of the firm's existing assets. Very rarely, you might enter a value over 1.0 to allow for new capital expenditures above and beyond what the firm has purchased in the past.

2. Annual Inflation Rate

ABEL uses the annual inflation rate to convert a firm's historic financial data into equivalent inflation-adjusted, future-year dollars. The standard value ABEL uses is based on the U.S. Gross Domestic Product (GDP) price deflator, a broad-based measure of economy-wide inflation.[20] The standard value is derived by averaging the historical rate of increase over the past five years with a consensus projection for the next five years from the publication *Blue Chip Economic Indicators.* You should not change this value without sufficient justification.

3. Discount Rate

ABEL uses the discount rate to express the firm's expected future cash flows in present value terms. The concept of net present value is based on the principle that "a dollar today is worth more than a dollar a year from now," because today's dollar can be invested immediately to earn a return over the coming year. Therefore, the earlier a dollar occurs, the greater its impact in present value terms. ABEL accounts for this "time value of money" effect by reducing all estimated future cash flows to their present value equivalents. This widely used technique is known as discounting.

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[20] This measure of inflation is more generalized than in the BEN model. Specifically, BEN's default is the Plant Cost Index (from *Chemical Engineering* magazine) to reflects cost increases in specific pieces of equipment. Since ABEL's cash flows do not correspond not to a specific basket of goods, a broader-based measure of the economy-wide inflation rate is necessary.

The default discount rate reflects a typical company's weighted-average cost of capital (WACC), based on the following formula:

$$WACC = CBA * (1.0 - TR) * W_D + (TN + R) * W_E$$

where:

CBA = Corporate bond average interest rates
TR = Marginal corporate tax rate
W_D = Fraction of total financing made up of debt
TN = Average return on five-year Treasury notes
R = Historical equity risk premia
W_E = Fraction of total financing made up of equity

You should not change this value without sufficient justification. (For a detailed derivation of the standard value, contact the EPA Helpline at 888-ECONSPT or review the BEN model's detailed printouts.)

4. Weighted-Average Smoothing Constant

ABEL uses the smoothing constant to calculate the weighted average of the firm's income. The 0.3 default value weights the most recent year's income most heavily. The table below provides the series of weights that a 0.3 value will generate for different years of data.

Year (1 = most recent)	Weights for Years of Data Equal to:		
	3	4	5
1	0.46	0.39	0.36
2	0.32	0.28	0.25
3	0.22	0.19	0.18
4	--	0.14	0.12
5	--	--	0.09

The default smoothing constant assumes that the most recent year of income is the most accurate predictor of the firm's future earnings potential. Do not adjust the smoothing constant unless: a) the model issues a flag alerting the user to large variation in total income and a change is warranted; or, b) you have other information (such as a written explanation from the firm) informing you that the most recent federal tax form is not a good proxy for the firm's future income. In that case, you must decide whether to adjust the smoothing constant, based upon whether you think the year causing a large variation is a more accurate predictor than the other years.

Raising the smoothing constant weights the most recent year of income more heavily; lowering it lowers the weight given to the most recent year's income, simultaneously raising the weights given to the other years. If, for example, the firm's most recent year of income is significantly higher than the average, and you believe that year is a much better estimate of future cash flow than the other years, you may wish to increase the smoothing constant. Alternatively, if you believe the most recent year is significantly larger than the average because of an aberration in income that will not continue in the future, you may wish to lower the smoothing constant, thereby decreasing the weight of this year's income in the calculation of total average income (and income from each source).

5. Marginal Income Tax Rate

The marginal income tax rate applies to the last dollar of income the firm earns. This rate reflects the percentage of income paid for taxes if taxable income were to increase or decrease, and includes both state and federal taxes. The marginal tax rate — as opposed to the average tax rate (i.e., total tax divided by total taxable income) — is appropriate because it applies to incremental changes in the firm's tax-deductible expenses and income. ABEL uses this rate to derive the firm's after-tax cash flow.

The marginal tax rate does not include sales tax, inventory tax, charter tax, or property taxes. Include one-time tax payments (e.g., sales taxes on equipment purchases) as a capital investment on the run inputs screen. Include regularly paid taxes (e.g., property taxes on equipment) of this nature as an annually recurring cost.

The standard value for this variable is based on the marginal federal tax rate at the highest income level and the average of all marginal corporate tax rates imposed by states. ABEL applies corporate rates to C corporations and individual rates to S corporations and partnerships. ABEL also varies the default rate by state. (For a firm in Puerto Rico or the Virgin Islands, contact the EPA Helpline at 888-ECONSPT to determine the applicable rate.) Because states taxes are deductible from taxable income for computing federal income, the combined tax rate calculation is:

Combined = Federal + (State * (1 - Federal)).

6. Number of Years of Considered Future Cash Flow

ABEL uses the number of years of cash flow to calculate the total amount of the firm's future income considered available to fund a penalty or contribution. The default value is five years, but you may select between one and four years, or up to ten years for Superfund cases. The model first calculates the firm's annual weighted-average cash flow based on past financial information. Next ABEL projects this annual cash flow amount into the future for the number of years of cash flow considered available. The model then calculates the present value of this stream of future cash flow

using the discount rate which is also specified on the "Model Parameters" screen. Appendix A provides a detailed description of this calculation.

In some cases, you may wish to reduce the number of years of cash flow considered available for a penalty or contribution to less than five years. You may choose to alter the default value if specific circumstances surrounding a case warrant a change or if the specific enforcement policy governing the case suggests using fewer years than the default value of five. For example, Superfund ability to pay guidance allows for reducing the number of years considered in certain instances, including when revenues and expenses are very erratic, the firm is going through a major restructuring, or other significant changes are occurring.[21] Decreasing the number of years of cash flow considered available decreases the firm's ability to pay a penalty or contribution because the model calculates the lump sum of less than five years of future cash flows.

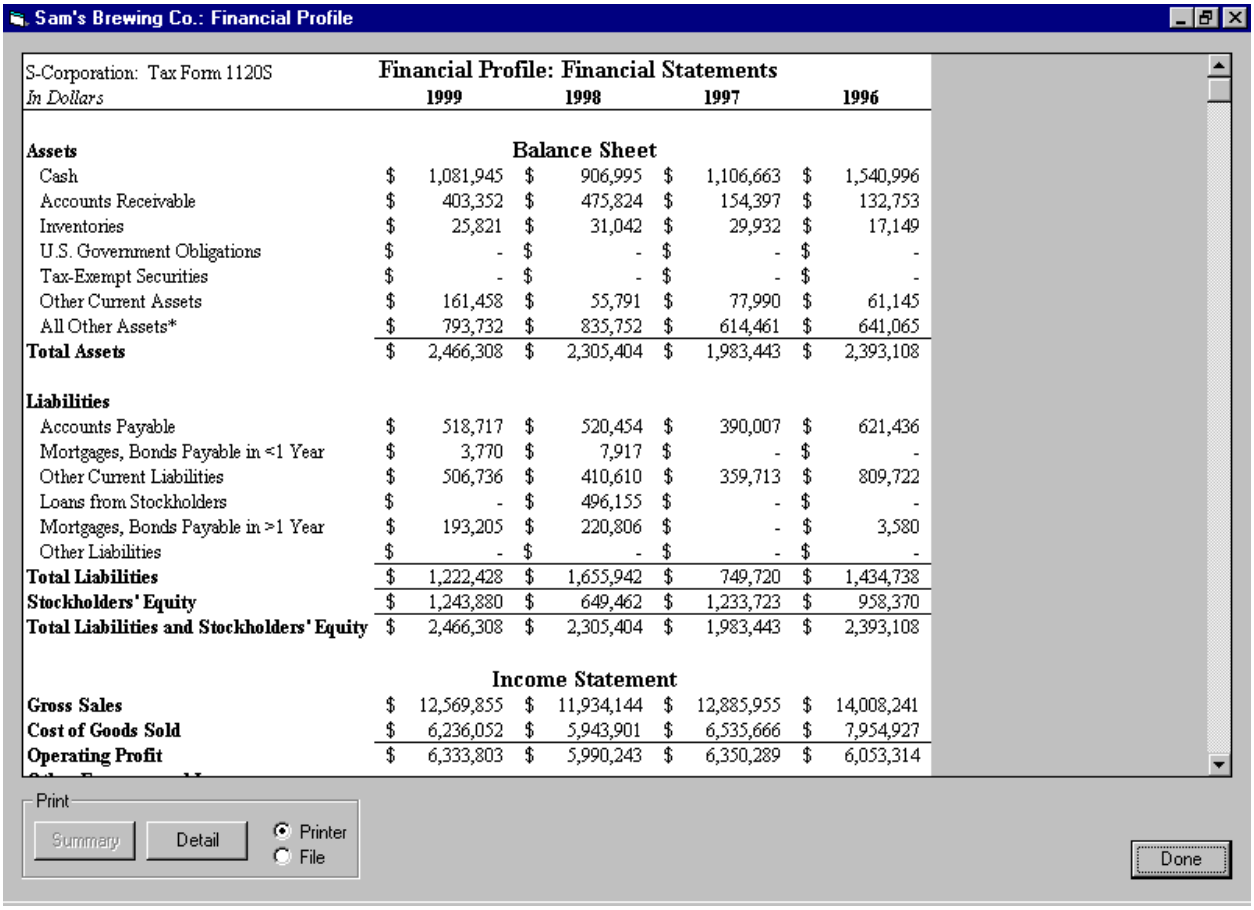
[21] U.S. EPA, Office of Site Remediation Enforcement, *General Policy on Superfund Ability to Pay Determinations*, September 30, 1997.

The ABEL analysis presents a comprehensive summary of a firm's financial status and quantifies its ability to pay a penalty or contribution. This chapter describes the ABEL Model's output. Section A discusses the part of the model's financial profile that generates financial statements. Section B describes the five financial ratios that ABEL's financial profile generates for each year of tax return data. Section C discusses how the ABEL Model uses the tax return information to determine a firm's ability to pay for an environmental expenditure.

