

CHAPTER I INTRODUCTION

Problem Statement

It has long been believed that it is a virtual impossibility, if not an *actual* impossibility, to predict the value of a given stock at some point in the future - it is of course the holy grail of any pursuit into the field of devising successful investment strategies. But as any investor that is successful over the long term can tell you, having *some* strategy, even though it may not be perfect, is important in terms of guiding your decisions in ever-variable conditions. Some strategies are psychological, relying on the sweeping waves of market reaction and overreaction to financial and non-financial events; some rely only on the strength and operational status of the company compared to its competition; some are purely statistical, correlating all manner of obvious and arcane averages, trends, and data points; many rely on combinations of all of the above.

One strategy is something of a *non-strategy*, in a sense: dollar-cost averaging (DCA.) Under this model, an investor spends *equal amounts of money* buying shares of a company at regular intervals *regardless of the price*. This ensures that over the long term the investor will buy *more* shares at lower prices and *fewer* shares at higher prices. It is therefore statistical in application, though it does not address the issue of *what* company in which to buy stock - that decision is left up to the investor. It may be thought of as a non-strategy because it completely ignores any factors external to the company *and*

ignores any factors internal to the company. It is a completely hands-off, automatic process. However, it is psychologically attractive because it allows investors to “buy low” even when they don’t know what prices may be considered “low,” once they have decided which company in which they wish to invest. It is popular with fixed-income investors and those investors that intend to hold the components of their portfolios for long periods of time.

But can we use computers to help us derive alternative strategies that still reflect the insular nature of dollar-cost averaging yet achieve better results? Can these strategies ignore external and internal factors, relying only on the history of share price changes, but still outperform the inherent “buy low” nature of dollar-cost averaging? This is the area that this project investigates.

Purpose of the Study

The purpose of this project is to use genetic algorithms to derive mechanical investment strategies that can outperform the use of DCA for a variety of sample stocks. If it could be found that such strategies *do* produce better results, they could be put forth as a superior alternative for those that embrace automatic, hands-off investing approaches. These derived strategies are structured to assign one of three actions - buy, sell, or hold - for any given price percentage change of a data set. For example, one derived solution may advise the buying of shares when the price rises 12%, but may

advise selling of shares when the price rises 25%. This model does *not* attempt to predict future prices or future price changes; rather, it examines the *history* of price changes to determine what the best (or good) action may have been for past price percentage changes - and in doing so, builds a case that repeating the same action for identical *current* percentage changes can yield positive results. Testing the validity of that claim, and hence comparing the results to DCA, is the focus of this project.

Research Questions

Obviously, the fundamental question to be answered is a simple one. Does applying the derived strategies to the test data sets lead to greater return on investment values than DCA over the same data? If so, can this result be accepted as a highly probable outcome over any general stock data set? And if not, how does the underlying trend of the test data set affect the strategy's performance?

Given that the program will generate multiple genomes for each input data set, what can be said about the probability of any single strategy producing positive results when used on the test data set? Can the results be reliably reproduced, or will wild variations in return on investment values negate any practical use for the program?

It can also be investigated as to whether transaction fees and interest on cash positions provide an advantage to the derived strategy performance, given that the derived strategies can feature hold actions and will tend to accrue large cash reserves.

CHAPTER II REVIEW OF RELATED LITERATURE

Genetic Algorithms

Genetic algorithms were originally developed by John Holland in the 1960s, although his work was inspired by earlier evolutionary computing theories put forth in the previous decade [4, p. 4]. His work formed the basis for modern genetic algorithms, which can be thought of as auto-intelligent search schemes. The primary application of genetic algorithms are maximizing and minimizing problems, as well as problems with ill-defined search spaces. Traditional search algorithms systematically search through a large set of possible solutions, or rely on having an ordered possible solution set. In contrast, genetic algorithms can take an arbitrary search space whose parameters are only minimally defined and can *evolve* an indefinite number of families of possible solutions, from which an acceptable, even an optimal, solution can be chosen [4, pp. 4 and 5].

How is this evolution enacted? The initial step in using a genetic algorithm is to design a *genome* that can represent a possible solution. This genome (or chromosome) can be a simple 1-D bitstring, or something as complex as an *n*-D array of arbitrary objects. A random population of these genomes is then created, from which promising solution candidates will eventually evolve. In order to facilitate evolution, instead of random breeding, a simulated natural selection process is codified in a *fitness* function and *selection* method [4, p. 9]. The fitness function is used to evaluate the relative

strength of possible solution (genome.) The selection method determines which genomes will survive and reproduce for the next generation and which will be eliminated from the genome pool. Such methods give preference to stronger genomes; many offer hedges against dominating genomes by also giving credit for diversity [4, p. 166].

In all, the probability that a perfect (or high-quality) solution will be evolved is high, given enough generations, because each generation of genomes can contribute its own individual strengths to the next generation.

GAlib

GAlib is intended to be a complete C++ solution for programmers desiring to use genetic algorithms to solve problems. Genetic algorithms built with the library can range from simple code whose parameters (crossover rate, mutation rate, etc.) can be modified for a user's needs, to fully-customizable systems where decisions on parameters can be set at run-time and custom genome representations and operators can be created with a minimum of code writing [6].

For programmers new to genetic algorithm systems, steps have been taken in the library to provide code that simplifies work and speeds use of the frameworks - output procedures and file-based or command-line-based input are built in and ready to use through simple function calls. These provisions are written through extensive use of

template-based object-oriented implementations, which is the secret to the immense customizations levels available to users [6].

GAlib has over a dozen genome representations pre-written in the code, ranging from simple bitstrings to 2-d and 3-d arrays of objects to trees and lists. It also has genetic operators appropriate for each genome type. Further, the library is heavily documented with class inheritance hierarchies, explanation of required member functions for custom classes, and extensive detailing of how different genetic operators, such as crossover types, perform. GAlib does lack user walkthroughs, however [6].

Dollar Cost Averaging

There are conflicting research reports concerning whether DCA is a more or less productive strategy than one-time lump-sum investing, value averaging, or asset allocation - primarily because there are so many market factors that affect the researched data sets that there is no way to establish a clearly strongest strategy for the majority of investment possibilities. It is a fundamental exercise used in the majority of 401k plans, and certainly it was (or is) a method pushed strongly by investment companies for their less experienced clients [2][5]. Regardless of such marketing, it has been shown that DCA allows for the accumulation of shares at a lower average cost than the average price of the shares [1, p. 30].

Despite that mathematical result, some researchers have concluded that DCA is no more successful or risk-averse than random decisions on buys and sells [3, p. 87]. Likewise, the alternative model they suggest, value averaging, bests DCA, under tested data sets, by an average of 3% on investment returns [3, p. 94]. In that sense, it may be irrelevant if DCA is a great strategy (surely it is not); for this project, it only matters if a strategy can be derived that nearly always bests DCA, and hence can take its place among other legitimate investment strategies.

It is surprising to note that there seems to be little, if any, published research in the area of trying to best DCA via genetic computing. Many artificial intelligence-based investment simulations are complicated attempts to find predictive elements out of mounds of chaotic unrelated and inter-related data - these of course all boil down to attempts to time the market through prediction. While they may or may not have any hope of success, little attention seems to have been paid to finding non-predictive but successful strategies.

CHAPTER III DESCRIPTION OF THE METHODOLOGY

GAlib

The initial phase of the project revolved around information gathering. Two pre-existing genetic algorithm libraries - GAlib and EO - were examined to judge their appropriateness for this project. Both are highly robust, battle-tested libraries with excellent performance. However, GAlib has a more complete set of documentation, which was appealing given that the need existed to build a custom (non-bitstring) chromosome. Choosing GAlib allowed the majority of the coding time to be spent working on the algorithms for the fitness function and applying the devised strategies to the test data sets.

Stock Selections

The second phase of the information gathering was related to the selection of stocks to feed the genetic algorithm and to use as test data sets. In order to gather a diverse group whose members represented a wide variety of industries, price trends and resistance or adherence to the broader economy, the decision was made to start with the 30 stocks that currently comprise the Dow Jones Industrial Average (appendix A) which would subsequently be cut in half to keep the program runs manageable in size. For this group split- and dividend-adjusted monthly share price histories (appendix C) from 1980 to 2002 [7] were gathered. This span of time was chosen for three reasons. First, it

features three significant market downturns (1981-1983, the crash of 1987, 2000-2002) and three significant market upturns (1982-1984, 1985-1987, 1989-2000) for variation. Second, it supplies a few hundred data points for the genetic algorithm to work with. And third, going back farther would have caused the majority of the data sets to feature adjusted share prices of zero, which would invalidate buy/sell mathematics.

From within that time period, the last 36 months were chosen to use as the test data sets - these months would *not* be used by the genetic algorithm in building solutions, but instead would be reserved for the application of the solutions and the application of DCA to determine ROI. This 36 month period contains a market rise, a market fall, and a leveling-off point, the combination of which is believed to be appropriate for testing the general strength of any solution in comparison to DCA. Applying the solutions to different time periods is an avenue for further investigation.

Given this time frame, several of the 30 stocks were disqualified. Home Depot, Microsoft, and SBC Communications did not exist as public stocks in January of 1980. American Express, General Electric, Johnson and Johnson, Coca-Cola, Altria Group, Merck, Wal-Mart, and Exxon-Mobil had adjusted shares prices of zero in January of 1980. And unfortunately, the data source [7] did not feature prices for Intel prior to 1986 or JP Morgan Chase prior to 1984.

Those exclusions left 17 stocks. For these a correlation matrix (appendix C) was computed showing the level of similarities between their historical share price percentage changes. This was an important step - since the genetic algorithm would devise strategies based on price percentage change histories, any two or more stocks with highly similar histories would likely interfere with drawing legitimate conclusions from the results. In essence, the histories should be as diverse as possible to test the validity and robustness of the program.

The correlation matrix revealed four “problem” stocks. DuPont (DD) had correlations of 0.68 and 0.64 with International Paper (IP) and 3M (MMM), respectively. IP had a correlation of 0.67 with MMM. Lastly, MMM also had a correlation of 0.62 with United Technologies (UTX.) By excluding MMM, three of these high correlations values disappeared. And by excluding either one of the IP/DD pair, the other could be kept. Since DD had a lower average correlation (0.379 vs. 0.396) against all stocks, IP was excluded. These exclusions produced a 15 element list (table 1), none of whose members had a correlation with each other of 0.6 or above.

| | | |
|------------------|-----------------------|---------------------------------------|
| Alcoa - AA | Disney - DIS | International Business Machines - IBM |
| Boeing - BA | Eastman Kodak - EK | McDonalds - MCD |
| Citigroup - C | General Motors - GM | Procter and Gamble - PG |
| Caterpillar - CT | Honeywell - HON | AT&T - T |
| DuPont - DD | Hewlett Packard - HPQ | United Technologies - UTX |

Table 1 - Stocks Selected for Program

The Program

The concept of a genetic algorithm allows for the exploration of possible solutions to problems without having to waste time and effort on weak or dead-end solutions - it is an exercise in efficiency that combines strong parts of some solutions with strong parts of other solutions, thereby *evolving* even stronger solutions over time. Furthermore, all it requires of a user is a structure to represent a solution (the chromosome) and a means of judging the strength of a solution (the fitness function.)

Relating this to mechanical investment strategies, we can see that genetic algorithms provide a promising area for exploration. In essence we wish to know when to buy, when to sell, and when to hold a stock. We can therefore design a chromosome to represent each of these three decisions, and can judge the strength of these decisions by calculating the ROI they generate. This is exactly what the program created for this project does.

The simulation program consists of four primary components (figure 1.) The first deals with selecting the price history data of a stock and converting it to percentage changes. The second calculates the DCA ROI for the stock over the test data set. The third constructs and runs the genetic algorithm to generate a strong genome representing

an investment strategy. The final component applies the devised strategy to the test data set.

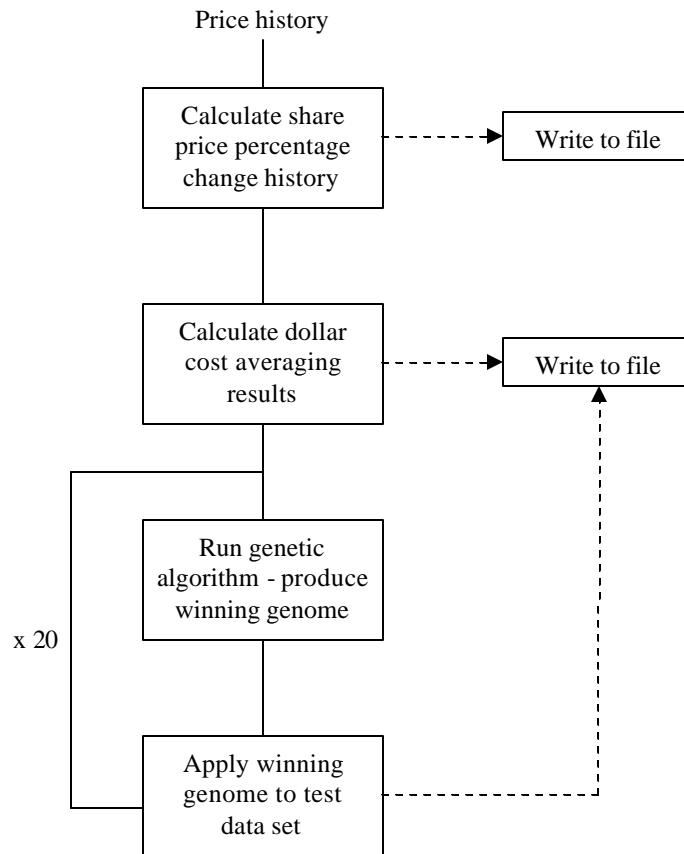


Figure 1 - Program Operation

Data and Input

The program begins by reading in sequential monthly share prices of a single stock from a data file supplied by the user on the command line. This file is parsed and the prices are stored in a vector. A second vector is then filled with the calculated

monthly percentage changes that correspond to the prices. This information is then written to a new “changes” file which exists solely as a user reference (the program works with the changes vector, not the changes file.) Also of note is that the program flags the maximum percentage increase and maximum percentage decrease. These are used to determine the range of changes, which is equally divided into 20 parts for use by the genetic algorithm in interpreting genomes.

DCA

The second major portion of the program calculates the DCA ROI for the stock over the test data set, after having parsed the transaction amount, transaction fee, and the cash position interest rate from the command line. The algorithm assumes that the transaction amount is made available every month for the purchasing of shares of stock. The actual number of shares purchased is determined by the divisibility of the transaction amount less the transaction fee by the price of a share of the stock for that month. Any remaining cash for that month (which is always less than the share price) is kept in a cash position; in the subsequent month, that cash position plus the new transaction amount is available for purchasing shares. After every month’s purchase the interest rate is applied to the cash position.

After the calculations proceed over the 36 month data set, the total ROI is calculated and displayed onscreen, as well as stored in an output file.

This design serves as a lookup table for all intents and purposes. If a given stock rises 5.34% in one month, for example, we could locate the position whose interval contains that change value and read the investment action there. Furthermore, since the intervals are determined by the actual stock data, there will never be a case where we need to lookup a change beyond the bounds of the array - each run of the program produces interval values that are scaled to the specific stock we are investigating. It should be noted that the granularity with which the range of price percentage changes are divided into intervals is limited by the chromosome having 20 positions. Using a longer chromosome is an area to be investigated in the future.

The *whichGene* Function

Using the chromosome as a lookup table requires a method of translating percentage change values into corresponding investment action values. This is where the helper function, *whichGene*, is useful. *whichGene* takes a percentage change as a parameter and returns the index of the position whose interval contains that value. It is used by both the fitness function and the *applyToNewData* function.

The Fitness Function

The fitness function of the genetic algorithm is used to assign a relative strength value to each and every genome that is generated. Much like the DCA function, it

assumes that the transaction amount is made available every month for the purchasing of shares of stock... but unlike the DCA function, it is not an automatic-buy situation. The action taken every month is determined by the investment action that corresponds with the price percentage change for that month held in the genome.

