

—Your Money Matters—

How Some Investors Use Personal Computers For Help in Picking Securities and Strategies

By RICHARD A. SHAFFER

Staff Reporter of THE WALL STREET JOURNAL
During every slump in the market, there are some stocks that do very well, and Charles W. Missler seems to have a knack for finding them—in his spare time.

An executive who specializes in rebuilding companies, Mr. Missler is chairman of Western Digital Corp., a Newport Beach, Calif., electronics firm. He also serves on the boards of several other companies, and he does a little consulting on the side. As a result, his schedule is so full that only the occasional evening or weekend is available for taking care of his personal investments. Yet in the last couple of years, his annual income from this off-hours pursuit has been in the \$50,000 to \$100,000 range.

"These have been hard times for the market in general," says Mr. Missler, "but my own portfolio has done fabulously."

His secret weapon is a little computer.

About the size of a typewriter, the machine sits on a desk in his study. Into it goes information about prices of securities, stock-market averages and economic indicators. He types the data in himself or pays his children to do it. What comes out is a sophisticated model of various corporations and markets that allows him to take advantage of opportunities that others apparently don't see so soon.

Mr. Missler's machine, an Altair 8800b, is one of the so-called personal computers that recently have become one of the computing industry's hottest products. These computers are built around microprocessors, the grandchildren of the transistor that form the tiny electronic heart of large computers as well as dozens of products ranging from calculators to electronic watches and video games.

The Boom in Sales

When first marketed, in 1975, these computers were sold in kits, mostly to hobbyists who wanted to build computers of their own and knew enough about electronics to do so. Since then, the market has soared. According to International Data Corp., a Waltham, Mass., computer-industry research firm, sales of personal computers amounted to more than \$63 million last year, up from \$5 million two years earlier, and probably will reach the \$300 million level by the end of the decade.

With the boom, these computers have spread far beyond the hobbyists and homeowners who used them to play games on the television set or to keep track of recipes or Christmas-card lists. Among the most popular new uses are investment analysis and portfolio management. No one really knows the extent of such use, but in a recent survey, 63% of the readers of Creative Computing magazine said they were interested in investment analysis by computer.

Already, personal computers are providing sophisticated individual investors with

the need to know how to program the machines.

Yet programming isn't all that difficult. Its essentials can be learned in minutes. Most computer investors write their own programs in the simple computer language called BASIC, an acronym for Beginners All-purpose Symbolic Instruction Code. According to Adam Osborne, who writes and publishes books on personal computing, "Learning how to program in BASIC is easier than learning how to trade stocks."

For those who don't want to create programs of their own, programs are available in books at prices ranging from about \$8 to about \$50 from companies such as Mr. Osborne's Osborne & Associates Inc., of Berkeley, Calif., and Scientific Research, of Key Biscayne, Fla. An increasing number of programs on investment analysis are also being printed in the personal-computing magazines, such as Kilobaud, Byte and ROM. These programs are lists of instructions which, when typed into the computer through its keyboard, guide the machine step by step through its tasks. A new journal, Microcomputer Investor, publishes studies on such topics as evaluating stock options. (One catch: The publication is available only to those willing to write an original article for it each year.)

When Everybody Has One. . . ?

For investment analysis and portfolio management, the most convenient programs, those recorded on magnetic tape or disk, are just coming on the market. The Computer Factory, a Manhattan store, has begun selling tape cassettes for the Pet Computer 2001 made by Commodore Business Machines Inc. These tapes contain programs that allow the \$800 computer to analyze options, stocks, annual reports and mortgages. For \$175, the Computer Factory also is providing a series of 12 tapes, one each month, that will automatically feed the

tools that, not long ago, only large institutions could afford. These small computers, which cost an average of about \$3,000, are in many ways comparable to the huge, work-horse computers of only a decade ago that cost hundreds of thousands of dollars. Low prices have made it easy for an individual with several stocks in his portfolio to apply technical trading theories and do standard fundamental analysis of corporate balance sheets and income statements without the tedium and errors of manual computation.

Looking for the 5-1 Payoff

Beyond that, the desk-top computers are permitting individuals to join the recent movement of professional money managers to quantitative measures of investment risk, such as volatility and beta coefficients. The machines also are proving useful in forecasting commodity prices—and in trading on the options market, where short-term price swings can be sudden and substantial.