You can view the financial profile (i.e., Sections A and B below) by clicking on the similarly named button on the left-hand side of the case screen. For the ability-to-pay analysis (i.e., Section C), you must first create a run (as Chapter 3 explains in detail) and then click **[Calculate]**.

A. FINANCIAL PROFILE: FINANCIAL STATEMENTS

As shown on the following page, the first section of the ABEL financial profile provides a summary balance sheet, income statement, and statement of historic cash flows for the firm. ABEL develops these statements using the model inputs entered for each specific case. These financial statements provide useful summary information on the firm's assets and liabilities, income and expenses, and historic cash flows. The information can be used to determine possible trends in the firm's past performance and to identify balance sheet or income statement items that exhibit considerable volatility. Users who are unfamiliar with financial information might find it difficult to understand or interpret this profile, and may wish to consult Appendix B. Nevertheless, you do not need to execute or understand a firm's Financial Profile to determine a firm's ability to pay for settlement purposes. Instead, you may proceed directly to the Ability to Pay Analysis.


Sam's Brewing Co.: Financial Profile
S-Corporation: Tax Form 1120S
In Dollars
Financial Profile: Financial Statements
1999 1998 1997 1996
Balance Sheet
Assets
Cash $ 1,081,945 $ 906,995 $ 1,106,663 $ 1,540,996
Accounts Receivable $ 403,352 $ 475,824 $ 154,397 $ 132,753
Inventories $ 25,821 $ 31,042 $ 29,932 $ 17,149
U.S. Government Obligations $ - $ - $ - $ -
Tax-Exempt Securities $ - $ - $ - $ -
Other Current Assets $ 161,458 $ 55,791 $ 77,990 $ 61,145
All Other Assets* $ 793,732 $ 835,752 $ 614,461 $ 641,065
Total Assets $ 2,466,308 $ 2,305,404 $ 1,983,443 $ 2,393,108
Liabilities
Accounts Payable $ 518,717 $ 520,454 $ 390,007 $ 621,436
Mortgages, Bonds Payable in <1 Year $ 3,770 $ 7,917 $ - $ -
Other Current Liabilities $ 506,736 $ 410,610 $ 359,713 $ 809,722
Loans from Stockholders $ - $ 496,155 $ - $ -
Mortgages, Bonds Payable in >1 Year $ 193,205 $ 220,806 $ - $ 3,580
Other Liabilities $ - $ - $ - $ -
Total Liabilities $ 1,222,428 $ 1,655,942 $ 749,720 $ 1,434,738
Stockholders' Equity $ 1,243,880 $ 649,462 $ 1,233,723 $ 958,370
Total Liabilities and Stockholders' Equity $ 2,466,308 $ 2,305,404 $ 1,983,443 $ 2,393,108
Income Statement
Gross Sales $ 12,569,855 $ 11,934,144 $ 12,885,955 $ 14,008,241
Cost of Goods Sold $ 6,236,052 $ 5,943,901 $ 6,535,666 $ 7,954,927
Operating Profit $ 6,333,803 $ 5,990,243 $ 6,350,289 $ 6,053,314
Print
Summary
Detail
Printer
File
Done

1. Balance Sheet

ABEL uses information you have entered for accounts receivable, cash, inventories, U.S. government obligations, tax-exempt securities, and other current assets to compute a firm's total assets, the first part of the balance sheet. ABEL also uses information you have entered for accounts payable, mortgages and bonds payable in less than one year, other current liabilities, loans from stockholders, mortgages and bonds payable in more than one year, and other liabilities to compute the firm's total liabilities. Finally, it provides the firm's stockholders' equity, an important indicator of a firm's overall viability. Note that ABEL calculates "all other assets" to reconcile a firm's total assets with its total liabilities and stockholders' equity.

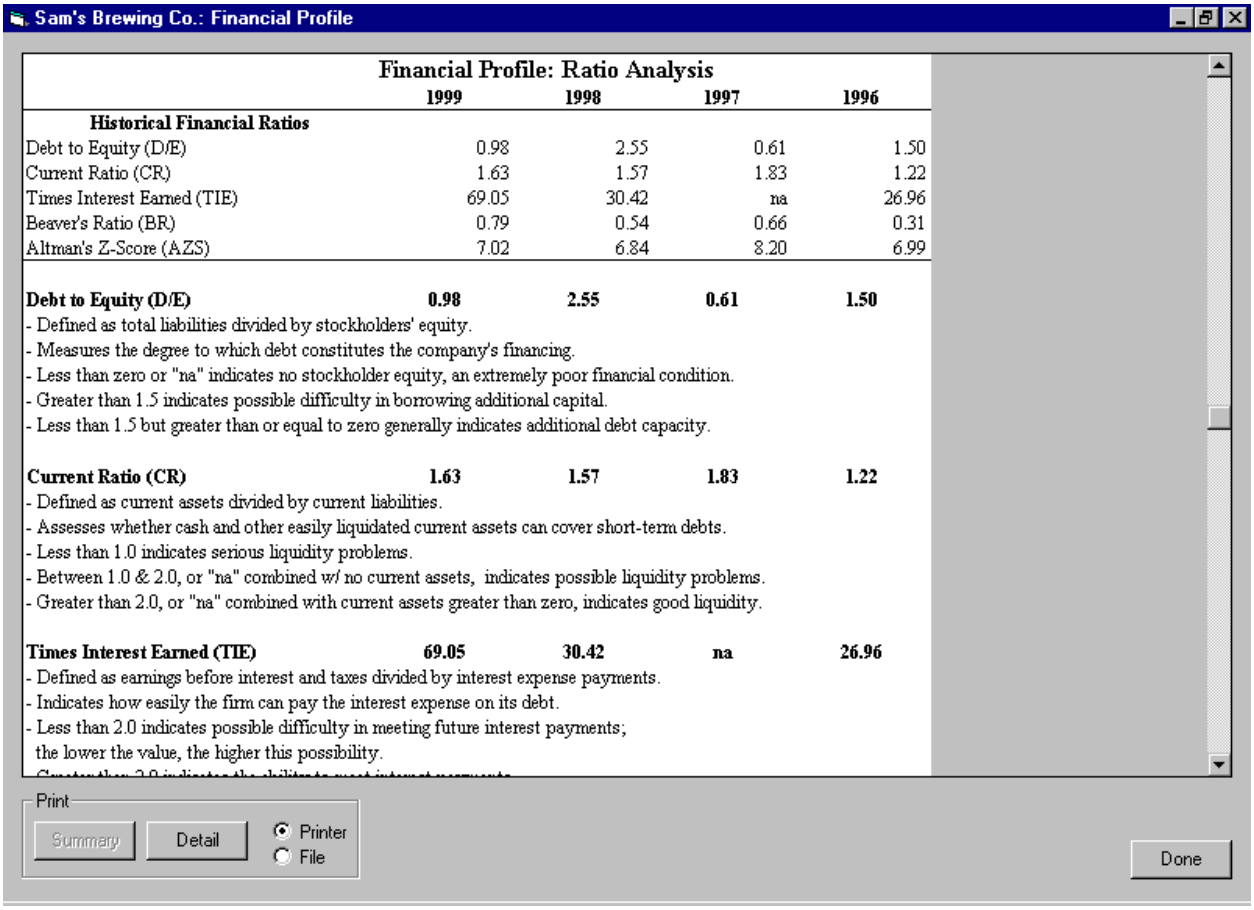
2. Income Statement

The summary income statement provides information on the firm's income and expenses. This information is critical to assessing the overall profitability of the firm and any trends in its performance over time. ABEL uses the information you have entered for gross sales and costs of goods sold to calculate a firm's operating profit and then subtracts interest expense, depreciation, depletion, amortization, and other expenses from operating profit to reproduce the firm's taxable income. ABEL also calculates other expenses (income) internally to ensure that operating profit less total expenses is equivalent to taxable income before net operating loss (NOL).

3. Statement of Historic Cash Flows

ABEL provides a table for the firm's cash flows, which can assist a financial analyst in understanding the relationship between the firm's historical and projected cash flows. The table is derived by subtracting taxes and adding back depreciation, amortization, depletion, income not included in return, credit for regulated investment companies, and credit for federal tax on fuels to a firm's taxable income before net operating loss deductions. ABEL adds back these expenses because they do not represent actual cash transfers. ABEL then calculates a firm's historic pre-tax annual cash flow by adding back taxes paid. This "pre-tax cash flow" shows the firm's historic pre-tax internally generated cash flows by year expressed in their respective years' dollars. Finally, ABEL computes inflation adjusted pre-tax cash flow using the inflation rate entered on the run input screen. This row shows the same pre-tax cash flow values expressed in current dollars so that they can be compared on an inflation-adjusted basis.

These cash flow values represent cash generated by the firm after meeting all of its business expenses and are considered available to fund a penalty payment. If a firm has positive cash flow, you can expect that ABEL will conclude the firm can pay some amount. If the values are negative, the ABEL result will also be negative.