If the action is to be a buy, the transaction amount less the transaction fee is spent on shares. Note that only the transaction amount is spent on shares, even if a far greater cash position is available; this decision was made to keep the actions comparable to DCA. Nonetheless, allowing all available cash to be used in purchase actions is a viable alternative that was not investigated in this project. As in DCA, any cash remaining from the purchase is kept in a cash position.

If the action is to be a sell, the value of shares sold will be as close as possible to (but not more) than the transaction amount less the transaction fee, again to keep it in line with DCA. The cash generated from this sale is kept in a cash position. However, the full transaction amount is *also* deposited in this position, because DCA assumes that the transaction amount (read: income) is newly available every month. Therefore in a sell this model allocates the income as well as the proceeds from the sale of shares into a cash account. We can see, then, that by allowing sell actions a relatively massive cash position can accumulate compared to DCA. As with a buy, the option to sell the maximum amount of shares was avoided but may warrant further exploration.

If the action is to be a hold, the cash position is simply increased by the transaction amount.

For each of the three actions, the interest rate is applied to the cash position at the end of each month. The total strength of each genome can be calculated, then, by adding the final cash position to the product of the final shares held and the final share price. This amounts to a total portfolio value - the higher the value, the stronger the genome because each genome, over the course of the simulation, receives the same amount of investment dollars.

Miscellaneous Variables

Aside from how the genetic algorithm examines and judges its genomes, what other variables affect its operation? There are several areas worth mentioning.

First, the basic parameters of population size, number of generations, and probability of crossover and mutation must be set. Although there is no explicit method for determining the best values for these variables, a general rule of thumb is to start with a population of 50, a crossover (mating) probability in the tenths, and a mutation probability in the thousandths - and then to experiment with these values to tweak the results. The number of generations contributes to the likelihood of finding the strongest

possible solutions; generally the higher the better, though there is a point of diminishing returns.

After a fair bit of experimentation, a population of 50, a probability of crossover of 0.6, a probability of mutation of 0.002, and a run of 5000 generations were settled upon. Raising or lowering these numbers small amounts seemed to have little effect; changing them drastically generally produced significantly worse results.

Another area to address is the structure and operation of the genetic algorithm itself. A “Deme” algorithm was chosen which, unlike the traditional algorithm evolves populations in parallel, then at certain points mates them together, then evolves the children in parallel. This separate/joining process is repeated many times over the course of the generations; this method appeared to boost the ROI values small but significant amounts, likely due to the diversity of chromosomes it allows to flourish.

Another bit of customization allowed by GALib is the type of crossover. The default (single-point crossover) was chosen wherein each genome is broken into two parts, one of which is exchanged with its mate, to produce an offspring. Investigations into the other crossover types seemed to yield no better results, yet slowed the program operation significantly.

An important feature to consider is the method by which the genetic algorithm selects genomes from a current population to use to create the next generation. Since every genome receives a fitness score, the selection process boils down to mathematical preference. Rank selection, tournament selection, roulette wheel selection, and deterministic sampling selection were investigated. Rank selection, whereby the genomes with the top n fitness scores are selected, produced the highest ROI values on the test data sets, and was therefore the choice to use.

A final area of note is a means to decrease the time the genetic algorithm spends working. A terminating condition was set so that when the ratio of the highest fitness score of 200 generations ago to the highest fitness score of the current generation is 0.999 or higher, the evolution would cease. In essence, if fitness scores hit a virtually plateau over a 200 generation span, there is no need to continue the evolution. This cut the operating time of the genetic algorithm by more than half.

The Application of the Genome

After all of that evolution, then, the question that this project hopes to answer is the following: can it be said that genomes with strong performances on the input data sets produce ROI on the test data sets that are stronger than DCA ROI? The final program component provides the data to find an answer.

The *applyToNewData* function takes the “winning” genome from the genetic algorithm’s evolutionary process and applies its investment action advice to the test data set for the stock. Much like the fitness function it cooperates with *whichGene* to buy, sell, or hold shares in the stock while simultaneously maintaining a cash position. However, this function works with the final 36 months worth of data, which the fitness function avoided. Furthermore, instead of calculating a fitness score for the genome, it calculates the ROI for the 36 months of activity. It displays this result onscreen and writes it to the same output file used by the DCA component. Optionally it will display the actual contents of the genome along with the interval values.

A Note on Iterations

Due to the nature of the genetic algorithm’s evolutionary process, inherent with its random population seeding and probability-related operations, there is no guarantee that the strongest genome produced in one run would be identical to the strongest genome produced on any other run. There is even the possibility that two distinct genomes could have identical fitness scores. For these reasons, the decision was made to run the genetic algorithm 20 times for each run of the program. Doing so created 20 viable candidates to apply to the test data, and as many as 20 different ROI values. The analysis of these runs would show whether or not using the genetic algorithm to generate *one* genome of investment advice for real-world application is a better alternative to DCA; in other words, it is not sufficient to show that a genetic algorithm *could* produce a better strategy,

but rather it needs to be shown with a certain probability that the genetic algorithm *will* produce a better strategy.

Transaction Costs, Fees and Interest on Cash Reserves

Because the goal was to compare the computer derived strategies to DCA, it was necessary to fix the genetic algorithm variables to be analogous to the chosen DCA variables. DCA uses a fixed transaction dollar value at regular intervals; therefore the genetic algorithm would do the same. \$1000 was chosen as the transaction value for both - this amount, though somewhat arbitrary, ensures that many shares could be purchased at any transaction time because the share prices of the chosen stocks were far less than this amount.

The next variable to set was the transaction fee - the cost paid by the investor to the broker for the buying and selling of shares. DCA would incur this fee every month; the genetic algorithm would incur it every month save for when the advice dictated holding the stock. Such fees vary greatly in the real world: they may be fixed dollar-value or percentage-based, they may be scaled up or down for large purchases, and they be higher for full-service brokers compared to discount brokers. Due to this market variability there would be no way to accurately account for all possible fee values - therefore the decision was made to make the fee a flat percentage for this project. 1.5% of the transaction amount represented discount brokers and 3% of the transaction amount

represented full-service brokers. These values did have a small but noticeable impact on the ROI results, and therefore continued varying of this fee may be an area for future investigation.

The last of the associated transactional variables considered was the most difficult to quantify yet still very important to account for: interest on any residual cash carried in the portfolios. Under the genetic algorithm model, the portfolio would have a cash position that would be added to or subtracted from every month as shares were sold or bought, respectively. While it is possible that such cash could simply be kept “under the mattress” by an investor, the far more realistic approach would be to keep the cash in a savings or money market account, both of which bear interest. Accounting for this interest rate is difficult because it varies between banks and investment houses and changes several times a year (usually keyed to federal interest rates.) This variability means that there would be no systematic way to account for actual interest rates during the chosen time frame. Instead the choice was made to run the simulations at 0% (mattress) and 2% interest rates. 2% is a reasonable average over the long term for savings accounts, though slightly low over the long term for money market accounts.

It is worth noting that under the project’s DCA model, there would *also* be a residual cash position. Since the transaction amount for DCA is fixed and shares of stock must be bought in whole number amounts, there would be times when there is a cash

remainder from a monthly purchase. This remainder would grow each month until such a time as it equaled or exceeded the cost of one share for a given month, at which time it would be used to purchase another share. This remainder, then, also deserved to be matched with the 0% and 2% interest rates.

CHAPTER IV FINDINGS AND DISCUSSION

Description of Findings

The program was run over 15 stock samples, each containing 273 price percentage change data points. 237 of these data points were used to run the genetic algorithm (generating a strong genome strategy) and the remaining 36 data points were used to apply the devised strategy to determine ROI and to determine DCA ROI. For each of the 15 stocks, the program was run with four sets of variables - 1.5% and 3% transaction fees, and 0% and 2% cash position interest rates. This method required 60 full runs of the program. Each run created 20 independent genetic algorithm evolutions, producing 20 genomes of investment advice and 20 ROI results - yielding 1200 data points to analyze. ROI results can be found in appendix D; full program output, including the devised strategies, can be found in appendix E.

Results Analysis

Mean ROI vs. DCA ROI

A cursory glance at the program results shows that 55 of the 60 runs produced genomes whose mean ROI values on the test data sets were higher than the DCA ROI values. Promising? Perhaps, but certainly not yet convincing. One of the four CAT runs failed to best DCA and all four of the PG runs failed by a wide margin.

Certainly, though, examining the mean ROI values is not sufficient to draw legitimate statistical conclusions about the effectiveness of the program. After all, if several of the 20 genomes for each run failed to top the DCA ROI, would it matter if the mean was higher? When run in a real-life investment scenario, the user will be choosing and applying *one* genome to their investment activities - we must speak to the probability that any random genome yielded by the program will be able to top the DCA ROI.

Minimum ROI vs. DCA ROI

We next examine the minimum ROI values of each program run in comparison to the DCA ROI. 14 of the 60 runs produced at least one genome with a lower resultant ROI - this is more discouraging a result than the mean values. PG again contributed negatively, with four failures out of four runs. EK also contributed four, and CAT and UTX contributed three (each had one entirely successful run.) In total, out of the 320 genomes generated on these runs of these four stocks, 148 bested the DCA ROI. 11 of the 15 stocks, accounting for 880 genomes, bested the DCA ROI with each and every genome. That results in 1028 out of 1200 genomes besting the DCA ROI, or 86%. We again see evidence that the program works in the majority of cases, but have little estimate of confidence, and no reason yet to explain why it does not work in the entirety of cases.

Standard Deviations in Relation to Mean ROI vs. DCA ROI

Examining the distribution of ROI values may satisfy questions of confidence. How do the differentials between the mean ROI values and the DCA ROI values for each program run compare to the standard deviations of those runs? The results we hope for, obviously, are for the mean ROI values to be as many multiples of their standard deviations above the DCA ROI values as possible - the higher the multiple, the higher the probability that any genome produced by the program could best the DCA results.

Each run of AA, DIS, and GM produced a differential greater than three standard deviations, indicating greater than a 99% confidence interval. HON, HPQ, IBM, MCD, and T had a differential greater than two standard deviations on all runs, showing more than a 95% confidence interval. DD had four at 1.53 or higher for better than 80%. All nine of these stocks therefore produced great to stellar results in regards to how well we can expect the program to generate genomes that will outperform DCA.

BA had four runs at 0.91 or higher (though its average run was well above 1.27), C had four at 0.73 or higher (0.86 average), UTX had four at .52 or higher (0.9 average), and EK had three at 0.43 or higher (1 at 0.13.) We have already seen that EK and UTX produced disappointing minimum ROI results but positive mean ROI results, which the standard deviation results reinforce. And while BA and C still produce good minimum *and* mean results, they have only mildly acceptable confidence levels.

Our established loser, PG, failed on all four of its runs to achieve a differential of greater than one standard deviation. CAT failed three times, though oddly enough the 3% fee 2% interest run of CAT managed to achieve an 80% confidence interval. Looking at all runs, 15 out of 60 yield greater than a 99% confidence interval, 32 out of 60 yield greater than 95%, and 41 out of 60 yield greater than 68%.

Transaction Fees and Cash Position Interest Rates

We see from the data that the mean increase of the ROI results of the 1.5% fee runs compared to the 3% fee runs was 0.55%; it makes intuitive sense that higher fees would produce lower ROI. And while some of these runs actually had slightly higher ROI under the 3% fee condition, examining the genome results shows that there were a higher number of instances of the hold action being advised in these cases - and of course hold actions incur no fee whatsoever.

The mean increase of the ROI results of the 2% interest rate runs compared to the 0% interest rate runs was 1.25%, again satisfying intuitive sense. In the few instances where the 0% runs produced a higher mean ROI, examining the genomes shows that fewer buys were advised in the 0% runs, meaning the 2% runs would generally have lower cash positions, allowing the inherent variability of each genome to slightly overcome the expected higher results due to the interest rate.

We can also note that both the fee and interest rate differences for each run are smaller than one standard deviation of the run anyway, save for a few select cases. PG again causes problems in this area.

The Explanation of PG Performance

The question remains: why does the program perform from comparable to very well compared to DCA in all cases save for PG? What qualities of the PG data points force the mean and even maximum ROI values of the program to be significantly below the DCA ROI values?

The answer appears to lie in the shape of the PG test data set price graph (figure 3.) The PG prices begin with a sharp decline followed by a long, drawn-out upward trend. The 4th degree best-fit polynomial shows the overall progress.

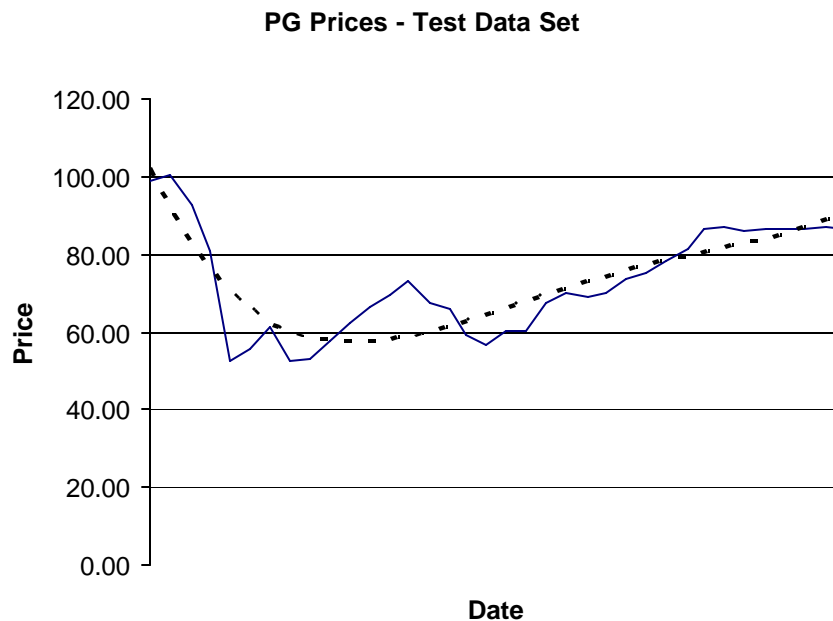


Figure 3 - PG Price Graph with Polynomial Best-Fit

What effect does such a curve have on buy/sell results? For any descending curve, the repeated buying of DCA will lead to a negative ROI. In comparison, any combination of buying, selling, and holding over the same descending curve will lead to an ROI that is always better than repeated buying. To illustrate this, the program was run again, but allowed to apply its genomes to only the first eight months of the 36 month test data set, which represented the downward opening trend. This resulted in a -24.82% DCA ROI, and a mean genome ROI of -8.38%, with a standard deviation of 2.55%, and a 6.44 standard deviation/differential multiple (table 2.) Clearly, the program has no difficulty outperforming DCA here because it avoids repeated buying.

| | 1st 8 (of 36) | | Last 19 (of 36) | |
|------------------------------------|----------------------|---------|------------------------|-------|
| DCA ROI | -24.82% | | 11.40% | |
| Genome ROI | -8.25% | -11.88% | 4.76% | 6.40% |
| | -11.88% | -6.04% | 4.76% | 4.76% |
| | -7.04% | -5.57% | 4.76% | 3.62% |
| | -7.42% | -7.04% | 3.62% | 8.16% |
| | -11.88% | -6.04% | 4.76% | 4.76% |
| | -6.04% | -12.25% | 3.62% | 6.40% |
| | -10.87% | -7.04% | 6.40% | 4.76% |
| | -11.88% | -10.87% | 6.40% | 4.76% |
| | -7.04% | -7.04% | 6.40% | 4.76% |
| | -5.57% | -6.04% | 3.42% | 6.40% |
| Mean | -8.38% | | 5.18% | |
| Std Dev | 2.55% | | 1.25% | |
| Mean/DCA ROI Differential | 16.44% | | -6.22% | |
| Std Dev Distance to DCA ROI | 6.44 | | -4.97 | |

Table 2 - Specialized PG Results

Then what of the long, sustained upward trend in the test data set? For any ascending curve, the repeated buying of DCA will maximize ROI; no combination of buying, selling, and holding can outperform DCA on strictly increasing values. To illustrate this, the program was run over the last 19 months of the 36 month test data set (see table 2) which represented the upward trend (though the data points were not strictly increasing.) DCA achieved an 11.4% ROI. The genomes averaged only 5.18%, with a standard deviation of 1.25% and a maximum of only 8.16%. By its very nature, the genetic algorithm *cannot* outperform DCA here.