Mr. Missler, it should be noted, is no novice. As a teen-ager, he was building a computer in his garage when other youngsters were hopping up cars, and he used to head the computing center at Ford Motor Co. But he isn't a professional investor, and his techniques give an impression of how advanced the amateur, with the aid of a computer, can become.

"I can pick up a company's 10-K and over the weekend build a computer model of that firm and project its probable behavior," he says. "When I was in the computer industry, that would have taken a staff of programmers a couple of weeks to do."

He maintains an electronic library of information on about 40 stocks and dozens of commodities and economic yardsticks. In less than an hour with his computer Mr. Missler can generate a statistical projection of the likely highs and lows of a stock over the coming nine months. With another computer program, he scans stock options in relation to interest rates and the securities that underlie the options. "I overlay a statistical distribution to generate an expected value of the play (the possible payoff)," he says, "and if the play has a significant advantage over its cost—usually at least 5-to-1—I seriously look at it."

Truth Remains Elusive

Investment analysis, of course, hardly requires a personal computer. Computer analysis of investments can be had from several companies for fees as low as \$100 a month. And all the analysis that computers do also can be done with advanced calculators, or even graph paper and a book of compound interest and annuity tables. Moreover, the most important part of automated analysis isn't the computer but the investment formulas, or algorithms, that it applies. "Computers aren't magic boxes where numbers go in and truth comes out," cautions Alan R. Kaplan, a personal-computing specialist at Data Communications Interface Inc., a Framingham, Mass., company that runs trade shows for the computer industry.

The power of the computer lies in its ability to organize and survey large quantities of information, detecting trends and discontinuities that would otherwise remain invisible. Most computers spend only a small fraction of their time doing arithmetic. Thus, for analysis that requires sophisticated mathematics but relatively little data, a programmable calculator such as the Texas Instruments TI-59 or the Hewlett-Packard HP-97 is adequate. As the amount of information to be screened increases, the more desirable a true computer becomes.

More than two dozen brands of personal computers are on the market now, ranging in price from about \$500 to about \$7,000. Most are capable of investment analysis. Among the more popular brands are computers made by Apple Computer Inc.; Imsai Manufacturing Corp.; the MITS division of Perdec Computer Corp., and Processor Technology Corp.

"Floppy Disks"

Generally, a computer's price varies with the size of "memory"—the amount of information that can be stored in the computer system—both in the computer itself and in the machines attached to it that serve as electronic file cabinets. Computer makers say that for financial analysis, the machine needs a memory that can hold at least 8,000 bytes, or characters of information. Another 8,000 memory spaces are needed to retain an electronic dictionary known as an interpreter that translates instructions from the operator to the machine.

Information that the computer doesn't immediately need is stored outside it on recording equipment. In less expensive computer systems, the information is recorded on cassettes of magnetic tape; costlier systems employ "floppy disks," which look like very thin 45-rpm records. Tapes are slower than disks because, to find any item on a tape, the computer must always start its search at the beginning. Disks provide what is known as random access memory (RAM). Information can be plucked from any part of the disk as needed.

Most authorities recommend starting out with a small computer, with limited memory and tape storage, to which more memory and disks can be added later. One such machine is the Radio Shack TRS-80 made by Tandy Corp. The basic model sells for \$800, and can be expanded into a system with four times as much memory, and a floppy disk, for another \$1,000.

While most personal computers no longer are sold as kits, they still have other drawbacks that limit their use. One obstacle is

Pet computer with data on 2,500 actively traded stocks. When one of these tapes is used with the report-analysis program, the computer calculates trends and ratios for a stock after its ticker symbol is typed on the keyboard.

Although most observers agree that the personal computer will have an increasing impact on the way individual investors buy and sell stocks, commodities and bonds, not everyone is convinced the effect will be entirely beneficial. "Within five years, most people who invest in the stock market will have a computer at their fingertips," predicts Portia Isaacson, president of the Computer Retailers Association, a new trade group. "People will be buying stock-market-analysis programs the same way they buy stereo records now."

"Which raises the question: What happens to the randomness of the market when thousands of investors are all using the same program?"