Sam's Brewing Co.: Financial Profile
Financial Profile: Ratio Analysis
1999 1998 1997 1996
Historical Financial Ratios
Debt to Equity (D/E) 0.98 2.55 0.61 1.50
Current Ratio (CR) 1.63 1.57 1.83 1.22
Times Interest Earned (TIE) 69.05 30.42 na 26.96
Beaver's Ratio (BR) 0.79 0.54 0.66 0.31
Altman's Z-Score (AZS) 7.02 6.84 8.20 6.99
Debt to Equity (D/E) 0.98 2.55 0.61 1.50
- Defined as total liabilities divided by stockholders' equity.
- Measures the degree to which debt constitutes the company's financing.
- Less than zero or "na" indicates no stockholder equity, an extremely poor financial condition.
- Greater than 1.5 indicates possible difficulty in borrowing additional capital.
- Less than 1.5 but greater than or equal to zero generally indicates additional debt capacity.
Current Ratio (CR) 1.63 1.57 1.83 1.22
- Defined as current assets divided by current liabilities.
- Assesses whether cash and other easily liquidated current assets can cover short-term debts.
- Less than 1.0 indicates serious liquidity problems.
- Between 1.0 & 2.0, or "na" combined w/ no current assets, indicates possible liquidity problems.
- Greater than 2.0, or "na" combined with current assets greater than zero, indicates good liquidity.
Times Interest Earned (TIE) 69.05 30.42 na 26.96
- Defined as earnings before interest and taxes divided by interest expense payments.
- Indicates how easily the firm can pay the interest expense on its debt.
- Less than 2.0 indicates possible difficulty in meeting future interest payments;
the lower the value, the higher this possibility.
Print
Summary
Detail
Printer
File
Done

B. FINANCIAL PROFILE: RATIO ANALYSIS

In the second section of the financial profile, which you reach by scrolling down below the financial statements, as shown on the previous page, ABEL generates five financial ratios for each year of tax return data. Analysts commonly use such ratios to evaluate a firm's viability and its financial structure. ABEL provides an explanation of each ratio, and offers some guidelines for interpreting their values.[22]

If all of the firm's ratios are strong relative to the target values and do not show significantly deteriorating trends, the firm is most likely currently in good financial health. If only some of the ratios show acceptable values however, the firm's situation may be more uncertain. **Poor ratios do not necessarily indicate that a firm will be unable to pay proposed environmental expenditures.** Always use the ratio analysis in conjunction with the conclusions of the ability to pay analysis.

As you review the ratio results, consider whether the firm's ratios are improving or worsening over time. Identify any ratios that appear to exhibit considerable variability year to year. If you identify any trends or other interesting items, contact the EPA Helpline at 888-ECONSPT to interpret the results. Note that these ratios are only a rough measure of a firm's financial condition and can easily be manipulated. Review this information with the appropriate caution and seek assistance from an expert. These ratios should not be the basis of any decision to alter the penalty or contribution of a firm.

ABEL calculates five key financial health indicators: (1) the debt to equity ratio; (2) the current ratio; (3) the times interest earned ratio; (4) Beaver's ratio; and, (5) Altman's Z-Score. The interpretation of each of these ratios is shown below; the method for calculating each ratio is presented in Appendix A.

1. Debt to Equity Ratio

The debt to equity ratio (D/E) is defined as the firm's total liabilities divided by its stockholders' equity. This ratio measures the degree to which debt constitutes the company's financing. Four conclusions are possible as shown below; however, a firm could fall into one category during a given year and the other category during the next year. Similar variation may

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[22] ABEL's target values come from a variety of sources and were chosen because they are generic, non-industry-specific, commonly applied standards. One of the sources is *Financial Tests as an Option for Demonstrating Financial Responsibility, Volume II: Text*, by International Research and Technology Corporation, November 25, 1980. More sophisticated users may want to compare the ratio results to those specifically calculated for the firm's industry or to evaluate ratio results over time. This information may be found, for example, in Dun and Bradstreet's industry summary financial data.

occur with the other ratios as well. ABEL's D/E conclusions are based on the following decision rules:

- A D/E less than 1.5 but greater than or equal to zero generally indicates that a firm has additional debt capacity.[23]
- A D/E greater than 1.5 generally indicates that a firm may have difficulty borrowing additional capital.
- A D/E less than zero indicates that a firm has negative stockholders' equity, an extremely poor financial situation.
- A D/E of "na" indicates that the firm's stockholders' equity is zero, an extremely serious financial condition.

2. Current Ratio

The current ratio (CR) is defined as the firm's current assets divided by its liabilities. The ratio assesses whether the firm will be able to cover its short-term debts using cash and other current assets which can easily be liquidated. Five conclusions are possible:

- A CR greater than 2.0 generally indicates that a firm has good liquidity.
- A CR between 1.0 and 2.0 indicates that the firm may suffer from liquidity problems.
- A CR less than 1.0 indicates that the firm has serious liquidity problems.
- When a firm's current assets are greater than zero, a CR of "na" generally indicates that the firm has good liquidity.
- When a firm's current assets are equal to zero, a CR of "na" indicates that the firm may suffer from liquidity problems.

[23] Note that acceptable debt ratios vary considerably with industry. This conclusion represents a conservative "rule of thumb" but may not apply in all cases.

3. Times Interest Earned Ratio

The times interest earned ratio (TIE) is defined as the firm's earnings before interest and taxes divided by its interest expense payments. This ratio indicates how easily the firm can pay the interest expense on its debt. Three conclusions are possible:

- A TIE greater than 2.0 generally indicates that the firm is able to meet its interest payments.
- A TIE less than 2.0 indicates that the firm may have trouble meeting future interest payments. As the TIE decreases, the likelihood and potential severity of the firm experiencing problems in meeting those payments increase.
- A TIE of "na" indicates that the firm had no interest expense in that year. This result may indicate a very poor financial condition because the firm has likely fallen behind its debt servicing requirements, or it may indicate that the firm is carrying no debt, a sign of strong financial health.

4. Beaver's Ratio

Beaver's Ratio (BR) is defined as the firm's after-tax cash flow divided by its total liabilities. The BR provides a useful measure for predicting a firm's long term solvency and likelihood of staying in business. In particular, the BR indicates whether the firm's internally generated cash flow is sufficient to meet it current and long-term financial obligations. Four conclusions are possible:

- A BR greater than 0.2 generally indicates that the firm is solvent and healthy.
- A BR between 0.1 and 0.2 is inconclusive.
- A BR less than 0.1 generally indicates poor financial health.
- A BR of "na" indicates that the firm had no liabilities in (year). Because this situation is extremely unusual, you should check the accuracy of the firm's tax returns against all inputs before proceeding.

5. Altman's Z-Score

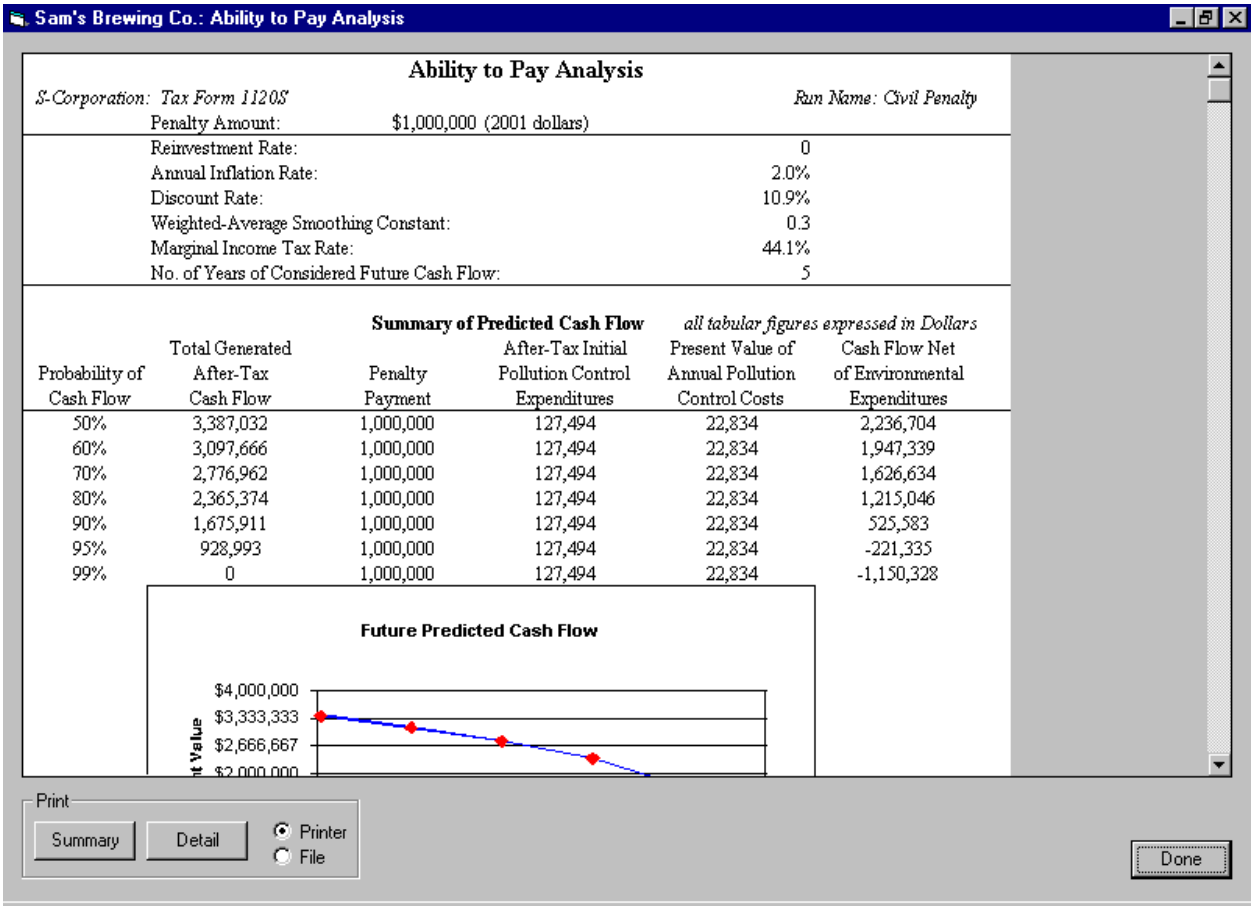
Altman's Z-Score (AZS) is calculated as a weighted average of several financial ratios. AZS is a predictor of firm failure. It is most accurate within two years prior to bankruptcy. Four conclusions are possible:

- An AZS greater than 2.90 indicates that it is unlikely that the firm will be forced into bankruptcy during the coming two years.

- An AZS between 1.23 and 2.90 is inconclusive.

- An AZS less than 1.23 indicates that the firm could be bankrupt within the next two years if its financial situation does not dramatically improve.