And so it is apparent that although the genomes had a chance to best DCA on the early portion of the PG test data set, they could not keep pace after that point, especially since the shares purchased by DCA on the second half of the descending curve paid off well with regards to the higher terminal price.

What relevance does this have to expected performance of the program on any random stock? The weakness of the program has been revealed: it cannot top DCA results when applied to a price set with a sustained decreasing portion followed by a sustained increasing portion. Does that make it useless since we cannot predict the price curve a stock will assume? Not at all. If the use of a genome is monitored, its singular failing can be at worst tempered and at best avoided. If the progress of the stock to which it is applied is charted, the investor can watch for sustained down turns. If the stock then begins to increase over a significant period of time, the investor can choose to abandon the genome advice, switching to repeated buying, until the sustained increase appears to falter. At that point the genome would regain its advantage, and the following of its advice could be resumed.

Summary

The genome-based advice created by this program performed quite well in besting dollar cost averaging results. It achieved comparable to slightly better return on

investment values on five of the 15 tested stocks, and easily beat DCA on nine others, each of which had very high confidence intervals. Only one stock proved impossible for the genomes to best DCA on due to the nature of its price curve.

CHAPTER V CONCLUSIONS

While it has been shown that relying solely on price percentage change histories within a genetic algorithm is not a perfect methodology when attempting to supplant the classic DCA investment model, it does offer a promising alternative. This is especially true given that its only significant failure on the sample stocks came when faced with a very specific trend within a data set - a trend that can, in practice, be monitored and accounted for to minimize the failings of the methodology. All other results were entirely significantly encouraging to wildly successful in meeting the goal of the project.

Further adjustments to the algorithm, such as allowing for variable transaction amounts or accounting in some way for market or moving averages may have the potential to increase the performance even more, and warrant investigation. Likewise, more testing with different transaction fees and interest rates, and with more stock data sets, would serve to give greater validation to the impressive results that were achieved.

Appendix A - Dow Industrial Average Stocks

List of Current Dow Jones Industrial Average Stocks

| | |
|------------------------|---------------------------------------|
| 3M - MMM | Home Depot - HD |
| Alcoa - AA | Honeywell International - HON |
| Altria - MO | Intel - INCT |
| American Express - AXP | International Business Machines - IBM |
| AT&T - T | International Paper - IP |
| Boeing - BA | J P Morgan Chase - JPM |
| Caterpillar - CAT | Johnson & Johnson - JNJ |
| CitiGroup - C | McDonalds - MCD |
| Coca-Cola - KO | Merck - MRK |
| DuPont De Nemours - DD | Microsoft - MSFT |
| Eastman Kodak - EK | Procter and Gamble - PG |
| Exxon Mobil - XOM | SBC Communications - SBC |
| General Electric - GE | United Technologies - UTX |
| General Motors - GM | Wal-Mart Stores - WMT |
| Hewlett-Packard - HPQ | Walt Disney - DIS |

Appendix B - Price Histories for 17 Selected Stocks

| | AA | % | BA | % | C | % |
|----------|------|---------|------|---------|------|---------|
| 01/02/80 | 0.02 | | 0.54 | | 0.13 | |
| 02/01/80 | 0.02 | 0.00% | 0.53 | -1.85% | 0.11 | -15.38% |
| 03/03/80 | 0.02 | 0.00% | 0.47 | -11.32% | 0.11 | 0.00% |
| 04/01/80 | 0.02 | 0.00% | 0.48 | 2.13% | 0.11 | 0.00% |
| 05/01/80 | 0.02 | 0.00% | 0.48 | 0.00% | 0.11 | 0.00% |
| 06/02/80 | 0.02 | 0.00% | 0.49 | 2.08% | 0.12 | 9.09% |
| 07/01/80 | 0.03 | 50.00% | 0.54 | 10.20% | 0.12 | 0.00% |
| 08/01/80 | 0.03 | 0.00% | 0.57 | 5.56% | 0.11 | -8.33% |
| 09/02/80 | 0.04 | 33.33% | 0.57 | 0.00% | 0.11 | 0.00% |
| 10/01/80 | 0.04 | 0.00% | 0.54 | -5.26% | 0.11 | 0.00% |
| 11/03/80 | 0.04 | 0.00% | 0.62 | 14.81% | 0.11 | 0.00% |
| 12/01/80 | 0.04 | 0.00% | 0.72 | 16.13% | 0.11 | 0.00% |
| 01/02/81 | 0.04 | 0.00% | 0.65 | -9.72% | 0.11 | 0.00% |
| 02/02/81 | 0.05 | 25.00% | 0.61 | -6.15% | 0.10 | -9.09% |
| 03/02/81 | 0.05 | 0.00% | 0.61 | 0.00% | 0.14 | 40.00% |
| 04/01/81 | 0.05 | 0.00% | 0.59 | -3.28% | 0.15 | 7.14% |
| 05/01/81 | 0.05 | 0.00% | 0.61 | 3.39% | 0.15 | 0.00% |
| 06/01/81 | 0.05 | 0.00% | 0.57 | -6.56% | 0.14 | -6.67% |
| 07/01/81 | 0.04 | -20.00% | 0.52 | -8.77% | 0.13 | -7.14% |
| 08/03/81 | 0.05 | 25.00% | 0.47 | -9.62% | 0.12 | -7.69% |
| 09/01/81 | 0.05 | 0.00% | 0.49 | 4.26% | 0.12 | 0.00% |
| 10/01/81 | 0.05 | 0.00% | 0.53 | 8.16% | 0.13 | 8.33% |
| 11/02/81 | 0.05 | 0.00% | 0.51 | -3.77% | 0.13 | 0.00% |
| 12/01/81 | 0.05 | 0.00% | 0.51 | 0.00% | 0.12 | -7.69% |
| 01/04/82 | 0.05 | 0.00% | 0.48 | -5.88% | 0.12 | 0.00% |
| 02/01/82 | 0.06 | 20.00% | 0.48 | 0.00% | 0.10 | -16.67% |
| 03/01/82 | 0.06 | 0.00% | 0.45 | -6.25% | 0.10 | 0.00% |
| 04/01/82 | 0.06 | 0.00% | 0.49 | 8.89% | 0.10 | 0.00% |
| 05/03/82 | 0.07 | 16.67% | 0.49 | 0.00% | 0.10 | 0.00% |
| 06/01/82 | 0.07 | 0.00% | 0.45 | -8.16% | 0.11 | 10.00% |
| 07/01/82 | 0.07 | 0.00% | 0.46 | 2.22% | 0.10 | -9.09% |
| 08/02/82 | 0.10 | 42.86% | 0.79 | 71.74% | 0.11 | 10.00% |
| 09/01/82 | 0.09 | -10.00% | 0.69 | -12.66% | 0.11 | 0.00% |
| 10/01/82 | 0.10 | 11.11% | 0.91 | 31.88% | 0.11 | 0.00% |
| 11/01/82 | 0.10 | 0.00% | 1.17 | 28.57% | 0.11 | 0.00% |
| 12/01/82 | 0.11 | 10.00% | 1.23 | 5.13% | 0.11 | 0.00% |
| 01/03/83 | 0.13 | 18.18% | 1.32 | 7.32% | 0.11 | 0.00% |
| 02/01/83 | 0.13 | 0.00% | 1.42 | 7.58% | 0.12 | 9.09% |
| 03/01/83 | 0.13 | 0.00% | 1.55 | 9.15% | 0.12 | 0.00% |
| 04/04/83 | 0.13 | 0.00% | 1.48 | -4.52% | 0.14 | 16.67% |
| 05/02/83 | 0.16 | 23.08% | 1.65 | 11.49% | 0.16 | 14.29% |
| 06/01/83 | 0.16 | 0.00% | 1.88 | 13.94% | 0.16 | 0.00% |
| 07/01/83 | 0.17 | 6.25% | 1.71 | -9.04% | 0.15 | -6.25% |

| | | | | | | |
|----------|------|---------|------|---------|------|---------|
| 08/01/83 | 0.22 | 29.41% | 1.65 | -3.51% | 0.15 | 0.00% |
| 09/01/83 | 0.21 | -4.55% | 1.72 | 4.24% | 0.16 | 6.67% |
| 10/03/83 | 0.20 | -4.76% | 1.66 | -3.49% | 0.15 | -6.25% |
| 11/01/83 | 0.22 | 10.00% | 2.12 | 27.71% | 0.18 | 20.00% |
| 12/01/83 | 0.22 | 0.00% | 2.03 | -4.25% | 0.17 | -5.56% |
| 01/03/84 | 0.22 | 0.00% | 2.06 | 1.48% | 0.19 | 11.76% |
| 02/01/84 | 0.19 | -13.64% | 2.12 | 2.91% | 0.18 | -5.26% |
| 03/01/84 | 0.21 | 10.53% | 1.87 | -11.79% | 0.17 | -5.56% |
| 04/02/84 | 0.20 | -4.76% | 1.84 | -1.60% | 0.16 | -5.88% |
| 05/01/84 | 0.19 | -5.00% | 2.04 | 10.87% | 0.15 | -6.25% |
| 06/01/84 | 0.19 | 0.00% | 2.29 | 12.25% | 0.17 | 13.33% |
| 07/02/84 | 0.19 | 0.00% | 2.45 | 6.99% | 0.16 | -5.88% |
| 08/01/84 | 0.21 | 10.53% | 2.93 | 19.59% | 0.17 | 6.25% |
| 09/04/84 | 0.20 | -4.76% | 2.95 | 0.68% | 0.18 | 5.88% |
| 10/01/84 | 0.23 | 15.00% | 3.17 | 7.46% | 0.17 | -5.56% |
| 11/01/84 | 0.23 | 0.00% | 3.08 | -2.84% | 0.18 | 5.88% |
| 12/03/84 | 0.24 | 4.35% | 3.23 | 4.87% | 0.18 | 0.00% |
| 01/02/85 | 0.26 | 8.33% | 3.56 | 10.22% | 0.18 | 0.00% |
| 02/01/85 | 0.25 | -3.85% | 3.89 | 9.27% | 0.19 | 5.56% |
| 03/01/85 | 0.24 | -4.00% | 3.71 | -4.63% | 0.19 | 0.00% |
| 04/01/85 | 0.23 | -4.17% | 3.58 | -3.50% | 0.19 | 0.00% |
| 05/01/85 | 0.24 | 4.35% | 4.07 | 13.69% | 0.21 | 10.53% |
| 06/03/85 | 0.25 | 4.17% | 4.11 | 0.98% | 0.22 | 4.76% |
| 07/01/85 | 0.29 | 16.00% | 4.43 | 7.79% | 0.21 | -4.55% |
| 08/01/85 | 0.28 | -3.45% | 4.53 | 2.26% | 0.21 | 0.00% |
| 09/03/85 | 0.26 | -7.14% | 4.27 | -5.74% | 0.19 | -9.52% |
| 10/01/85 | 0.27 | 3.85% | 4.32 | 1.17% | 0.20 | 5.26% |
| 11/01/85 | 0.31 | 14.81% | 4.75 | 9.95% | 0.23 | 15.00% |
| 12/02/85 | 0.33 | 6.45% | 5.06 | 6.53% | 0.22 | -4.35% |
| 01/02/86 | 0.36 | 9.09% | 4.67 | -7.71% | 0.24 | 9.09% |
| 02/03/86 | 0.40 | 11.11% | 5.31 | 13.70% | 0.28 | 16.67% |
| 03/03/86 | 0.38 | -5.00% | 5.67 | 6.78% | 0.28 | 0.00% |
| 04/01/86 | 0.39 | 2.63% | 5.60 | -1.23% | 0.25 | -10.71% |
| 05/01/86 | 0.40 | 2.56% | 5.94 | 6.07% | 0.27 | 8.00% |
| 06/02/86 | 0.37 | -7.50% | 6.42 | 8.08% | 0.28 | 3.70% |
| 07/01/86 | 0.35 | -5.41% | 6.03 | -6.07% | 0.29 | 3.57% |
| 08/01/86 | 0.38 | 8.57% | 6.35 | 5.31% | 0.32 | 10.34% |
| 09/02/86 | 0.38 | 0.00% | 5.57 | -12.28% | 0.30 | -6.25% |
| 10/01/86 | 0.38 | 0.00% | 5.52 | -0.90% | 0.32 | 6.67% |
| 11/03/86 | 0.38 | 0.00% | 5.46 | -1.09% | 0.31 | -3.13% |
| 12/01/86 | 0.38 | 0.00% | 5.48 | 0.37% | 0.30 | -3.23% |
| 01/02/87 | 0.44 | 15.79% | 5.38 | -1.82% | 0.34 | 13.33% |
| 02/02/87 | 0.48 | 9.09% | 6.00 | 11.52% | 0.37 | 8.82% |
| 03/02/87 | 0.50 | 4.17% | 5.74 | -4.33% | 0.35 | -5.41% |
| 04/01/87 | 0.59 | 18.00% | 4.92 | -14.29% | 0.35 | 0.00% |
| 05/01/87 | 0.59 | 0.00% | 5.18 | 5.28% | 0.32 | -8.57% |

| | | | | | | |
|----------|------|---------|-------|---------|------|---------|
| 06/01/87 | 0.66 | 11.86% | 5.37 | 3.67% | 0.33 | 3.13% |
| 07/01/87 | 0.79 | 19.70% | 6.07 | 13.04% | 0.42 | 27.27% |
| 08/03/87 | 0.70 | -11.39% | 6.23 | 2.64% | 0.42 | 0.00% |
| 09/01/87 | 0.80 | 14.29% | 6.01 | -3.53% | 0.41 | -2.38% |
| 10/01/87 | 0.55 | -31.25% | 4.56 | -24.13% | 0.29 | -29.27% |
| 11/02/87 | 0.59 | 7.27% | 4.23 | -7.24% | 0.26 | -10.34% |
| 12/01/87 | 0.62 | 5.08% | 4.56 | 7.80% | 0.24 | -7.69% |
| 01/04/88 | 0.55 | -11.29% | 5.63 | 23.46% | 0.35 | 45.83% |
| 02/01/88 | 0.66 | 20.00% | 6.06 | 7.64% | 0.39 | 11.43% |
| 03/01/88 | 0.61 | -7.58% | 5.93 | -2.15% | 0.38 | -2.56% |
| 04/04/88 | 0.62 | 1.64% | 6.12 | 3.20% | 0.37 | -2.63% |
| 05/02/88 | 0.69 | 11.29% | 7.28 | 18.95% | 0.37 | 0.00% |
| 06/01/88 | 0.80 | 15.94% | 7.78 | 6.87% | 0.41 | 10.81% |
| 07/01/88 | 0.79 | -1.25% | 8.01 | 2.96% | 0.45 | 9.76% |
| 08/01/88 | 0.80 | 1.27% | 7.81 | -2.50% | 0.53 | 17.78% |
| 09/01/88 | 0.83 | 3.75% | 8.49 | 8.71% | 0.53 | 0.00% |
| 10/03/88 | 0.92 | 10.84% | 8.59 | 1.18% | 0.63 | 18.87% |
| 11/01/88 | 0.88 | -4.35% | 8.44 | -1.75% | 0.63 | 0.00% |
| 12/01/88 | 0.93 | 5.68% | 8.25 | -2.25% | 0.48 | -23.81% |
| 01/03/89 | 1.33 | 43.01% | 8.63 | 4.61% | 0.53 | 10.42% |
| 02/01/89 | 1.27 | -4.51% | 8.67 | 0.46% | 0.50 | -5.66% |
| 03/01/89 | 1.23 | -3.15% | 9.56 | 10.27% | 0.49 | -2.00% |
| 04/03/89 | 1.30 | 5.69% | 10.63 | 11.19% | 0.47 | -4.08% |
| 05/01/89 | 1.40 | 7.69% | 11.57 | 8.84% | 0.53 | 12.77% |
| 06/01/89 | 1.39 | -0.71% | 10.36 | -10.46% | 0.53 | 0.00% |
| 07/03/89 | 1.57 | 12.95% | 11.31 | 9.17% | 0.64 | 20.75% |
| 08/01/89 | 1.75 | 11.46% | 12.03 | 6.37% | 0.66 | 3.13% |
| 09/01/89 | 1.74 | -0.57% | 12.52 | 4.07% | 0.68 | 3.03% |
| 10/02/89 | 1.67 | -4.02% | 12.36 | -1.28% | 0.73 | 7.35% |
| 11/01/89 | 1.73 | 3.59% | 13.39 | 8.33% | 0.74 | 1.37% |
| 12/01/89 | 1.79 | 3.47% | 13.26 | -0.97% | 0.72 | -2.70% |
| 01/02/90 | 1.90 | 6.15% | 13.23 | -0.23% | 0.68 | -5.56% |
| 02/01/90 | 1.99 | 4.74% | 14.47 | 9.37% | 0.70 | 2.94% |
| 03/01/90 | 2.01 | 1.01% | 16.25 | 12.30% | 0.72 | 2.86% |
| 04/02/90 | 2.02 | 0.50% | 15.80 | -2.77% | 0.75 | 4.17% |
| 05/01/90 | 2.15 | 6.44% | 18.93 | 19.81% | 0.88 | 17.33% |
| 06/01/90 | 2.08 | -3.26% | 20.17 | 6.55% | 0.93 | 5.68% |
| 07/02/90 | 2.49 | 19.71% | 19.91 | -1.29% | 0.91 | -2.15% |
| 08/01/90 | 2.30 | -7.63% | 16.79 | -15.67% | 0.79 | -13.19% |
| 09/04/90 | 2.24 | -2.61% | 14.49 | -13.70% | 0.58 | -26.58% |
| 10/01/90 | 2.02 | -9.82% | 15.57 | 7.45% | 0.55 | -5.17% |
| 11/01/90 | 2.08 | 2.97% | 15.57 | 0.00% | 0.68 | 23.64% |
| 12/03/90 | 2.19 | 5.29% | 15.97 | 2.57% | 0.69 | 1.47% |
| 01/02/91 | 2.65 | 21.00% | 17.38 | 8.83% | 0.84 | 21.74% |
| 02/01/91 | 2.64 | -0.38% | 17.15 | -1.32% | 0.98 | 16.67% |
| 03/01/91 | 2.70 | 2.27% | 16.70 | -2.62% | 0.97 | -1.02% |

