

## Business Games and Experiential Learning in Action, Volume 2, 1975

### THE COMPUSTAT ANALYSIS SYSTEM

Carl E. Ferguson, Jr., University of Missouri

The COMPUSTAT Analysis System is an integrated set of software for use with the COMPUSTAT financial data files. The COMPUSTAT service, a data product of Investment Management Sciences, Inc., consists of a number of computer readable libraries of financial, statistical, and market information covering several thousand industrial and non-industrial companies [1, sec. 3, p. 1]. These data form a substantial resource for many types of managerial analysis, academic research, and academic instructional support. Their usefulness is however a function of the available retrieval and analytical software. It is in this area that CAS can be of value to all COMPUSTAT users.

CAS modules are designed around the data files. The following table presents the COMPUSTAT files and their respective CAS module.

TABLE 1

COMPUSTAT Files and CAS Modules

| File<br>Names        | Abbreviated<br>Name | Supporting<br>CAS<br>Module |
|----------------------|---------------------|-----------------------------|
| Annual Industrial    | ANNIND              | CASAI                       |
| Annual OTC           | ANNOTC              | CASAI                       |
| Annual Canadian      | ANNCDN              | CASAI                       |
| Quarterly Industrial | QTRIND              | CASQI*                      |
| Annual Utility       | ANNUTL              | CASAU*                      |
| Quarterly Utility    | QTRUTL              | CASQU*                      |
| Annual Bank          | ANNBNK              | CASQU*                      |
| Quarterly Bank       | QTRBNK              | CASAB*                      |

\* Under Development

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As indicated in Table 1, the Annual Industrial Module (CASAI) is available at this time. CASAI offers the user two major types of service:

### **I. Data Management**

1. Copying all of the companies on a file, or a specified subset of companies.
2. Copying all data items for a given company or a specified subset of data items.
3. Copying all years for which data is available for a given company or a specified subset of years.
4. Punching the data in an eighty column format, all or subsets as in 1, 2, and 3.
5. Listing the data to a 132 column printer all or subsets as in 1, 2, and 3.
6. Screening the file to select companies that meet user specified criteria.
7. Aggregating company data to form composites.

### **II. Data Analysis**

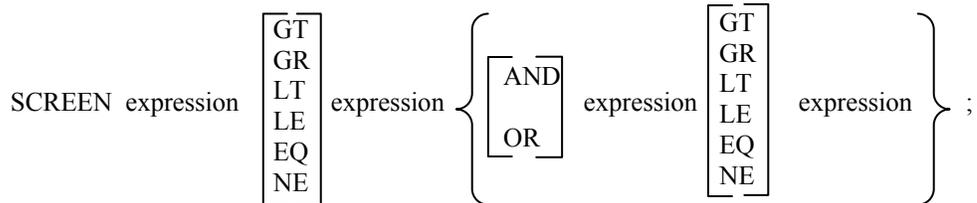
1. Ratio analysis.
2. Balance sheet and income statement.
3. Valuation measures.
4. Regression analysis (trend and multiple regression models).
5. Compute user specified equations, using CASAI supplied functions if desired.
6. Printer plots of user specified variables.

As a module combining both data management and analytical functions, the potential user need be familiar with only one type of control card language. Utilizing a free format, and keyword approach the program options are easy to master and meet most of the needs of researcher and student.

As indicated, data management services are aimed at providing the user with data selection capacity for both printed listings and machine readable output. The student often wants to work

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with selected data items and years over a specific set of companies. Historically this required manipulating the entire COMPUSTAT file. Though this is not difficult for the experienced user, it is not viewed as a viable solution by the neophyte programmer. Thus, using CASAI to extract from the file those companies, items, and years the user desires, the magnitude of the task is significantly reduced. In addition to extracting specific companies, the user can specify a criteria screen which the firm must pass in order to be selected. These screens can be as simple as requiring total assets to be greater than a given value are quite complex involving many variables in quite lengthy models.



The following is the general form of the SCREEN parameter:

The first case would be coded:

```
SCREEN I(6, 20) GT 20;
```

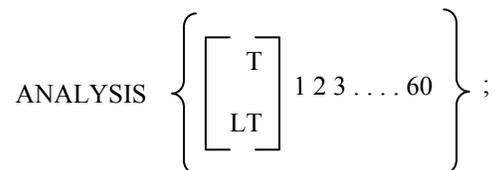
Thus, in order to be accepted, a company must have total assets in the last year greater than 20 million dollars.

A more complex screen might state:

```
SCREEN ( I(18, *) / I( 12, *) ) *100 GT 10 OR
        I(6,*) GT 10 AND I(6, *) LT 20 Y69 TO 73;
```

In other words net income to net sales must be greater than 10% or assets must be greater than 10 million and less than 20 million, and these conditions must hold for years 1969 through 1973. Prior to CASAI, students were required to be qualified programmers or know one in order to screen the file; now the user has the ability to screen all or part of the file using whatever criteria he or she desires.

CASAI analysis is invoked by the ANALYSIS parameter, with the general form:



All sub-parameters are optional. By selecting either T or LT and specifying one or more item numbers, the user requests either a simple trend or a log trend be computed for the item numbers listed. The T causes the given values of an item to be regressed on time. LT regresses the log of

## Business Games and Experiential Learning in Action, Volume 2, 1975

the value on time. Along with slope and intercept, CASAI computes and prints for each item requested, the per annum growth rate, and correlation with time.

This type of analysis was presented by Eiteman [2] and has been well received in the academic community. If neither T or LT are specified, a LT will be computed for earnings per share, net profit to common, net sales, dividend per share, average market price, book value per share, and cash flow per share. In addition to the trend analysis, all of the 60 items will be printed for ten years, organized by balance and income statement items and miscellaneous items. Again similar to the Eiteman statement analysis, selected financial ratios will also be computed for the last ten years. The ratios cover such areas as earnings per share measures, cash flow, liquidity, operating margins, balance sheet items per share, turnover rates, rates of return, capitalization, and financial soundness measures. A STATEMENT parameter of the form:

$$\text{STATEMENT } \left\{ \text{B I Y53 54 . . . . 73} \right\} ;$$

enables the printing of balance sheets and income statements. If no years are specified, the latest year of data is used to form the statements.

In addition to these established items, ratios, and statements, the user via the COMPUTE parameter, can compute any expression. The COMPUTE parameter has the form:

$$\text{COMPUTE } \left\{ \text{En} = \right\} \left[ \text{expression} \right] \left\{ \text{Y 54 . . . . 73 NAME user supplied name} \right\} ;$$

The user must either specify a mathematical expression with no target (i.e., no equal sign) or an assignment statement using as the target variable, En, where n can range from 1 to 60. Optionally a 28 character name can be assigned to each expression. If no name is assigned, the results of the computation will be referred to only by COMPUTE n where n is the number of the COMPUTE parameter from 1 to the number of COMPUTE parameters the user has provided. Thus, by using the COMPUTE parameter, the user can calculate any desired value from the company or composite data.

CASAI does not enable the non-programming user to do all of the things that a competent programmer could do. However, CASAI is a step beyond the basic data listing programs and fixed analysis routines. CASAI can be a viable research and educational tool.

**Business Games and Experiential Learning in Action, Volume 2, 1975**

REFERENCES

1. Investors Management Sciences, COMPUSTAT, September, 1973.
2. Eiteman, David K., "A Computer Program for Financial Statement Analysis," Financial Analysts Journal, November-December, 1964.