- An AZS of "na" indicates that a numerical value could not be computed for (year) because either total assets or total liabilities were equal to zero. Because this situation is extremely unusual, you should check the accuracy of the firm's tax returns against all inputs before proceeding.


Sam's Brewing Co.: Ability to Pay Analysis
Ability to Pay Analysis
S-Corporation: Tax Form 1120S
Run Name: Civil Penalty
Penalty Amount: $1,000,000 (2001 dollars)
Reinvestment Rate: 0
Annual Inflation Rate: 2.0%
Discount Rate: 10.9%
Weighted-Average Smoothing Constant: 0.3
Marginal Income Tax Rate: 44.1%
No. of Years of Considered Future Cash Flow: 5
Summary of Predicted Cash Flow
all tabular figures expressed in Dollars
Probability of Cash Flow
Total Generated After-Tax Cash Flow
Penalty Payment
After-Tax Initial Pollution Control Expenditures
Present Value of Annual Pollution Control Costs
Cash Flow Net of Environmental Expenditures
50% 3,387,032 1,000,000 127,494 22,834 2,236,704
60% 3,097,666 1,000,000 127,494 22,834 1,947,339
70% 2,776,962 1,000,000 127,494 22,834 1,626,634
80% 2,365,374 1,000,000 127,494 22,834 1,215,046
90% 1,675,911 1,000,000 127,494 22,834 525,583
95% 928,993 1,000,000 127,494 22,834 -221,335
99% 0 1,000,000 127,494 22,834 -1,150,328
Future Predicted Cash Flow
$4,000,000
$3,333,333
$2,666,667
Print
Summary
Detail
Printer
File
Done

C. ABILITY TO PAY CONCLUSION

Calculating a run quantifies the firm's ability to pay for an environmental expenditure. To make this determination, ABEL uses the three to five years of tax return data you entered to project five years of internally generated, after-tax cash flows.[24] ABEL then compares the present value of these cash flows with the present value of the after-tax cash flows following the environmental expenditures that you have specified.[25] If the present value of the firm's remaining projected cash flows is still positive after making the environmental expenditures, ABEL will predict that the firm can afford the expenditure.

While the general methodology for determining a firm's ability to pay is straightforward, the actual details of the calculations are quite complex. Appendix A provides the detailed equations used in the ABEL analysis, as an aid to financial analysts and other interested users. Using ABEL as an ability to pay screening tool does not require a reading of Appendix A. The main section of this manual contains all that you need to use the ABEL program successfully.

ABEL produces a summary table, illustrative graphic, and related explanatory text to convey the ability to pay result, as shown on the previous page. ABEL also evaluates the probability that the firm can afford the environmental expenditures that you have proposed.

1. Summary Table

ABEL first produces a table showing the present value of the firm's projected cash flows over five years (or for fewer years as specified during the input phase), both including and excluding the environmental expenditures that you specified. This table will be the focus of almost all ABEL analyses. Since ABEL bases the firm's projected cash flows on a statistical extrapolation of the firm's historical cash flows, the table shows projected cash flows at seven different probability levels. These probabilities reflect the likelihood that the firm will equal or exceed the specified level of cash flow.

The second column lists the firm's projected after-tax cash flows, which represent the likelihood that the firm will generate cash flows given an associated probability. These values do

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[24] This discussion assumes that you used the standard default value of five years of future cash flow considered available for penalty or contribution to EPA. You may also select one to four years of future cash flow considered in ability to pay analysis; however, the methodology used in each calculation is exactly the same as the calculations employed for five years of cash flow.

[25] The concept of net present value is based on the principle that "a dollar today is worth more than a dollar a year from now," because today's dollar can be invested immediately to earn a return over the coming year. Therefore, the earlier a cost (or benefit) is incurred, the greater its economic impact. ABEL accounts for this "time value of money" effect by reducing all estimated future cash flows to their present value equivalents. This widely used technique is known as discounting.

not take any environmental expenditures or penalties into consideration. The third column presents the proposed civil penalty, if any. The fourth column reflects the initial pollution control expenditures required of the firm, if applicable. The fifth column lists the present value of the annual pollution control expenditures required to maintain any capital investments. (If instead the run is for a Superfund cleanup cost, then third, fourth, and fifth columns will be condensed into a single column for the after-tax present value of the Superfund cleanup cost.) The final column presents the cash flow ABEL predicts the firm will generate after pollution control expenditures and penalty payment. ABEL provides you with a range of cash flows that might be generated based on its statistical analysis.

2. Summary Graphic

ABEL also prepares a summary graphic illustrating the results presented in the summary table. As indicated in this graphic, the likelihood that the firm will generate a specific level of cash flow declines as the magnitude of the cash flows increases.

This summary graphic can be a useful tool to assess the reliability of ABEL's predicted future cash flow. A sharp decline in the curve at the 50-, 60-, or 70-percent probability level can often be attributed to significant variations in past cash flow. If you notice this kind of variability in combination with a less than 70 percent probability that the firm can pay the proposed penalty or contribution, you may wish to contact the EPA Helpline at 888-ECONSPT. Alternatively, a flat curve over the 50-, 60-, or 70-percent probability level that declines only after the 90- or 95-percent probability level is often indicative of consistent cash flow.

3. Conclusion

Following the table and graphic, ABEL prints a message summarizing the firm's ability to pay. This message indicates the probability that the firm can meet the proposed penalty (and/or pollution control expenditures) through its projected cash flow. (Note that these amounts are always in dollars regardless of the data entry format.) This estimation of ability to pay is based on funds the firm is expected to generate during the next five years.

ABEL also predicts the cash flow a firm is likely to generate with 70-percent probability, a level selected because this is one common cut off EPA uses for determining ability to pay. It is ultimately up to the litigation team, however, to determine an appropriate cutoff.

If during the input phase you requested to have the payment spread out over a period of years (2 to 5), the model will also provide the installment amount that will create a payment schedule that is equivalent to the lump sum payment.

4. Historic Comparison

If the firm's performance is worsening, ABEL may overstate ability to pay. ABEL performs two tests to determine if the firm's most recent year's actual cash flow (derived from the firm's tax return) was significantly worse than its historic average. Based on these tests' results, ABEL may recommend that you change the weighted-average smoothing constant 0.3 standard value, which will place greater weight on the firm's most recent performance in the ability-to-pay calculation:

> "The most recent year's cash flow is significantly worse than its historic average, which could mean that ABEL's future cash flow projections are overstated. A 0.7 smoothing constant is recommended to weight this year more heavily."

Otherwise, do not change the smoothing constant unless a financial analyst recommends this based upon a review of the data.

D. USING THE RESULTS

ABEL uses generally accepted accounting and financial methods to generate its conclusions. Note, however, the model employs inputs taken directly from an entity's tax returns, with no independent assessment concerning the quality of this information. Since firms have incentives to minimize taxable income to lower their tax liabilities, ABEL generally provides a conservative estimate of ability to pay. If ABEL concludes that a firm has sufficient resources to pay the stipulated penalty, the enforcement official can be reasonably assured that the penalty payment will not burden the firm with undue financial hardship. If ABEL provides a negative or inconclusive result, however, you should not assume the firm cannot pay the penalty without first conducting additional analysis.

The analyst should take a second look after receiving a negative ABEL result for a number of reasons. The first reason was mentioned above — ABEL employs a number of conservative assumptions in its calculations. In addition, ABEL focuses on only one area of ability to pay, cash flow. Firms may have other potential sources of funds that are not captured in the ABEL analysis. For example, the firm's available cash flow may be understated if it has inflated or nonessential business expenses and distributions. These might include, among others:

- Extravagant or unnecessary compensation of officers;
- Extravagant or unnecessary travel and entertainment expenses;
- Contributions to charitable and other organizations; and,
- Cash dividends paid out to shareholders.

Furthermore, the firm might own assets that are not essential to its business operations that could be liquidated to fund a penalty, or it may have loaned funds to its owners or officers which could be called in as a source of additional funds. The firm may have additional debt capacity, allowing it to acquire additional loans to fund a payment. Finally, the firm may have close relations with its parent entities, subsidiaries, and other affiliates, all of which could potentially provide a source of funds for penalty payment.

ABEL's Financial Profile section provides a good place to start an investigation of these issues. You can use the summary financial information to identify large or highly variable asset holdings and expenses, or determine whether the company is carrying large amounts of debt. Reference Appendix B of this manual for a detailed explanation of how to analyze this information. Finally, you can contact the EPA Helpline at 888-ECONSPT to help you assess these issues.

D. ANALYZING PARTNERSHIPS

In addition to analyzing corporations (either C or S), ABEL can assess the ability to pay of partnerships, which file form 1065.[26] An owner's liability for corporate debts is limited to the owner's investment in the company; by contrast, owners of a partnership (i.e., "partners") are liable for any and all the partnership's debts. A "general partner" can be personally liable, while limited partners' exposure is limited to their investment. Although ABEL accurately assesses the financial resources that a particular partnership controls, the analyst should, in addition, consider assessing the personal financial capabilities of the partnership's individual owners to conduct a complete ability to pay analysis.

Enforcement staff often conduct a two-stage ability to pay analysis of a partnership. The first stage evaluates the financial resources of the partnership entity — alone — using the ABEL model. If — and only if — the resources of the partnership are inadequate for the sought penalty or contribution, the second stage then evaluates the resources of the individual partners for their ability to pay the entire or remaining portion. Partners can be either corporations or individuals. If the partner is a corporation, you should obtain the firm's completed income tax returns (form 1120 or 1120 S) and use ABEL to assess its ability to pay. If the partner is an individual, you should obtain the individual's completed individual income tax returns (Form 1040) and have the individual

[26] Limited Liability Corporations (LLC) and Limited Liability Partnerships (LLP) are becoming increasingly more common. For analysis purposes, you should analyze the ability to pay of a LLC by selecting "C corporation" (assuming the firm submits form 1120) on the "Case Description Details" screen. You should analyze the ability to pay of a LLP by selecting "Partnership" on the "Case Description Details" screen. If the ABEL results indicate that the LLP/LLC can pay the proposed penalty or contribution at a probability level greater than or equal to 70 percent, you should conclude the entity can pay the proposed penalty. If the ABEL results are inconclusive, you may wish to obtain the LLP's or LLC's articles of incorporation for a more detailed analysis. You can also contact the EPA Helpline at 888-ECONSPT.

complete a Financial Data Request Form. You should then analyze this information with the Individual Ability to Pay (INDIPAY) Model.