| | | | | | | |
|----------|------|---------|-------|---------|------|---------|
| 04/01/91 | 2.94 | 8.89% | 16.26 | -2.63% | 0.97 | 0.00% |
| 05/01/91 | 3.09 | 5.10% | 17.60 | 8.24% | 1.05 | 8.25% |
| 06/03/91 | 2.94 | -4.85% | 16.43 | -6.65% | 0.92 | -12.38% |
| 07/01/91 | 3.22 | 9.52% | 16.66 | 1.40% | 1.10 | 19.57% |
| 08/01/91 | 3.16 | -1.86% | 18.06 | 8.40% | 1.17 | 6.36% |
| 09/03/91 | 2.91 | -7.91% | 18.43 | 2.05% | 1.23 | 5.13% |
| 10/01/91 | 3.05 | 4.81% | 17.88 | -2.98% | 1.32 | 7.32% |
| 11/01/91 | 2.81 | -7.87% | 16.23 | -9.23% | 1.18 | -10.61% |
| 12/02/91 | 3.09 | 9.96% | 17.52 | 7.95% | 1.43 | 21.19% |
| 01/02/92 | 3.10 | 0.32% | 18.66 | 6.51% | 1.56 | 9.09% |
| 02/03/92 | 3.53 | 13.87% | 17.05 | -8.63% | 1.56 | 0.00% |
| 03/02/92 | 3.59 | 1.70% | 16.26 | -4.63% | 1.52 | -2.56% |
| 04/01/92 | 4.11 | 14.48% | 16.30 | 0.25% | 1.63 | 7.24% |
| 05/01/92 | 4.12 | 0.24% | 16.45 | 0.92% | 1.54 | -5.52% |
| 06/01/92 | 4.03 | -2.18% | 14.95 | -9.12% | 1.54 | 0.00% |
| 07/01/92 | 3.91 | -2.98% | 14.99 | 0.27% | 1.88 | 22.08% |
| 08/03/92 | 3.59 | -8.18% | 14.14 | -5.67% | 1.70 | -9.57% |
| 09/01/92 | 3.68 | 2.51% | 13.95 | -1.34% | 1.87 | 10.00% |
| 10/01/92 | 3.87 | 5.16% | 13.66 | -2.08% | 1.82 | -2.67% |
| 11/02/92 | 4.08 | 5.43% | 13.52 | -1.02% | 2.16 | 18.68% |
| 12/01/92 | 4.16 | 1.96% | 15.44 | 14.20% | 2.18 | 0.93% |
| 01/04/93 | 4.32 | 3.85% | 13.57 | -12.11% | 2.40 | 10.09% |
| 02/01/93 | 4.26 | -1.39% | 13.42 | -1.11% | 2.62 | 9.17% |
| 03/01/93 | 3.92 | -7.98% | 13.66 | 1.79% | 3.30 | 25.95% |
| 04/01/93 | 4.02 | 2.55% | 14.83 | 8.57% | 3.29 | -0.30% |
| 05/03/93 | 4.31 | 7.21% | 15.67 | 5.66% | 3.41 | 3.65% |
| 06/01/93 | 4.47 | 3.71% | 14.63 | -6.64% | 3.88 | 13.78% |
| 07/01/93 | 4.55 | 1.79% | 15.57 | 6.43% | 3.98 | 2.58% |
| 08/02/93 | 5.02 | 10.33% | 15.87 | 1.93% | 4.47 | 12.31% |
| 09/01/93 | 4.49 | -10.56% | 15.37 | -3.15% | 4.81 | 7.61% |
| 10/01/93 | 4.55 | 1.34% | 15.02 | -2.28% | 4.44 | -7.69% |
| 11/01/93 | 4.86 | 6.81% | 15.68 | 4.39% | 4.10 | -7.66% |
| 12/01/93 | 4.87 | 0.21% | 17.56 | 11.99% | 3.98 | -2.93% |
| 01/03/94 | 5.79 | 18.89% | 17.56 | 0.00% | 4.31 | 8.29% |
| 02/01/94 | 5.51 | -4.84% | 19.20 | 9.34% | 3.87 | -10.21% |
| 03/01/94 | 5.24 | -4.90% | 18.28 | -4.79% | 3.68 | -4.91% |
| 04/04/94 | 4.98 | -4.96% | 18.49 | 1.15% | 3.62 | -1.63% |
| 05/02/94 | 5.43 | 9.04% | 19.27 | 4.22% | 3.52 | -2.76% |
| 06/01/94 | 5.62 | 3.50% | 19.21 | -0.31% | 3.45 | -1.99% |
| 07/01/94 | 6.01 | 6.94% | 18.54 | -3.49% | 3.55 | 2.90% |
| 08/01/94 | 6.73 | 11.98% | 19.11 | 3.07% | 4.07 | 14.65% |
| 09/01/94 | 6.79 | 0.89% | 18.17 | -4.92% | 3.62 | -11.06% |
| 10/03/94 | 7.10 | 4.57% | 18.43 | 1.43% | 3.82 | 5.52% |
| 11/01/94 | 6.79 | -4.37% | 19.07 | 3.47% | 3.70 | -3.14% |
| 12/01/94 | 7.21 | 6.19% | 19.97 | 4.72% | 3.66 | -1.08% |
| 01/03/95 | 6.85 | -4.99% | 18.91 | -5.31% | 4.30 | 17.49% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 02/01/95 | 6.79 | -0.88% | 19.81 | 4.76% | 4.54 | 5.58% |
| 03/01/95 | 7.23 | 6.48% | 23.09 | 16.56% | 4.51 | -0.66% |
| 04/03/95 | 7.82 | 8.16% | 23.62 | 2.30% | 4.83 | 7.10% |
| 05/01/95 | 8.27 | 5.75% | 25.52 | 8.04% | 5.06 | 4.76% |
| 06/01/95 | 8.91 | 7.74% | 27.15 | 6.39% | 5.26 | 3.95% |
| 07/03/95 | 10.13 | 13.69% | 29.04 | 6.96% | 5.70 | 8.37% |
| 08/01/95 | 10.32 | 1.88% | 27.96 | -3.72% | 5.92 | 3.86% |
| 09/01/95 | 9.55 | -7.46% | 29.81 | 6.62% | 6.55 | 10.64% |
| 10/02/95 | 9.21 | -3.56% | 28.61 | -4.03% | 6.23 | -4.89% |
| 11/01/95 | 10.76 | 16.83% | 32.06 | 12.06% | 7.51 | 20.55% |
| 12/01/95 | 9.73 | -9.57% | 34.48 | 7.55% | 7.91 | 5.33% |
| 01/02/96 | 10.37 | 6.58% | 34.10 | -1.10% | 8.30 | 4.93% |
| 02/01/96 | 10.63 | 2.51% | 35.91 | 5.31% | 8.62 | 3.86% |
| 03/01/96 | 11.71 | 10.16% | 38.35 | 6.79% | 8.51 | -1.28% |
| 04/01/96 | 11.66 | -0.43% | 36.36 | -5.19% | 7.93 | -6.82% |
| 05/01/96 | 11.69 | 0.26% | 38.00 | 4.51% | 8.21 | 3.53% |
| 06/03/96 | 10.88 | -6.93% | 38.84 | 2.21% | 9.02 | 9.87% |
| 07/01/96 | 11.17 | 2.67% | 39.45 | 1.57% | 8.35 | -7.43% |
| 08/01/96 | 11.97 | 7.16% | 40.59 | 2.89% | 8.70 | 4.19% |
| 09/03/96 | 11.37 | -5.01% | 42.39 | 4.43% | 9.85 | 13.22% |
| 10/01/96 | 11.55 | 1.58% | 42.78 | 0.92% | 11.00 | 11.68% |
| 11/01/96 | 12.53 | 8.48% | 44.85 | 4.84% | 12.17 | 10.64% |
| 12/02/96 | 12.56 | 0.24% | 48.06 | 7.16% | 12.27 | 0.82% |
| 01/02/97 | 13.59 | 8.20% | 48.34 | 0.58% | 14.29 | 16.46% |
| 02/03/97 | 14.22 | 4.64% | 46.16 | -4.51% | 14.63 | 2.38% |
| 03/03/97 | 13.57 | -4.57% | 44.74 | -3.08% | 13.10 | -10.46% |
| 04/01/97 | 14.15 | 4.27% | 44.74 | 0.00% | 15.14 | 15.57% |
| 05/01/97 | 14.91 | 5.37% | 48.07 | 7.44% | 15.13 | -0.07% |
| 06/02/97 | 15.26 | 2.35% | 48.42 | 0.73% | 17.35 | 14.67% |
| 07/01/97 | 17.92 | 17.43% | 53.55 | 10.59% | 19.91 | 14.76% |
| 08/01/97 | 16.85 | -5.97% | 49.85 | -6.91% | 17.58 | -11.70% |
| 09/02/97 | 16.80 | -0.30% | 49.80 | -0.10% | 18.91 | 7.57% |
| 10/01/97 | 14.95 | -11.01% | 43.91 | -11.83% | 19.50 | 3.12% |
| 11/03/97 | 13.97 | -6.56% | 48.75 | 11.02% | 21.26 | 9.03% |
| 12/01/97 | 14.62 | 4.65% | 44.90 | -7.90% | 22.51 | 5.88% |
| 01/02/98 | 15.86 | 8.48% | 43.70 | -2.67% | 20.71 | -8.00% |
| 02/02/98 | 15.54 | -2.02% | 49.92 | 14.23% | 23.36 | 12.80% |
| 03/02/98 | 14.58 | -6.18% | 47.97 | -3.91% | 25.19 | 7.83% |
| 04/01/98 | 16.42 | 12.62% | 46.06 | -3.98% | 25.80 | 2.42% |
| 05/01/98 | 14.89 | -9.32% | 44.06 | -4.34% | 25.82 | 0.08% |
| 06/01/98 | 14.15 | -4.97% | 41.12 | -6.67% | 25.56 | -1.01% |
| 07/01/98 | 14.87 | 5.09% | 35.81 | -12.91% | 28.46 | 11.35% |
| 08/03/98 | 13.05 | -12.24% | 28.66 | -19.97% | 18.78 | -34.01% |
| 09/01/98 | 15.47 | 18.54% | 31.78 | 10.89% | 15.87 | -15.50% |
| 10/01/98 | 17.27 | 11.64% | 34.79 | 9.47% | 20.05 | 26.34% |
| 11/02/98 | 16.39 | -5.10% | 37.75 | 8.51% | 21.44 | 6.93% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 12/01/98 | 16.46 | 0.43% | 30.32 | -19.68% | 21.20 | -1.12% |
| 01/04/99 | 18.45 | 12.09% | 32.23 | 6.30% | 24.08 | 13.58% |
| 02/01/99 | 18.23 | -1.19% | 33.23 | 3.10% | 25.23 | 4.78% |
| 03/01/99 | 18.54 | 1.70% | 31.71 | -4.57% | 27.44 | 8.76% |
| 04/01/99 | 28.03 | 51.19% | 37.90 | 19.52% | 32.34 | 17.86% |
| 05/03/99 | 24.93 | -11.06% | 39.36 | 3.85% | 28.62 | -11.50% |
| 06/01/99 | 28.04 | 12.47% | 41.17 | 4.60% | 30.77 | 7.51% |
| 07/01/99 | 27.14 | -3.21% | 42.46 | 3.13% | 28.98 | -5.82% |
| 08/02/99 | 29.45 | 8.51% | 42.53 | 0.16% | 28.91 | -0.24% |
| 09/01/99 | 28.31 | -3.87% | 40.01 | -5.93% | 28.62 | -1.00% |
| 10/01/99 | 27.71 | -2.12% | 43.23 | 8.05% | 35.42 | 23.76% |
| 11/01/99 | 30.08 | 8.55% | 38.26 | -11.50% | 35.17 | -0.71% |
| 12/01/99 | 38.11 | 26.70% | 39.02 | 1.99% | 36.36 | 3.38% |
| 01/03/00 | 32.00 | -16.03% | 41.90 | 7.38% | 37.21 | 2.34% |
| 02/01/00 | 31.67 | -1.03% | 34.90 | -16.71% | 33.91 | -8.87% |
| 03/01/00 | 32.48 | 2.56% | 35.72 | 2.35% | 39.24 | 15.72% |
| 04/03/00 | 29.99 | -7.67% | 37.50 | 4.98% | 38.79 | -1.15% |
| 05/01/00 | 27.23 | -9.20% | 37.04 | -1.23% | 40.89 | 5.41% |
| 06/01/00 | 27.03 | -0.73% | 39.65 | 7.05% | 39.61 | -3.13% |
| 07/03/00 | 28.19 | 4.29% | 46.29 | 16.75% | 46.35 | 17.02% |
| 08/01/00 | 31.13 | 10.43% | 51.01 | 10.20% | 51.37 | 10.83% |
| 09/01/00 | 23.68 | -23.93% | 61.34 | 20.25% | 47.56 | -7.42% |
| 10/02/00 | 26.85 | 13.39% | 64.49 | 5.14% | 46.30 | -2.65% |
| 11/01/00 | 26.49 | -1.34% | 65.82 | 2.06% | 43.94 | -5.10% |
| 12/01/00 | 31.48 | 18.84% | 62.90 | -4.44% | 45.04 | 2.50% |
| 01/02/01 | 34.68 | 10.17% | 55.75 | -11.37% | 49.37 | 9.61% |
| 02/01/01 | 33.75 | -2.68% | 59.46 | 6.65% | 43.49 | -11.91% |
| 03/01/01 | 33.93 | 0.53% | 53.25 | -10.44% | 39.78 | -8.53% |
| 04/02/01 | 39.07 | 15.15% | 59.08 | 10.95% | 43.46 | 9.25% |
| 05/01/01 | 40.87 | 4.61% | 60.28 | 2.03% | 45.45 | 4.58% |
| 06/01/01 | 37.89 | -7.29% | 53.29 | -11.60% | 46.86 | 3.10% |
| 07/02/01 | 37.16 | -1.93% | 56.10 | 5.27% | 44.52 | -4.99% |
| 08/01/01 | 36.25 | -2.45% | 49.22 | -12.26% | 40.74 | -8.49% |
| 09/04/01 | 29.49 | -18.65% | 32.21 | -34.56% | 36.03 | -11.56% |
| 10/01/01 | 30.82 | 4.51% | 31.34 | -2.70% | 40.49 | 12.38% |
| 11/01/01 | 36.87 | 19.63% | 33.92 | 8.23% | 42.76 | 5.61% |
| 12/03/01 | 33.96 | -7.89% | 37.47 | 10.47% | 45.06 | 5.38% |
| 01/02/02 | 34.24 | 0.82% | 39.57 | 5.60% | 42.46 | -5.77% |
| 02/04/02 | 36.05 | 5.29% | 44.59 | 12.69% | 40.53 | -4.55% |
| 03/01/02 | 36.21 | 0.44% | 46.82 | 5.00% | 44.36 | 9.45% |
| 04/01/02 | 32.65 | -9.83% | 43.28 | -7.56% | 38.79 | -12.56% |
| 05/01/02 | 33.71 | 3.25% | 41.54 | -4.02% | 38.84 | 0.13% |
| 06/03/02 | 31.95 | -5.22% | 43.83 | 5.51% | 34.85 | -10.27% |
| 07/01/02 | 26.22 | -17.93% | 40.44 | -7.73% | 30.17 | -13.43% |
| 08/01/02 | 24.32 | -7.25% | 36.27 | -10.31% | 31.76 | 5.27% |
| 09/03/02 | 18.71 | -23.07% | 33.39 | -7.94% | 28.75 | -9.48% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 10/01/02 | 21.38 | 14.27% | 29.11 | -12.82% | 36.01 | 25.25% |
| | CAT | % | DD | % | DIS | % |
| 01/02/80 | 3.67 | | 0.14 | | 0.01 | |
| 02/01/80 | 3.44 | -6.27% | 0.14 | 0.00% | 0.01 | 0.00% |
| 03/03/80 | 3.08 | -10.47% | 0.13 | -7.14% | 0.01 | 0.00% |
| 04/01/80 | 3.04 | -1.30% | 0.13 | 0.00% | 0.01 | 0.00% |
| 05/01/80 | 3.19 | 4.93% | 0.16 | 23.08% | 0.01 | 0.00% |
| 06/02/80 | 3.41 | 6.90% | 0.17 | 6.25% | 0.01 | 0.00% |
| 07/01/80 | 3.81 | 11.73% | 0.17 | 0.00% | 0.01 | 0.00% |
| 08/01/80 | 3.42 | -10.24% | 0.19 | 11.76% | 0.01 | 0.00% |
| 09/02/80 | 3.61 | 5.56% | 0.19 | 0.00% | 0.01 | 0.00% |
| 10/01/80 | 3.69 | 2.22% | 0.17 | -10.53% | 0.01 | 0.00% |
| 11/03/80 | 4.05 | 9.76% | 0.21 | 23.53% | 0.01 | 0.00% |
| 12/01/80 | 3.75 | -7.41% | 0.21 | 0.00% | 0.01 | 0.00% |
| 01/02/81 | 3.59 | -4.27% | 0.23 | 9.52% | 0.01 | 0.00% |
| 02/02/81 | 4.15 | 15.60% | 0.27 | 17.39% | 0.01 | 0.00% |
| 03/02/81 | 4.18 | 0.72% | 0.27 | 0.00% | 0.01 | 0.00% |
| 04/01/81 | 4.64 | 11.00% | 0.27 | 0.00% | 0.01 | 0.00% |
| 05/01/81 | 4.39 | -5.39% | 0.29 | 7.41% | 0.01 | 0.00% |
| 06/01/81 | 4.24 | -3.42% | 0.32 | 10.34% | 0.01 | 0.00% |
| 07/01/81 | 4.04 | -4.72% | 0.27 | -15.63% | 0.01 | 0.00% |
| 08/03/81 | 3.76 | -6.93% | 0.26 | -3.70% | 0.01 | 0.00% |
| 09/01/81 | 3.47 | -7.71% | 0.25 | -3.85% | 0.01 | 0.00% |
| 10/01/81 | 3.25 | -6.34% | 0.26 | 4.00% | 0.01 | 0.00% |
| 11/02/81 | 3.68 | 13.23% | 0.30 | 15.38% | 0.01 | 0.00% |
| 12/01/81 | 3.59 | -2.45% | 0.28 | -6.67% | 0.01 | 0.00% |
| 01/04/82 | 3.58 | -0.28% | 0.27 | -3.57% | 0.01 | 0.00% |
| 02/01/82 | 3.21 | -10.34% | 0.30 | 11.11% | 0.01 | 0.00% |
| 03/01/82 | 3.29 | 2.49% | 0.28 | -6.67% | 0.01 | 0.00% |
| 04/01/82 | 3.32 | 0.91% | 0.29 | 3.57% | 0.02 | 100.00% |
| 05/03/82 | 2.66 | -19.88% | 0.31 | 6.90% | 0.02 | 0.00% |
| 06/01/82 | 2.68 | 0.75% | 0.31 | 0.00% | 0.02 | 0.00% |
| 07/01/82 | 2.85 | 6.34% | 0.28 | -9.68% | 0.02 | 0.00% |
| 08/02/82 | 3.14 | 10.18% | 0.36 | 28.57% | 0.02 | 0.00% |
| 09/01/82 | 2.63 | -16.24% | 0.36 | 0.00% | 0.03 | 50.00% |
| 10/01/82 | 3.06 | 16.35% | 0.40 | 11.11% | 0.03 | 0.00% |
| 11/01/82 | 3.18 | 3.92% | 0.43 | 7.50% | 0.04 | 33.33% |
| 12/01/82 | 3.25 | 2.20% | 0.41 | -4.65% | 0.04 | 0.00% |
| 01/03/83 | 3.58 | 10.15% | 0.46 | 12.20% | 0.04 | 0.00% |
| 02/01/83 | 3.70 | 3.35% | 0.51 | 10.87% | 0.05 | 25.00% |
| 03/01/83 | 3.57 | -3.51% | 0.53 | 3.92% | 0.06 | 20.00% |
| 04/04/83 | 4.03 | 12.89% | 0.59 | 11.32% | 0.06 | 0.00% |
| 05/02/83 | 4.05 | 0.50% | 0.66 | 11.86% | 0.06 | 0.00% |
| 06/01/83 | 4.09 | 0.99% | 0.65 | -1.52% | 0.05 | -16.67% |
| 07/01/83 | 3.94 | -3.67% | 0.66 | 1.54% | 0.06 | 20.00% |

