

Vast Stock Analysis a Tale of Many Woes

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(Second of Two Articles)

The center for research in security prices at the University of Chicago graduate school of business is well along in the first phase of a project designed to produce more information on stock price fluctuations than has heretofore been available. The project, with which Merrill Lynch, Pierce, Fenner & Smith, Inc., is linked as sponsor, has had its rough moments—by the thousands.

Lawrence Fisher, assistant professor of finance at the school, was placed in direct charge of operations at the center when it was established a couple of years ago. Almost immediately he ran into troubles.

Data was to be collected on all common stocks listed on the New York Stock exchange beginning in January, 1926, at intervals of one month. The exchange was asked to supply a copy of stock listings at the end of each month during the period. To the astonishment of Fisher and his associates, no such lists existed.

Takes Weeks of Effort

There followed weeks of clerical effort to get the information from the records of the exchange, record it on forms designed by Fisher, and transfer it to punch cards which later would be used to place it on tape. The clerical staff at times numbered as many as 40, with one key punch operator keeping up with the whole crew.

Another difficulty arose when an effort was made to eliminate all but common stocks. The clerks were instructed to copy everything not specifically labeled a preferred stock. It developed that there were dozens of things not labeled preferred stock that also were not—or probably were not—common stock. Some were difficult even for the experts to classify.

The information collected from the exchange was checked against data in other sources. As the material found its way from forms to cards, certain errors were detected. A sampling of 5,000 cards bearing price and trading volume information was taken.

133 Errors Found

The samplers found 133 errors, but 105 of them—all the big ones—would have been detected by the computers to which the data was to be submitted. This left an error factor of 0.56 per cent. Prof. James H. Lorie and Fisher noted that the program, up to that point, was 99 44-100 per cent pure.

However, they set up additional programs to eradicate errors in the recording of stock prices and trading volume, using names of "garble" and "Filter Queen" to identify each. Meanwhile, they were wrestling with dividends. And what problems there were!

Bear in mind that all data in each category had to be reduced to some sort of common language for processing. The researchers found that dividends were paid in Italian Lira at one time by a company listed on the New York Stock exchange. Another paid a divi-

dend or two in whisky warehouse receipts. Some companies have paid dividends in stock of other companies, as Standard Oil company [Indiana] which pays an occasional supplementary dividend in stock of Standard Oil company [New Jersey].

Dividends Are Classified

Moreover, each dividend was classified as to tax status. It might be capital gain, return of capital, ordinary income, or one of three or four others. And one dividend might fall into as many as three different categories.

"This kind of detail had never been recorded before," said Lorie, who was telling the story of the whole project. "It's all Fisher's fault. He insisted on it."

The recording of capital changes, without going into the gory details, was an equally back-breaking labor.

To figure what the investor earned on his stock, the cost of commissions also had to be taken into account. It was necessary to compute earnings if [1] dividends were reinvested in additional stock, or [2] dividends payments simply were retained as cash. Allowances had to be made for payment of taxes appropriate to the tax status of the investor, and for keeping or not keeping stock made available by mergers or exchange offers.

What Report Will Cover

The center, in its first report on how much investors earn on common stock, will cover the cases of investors in three arbitrarily chosen income and tax situations. It is possible, however, to "plug in" to the computer any combination of income and tax categories to see what investors at various levels of affluence would have earned on a specific stock purchase in any of several different times and under any of several different circumstances.

Beyond its initial analytical project—and remember that the data is still being organized and "purified"—the research staff will consider every possible stock purchase and resale at the end of a month in the 34 year period. There were more than 80 million such transactions.

The first effort at analysis when all pertinent data is on electronic tape will be to answer the question from Merrill Lynch that triggered the whole affair: What are average earnings rates on common stock investments? Lorie visualizes a long and useful future for the tape library and its computer-librarian, however.

The library will be kept up to date. And whereas data on New York Stock exchange prices consists of monthly closes thru July 1, 1960, the school has been collecting data on a daily basis since that time.

There is a very large industry based on selling stock market advice and predictions. The entire industry may well undergo some fundamental changes in the months to come when the analytical phase of the University of Chicago center for research on security prices is ready to roll.