Remember that the shareholders who "own" a corporation contribute either money, property or services to the firm in return for shares. The main difference between a corporation (either C or S) and a partnership is that the shareholders of a corporation are liable only to the extent that they have invested in the company. For example, if a corporation sustains significant losses to such an extent that it cannot repay its creditors, the shareholders' personal assets are legally protected. In contrast, the personal assets of a partnership's shareholders may be accessed to satisfy obligations.

A. OVERVIEW

This technical appendix explains how the ABEL computer program assesses a firm's ability to pay for civil penalties, compliance costs, and/or Superfund contributions. The explanations are intended for financial analysts who wish to obtain a more complete understanding of how the model performs its calculations. You do not need to read Appendix A to use ABEL. Appendix B, Understanding ABEL's Financial Profile Results, helps the user to better assess the overall financial condition of the firm being analyzed. Appendix B also alerts the user to items to look for on a firm's tax returns. If you ever have any questions concerning either Appendix A or B, contact the Helpline at 888-ECONSPT.

ABEL references a Microsoft Excel™ spreadsheet to perform all of its ability-to-pay calculations, although you do not need Excel to run ABEL. The data you enter into the program is automatically transferred to the spreadsheet. The spreadsheet performs the calculations and returns the result to the program for output.

The spreadsheet is in your ABEL folder (on your C drive or wherever else you installed ABEL), filename "ABEL****.xls". (The asterisks represent the most recent year for which EPA has performed updates for the spreadsheet.) The easiest way to understand ABEL's calculations is to open the file in Excel. This way you can look inside each cell, and see exactly how the formula is written. If you are ever having trouble determining the location of certain cell references in the formulas, go under the Excel "Tools" menu and choose "Auditing." Here you can trace Precedents or Dependents, which will draw arrows to all the cells that a formula uses.

However, be sure not to alter the saved file, as this has the potential to corrupt your copy of ABEL. If you plan to spend considerable time reviewing the spreadsheet, you might want to copy the spreadsheet file to another folder using a different name (e.g., "ABELtest.xls"). Also, do not try to run ABEL with the spreadsheet open in Excel, as this will cause ABEL to crash.

Once you open the file, you will see that it has many sheets, but they mainly concern the process of exchanging data with the computer program. The calculations that you will want to

review are located on the "print" and "calc" pages, with a few additional calculations on the "nsd," "z," and "smooth" pages.

B. FINANCIAL STATEMENTS

The Financial Profile section of the ABEL results allows the user to compare a firm's financial performance over time. It is an easy way to spot inconsistencies within specific cost categories, as well as excessive variation in expenses, income, and deductions as claimed by a firm on its tax returns. For a more general description of a firm's financial profile results (as opposed to the calculations), consult Appendix B.

1. Balance Sheet

The balance sheet provides important information about a firm's assets and liabilities. The first section of the balance sheet illustrates a firm's assets. In this section, the entries for accounts receivable, cash, inventories, U.S. government obligations, tax-exempt securities, and other current assets are copied directly from data entered during the ABEL input session for each year. Because the user does not enter total assets during the input session, ABEL computes the figure as equivalent to total liabilities and stockholders' equity. All other assets is equivalent to total assets less accounts receivable, cash, inventories, U.S. government obligations, tax-exempt securities, and other current assets.

On the second half of the balance sheet ABEL calculates a firm's total liabilities. Entries for accounts payable, mortgages, bonds payable in less than one year, other current liabilities, loans from stockholders, mortgages, bonds payable in more than one year, and other liabilities are taken directly from data entered by the user during the ABEL input session for each year. ABEL then computes total liabilities by summing these entries. Finally, ABEL calculates stockholders' equity by subtracting total liabilities from total liabilities and stockholders' equity, a figure entered during the ABEL input session.

You can view all of these calculations in the Excel spreadsheet on the "print" page, section A4:F23.

2. Income Statement

The income statement illustrates the firm's financial performance. It allows the user to identify whether the firm is generating profits from its daily business operations as well as whether its taxable income is positive. In addition, it highlights a few of the firm's expenses and deductions including depreciation, depletion, amortization, and interest expense spent on servicing its current outstanding debt. On the income statement, gross sales and cost of goods sold are copied directly

from inputs entered during the data entry session. Operating profit is calculated as the difference between gross sales and cost of goods sold. Taxable income before net operating loss deductions is also entered during the data input session. This figure is then used to calculate total expenses such that operating profit minus taxable income yields total expenses. Finally, other expenses (income) is derived as the difference between total expenses less interest expense, deprecation, depletion and amortization.

You can view all of these calculations in the Excel spreadsheet on the "print" page, section A26:F35.

3. Estimated Cash Flows

ABEL calculates a firm's historic cash flows using the methodology employed in the ability to pay section. ABEL first calculates available after-tax cash flow. This figure is equivalent to taxable income before net operating losses less taxes paid plus credit for regulated investment companies, credit for federal tax on fuels, depreciation, depletion, amortization, and income recorded on books not included in the return. Finally, ABEL calculates a firm's inflation adjusted available pre-tax cash flows. The calculation uses the inflation rate from the Optional Run Inputs screen.

You can view all of these calculations in the Excel spreadsheet on the "print" page, section A37:F47.

C. FINANCIAL RATIOS

This section of the appendix presents the methodology that ABEL uses to calculate the five financial ratios. These ratios are often used to evaluate a firm's overall viability and financial structure.

You can view all of these calculations in the Excel spreadsheet on the "print" page, section A54:F61. The following sections provide additional details about the calculations that may not be readily apparent when reviewing the spreadsheet file.

1. Debt to Equity Ratio

This is simply the ratio of total liabilities to total equity, but if total equity is equal to zero (i.e., assets are equal to liabilities), ABEL will display "na," indicating that the ratio cannot be computed. A Debt to Equity ratio of "na" indicates that stockholders' equity is zero, a serious financial condition.

2. Current Ratio

This is simply the ratio of various current assets to various current liabilities. If the firm has no current liabilities, then ABEL will display a value of "na" for that year.

3. Times Interest Earned Ratio

This is simply the ratio of earnings before interest and taxes (i.e., interest expense plus taxable income before net operating loss deductions) to interest expense. If the firm has no interest expense, then ABEL will display a value of "na" for that year.

4. Beaver's Ratio

This is simply the ratio of available after-tax cash flow to total liabilities. If the firm has no liabilities, then ABEL will display a value of "na" for that year.

Note that the value ABEL uses for after-tax cash flow does not, strictly speaking, include all items that affect cash flow. Excluded are changes in non-cash working capital, capital expenditures paid for with cash, dividends, and cash flow resulting from debt and equity financing. ABEL's version for cash flow was chosen for calculating Beaver's Ratio because it most closely replicates the definition used by William Beaver in his study (i.e., cash flow equals after-tax net income plus depreciation plus depletion).[27] Also, Beaver's definition was used as the basis for determining healthy/unhealthy Beaver's Ratio cutoff values.[28]

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[27] William H. Beaver, "Financial Ratios as Predictors of Failure," in *Empirical Research in Accounting: Selected Studies*, 1966, pages 71-111.

[28] The above equation for cash flow is quite sound without requiring an excessive number of inputs. ABEL utilizes an identical definition of cash flow in its ability to pay conclusion except that it also takes into account reinvestment in equipment (i.e., capital expenditures). Thus, the implicit cash flow assumptions are that net non-cash working capital is at a steady-state level, no dividends are paid (or if they are, they can be discontinued in order to finance capital expenditures or to pay penalties), and that the only sustainable cash flows are those from operations rather than from debt or equity financing.

5. Altman's Z-Score

The calculations for Altman's Z-Score are more complicated than for the other financial ratios, and occupy their own page ("z") of the spreadsheet.[29] If the firm has no assets or liabilities, then ABEL will display a value of "na" for that year.

D. ABILITY-TO-PAY CALCULATIONS

This section presents ABEL's ability-to-pay calculations and decision rules. ABEL discounts a firm's projected internally generated cash flows back to the date on which the firm will incur the environmental expenditure. All after-tax cash flows associated with the environmental expenditures penalty are subtracted out of these cash flows to estimate the funds that will remain after the expenditures are incurred. (For Superfund cases, the user has the option of specifying alternative tax treatment of the expenditures, so the after-tax cash flows may or may not be equal to their pre-tax values.) If the present value of these net cash flows is greater than or equal to zero, the firm is deemed able to pay for all the environmental expenditures. If the present value is negative, however, the firm is deemed unable to fund all or a portion of the sought expenditures.

The following are the nine main steps that ABEL performs in its ability to pay calculations. Most of these calculations are performed on the "calc" page of the spreadsheet.

1. Calculate Pre-Tax Historic Available Cash Flow

ABEL first calculates the historic pre-tax available cash flow, where the reinvestment rate has the value of 0.0 unless the user modified it on the Optional Run Inputs screen. Like the historical data provided, these calculations yield available cash flow figures expressed in current (nominal) dollar terms. A firm's pre-tax historic available cash flows can be found on the Financial Statements section of the ABEL model output.

2. Adjust Available Cash Flows for Inflation

ABEL then converts the current dollar pre-tax historic available cash flows into inflation-adjusted constant (real) dollars as of the base year (i.e., the year that the company will be incurring the environmental expenditures, as entered on the Run Inputs screen). The annual inflation rate is equal to the default value (updated annually), unless the user modified it on the Optional Run Inputs screen.