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|----------|------|---------|------|--------|------|---------|
| 08/01/83 | 3.52 | -10.66% | 0.78 | 18.18% | 0.06 | 0.00% |
| 09/01/83 | 3.91 | 11.08% | 0.77 | -1.28% | 0.06 | 0.00% |
| 10/03/83 | 3.63 | -7.16% | 0.76 | -1.30% | 0.08 | 33.33% |
| 11/01/83 | 4.16 | 14.60% | 0.87 | 14.47% | 0.06 | -25.00% |
| 12/01/83 | 4.39 | 5.53% | 0.83 | -4.60% | 0.09 | 50.00% |
| 01/03/84 | 4.63 | 5.47% | 0.80 | -3.61% | 0.10 | 11.11% |
| 02/01/84 | 4.34 | -6.26% | 0.84 | 5.00% | 0.09 | -10.00% |
| 03/01/84 | 4.91 | 13.13% | 0.87 | 3.57% | 0.16 | 77.78% |
| 04/02/84 | 4.65 | -5.30% | 0.89 | 2.30% | 0.15 | -6.25% |
| 05/01/84 | 4.03 | -13.33% | 0.91 | 2.25% | 0.15 | 0.00% |
| 06/01/84 | 3.71 | -7.94% | 0.88 | -3.30% | 0.15 | 0.00% |
| 07/02/84 | 3.54 | -4.58% | 0.85 | -3.41% | 0.17 | 13.33% |
| 08/01/84 | 4.01 | 13.28% | 1.06 | 24.71% | 0.18 | 5.88% |
| 09/04/84 | 3.61 | -9.98% | 1.05 | -0.94% | 0.24 | 33.33% |
| 10/01/84 | 3.25 | -9.97% | 1.00 | -4.76% | 0.24 | 0.00% |
| 11/01/84 | 3.24 | -0.31% | 1.09 | 9.00% | 0.24 | 0.00% |
| 12/03/84 | 3.25 | 0.31% | 1.16 | 6.42% | 0.33 | 37.50% |
| 01/02/85 | 3.56 | 9.54% | 1.21 | 4.31% | 0.41 | 24.24% |
| 02/01/85 | 3.51 | -1.40% | 1.34 | 10.74% | 0.43 | 4.88% |
| 03/01/85 | 3.40 | -3.13% | 1.33 | -0.75% | 0.53 | 23.26% |
| 04/01/85 | 3.42 | 0.59% | 1.42 | 6.77% | 0.52 | -1.89% |
| 05/01/85 | 3.75 | 9.65% | 1.68 | 18.31% | 0.71 | 36.54% |
| 06/03/85 | 3.59 | -4.27% | 1.62 | -3.57% | 0.77 | 8.45% |
| 07/01/85 | 4.05 | 12.81% | 1.66 | 2.47% | 0.71 | -7.79% |
| 08/01/85 | 3.95 | -2.47% | 1.73 | 4.22% | 0.73 | 2.82% |
| 09/03/85 | 3.88 | -1.77% | 1.72 | -0.58% | 0.82 | 12.33% |
| 10/01/85 | 3.95 | 1.80% | 1.87 | 8.72% | 0.90 | 9.76% |
| 11/01/85 | 4.44 | 12.41% | 2.05 | 9.63% | 0.97 | 7.78% |
| 12/02/85 | 4.67 | 5.18% | 2.20 | 7.32% | 1.28 | 31.96% |
| 01/02/86 | 5.16 | 10.49% | 2.12 | -3.64% | 1.34 | 4.69% |
| 02/03/86 | 5.72 | 10.85% | 2.50 | 17.92% | 1.58 | 17.91% |
| 03/03/86 | 5.93 | 3.67% | 2.66 | 6.40% | 1.75 | 10.76% |
| 04/01/86 | 6.03 | 1.69% | 2.64 | -0.75% | 2.10 | 20.00% |
| 05/01/86 | 6.17 | 2.32% | 3.13 | 18.56% | 2.20 | 4.76% |
| 06/02/86 | 5.66 | -8.27% | 3.07 | -1.92% | 2.62 | 19.09% |
| 07/01/86 | 5.13 | -9.36% | 2.80 | -8.79% | 2.31 | -11.83% |
| 08/01/86 | 5.74 | 11.89% | 3.22 | 15.00% | 2.18 | -5.63% |
| 09/02/86 | 4.36 | -24.04% | 3.14 | -2.48% | 1.94 | -11.01% |
| 10/01/86 | 4.65 | 6.65% | 3.37 | 7.32% | 2.15 | 10.82% |
| 11/03/86 | 4.62 | -0.65% | 3.70 | 9.79% | 2.11 | -1.86% |
| 12/01/86 | 4.68 | 1.30% | 3.48 | -5.95% | 2.16 | 2.37% |
| 01/02/87 | 5.13 | 9.62% | 4.05 | 16.38% | 2.83 | 31.02% |
| 02/02/87 | 5.41 | 5.46% | 4.34 | 7.16% | 2.98 | 5.30% |
| 03/02/87 | 5.69 | 5.18% | 4.86 | 11.98% | 3.18 | 6.71% |
| 04/01/87 | 5.74 | 0.88% | 4.86 | 0.00% | 3.27 | 2.83% |
| 05/01/87 | 6.19 | 7.84% | 5.11 | 5.14% | 3.26 | -0.31% |