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[29] Edward I. Altman, *Corporate Financial Distress: A Complete Guide to Predicting, Avoiding and Dealing with Bankruptcy*, 1983, and "The Success of Business Failure Prediction Models", *Journal of Banking and Finance*, Vol. 8, pages 171-198, June 1984.

3. Compute Mean and Standard Deviation of Historic Constant Dollar Pre-Tax Available Cash Flows

The weights for the historical mean are determined by the smoothing constant, whose 0.3 default value the user can modify on the Optional Run Inputs screen. ABEL will use the standard deviation as part of determining its probability levels (see below).

4. Estimate Future Available Pre-Tax Cash Flows

This equation calculates the constant dollar available cash flows that a firm can be expected to generate in the future at different probability levels. The firm's total population of all of its historic constant dollar available cash flows are assumed to be normally distributed.

ABEL employs the T-distribution as the basis for estimating probabilities, because of the small number of data points used in the calculations. In general, if a population is normally distributed, then one can estimate the percentage of data points in the population that will exceed a particular value by using a standard normal table. Even if we are only dealing with a subset of the entire population, we can still use the standard normal table to estimate percentages (probabilities), providing the sample is large enough, typically in excess of fifteen to thirty data points. When the population is normally distributed yet the sample size is very small, the T-distribution table is the analytically correct approach for estimating probabilities. The T-distribution, also referred to as the sampling distribution, has the same symmetrical bell-shaped curve as the normal distribution. It is somewhat flatter and lower at the mean, however, as well as somewhat more dense in the two tails than the normal distribution. (Note that the values for the number of standard deviations away from the mean is calculated on the "nsd" page of the spreadsheet.)

5. Compute Present Value of Future Available After-Tax Cash Flows

The present value of expected future available after-tax cash flows for a given probability level is then calculated. The default value for the number of future years is five, which the user can modify on the Optional Run Inputs screen.

Note that the firm's nominal after-tax cash flows are discounted back at the firm's nominal after-tax cost of capital, whose default value that user can modify on the Optional Run Inputs screen. Also, the calculations treat the company's annual cash flows as occurring in the middle of each year. This convention balances off cash flows which occur in the first half of the year with those that occur in the second half of the year.

6. Compute Present Value of After-Tax Cash Flows Associated with New Capital Investment

Three primary components of new pollution control capital investments affect after-tax cash flow:

(1) the original capital investment;
(2) the depreciation and deduction tax shields associated with the investment; and,
(3) the annual operating expenses.

Note that for a Superfund case, the user can specify the cleanup cost's tax treatment, which can sometimes be classified as a depreciable capital investment, according to IRS interpretations.

Two sources of tax shields correspond to the initial pollution control capital investment, both of which serve to reduce taxes and thereby increase cash flow:

(1) the depreciation tax shields associated with the capital investment; and,

(2) the nondepreciable but tax-deductible items, which are written off for tax purposes in the year in which they are incurred.

To be consistent with the Tax Reform Act of 1986, ABEL's depreciation follows the Modified Accelerated Cost Recovery System (MACRS). MACRS calls for the use of double declining balance (DDB) depreciation with half-year convention, a seven-year life, and a switch from DDB to the straight line method in the fifth year. The switch is made in the year depreciation equals or exceeds that determined under DDB in order to maximize the depreciation deduction.

Note that the tax shields are not inflated to current dollars before discounting them, since the actual depreciation in any year is a fixed dollar amount, thereby already in each year's current dollars.

7. Compute Resulting Net Present Value of Five Years of After-Tax Future Cash Flows for All Probability Levels

Note that this step's results do not imply that the firm will have enough cash on hand as of the expenditures are incurred to make a lump sum penalty payment. If the firm's current financial position is strong, however, as determined in the Financial Ratios section, and the cash flow is sufficiently large with, for example, an 80% confidence level, then ABEL assumes that the firm would be able to obtain additional debt or equity financing sufficient to pay a lump sum penalty of that amount.

8. Calculate the Probability Level Associated with the Penalty Amount Using Linear Interpolation

For these calculations, note that if the probability falls below 50 percent, ABEL's output will simply display "less than 50," and if the probability exceeds 99 percent, ABEL will display "greater than 99."

9. Convert the Affordable Penalty into an Annual Equivalent Cash Flow

Rather than paying a single lump-sum penalty, the government may wish to allow a firm to spread payment of that penalty over several years in equal installments. The first installment would occur at the beginning of each period, whether monthly, quarterly, or yearly, as the user can specify on the Optional Run Inputs screen. The default interest rate is either the company's cost of capital, or, for Superfund cases, the Superfund interest rate.[30]

E. DECISION RULE FOR CHANGING SMOOTHING CONSTANT

ABEL will occasionally suggest that the user adjust the smoothing constant. ABEL compares the average income generated over all years except the most recent year with cash flows generated in the most recent year. The following conditions will trigger such a prompt:

- The most recent year's cash flow is more than twice the historical average;
- The most recent year's cash flow is less than half the historical average; or,
- The most recent year is negative yet the historical average is positive.

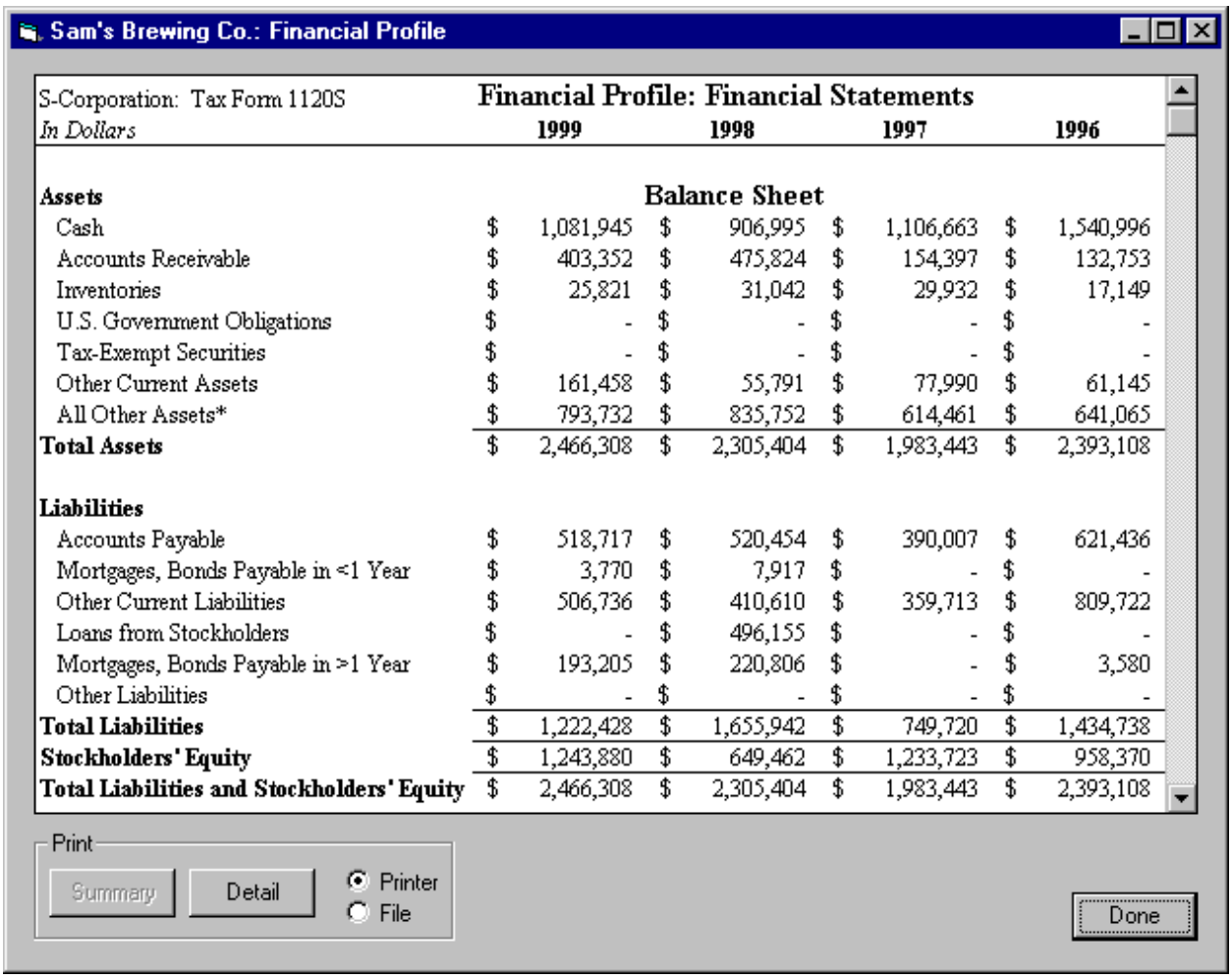
ABEL's calculations for these comparisons are on the "smooth" page in the spreadsheet.

[30] Consistent with EPA policy outlined in a memorandum titled *General Policy on Superfund Ability to Pay Determinations*, dated 30 September 1997, the Superfund interest rate should be used to calculate ability to pay settlements that include payments over time. This rate is based on the investment rate of the Superfund trust fund. All Superfund contributions are invested annually in one type of treasury bill. ABEL uses the most recent rate, which is available at: http://www.epa.gov/ocfo/finstatement/superfund/int_rate.htm

ABEL's financial profile presents possibly familiar yet potentially confusing information, but with a little effort you can employ the information to better assess a firm's financial condition. The financial profile is similar in substance and format to a business's own financial statements, since the information is taken from income tax returns, which are simply a standardized form of financial statements. The information has three parts: balance sheet, income statement, and summary of cash flows. This primer on understanding financial information will not make you an expert in financial analysis, but it will provide you with a better understanding of ABEL's results. If you have questions or wish to conduct a complete review of this information, contact the EPA Helpline at 888-ECONSPT.

The balance sheet is a snapshot of a firm's financial position at a moment in time, showing assets, liabilities, and shareholders' equity. Liabilities and shareholders' equity represent the firm's sources of funds. Liabilities represent loans from banks, owners, or customers; shareholders' equity represents funds (or capital) provided by owners or the firm itself through retained profits. Assets represent items that the firm has purchased with these funds. Hence, the balance sheet is a static presentation of what the firm has purchased and the amount of debt or equity used to finance those purchases. Since the firm cannot purchase more items than it has resources to fund them, assets must always equal the sum of liabilities and shareholders' equity; thus the term "balance" sheet.

While the balance sheet presents a snapshot of a firm's financial condition, the income statement summarizes the operating activities of a firm over a period of time, representing a link between a firm's balance sheet at the beginning and end of a period. The income statement shows the income a firm earned in a particular period and the expenses it incurred to generate that income. Somewhat similarly, the summary of cash flows reconciles the flow of cash in and out of the firm with the flow of income and expenses in and out of the firm. The flow of cash is not necessarily the same as the flow of income and expenses. ABEL uses these past cash flows to predict future cash flows and derive its ability to pay conclusion. Using the ABEL financial profile for the example that installs with the model, the following sections discuss each item and describe its relevance to the ability to pay assessment.


Sam's Brewing Co.: Financial Profile
S-Corporation: Tax Form 1120S
In Dollars
Financial Profile: Financial Statements
1999
1998
1997
1996
Balance Sheet
Assets
Cash $ 1,081,945 $ 906,995 $ 1,106,663 $ 1,540,996
Accounts Receivable $ 403,352 $ 475,824 $ 154,397 $ 132,753
Inventories $ 25,821 $ 31,042 $ 29,932 $ 17,149
U.S. Government Obligations $ - $ - $ - $ -
Tax-Exempt Securities $ - $ - $ - $ -
Other Current Assets $ 161,458 $ 55,791 $ 77,990 $ 61,145
All Other Assets* $ 793,732 $ 835,752 $ 614,461 $ 641,065
Total Assets $ 2,466,308 $ 2,305,404 $ 1,983,443 $ 2,393,108
Liabilities
Accounts Payable $ 518,717 $ 520,454 $ 390,007 $ 621,436
Mortgages, Bonds Payable in <1 Year $ 3,770 $ 7,917 $ - $ -
Other Current Liabilities $ 506,736 $ 410,610 $ 359,713 $ 809,722
Loans from Stockholders $ - $ 496,155 $ - $ -
Mortgages, Bonds Payable in >1 Year $ 193,205 $ 220,806 $ - $ 3,580
Other Liabilities $ - $ - $ - $ -
Total Liabilities $ 1,222,428 $ 1,655,942 $ 749,720 $ 1,434,738
Stockholders' Equity $ 1,243,880 $ 649,462 $ 1,233,723 $ 958,370
Total Liabilities and Stockholders' Equity $ 2,466,308 $ 2,305,404 $ 1,983,443 $ 2,393,108
Print
Summary
Detail
Printer
File
Done

A. BALANCE SHEET

The balance sheet, as shown on the preceding page, has three components: assets, liabilities, and shareholders' equity. Assets represent the investing activities of the firm; liabilities and shareholders' equity represent the financing activities of the firm. Three factors are important when assessing items on the balance sheet, including: (1) when the balance sheet item is recognized (i.e., determining when a financial transaction legitimately results in the generation of an asset, liability, or equity); (2) how the balance sheet item is valued; and, (3) how it is classified.

1. Assets

Assets are resources that: (a) have a potential for providing the firm with future economic benefits; (b) can be measured in dollar terms; and, (c) are owned and controlled by the firm as a result of past transactions. Assets are generally valued using their acquisition or historical cost. They are typically classified according to their longevity, yielding two broad categories of assets, current assets and long-lived assets.

a. Current Assets

In general, current assets include cash and other assets that will likely be converted into cash in the near future, generally within one year from the date of the balance sheet.

- **Cash** includes coins and currency held by the firm or in bank deposits.

- **Accounts receivable** represent amounts due from customers but not yet collected. After goods are shipped or a service provided, a customer typically has a certain period of time (e.g., 30, 60, or 90 days) in which to pay.

- **Inventories** represent raw materials held as inputs to a production process, partially finished goods in the process of manufacture, or finished goods ready for resale, such as automobiles coming off an assembly line or canned goods on the shelves of a grocery store.

- **U.S. government obligations** are notes or bonds issued by the Federal government and purchased by the firm. They represent very liquid assets that, in general, can be easily converted into cash.

- **Tax-exempt securities** are notes or bonds issued by authorities with certain tax-exempt status, primarily municipalities. In most cases, these debt instruments are easily sold and converted into cash.

- **Other current assets** include a variety of items that are likely to be converted into cash over the next operating period. These assets should be itemized in an attachment to the tax returns.

b. Long-Lived Assets

The category, "All Other Assets," appearing in the summary balance sheet includes a number of long-lived assets detailed in the tax return. These represent assets that are not intended for sale in the near term and generally are used continually over time throughout the production process. The asset items typically include:

- **Loans to stockholders** represent money loaned to owners of the company. EPA generally regards such loans as being available to fund a penalty payment or Superfund contribution. Presumably, the owners could borrow equivalent sums from a commercial lending institution and repay the loan to the firm.

- **Mortgage and real estate loans** are funds loaned to other parties for purchasing real estate property. Depending on the nature of these loans, they may be "callable" to fund an environmental expenditure.

- **Other investments** represent funds the firm has used to purchase a variety of assets that it does not intend to liquidate in the near future. These assets and their value should be itemized in an attachment to the tax return.

- **Buildings and other depreciable assets** are manufacturing facilities, warehouses, and other pieces of productive equipment. Since their productive capacities are likely to last for a period of years, these assets are depreciated over time. Depreciation represents the allocation of the purchase price of these assets over their useful life.

- **Depletable assets** generally include natural resource reserves, like oil or coal.

- **Land** is simply property owned by the company.

- **Intangible assets** include patents, non-compete agreements, and goodwill among others. Patents and non-compete agreements are rights granted or purchased to exclude others from manufacturing, using, or selling certain processes or devices. Goodwill is an amount paid by the firm in acquiring another business enterprise that is greater than the sum of the then-current values assignable to the business's identifiable assets. Brand names, for example, represent potentially considerable yet intangible value.

- **Other assets** includes those assets not identified above. An itemization of these assets should be included in an attachment to the tax returns.

2. Liabilities

Liabilities are obligations of the firm to transfer assets or provide services at a specific time in the future as a result of past transactions. Liabilities are generally measured at their current cash value (if payment is to be made within one year) or cost (the amount originally borrowed). Like assets, liabilities are typically classified into two categories, current and long-term.

a. Current Liabilities

Current liabilities include all debts that fall due within the next operating period (typically 12 months). They have a close relationship with current assets, since current assets represent the source of funds available to settle a firm's current liabilities. The ability to fund current liabilities by converting current assets into cash is one of the most important indications of financial health.

- **Accounts payable** are amounts owed for goods or services acquired under an informal credit agreement. These accounts are usually payable within one or two months. (The same items appear as accounts receivable on the creditors' balance sheet.)

- **Mortgages, bonds payable in less than one year** equal the face amount of promissory notes given in connection with loans from a bank or other lender.

- **Other current liabilities** includes other liabilities not categorized above. These items should be itemized in an attachment to the tax return.

b. Long-Term Liabilities

Long-term liabilities represent debts owed by the firm, due in more than one year. They are important because the amount of debt held by a firm affects its debt capacity, or ability to borrow additional money, perhaps to fund a penalty payment or remediation expenditure.

- **Loans from stockholders** represents funds loaned to the firm by its owners.

- **Mortgages, bonds payable in more than one year** are long-term promissory notes or mortgages representing sums of money borrowed for a relatively long period of time under a formal written contract, i.e., the portion of the firm's liabilities not likely to be repaid within the current year.