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|----------|------|---------|-------|---------|------|---------|
| 06/01/87 | 6.38 | 3.07% | 5.44 | 6.46% | 3.74 | 14.72% |
| 07/01/87 | 7.80 | 22.26% | 5.66 | 4.04% | 3.73 | -0.27% |
| 08/03/87 | 7.44 | -4.62% | 5.86 | 3.53% | 4.14 | 10.99% |
| 09/01/87 | 8.84 | 18.82% | 5.62 | -4.10% | 4.06 | -1.93% |
| 10/01/87 | 6.04 | -31.67% | 4.26 | -24.20% | 2.89 | -28.82% |
| 11/02/87 | 6.89 | 14.07% | 3.91 | -8.22% | 2.74 | -5.19% |
| 12/01/87 | 7.53 | 9.29% | 4.37 | 11.76% | 3.10 | 13.14% |
| 01/04/88 | 7.16 | -4.91% | 4.14 | -5.26% | 3.09 | -0.32% |
| 02/01/88 | 7.99 | 11.59% | 4.61 | 11.35% | 3.27 | 5.83% |
| 03/01/88 | 7.67 | -4.01% | 4.31 | -6.51% | 3.15 | -3.67% |
| 04/04/88 | 7.81 | 1.83% | 4.57 | 6.03% | 3.13 | -0.63% |
| 05/02/88 | 7.72 | -1.15% | 4.76 | 4.16% | 3.15 | 0.64% |
| 06/01/88 | 8.43 | 9.20% | 5.31 | 11.55% | 3.43 | 8.89% |
| 07/01/88 | 7.84 | -7.00% | 4.97 | -6.40% | 3.50 | 2.04% |
| 08/01/88 | 7.01 | -10.59% | 4.89 | -1.61% | 3.47 | -0.86% |
| 09/01/88 | 7.24 | 3.28% | 5.01 | 2.45% | 3.60 | 3.75% |
| 10/03/88 | 7.88 | 8.84% | 4.96 | -1.00% | 3.74 | 3.89% |
| 11/01/88 | 8.09 | 2.66% | 5.37 | 8.27% | 3.58 | -4.28% |
| 12/01/88 | 8.12 | 0.37% | 5.81 | 8.19% | 3.71 | 3.63% |
| 01/03/89 | 8.04 | -0.99% | 6.70 | 15.32% | 4.31 | 16.17% |
| 02/01/89 | 7.63 | -5.10% | 6.66 | -0.60% | 4.26 | -1.16% |
| 03/01/89 | 7.42 | -2.75% | 7.18 | 7.81% | 4.51 | 5.87% |
| 04/03/89 | 8.03 | 8.22% | 7.72 | 7.52% | 4.99 | 10.64% |
| 05/01/89 | 8.47 | 5.48% | 8.22 | 6.48% | 5.45 | 9.22% |
| 06/01/89 | 7.69 | -9.21% | 8.11 | -1.34% | 5.54 | 1.65% |
| 07/03/89 | 8.04 | 4.55% | 8.48 | 4.56% | 6.39 | 15.34% |
| 08/01/89 | 8.70 | 8.21% | 9.28 | 9.43% | 6.98 | 9.23% |
| 09/01/89 | 8.26 | -5.06% | 9.43 | 1.62% | 7.19 | 3.01% |
| 10/02/89 | 7.91 | -4.24% | 9.06 | -3.92% | 7.45 | 3.62% |
| 11/01/89 | 8.10 | 2.40% | 9.80 | 8.17% | 7.76 | 4.16% |
| 12/01/89 | 8.00 | -1.23% | 10.33 | 5.41% | 6.74 | -13.14% |
| 01/02/90 | 7.82 | -2.25% | 9.55 | -7.55% | 6.34 | -5.93% |
| 02/01/90 | 8.56 | 9.46% | 10.10 | 5.76% | 6.67 | 5.21% |
| 03/01/90 | 8.63 | 0.82% | 9.88 | -2.18% | 6.77 | 1.50% |
| 04/02/90 | 8.84 | 2.43% | 9.59 | -2.94% | 6.83 | 0.89% |
| 05/01/90 | 9.65 | 9.16% | 10.49 | 9.38% | 7.98 | 16.84% |
| 06/01/90 | 7.58 | -21.45% | 10.12 | -3.53% | 7.93 | -0.63% |
| 07/02/90 | 7.20 | -5.01% | 10.91 | 7.81% | 7.37 | -7.06% |
| 08/01/90 | 6.34 | -11.94% | 9.66 | -11.46% | 6.42 | -12.89% |
| 09/04/90 | 6.23 | -1.74% | 9.09 | -5.90% | 5.68 | -11.53% |
| 10/01/90 | 6.19 | -0.64% | 8.89 | -2.20% | 5.81 | 2.29% |
| 11/01/90 | 6.25 | 0.97% | 10.15 | 14.17% | 6.36 | 9.47% |
| 12/03/90 | 7.14 | 14.24% | 10.12 | -0.30% | 6.48 | 1.89% |
| 01/02/91 | 7.76 | 8.68% | 9.98 | -1.38% | 7.04 | 8.64% |
| 02/01/91 | 8.52 | 9.79% | 10.60 | 6.21% | 8.02 | 13.92% |
| 03/01/91 | 7.47 | -12.32% | 10.46 | -1.32% | 7.74 | -3.49% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 04/01/91 | 7.63 | 2.14% | 11.73 | 12.14% | 7.62 | -1.55% |
| 05/01/91 | 8.29 | 8.65% | 13.58 | 15.77% | 7.68 | 0.79% |
| 06/03/91 | 7.91 | -4.58% | 13.18 | -2.95% | 7.38 | -3.91% |
| 07/01/91 | 8.06 | 1.90% | 14.05 | 6.60% | 8.14 | 10.30% |
| 08/01/91 | 7.80 | -3.23% | 14.10 | 0.36% | 8.00 | -1.72% |
| 09/03/91 | 7.33 | -6.03% | 13.19 | -6.45% | 7.68 | -4.00% |
| 10/01/91 | 8.09 | 10.37% | 13.92 | 5.53% | 8.15 | 6.12% |
| 11/01/91 | 6.96 | -13.97% | 13.20 | -5.17% | 7.19 | -11.78% |
| 12/02/91 | 7.40 | 6.32% | 13.87 | 5.08% | 7.86 | 9.32% |
| 01/02/92 | 8.00 | 8.11% | 13.83 | -0.29% | 9.54 | 21.37% |
| 02/03/92 | 8.36 | 4.50% | 14.00 | 1.23% | 10.75 | 12.68% |
| 03/02/92 | 8.55 | 2.27% | 14.42 | 3.00% | 10.60 | -1.40% |
| 04/01/92 | 9.72 | 13.68% | 16.43 | 13.94% | 10.35 | -2.36% |
| 05/01/92 | 10.46 | 7.61% | 16.24 | -1.16% | 10.80 | 4.35% |
| 06/01/92 | 9.31 | -10.99% | 15.55 | -4.25% | 10.27 | -4.91% |
| 07/01/92 | 9.68 | 3.97% | 16.51 | 6.17% | 10.27 | 0.00% |
| 08/03/92 | 8.45 | -12.71% | 15.46 | -6.36% | 9.84 | -4.19% |
| 09/01/92 | 9.13 | 8.05% | 14.76 | -4.53% | 10.34 | 5.08% |
| 10/01/92 | 9.26 | 1.42% | 15.15 | 2.64% | 11.29 | 9.19% |
| 11/02/92 | 10.06 | 8.64% | 15.34 | 1.25% | 12.09 | 7.09% |
| 12/01/92 | 9.50 | -5.57% | 15.03 | -2.02% | 12.33 | 1.99% |
| 01/04/93 | 10.05 | 5.79% | 14.59 | -2.93% | 13.13 | 6.49% |
| 02/01/93 | 10.39 | 3.38% | 15.05 | 3.15% | 12.77 | -2.74% |
| 03/01/93 | 10.59 | 1.92% | 15.66 | 4.05% | 12.80 | 0.23% |
| 04/01/93 | 12.52 | 18.22% | 16.92 | 8.05% | 11.77 | -8.05% |
| 05/03/93 | 12.95 | 3.43% | 17.42 | 2.96% | 12.71 | 7.99% |
| 06/01/93 | 13.54 | 4.56% | 15.56 | -10.68% | 11.77 | -7.40% |
| 07/01/93 | 14.01 | 3.47% | 15.48 | -0.51% | 10.88 | -7.56% |
| 08/02/93 | 14.99 | 7.00% | 16.37 | 5.75% | 11.39 | 4.69% |
| 09/01/93 | 14.40 | -3.94% | 15.65 | -4.40% | 10.96 | -3.78% |
| 10/01/93 | 16.80 | 16.67% | 16.03 | 2.43% | 12.54 | 14.42% |
| 11/01/93 | 15.65 | -6.85% | 16.36 | 2.06% | 11.63 | -7.26% |
| 12/01/93 | 16.34 | 4.41% | 16.54 | 1.10% | 12.43 | 6.88% |
| 01/03/94 | 19.25 | 17.81% | 19.24 | 16.32% | 13.84 | 11.34% |
| 02/01/94 | 20.03 | 4.05% | 18.55 | -3.59% | 14.06 | 1.59% |
| 03/01/94 | 20.77 | 3.69% | 18.46 | -0.49% | 12.30 | -12.52% |
| 04/04/94 | 20.42 | -1.69% | 19.90 | 7.80% | 12.52 | 1.79% |
| 05/02/94 | 19.86 | -2.74% | 21.92 | 10.15% | 12.78 | 2.08% |
| 06/01/94 | 18.59 | -6.39% | 20.60 | -6.02% | 12.26 | -4.07% |
| 07/01/94 | 20.37 | 9.58% | 21.00 | 1.94% | 12.55 | 2.37% |
| 08/01/94 | 21.68 | 6.43% | 21.73 | 3.48% | 12.21 | -2.71% |
| 09/01/94 | 20.35 | -6.13% | 20.84 | -4.10% | 11.47 | -6.06% |
| 10/03/94 | 22.58 | 10.96% | 21.42 | 2.78% | 11.76 | 2.53% |
| 11/01/94 | 20.46 | -9.39% | 19.69 | -8.08% | 12.96 | 10.20% |
| 12/01/94 | 20.83 | 1.81% | 20.51 | 4.16% | 13.70 | 5.71% |
| 01/03/95 | 19.59 | -5.95% | 19.46 | -5.12% | 15.23 | 11.17% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 02/01/95 | 19.68 | 0.46% | 20.87 | 7.25% | 15.98 | 4.92% |
| 03/01/95 | 21.16 | 7.52% | 22.50 | 7.81% | 16.01 | 0.19% |
| 04/03/95 | 22.50 | 6.33% | 24.49 | 8.84% | 16.66 | 4.06% |
| 05/01/95 | 23.18 | 3.02% | 25.63 | 4.65% | 16.69 | 0.18% |
| 06/01/95 | 24.72 | 6.64% | 25.96 | 1.29% | 16.69 | 0.00% |
| 07/03/95 | 27.33 | 10.56% | 25.30 | -2.54% | 17.72 | 6.17% |
| 08/01/95 | 26.07 | -4.61% | 25.09 | -0.83% | 17.00 | -4.06% |
| 09/01/95 | 22.09 | -15.27% | 26.39 | 5.18% | 17.34 | 2.00% |
| 10/02/95 | 22.34 | 1.13% | 23.94 | -9.28% | 17.50 | 0.92% |
| 11/01/95 | 24.17 | 8.19% | 25.96 | 8.44% | 18.26 | 4.34% |
| 12/01/95 | 23.13 | -4.30% | 27.27 | 5.05% | 17.97 | -1.59% |
| 01/02/96 | 25.67 | 10.98% | 29.96 | 9.86% | 19.60 | 9.07% |
| 02/01/96 | 26.62 | 3.70% | 30.25 | 0.97% | 19.99 | 1.99% |
| 03/01/96 | 27.12 | 1.88% | 32.82 | 8.50% | 19.49 | -2.50% |
| 04/01/96 | 25.84 | -4.72% | 31.73 | -3.32% | 19.02 | -2.41% |
| 05/01/96 | 26.45 | 2.36% | 32.00 | 0.85% | 18.63 | -2.05% |
| 06/03/96 | 27.30 | 3.21% | 31.74 | -0.81% | 19.29 | 3.54% |
| 07/01/96 | 26.87 | -1.58% | 32.40 | 2.08% | 17.16 | -11.04% |
| 08/01/96 | 28.10 | 4.58% | 33.41 | 3.12% | 17.58 | 2.45% |
| 09/03/96 | 30.75 | 9.43% | 35.85 | 7.30% | 19.51 | 10.98% |
| 10/01/96 | 28.30 | -7.97% | 37.73 | 5.24% | 20.43 | 4.72% |
| 11/01/96 | 32.63 | 15.30% | 38.80 | 2.84% | 22.91 | 12.14% |
| 12/02/96 | 31.03 | -4.90% | 38.75 | -0.13% | 21.63 | -5.59% |
| 01/02/97 | 32.34 | 4.22% | 45.13 | 16.46% | 22.71 | 4.99% |
| 02/03/97 | 32.61 | 0.83% | 44.61 | -1.15% | 23.14 | 1.89% |
| 03/03/97 | 33.44 | 2.55% | 44.09 | -1.17% | 22.71 | -1.86% |
| 04/01/97 | 37.44 | 11.96% | 44.14 | 0.11% | 25.61 | 12.77% |
| 05/01/97 | 41.07 | 9.70% | 45.70 | 3.53% | 25.65 | 0.16% |
| 06/02/97 | 45.17 | 9.98% | 52.92 | 15.80% | 25.14 | -1.99% |
| 07/01/97 | 47.32 | 4.76% | 56.43 | 6.63% | 25.44 | 1.19% |
| 08/01/97 | 49.06 | 3.68% | 52.69 | -6.63% | 24.18 | -4.95% |
| 09/02/97 | 45.58 | -7.09% | 52.05 | -1.21% | 25.38 | 4.96% |
| 10/01/97 | 43.49 | -4.59% | 48.09 | -7.61% | 26.05 | 2.64% |
| 11/03/97 | 40.68 | -6.46% | 51.47 | 7.03% | 30.03 | 15.28% |
| 12/01/97 | 41.16 | 1.18% | 51.05 | -0.82% | 31.31 | 4.26% |
| 01/02/98 | 40.95 | -0.51% | 48.13 | -5.72% | 33.94 | 8.40% |
| 02/02/98 | 46.55 | 13.68% | 52.37 | 8.81% | 35.55 | 4.74% |
| 03/02/98 | 46.98 | 0.92% | 58.09 | 10.92% | 33.90 | -4.64% |
| 04/01/98 | 48.80 | 3.87% | 62.20 | 7.08% | 39.73 | 17.20% |
| 05/01/98 | 47.08 | -3.52% | 66.23 | 6.48% | 36.13 | -9.06% |
| 06/01/98 | 45.34 | -3.70% | 64.09 | -3.23% | 33.51 | -7.25% |
| 07/01/98 | 41.80 | -7.81% | 53.20 | -16.99% | 33.00 | -1.52% |
| 08/03/98 | 36.20 | -13.40% | 49.95 | -6.11% | 26.30 | -20.30% |
| 09/01/98 | 38.36 | 5.97% | 48.55 | -2.80% | 24.31 | -7.57% |
| 10/01/98 | 38.98 | 1.62% | 49.84 | 2.66% | 25.87 | 6.42% |
| 11/02/98 | 42.88 | 10.01% | 51.11 | 2.55% | 30.91 | 19.48% |

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|----------|-------|---------|-------|---------|-------|---------|
| 12/01/98 | 39.90 | -6.95% | 46.05 | -9.90% | 28.81 | -6.79% |
| 01/04/99 | 37.81 | -5.24% | 44.43 | -3.52% | 31.69 | 10.00% |
| 02/01/99 | 39.77 | 5.18% | 44.83 | 0.90% | 33.79 | 6.63% |
| 03/01/99 | 40.11 | 0.85% | 50.72 | 13.14% | 29.88 | -11.57% |
| 04/01/99 | 56.47 | 40.79% | 61.76 | 21.77% | 30.49 | 2.04% |
| 05/03/99 | 48.14 | -14.75% | 57.44 | -6.99% | 27.96 | -8.30% |
| 06/01/99 | 52.64 | 9.35% | 59.96 | 4.39% | 29.59 | 5.83% |
| 07/01/99 | 51.72 | -1.75% | 63.31 | 5.59% | 26.46 | -10.58% |
| 08/02/99 | 49.95 | -3.42% | 55.91 | -11.69% | 26.65 | 0.72% |
| 09/01/99 | 48.35 | -3.20% | 53.37 | -4.54% | 24.97 | -6.30% |
| 10/01/99 | 49.08 | 1.51% | 56.85 | 6.52% | 25.50 | 2.12% |
| 11/01/99 | 41.16 | -16.14% | 52.74 | -7.23% | 27.05 | 6.08% |
| 12/01/99 | 41.76 | 1.46% | 58.44 | 10.81% | 28.39 | 4.95% |
| 01/03/00 | 37.90 | -9.24% | 52.35 | -10.42% | 35.24 | 24.13% |
| 02/01/00 | 31.31 | -17.39% | 45.10 | -13.85% | 33.00 | -6.36% |
| 03/01/00 | 35.22 | 12.49% | 47.28 | 4.83% | 40.04 | 21.33% |
| 04/03/00 | 35.51 | 0.82% | 42.36 | -10.41% | 42.35 | 5.77% |
| 05/01/00 | 34.44 | -3.01% | 44.07 | 4.04% | 40.95 | -3.31% |
| 06/01/00 | 30.50 | -11.44% | 39.34 | -10.73% | 37.67 | -8.01% |
| 07/03/00 | 30.96 | 1.51% | 40.75 | 3.58% | 37.43 | -0.64% |
| 08/01/00 | 33.42 | 7.95% | 40.67 | -0.20% | 37.81 | 1.02% |
| 09/01/00 | 28.18 | -15.68% | 37.04 | -8.93% | 37.13 | -1.80% |
| 10/02/00 | 32.23 | 14.37% | 41.12 | 11.02% | 34.76 | -6.38% |
| 11/01/00 | 36.13 | 12.10% | 38.65 | -6.01% | 28.09 | -19.19% |
| 12/01/00 | 43.49 | 20.37% | 44.13 | 14.18% | 28.28 | 0.68% |
| 01/02/01 | 40.96 | -5.82% | 39.93 | -9.52% | 29.76 | 5.23% |
| 02/01/01 | 38.53 | -5.93% | 40.24 | 0.78% | 30.25 | 1.65% |
| 03/01/01 | 41.10 | 6.67% | 37.49 | -6.83% | 27.95 | -7.60% |
| 04/02/01 | 46.82 | 13.92% | 41.63 | 11.04% | 29.56 | 5.76% |
| 05/01/01 | 50.52 | 7.90% | 43.06 | 3.44% | 30.90 | 4.53% |
| 06/01/01 | 46.68 | -7.60% | 44.77 | 3.97% | 28.23 | -8.64% |
| 07/02/01 | 51.73 | 10.82% | 39.74 | -11.24% | 25.75 | -8.78% |
| 08/01/01 | 46.94 | -9.26% | 38.34 | -3.52% | 24.85 | -3.50% |
| 09/04/01 | 42.06 | -10.40% | 35.11 | -8.42% | 18.20 | -26.76% |
| 10/01/01 | 42.30 | 0.57% | 37.42 | 6.58% | 18.17 | -0.16% |
| 11/01/01 | 44.85 | 6.03% | 41.84 | 11.81% | 20.01 | 10.13% |
| 12/03/01 | 49.42 | 10.19% | 40.11 | -4.13% | 20.46 | 2.25% |
| 01/02/02 | 47.91 | -3.06% | 41.68 | 3.91% | 20.80 | 1.66% |
| 02/04/02 | 52.89 | 10.39% | 44.55 | 6.89% | 22.72 | 9.23% |
| 03/01/02 | 54.17 | 2.42% | 44.84 | 0.65% | 22.80 | 0.35% |
| 04/01/02 | 52.37 | -3.32% | 42.32 | -5.62% | 22.89 | 0.39% |
| 05/01/02 | 50.12 | -4.30% | 44.09 | 4.18% | 22.63 | -1.14% |
| 06/03/02 | 46.94 | -6.34% | 42.56 | -3.47% | 18.67 | -17.50% |
| 07/01/02 | 43.21 | -7.95% | 40.17 | -5.62% | 17.51 | -6.21% |
| 08/01/02 | 42.19 | -2.36% | 38.96 | -3.01% | 15.49 | -11.54% |
| 09/03/02 | 35.98 | -14.72% | 34.86 | -10.52% | 14.95 | -3.49% |