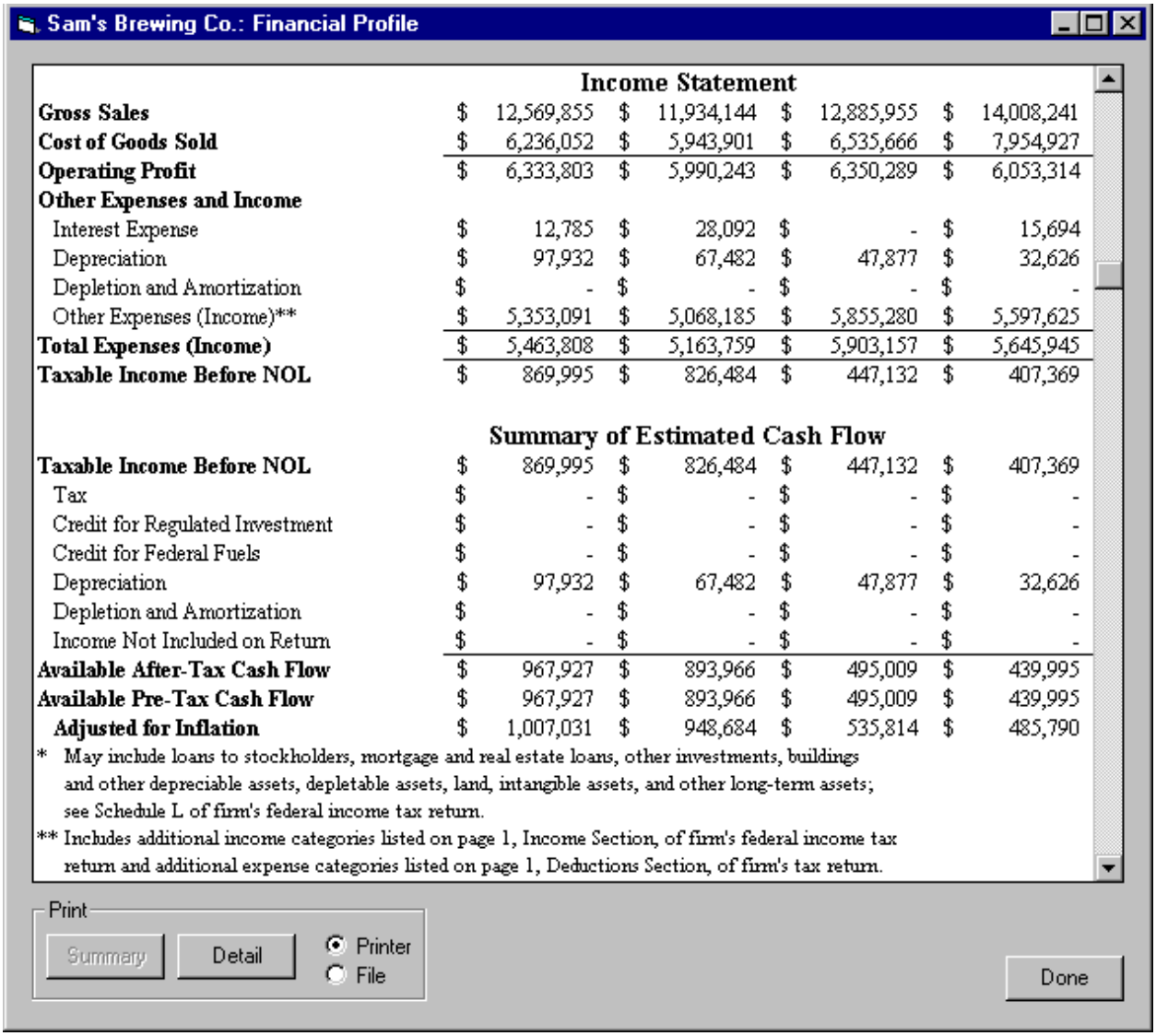
3. Shareholders' Equity

Shareholders' equity represents the total interest that all shareholders have in the corporation. It is equal to the firm's net worth, or assets less liabilities. This item is typically split into two general components, capital stock and retained earnings. Capital stock represents shares in the firm, or a proportion of ownership. Retained earnings represents the sum of profits earned over the course of the firm's operating history net of any portion of these profits distributed to the owners in the form of dividends. Retained earnings is the total amount of profits owners choose to leave in the firm to provide working capital, fund reinvestment efforts, or initiate other productive activities. Note that shareholders have a "residual" interest in the value of the firm, i.e., other creditors' claims must generally be satisfied before shareholders can claim their share of the value of the firm.

4. Items to Look for in the Balance Sheet

The summary balance sheet presented in the ABEL results is particularly useful in identifying trends in performance over time. Look for items that exhibit considerable variability year to year, or are trending upward or downward. Also consider the relationship of current assets to current liabilities. A healthy firm will generally have sufficient current assets, assets that can readily be converted into cash, to meet its near-term debt payments. A rough measure of this capability is having current assets that are at least twice as large as current liabilities.

Also look at long-term assets to determine whether these items are increasing or decreasing in value, perhaps suggesting that the firm is investing in new productive assets or selling these assets. Determine whether the firm is increasing or decreasing the amount of debt it is carrying. Increasing debt levels may indicate the firm is having difficulty generating sufficient funds internally to fund its ongoing operations, requiring it to borrow money. Determine whether the firm has loans from or to shareholders, indicating a close relationship between the company and its owners. After you have identified any interesting items or general trends in the data, contact the EPA Helpline at 888-ECONSPT.


Sam's Brewing Co.: Financial Profile
Income Statement
Gross Sales $ 12,569,855 $ 11,934,144 $ 12,885,955 $ 14,008,241
Cost of Goods Sold $ 6,236,052 $ 5,943,901 $ 6,535,666 $ 7,954,927
Operating Profit $ 6,333,803 $ 5,990,243 $ 6,350,289 $ 6,053,314
Other Expenses and Income
Interest Expense $ 12,785 $ 28,092 $ - $ 15,694
Depreciation $ 97,932 $ 67,482 $ 47,877 $ 32,626
Depletion and Amortization $ - $ - $ - $ -
Other Expenses (Income)** $ 5,353,091 $ 5,068,185 $ 5,855,280 $ 5,597,625
Total Expenses (Income) $ 5,463,808 $ 5,163,759 $ 5,903,157 $ 5,645,945
Taxable Income Before NOL $ 869,995 $ 826,484 $ 447,132 $ 407,369
Summary of Estimated Cash Flow
Taxable Income Before NOL $ 869,995 $ 826,484 $ 447,132 $ 407,369
Tax $ - $ - $ - $ -
Credit for Regulated Investment $ - $ - $ - $ -
Credit for Federal Fuels $ - $ - $ - $ -
Depreciation $ 97,932 $ 67,482 $ 47,877 $ 32,626
Depletion and Amortization $ - $ - $ - $ -
Income Not Included on Return $ - $ - $ - $ -
Available After-Tax Cash Flow $ 967,927 $ 893,966 $ 495,009 $ 439,995
Available Pre-Tax Cash Flow $ 967,927 $ 893,966 $ 495,009 $ 439,995
Adjusted for Inflation $ 1,007,031 $ 948,684 $ 535,814 $ 485,790
* May include loans to stockholders, mortgage and real estate loans, other investments, buildings and other depreciable assets, depletable assets, land, intangible assets, and other long-term assets; see Schedule L of firm's federal income tax return.
** Includes additional income categories listed on page 1, Income Section, of firm's federal income tax return and additional expense categories listed on page 1, Deductions Section, of firm's tax return.
Print
Summary
Detail
Printer
File
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B. INCOME STATEMENT

The income statement, as shown on the previous page, provides the firm's profits or losses generated during the course of the operating period. These earnings equal the difference between revenues and expenses. The income statement matches the amounts received from selling goods and services against the costs incurred to produce those goods and services.

1. Components of the Income Statement

A firm's primary income source is gross sales. To produce and sell a good or service, a business incurs expenses through the purchase of the required materials and labor. Expenses are generally broken into two categories, including cost of goods sold and overhead (or general and administrative costs).

- **Gross sales** represent income received or likely to be received (i.e., accounts receivable) as a result of selling goods or services. Sales are recognized when earned by the company (e.g., when a product is shipped to a customer) and if there is reasonable certainty that the firm will receive payment for that sale.

- **Cost of goods sold** represents the input costs of the final product that is sold. It includes costs that can be directly attributed to the production of the good or service. Common items include cost of raw materials and labor, rent paid on the manufacturing facility, and expenses related to the operation and use of related equipment. These costs are itemized in Schedule A of a company's federal income tax return and related attachments.

- **Overhead, or general and administrative, expenses** represent the cost of operations not directly related to the manufacture of the product or delivery of a service. Examples include administrative and marketing costs. The "Deductions" section on page one of the tax return details a number of these expense items, including officers' compensation, interest payments, rent, depreciation, and a number of others, including an itemization of these expenses in attachments to Line 19 of the return.

For purposes of presentation, ABEL also includes in this section a summary of other income sources detailed in the "Income" section on page 1 of the tax return. Such income might include rental payments received on real estate holdings or interest payments received from loans made by the firm.

2. Items to Look for in the Income Statement

The income statement provides useful information on a firm's past and likely future profitability. The difference between gross sales and cost of goods sold equals operating profit. Operating profit is an important measure of firm health because it indicates whether a firm's core operating activities are generating positive returns. The difference between the sum of all income and the sum of all expenses equals taxable income. Positive taxable income indicates the firm is generating sufficient income to meet all of its business expenses and has additional income left over.

Like the balance sheet, the summary income statement provides useful information to identify trends in performance. Look to see whether sales are increasing or decreasing, and whether expenses are changing in proportion. Observe whether particular expense items are variable or appear high relative to the size of the company. Determine whether profits appear to be increasing or decreasing over time. Once you have identified any interesting items, contact the EPA Helpline at 888-ECONSPT to help you understand and interpret the information.

Note that certain expenses may not represent an outflow of cash from the company. The most important non-cash expense is generally depreciation. These expenses represent the annual usage of an asset. The presence of non-cash expenses has important consequences for the calculation of cash flow, as discussed below.

C. SUMMARY OF CASH FLOWS

The flow of income and expenses in and out of a firm may differ from the flow of cash. One source of this difference in the timing of income and expenses and cash is non-cash expenses. ABEL's cash flow summary illustrates these timing differences. To reconcile income with available cash, we start with taxable income and add back any non-cash expenses that are impounded in the taxable income amount. The resulting total represents a rough estimate of the annual pre-tax cash flow the firm is generating, as opposed to its taxable income. In most cases, this calculation will only include an allowance for depreciation expenses. In some cases, a firm will also have amortization expenses, which are non-cash expenses similar to depreciation. After subtracting out an appropriate cash allowance for taxes and other tax-related deductions, and adjusting for inflation, we can calculate a rough estimate of the after-tax cash flow being generated by the firm.

Cash flow is the lifeblood of any business. A firm with sufficient cash can easily fund its ongoing operations without acquiring additional debt; furthermore, it can easily make any interest or principal payments on debt it does maintain. As you review the cash flow summary, consider whether the firm's cash flow is positive or negative, is trending upward or downward, or is highly variable from year to year. Talk with the EPA Helpline at 888-ECONSPT to help you interpret the data.

Remember that any positive cash flow amounts presented in this summary represent cash available after the firm meets all of its operating expenses. Accordingly, available cash flow is the primary consideration in ABEL's calculation of ability to pay. The model uses this information to estimate the average annual cash flow a firm is likely to generate. ABEL then projects this average cash flow amount out five years (or some alternative number of years as designated by the user) to predict the firm's future available cash flow. From this projection, the model then derives its conclusion presented in the "Ability to Pay Analysis" section of the model's results.