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|----------|-------|---------|-------|---------|-------|---------|
| 10/01/02 | 39.85 | 10.76% | 39.87 | 14.37% | 16.49 | 10.30% |
| | EK | % | GM | % | HON | % |
| 01/02/80 | 4.55 | | 4.12 | | 0.39 | |
| 02/01/80 | 4.41 | -3.08% | 3.97 | -3.64% | 0.40 | 2.56% |
| 03/03/80 | 4.61 | 4.54% | 3.62 | -8.82% | 0.32 | -20.00% |
| 04/01/80 | 5.11 | 10.85% | 3.57 | -1.38% | 0.34 | 6.25% |
| 05/01/80 | 5.29 | 3.52% | 3.61 | 1.12% | 0.39 | 14.71% |
| 06/02/80 | 5.58 | 5.48% | 3.75 | 3.88% | 0.37 | -5.13% |
| 07/01/80 | 6.10 | 9.32% | 4.23 | 12.80% | 0.40 | 8.11% |
| 08/01/80 | 6.57 | 7.70% | 4.42 | 4.49% | 0.41 | 2.50% |
| 09/02/80 | 6.69 | 1.83% | 4.35 | -1.58% | 0.40 | -2.44% |
| 10/01/80 | 6.96 | 4.04% | 4.06 | -6.67% | 0.43 | 7.50% |
| 11/03/80 | 7.35 | 5.60% | 3.75 | -7.64% | 0.48 | 11.63% |
| 12/01/80 | 7.41 | 0.82% | 3.80 | 1.33% | 0.44 | -8.33% |
| 01/02/81 | 7.40 | -0.13% | 3.89 | 2.37% | 0.41 | -6.82% |
| 02/02/81 | 8.50 | 14.86% | 4.35 | 11.83% | 0.47 | 14.63% |
| 03/02/81 | 8.66 | 1.88% | 4.59 | 5.52% | 0.47 | 0.00% |
| 04/01/81 | 8.16 | -5.77% | 4.68 | 1.96% | 0.47 | 0.00% |
| 05/01/81 | 8.28 | 1.47% | 4.94 | 5.56% | 0.52 | 10.64% |
| 06/01/81 | 8.13 | -1.81% | 4.70 | -4.86% | 0.51 | -1.92% |
| 07/01/81 | 8.13 | 0.00% | 4.56 | -2.98% | 0.51 | 0.00% |
| 08/03/81 | 7.39 | -9.10% | 4.22 | -7.46% | 0.49 | -3.92% |
| 09/01/81 | 7.25 | -1.89% | 4.06 | -3.79% | 0.42 | -14.29% |
| 10/01/81 | 7.31 | 0.83% | 3.32 | -18.23% | 0.48 | 14.29% |
| 11/02/81 | 8.07 | 10.40% | 3.47 | 4.52% | 0.52 | 8.33% |
| 12/01/81 | 8.27 | 2.48% | 3.61 | 4.03% | 0.48 | -7.69% |
| 01/04/82 | 8.79 | 6.29% | 3.56 | -1.39% | 0.48 | 0.00% |
| 02/01/82 | 8.29 | -5.69% | 3.59 | 0.84% | 0.46 | -4.17% |
| 03/01/82 | 8.63 | 4.10% | 3.97 | 10.58% | 0.39 | -15.22% |
| 04/01/82 | 8.47 | -1.85% | 4.05 | 2.02% | 0.41 | 5.13% |
| 05/03/82 | 8.75 | 3.31% | 4.27 | 5.43% | 0.46 | 12.20% |
| 06/01/82 | 9.01 | 2.97% | 4.45 | 4.22% | 0.41 | -10.87% |
| 07/01/82 | 9.23 | 2.44% | 4.26 | -4.27% | 0.47 | 14.63% |
| 08/02/82 | 10.28 | 11.38% | 4.96 | 16.43% | 0.52 | 10.64% |
| 09/01/82 | 10.17 | -1.07% | 4.78 | -3.63% | 0.47 | -9.62% |
| 10/01/82 | 10.90 | 7.18% | 5.82 | 21.76% | 0.52 | 10.64% |
| 11/01/82 | 12.16 | 11.56% | 6.27 | 7.73% | 0.58 | 11.54% |
| 12/01/82 | 11.10 | -8.72% | 6.53 | 4.15% | 0.54 | -6.90% |
| 01/03/83 | 11.00 | -0.90% | 6.62 | 1.38% | 0.58 | 7.41% |
| 02/01/83 | 11.84 | 7.64% | 6.56 | -0.91% | 0.69 | 18.97% |
| 03/01/83 | 10.82 | -8.61% | 6.34 | -3.35% | 0.82 | 18.84% |
| 04/04/83 | 11.17 | 3.23% | 7.31 | 15.30% | 0.84 | 2.44% |
| 05/02/83 | 9.77 | -12.53% | 7.13 | -2.46% | 0.98 | 16.67% |
| 06/01/83 | 9.77 | 0.00% | 7.90 | 10.80% | 1.00 | 2.04% |
| 07/01/83 | 9.44 | -3.38% | 7.99 | 1.14% | 1.05 | 5.00% |

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|----------|-------|--------|-------|---------|------|--------|
| 08/01/83 | 9.23 | -2.22% | 7.76 | -2.88% | 1.16 | 10.48% |
| 09/01/83 | 9.48 | 2.71% | 8.13 | 4.77% | 1.22 | 5.17% |
| 10/03/83 | 9.23 | -2.64% | 8.56 | 5.29% | 1.19 | -2.46% |
| 11/01/83 | 10.52 | 13.98% | 8.26 | -3.50% | 1.25 | 5.04% |
| 12/01/83 | 10.93 | 3.90% | 8.44 | 2.18% | 1.28 | 2.40% |
| 01/03/84 | 10.47 | -4.21% | 8.23 | -2.49% | 1.21 | -5.47% |
| 02/01/84 | 9.99 | -4.58% | 8.08 | -1.82% | 1.20 | -0.83% |
| 03/01/84 | 9.37 | -6.21% | 7.60 | -5.94% | 1.27 | 5.83% |
| 04/02/84 | 8.91 | -4.91% | 7.83 | 3.03% | 1.32 | 3.94% |
| 05/01/84 | 10.02 | 12.46% | 7.58 | -3.19% | 1.30 | -1.52% |
| 06/01/84 | 10.47 | 4.49% | 7.96 | 5.01% | 1.23 | -5.38% |
| 07/02/84 | 11.17 | 6.69% | 8.42 | 5.78% | 1.12 | -8.94% |
| 08/01/84 | 11.62 | 4.03% | 9.23 | 9.62% | 1.40 | 25.00% |
| 09/04/84 | 11.00 | -5.34% | 9.69 | 4.98% | 1.45 | 3.57% |
| 10/01/84 | 11.06 | 0.55% | 10.06 | 3.82% | 1.36 | -6.21% |
| 11/01/84 | 11.43 | 3.35% | 9.67 | -3.88% | 1.51 | 11.03% |
| 12/03/84 | 11.59 | 1.40% | 10.16 | 5.07% | 1.50 | -0.66% |
| 01/02/85 | 11.81 | 1.90% | 10.77 | 6.00% | 1.70 | 13.33% |
| 02/01/85 | 11.59 | -1.86% | 10.64 | -1.21% | 1.76 | 3.53% |
| 03/01/85 | 11.34 | -2.16% | 9.77 | -8.18% | 1.72 | -2.27% |
| 04/01/85 | 11.03 | -2.73% | 9.05 | -7.37% | 2.03 | 18.02% |
| 05/01/85 | 11.29 | 2.36% | 9.94 | 9.83% | 1.98 | -2.46% |
| 06/03/85 | 11.20 | -0.80% | 9.99 | 0.50% | 2.02 | 2.02% |
| 07/01/85 | 11.42 | 1.96% | 9.82 | -1.70% | 2.12 | 4.95% |
| 08/01/85 | 11.25 | -1.49% | 9.70 | -1.22% | 1.97 | -7.08% |
| 09/03/85 | 11.25 | 0.00% | 9.64 | -0.62% | 2.11 | 7.11% |
| 10/01/85 | 11.25 | 0.00% | 9.61 | -0.31% | 2.08 | -1.42% |
| 11/01/85 | 13.12 | 16.62% | 10.47 | 8.95% | 2.29 | 10.10% |
| 12/02/85 | 13.38 | 1.98% | 10.51 | 0.38% | 2.31 | 0.87% |
| 01/02/86 | 12.75 | -4.71% | 11.05 | 5.14% | 2.33 | 0.87% |
| 02/03/86 | 15.03 | 17.88% | 12.01 | 8.69% | 2.63 | 12.88% |
| 03/03/86 | 16.75 | 11.44% | 13.32 | 10.91% | 2.65 | 0.76% |
| 04/01/86 | 15.64 | -6.63% | 12.36 | -7.21% | 2.67 | 0.75% |
| 05/01/86 | 16.47 | 5.31% | 12.72 | 2.91% | 2.41 | -9.74% |
| 06/02/86 | 16.00 | -2.85% | 12.38 | -2.67% | 2.39 | -0.83% |
| 07/01/86 | 15.42 | -3.63% | 10.86 | -12.28% | 2.20 | -7.95% |
| 08/01/86 | 15.74 | 2.08% | 11.90 | 9.58% | 2.29 | 4.09% |
| 09/02/86 | 14.77 | -6.16% | 11.20 | -5.88% | 2.27 | -0.87% |
| 10/01/86 | 16.96 | 14.83% | 11.76 | 5.00% | 2.28 | 0.44% |
| 11/03/86 | 19.09 | 12.56% | 12.46 | 5.95% | 2.42 | 6.14% |
| 12/01/86 | 19.30 | 1.10% | 11.29 | -9.39% | 2.34 | -3.31% |
| 01/02/87 | 21.87 | 13.32% | 12.87 | 13.99% | 2.76 | 17.95% |
| 02/02/87 | 21.92 | 0.23% | 13.17 | 2.33% | 2.79 | 1.09% |
| 03/02/87 | 21.95 | 0.14% | 13.79 | 4.71% | 2.79 | 0.00% |
| 04/01/87 | 21.56 | -1.78% | 15.89 | 15.23% | 2.69 | -3.58% |
| 05/01/87 | 22.98 | 6.59% | 15.47 | -2.64% | 2.57 | -4.46% |

| | | | | | | |
|----------|-------|---------|-------|---------|------|---------|
| 06/01/87 | 24.81 | 7.96% | 15.00 | -3.04% | 2.77 | 7.78% |
| 07/01/87 | 27.05 | 9.03% | 16.13 | 7.53% | 2.79 | 0.72% |
| 08/03/87 | 29.04 | 7.36% | 17.19 | 6.57% | 3.04 | 8.96% |
| 09/01/87 | 29.47 | 1.48% | 15.51 | -9.77% | 3.01 | -0.99% |
| 10/01/87 | 24.19 | -17.92% | 10.93 | -29.53% | 2.38 | -20.93% |
| 11/02/87 | 19.82 | -18.07% | 10.99 | 0.55% | 2.02 | -15.13% |
| 12/01/87 | 21.46 | 8.27% | 11.96 | 8.83% | 1.97 | -2.48% |
| 01/04/88 | 19.05 | -11.23% | 12.82 | 7.19% | 2.18 | 10.66% |
| 02/01/88 | 19.21 | 0.84% | 14.64 | 14.20% | 2.40 | 10.09% |
| 03/01/88 | 18.05 | -6.04% | 14.46 | -1.23% | 2.38 | -0.83% |
| 04/04/88 | 18.05 | 0.00% | 15.20 | 5.12% | 2.32 | -2.52% |
| 05/02/88 | 18.81 | 4.21% | 15.74 | 3.55% | 2.58 | 11.21% |
| 06/01/88 | 20.26 | 7.71% | 16.79 | 6.67% | 2.69 | 4.26% |
| 07/01/88 | 20.43 | 0.84% | 16.79 | 0.00% | 2.77 | 2.97% |
| 08/01/88 | 19.48 | -4.65% | 15.77 | -6.08% | 2.82 | 1.81% |
| 09/01/88 | 20.39 | 4.67% | 16.23 | 2.92% | 2.88 | 2.13% |
| 10/03/88 | 21.92 | 7.50% | 18.04 | 11.15% | 2.91 | 1.04% |
| 11/01/88 | 20.73 | -5.43% | 18.80 | 4.21% | 3.08 | 5.84% |
| 12/01/88 | 20.68 | -0.24% | 18.63 | -0.90% | 2.93 | -4.87% |
| 01/03/89 | 22.22 | 7.45% | 20.38 | 9.39% | 3.14 | 7.17% |
| 02/01/89 | 21.36 | -3.87% | 19.68 | -3.43% | 3.22 | 2.55% |
| 03/01/89 | 21.01 | -1.64% | 19.14 | -2.74% | 3.11 | -3.42% |
| 04/03/89 | 22.22 | 5.76% | 19.14 | 0.00% | 3.21 | 3.22% |
| 05/01/89 | 20.95 | -5.72% | 18.97 | -0.89% | 3.53 | 9.97% |
| 06/01/89 | 22.00 | 5.01% | 19.61 | 3.37% | 3.33 | -5.67% |
| 07/03/89 | 22.59 | 2.68% | 21.08 | 7.50% | 3.74 | 12.31% |
| 08/01/89 | 22.94 | 1.55% | 23.41 | 11.05% | 4.25 | 13.64% |
| 09/01/89 | 21.93 | -4.40% | 22.28 | -4.83% | 3.96 | -6.82% |
| 10/02/89 | 20.57 | -6.20% | 21.20 | -4.85% | 3.82 | -3.54% |
| 11/01/89 | 20.10 | -2.28% | 21.32 | 0.57% | 4.03 | 5.50% |
| 12/01/89 | 19.68 | -2.09% | 20.53 | -3.71% | 3.88 | -3.72% |
| 01/02/90 | 18.25 | -7.27% | 20.23 | -1.46% | 3.78 | -2.58% |
| 02/01/90 | 18.25 | 0.00% | 22.19 | 9.69% | 4.12 | 8.99% |
| 03/01/90 | 18.97 | 3.95% | 22.69 | 2.25% | 4.34 | 5.34% |
| 04/02/90 | 17.88 | -5.75% | 21.88 | -3.57% | 4.12 | -5.07% |
| 05/01/90 | 19.75 | 10.46% | 24.44 | 11.70% | 4.50 | 9.22% |
| 06/01/90 | 19.88 | 0.66% | 23.94 | -2.05% | 4.53 | 0.67% |
| 07/02/90 | 18.71 | -5.89% | 23.43 | -2.13% | 4.16 | -8.17% |
| 08/01/90 | 20.00 | 6.89% | 20.35 | -13.15% | 4.04 | -2.88% |
| 09/04/90 | 19.13 | -4.35% | 18.56 | -8.80% | 3.63 | -10.15% |
| 10/01/90 | 19.76 | 3.29% | 18.81 | 1.35% | 3.27 | -9.92% |
| 11/01/90 | 21.31 | 7.84% | 19.08 | 1.44% | 3.88 | 18.65% |
| 12/03/90 | 20.93 | -1.78% | 17.97 | -5.82% | 3.78 | -2.58% |
| 01/02/91 | 21.43 | 2.39% | 18.95 | 5.45% | 4.05 | 7.14% |
| 02/01/91 | 22.24 | 3.78% | 20.88 | 10.18% | 4.42 | 9.14% |
| 03/01/91 | 22.18 | -0.27% | 19.95 | -4.45% | 4.31 | -2.49% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|--------|
| 04/01/91 | 21.16 | -4.60% | 18.90 | -5.26% | 4.40 | 2.09% |
| 05/01/91 | 21.81 | 3.07% | 23.04 | 21.90% | 4.72 | 7.27% |
| 06/03/91 | 19.94 | -8.57% | 21.77 | -5.51% | 5.22 | 10.59% |
| 07/01/91 | 21.10 | 5.82% | 21.23 | -2.48% | 6.15 | 17.82% |
| 08/01/91 | 22.45 | 6.40% | 20.50 | -3.44% | 6.37 | 3.58% |
| 09/03/91 | 22.19 | -1.16% | 20.17 | -1.61% | 6.02 | -5.49% |
| 10/01/91 | 23.49 | 5.86% | 18.95 | -6.05% | 6.89 | 14.45% |
| 11/01/91 | 24.54 | 4.47% | 16.59 | -12.45% | 6.61 | -4.06% |
| 12/02/91 | 25.39 | 3.46% | 15.58 | -6.09% | 7.46 | 12.86% |
| 01/02/92 | 26.57 | 4.65% | 17.47 | 12.13% | 8.42 | 12.87% |
| 02/03/92 | 23.74 | -10.65% | 20.46 | 17.12% | 8.61 | 2.26% |
| 03/02/92 | 21.61 | -8.97% | 19.99 | -2.30% | 8.76 | 1.74% |
| 04/01/92 | 21.08 | -2.45% | 22.64 | 13.26% | 10.11 | 15.41% |
| 05/01/92 | 21.48 | 1.90% | 21.76 | -3.89% | 10.24 | 1.29% |
| 06/01/92 | 21.62 | 0.65% | 24.25 | 11.44% | 9.49 | -7.32% |
| 07/01/92 | 23.43 | 8.37% | 22.95 | -5.36% | 9.79 | 3.16% |
| 08/03/92 | 24.11 | 2.90% | 19.30 | -15.90% | 9.42 | -3.78% |
| 09/01/92 | 24.24 | 0.54% | 17.91 | -7.20% | 9.35 | -0.74% |
| 10/01/92 | 22.27 | -8.13% | 17.14 | -4.30% | 9.98 | 6.74% |
| 11/02/92 | 23.10 | 3.73% | 18.09 | 5.54% | 10.46 | 4.81% |
| 12/01/92 | 22.34 | -3.29% | 18.09 | 0.00% | 11.08 | 5.93% |
| 01/04/93 | 27.51 | 23.14% | 21.17 | 17.03% | 10.55 | -4.78% |
| 02/01/93 | 29.87 | 8.58% | 21.00 | -0.80% | 12.27 | 16.30% |
| 03/01/93 | 30.21 | 1.14% | 21.22 | 1.05% | 12.41 | 1.14% |
| 04/01/93 | 27.15 | -10.13% | 23.05 | 8.62% | 12.16 | -2.01% |
| 05/03/93 | 29.09 | 7.15% | 22.74 | -1.34% | 12.66 | 4.11% |
| 06/01/93 | 28.11 | -3.37% | 25.22 | 10.91% | 12.66 | 0.00% |
| 07/01/93 | 30.15 | 7.26% | 27.48 | 8.96% | 13.30 | 5.06% |
| 08/02/93 | 34.57 | 14.66% | 26.68 | -2.91% | 14.41 | 8.35% |
| 09/01/93 | 33.66 | -2.63% | 23.76 | -10.94% | 14.05 | -2.50% |
| 10/01/93 | 35.64 | 5.88% | 27.10 | 14.06% | 13.81 | -1.71% |
| 11/01/93 | 34.79 | -2.38% | 30.14 | 11.22% | 13.93 | 0.87% |
| 12/01/93 | 32.14 | -7.62% | 31.36 | 4.05% | 15.47 | 11.06% |
| 01/03/94 | 31.89 | -0.78% | 35.00 | 11.61% | 15.40 | -0.45% |
| 02/01/94 | 31.37 | -1.63% | 33.39 | -4.60% | 15.18 | -1.43% |
| 03/01/94 | 32.38 | 3.22% | 30.89 | -7.49% | 14.51 | -4.41% |
| 04/04/94 | 30.28 | -6.49% | 32.53 | 5.31% | 13.72 | -5.44% |
| 05/02/94 | 34.49 | 13.90% | 30.92 | -4.95% | 14.10 | 2.77% |
| 06/01/94 | 35.41 | 2.67% | 28.91 | -6.50% | 13.90 | -1.42% |
| 07/01/94 | 35.60 | 0.54% | 29.56 | 2.25% | 15.35 | 10.43% |
| 08/01/94 | 36.90 | 3.65% | 29.02 | -1.83% | 15.14 | -1.37% |
| 09/01/94 | 38.39 | 4.04% | 27.08 | -6.69% | 13.83 | -8.65% |
| 10/03/94 | 35.70 | -7.01% | 22.82 | -15.73% | 14.03 | 1.45% |
| 11/01/94 | 34.05 | -4.62% | 22.14 | -2.98% | 13.35 | -4.85% |
| 12/01/94 | 35.73 | 4.93% | 24.46 | 10.48% | 13.92 | 4.27% |
| 01/03/95 | 36.66 | 2.60% | 22.57 | -7.73% | 14.63 | 5.10% |

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|----------|-------|---------|-------|---------|-------|---------|
| 02/01/95 | 38.46 | 4.91% | 24.88 | 10.23% | 15.66 | 7.04% |
| 03/01/95 | 40.16 | 4.42% | 25.68 | 3.22% | 16.23 | 3.64% |
| 04/03/95 | 43.36 | 7.97% | 26.34 | 2.57% | 16.39 | 0.99% |
| 05/01/95 | 45.84 | 5.72% | 28.21 | 7.10% | 16.86 | 2.87% |
| 06/01/95 | 46.03 | 0.41% | 27.55 | -2.34% | 18.58 | 10.20% |
| 07/03/95 | 43.75 | -4.95% | 28.65 | 3.99% | 19.52 | 5.06% |
| 08/01/95 | 44.14 | 0.89% | 27.87 | -2.72% | 18.69 | -4.25% |
| 09/01/95 | 45.29 | 2.61% | 27.72 | -0.54% | 18.58 | -0.59% |
| 10/02/95 | 47.87 | 5.70% | 25.87 | -6.67% | 17.90 | -3.66% |
| 11/01/95 | 52.47 | 9.61% | 28.87 | 11.60% | 20.12 | 12.40% |
| 12/01/95 | 51.51 | -1.83% | 31.48 | 9.04% | 20.18 | 0.30% |
| 01/02/96 | 56.41 | 9.51% | 31.33 | -0.48% | 21.19 | 5.00% |
| 02/01/96 | 55.27 | -2.02% | 30.74 | -1.88% | 23.82 | 12.41% |
| 03/01/96 | 54.89 | -0.69% | 31.94 | 3.90% | 25.32 | 6.30% |
| 04/01/96 | 59.14 | 7.74% | 32.54 | 1.88% | 24.84 | -1.90% |
| 05/01/96 | 57.80 | -2.27% | 33.32 | 2.40% | 23.63 | -4.87% |
| 06/03/96 | 60.43 | 4.55% | 31.66 | -4.98% | 24.65 | 4.32% |
| 07/01/96 | 58.00 | -4.02% | 29.46 | -6.95% | 25.35 | 2.84% |
| 08/01/96 | 56.66 | -2.31% | 30.22 | 2.58% | 26.84 | 5.88% |
| 09/03/96 | 61.34 | 8.26% | 29.23 | -3.28% | 28.63 | 6.67% |
| 10/01/96 | 62.22 | 1.43% | 32.66 | 11.73% | 28.47 | -0.56% |
| 11/01/96 | 63.70 | 2.38% | 35.35 | 8.24% | 32.04 | 12.54% |
| 12/02/96 | 63.02 | -1.07% | 34.20 | -3.25% | 29.31 | -8.52% |
| 01/02/97 | 68.12 | 8.09% | 36.19 | 5.82% | 30.78 | 5.02% |
| 02/03/97 | 70.82 | 3.96% | 35.81 | -1.05% | 31.83 | 3.41% |
| 03/03/97 | 59.97 | -15.32% | 34.27 | -4.30% | 31.39 | -1.38% |
| 04/01/97 | 65.59 | 9.37% | 35.81 | 4.49% | 31.83 | 1.40% |
| 05/01/97 | 65.74 | 0.23% | 35.81 | 0.00% | 34.04 | 6.94% |
| 06/02/97 | 60.89 | -7.38% | 34.79 | -2.85% | 37.26 | 9.46% |
| 07/01/97 | 53.15 | -12.71% | 38.62 | 11.01% | 40.91 | 9.80% |
| 08/01/97 | 52.20 | -1.79% | 39.48 | 2.23% | 36.84 | -9.95% |
| 09/02/97 | 51.86 | -0.65% | 42.12 | 6.69% | 37.93 | 2.96% |
| 10/01/97 | 47.82 | -7.79% | 40.39 | -4.11% | 32.13 | -15.29% |
| 11/03/97 | 48.77 | 1.99% | 38.64 | -4.33% | 33.26 | 3.52% |
| 12/01/97 | 48.71 | -0.12% | 40.83 | 5.67% | 34.76 | 4.51% |
| 01/02/98 | 52.48 | 7.74% | 38.94 | -4.63% | 34.88 | 0.35% |
| 02/02/98 | 53.14 | 1.26% | 46.70 | 19.93% | 38.26 | 9.69% |
| 03/02/98 | 52.53 | -1.15% | 45.89 | -1.73% | 37.76 | -1.31% |
| 04/01/98 | 58.46 | 11.29% | 45.63 | -0.57% | 39.38 | 4.29% |
| 05/01/98 | 58.16 | -0.51% | 49.03 | 7.45% | 38.56 | -2.08% |
| 06/01/98 | 59.53 | 2.36% | 45.57 | -7.06% | 40.03 | 3.81% |
| 07/01/98 | 68.34 | 14.80% | 49.33 | 8.25% | 39.24 | -1.97% |
| 08/03/98 | 63.99 | -6.37% | 39.93 | -19.06% | 31.07 | -20.82% |
| 09/01/98 | 62.97 | -1.59% | 37.70 | -5.58% | 32.04 | 3.12% |
| 10/01/98 | 63.48 | 0.81% | 43.41 | 15.15% | 35.27 | 10.08% |
| 11/02/98 | 59.84 | -5.73% | 48.36 | 11.40% | 39.99 | 13.38% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 12/01/98 | 59.32 | -0.87% | 49.53 | 2.42% | 40.27 | 0.70% |
| 01/04/99 | 53.86 | -9.20% | 62.12 | 25.42% | 35.44 | -11.99% |
| 02/01/99 | 54.89 | 1.91% | 57.45 | -7.52% | 37.76 | 6.55% |
| 03/01/99 | 52.97 | -3.50% | 60.54 | 5.38% | 44.88 | 18.86% |
| 04/01/99 | 61.99 | 17.03% | 61.97 | 2.36% | 53.60 | 19.43% |
| 05/03/99 | 56.43 | -8.97% | 58.39 | -5.78% | 53.12 | -0.90% |
| 06/01/99 | 56.54 | 0.19% | 55.85 | -4.35% | 57.64 | 8.51% |
| 07/01/99 | 57.68 | 2.02% | 51.73 | -7.38% | 59.19 | 2.69% |
| 08/02/99 | 61.64 | 6.87% | 56.52 | 9.26% | 56.37 | -4.76% |
| 09/01/99 | 63.47 | 2.97% | 53.69 | -5.01% | 54.99 | -2.45% |
| 10/01/99 | 57.87 | -8.82% | 60.09 | 11.92% | 52.24 | -5.00% |
| 11/01/99 | 52.30 | -9.63% | 63.42 | 5.54% | 55.20 | 5.67% |
| 12/01/99 | 55.99 | 7.06% | 62.46 | -1.51% | 53.07 | -3.86% |
| 01/03/00 | 52.30 | -6.59% | 69.23 | 10.84% | 44.16 | -16.79% |
| 02/01/00 | 48.81 | -6.67% | 65.77 | -5.00% | 44.46 | 0.68% |
| 03/01/00 | 46.25 | -5.24% | 71.61 | 8.88% | 48.67 | 9.47% |
| 04/03/00 | 48.01 | 3.81% | 80.96 | 13.06% | 51.73 | 6.29% |
| 05/01/00 | 51.26 | 6.77% | 61.43 | -24.12% | 50.69 | -2.01% |
| 06/01/00 | 51.05 | -0.41% | 50.50 | -17.79% | 31.22 | -38.41% |
| 07/03/00 | 47.08 | -7.78% | 49.53 | -1.92% | 31.51 | 0.93% |
| 08/01/00 | 53.80 | 14.27% | 61.39 | 23.95% | 36.23 | 14.98% |
| 09/01/00 | 35.32 | -34.35% | 57.00 | -7.15% | 33.20 | -8.36% |
| 10/02/00 | 38.77 | 9.77% | 54.48 | -4.42% | 50.14 | 51.02% |
| 11/01/00 | 36.67 | -5.42% | 43.80 | -19.60% | 45.59 | -9.07% |
| 12/01/00 | 34.39 | -6.22% | 45.07 | 2.90% | 44.24 | -2.96% |
| 01/02/01 | 38.09 | 10.76% | 47.51 | 5.41% | 44.19 | -0.11% |
| 02/01/01 | 39.67 | 4.15% | 47.60 | 0.19% | 43.87 | -0.72% |
| 03/01/01 | 35.17 | -11.34% | 46.29 | -2.75% | 38.31 | -12.67% |
| 04/02/01 | 38.35 | 9.04% | 48.93 | 5.70% | 45.65 | 19.16% |
| 05/01/01 | 42.11 | 9.80% | 51.26 | 4.76% | 45.44 | -0.46% |
| 06/01/01 | 41.53 | -1.38% | 57.97 | 13.09% | 32.77 | -27.88% |
| 07/02/01 | 38.53 | -7.22% | 57.29 | -1.17% | 34.80 | 6.19% |
| 08/01/01 | 40.12 | 4.13% | 49.71 | -13.23% | 35.35 | 1.58% |
| 09/04/01 | 29.22 | -27.17% | 38.95 | -21.65% | 25.05 | -29.14% |
| 10/01/01 | 22.97 | -21.39% | 37.52 | -3.67% | 28.03 | 11.90% |
| 11/01/01 | 27.61 | 20.20% | 45.66 | 21.70% | 31.63 | 12.84% |
| 12/03/01 | 26.85 | -2.75% | 44.65 | -2.21% | 32.28 | 2.06% |
| 01/02/02 | 25.91 | -3.50% | 46.98 | 5.22% | 32.08 | -0.62% |
| 02/04/02 | 28.73 | 10.88% | 49.17 | 4.66% | 36.59 | 14.06% |
| 03/01/02 | 28.43 | -1.04% | 56.10 | 14.09% | 36.73 | 0.38% |
| 04/01/02 | 29.38 | 3.34% | 59.53 | 6.11% | 35.21 | -4.14% |
| 05/01/02 | 31.15 | 6.02% | 58.10 | -2.40% | 37.81 | 7.38% |
| 06/03/02 | 27.31 | -12.33% | 49.97 | -13.99% | 33.98 | -10.13% |
| 07/01/02 | 28.82 | 5.53% | 43.52 | -12.91% | 31.21 | -8.15% |
| 08/01/02 | 28.60 | -0.76% | 45.26 | 4.00% | 29.06 | -6.89% |
| 09/03/02 | 25.51 | -10.80% | 36.79 | -18.71% | 21.01 | -27.70% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 10/01/02 | 31.69 | 24.23% | 31.45 | -14.51% | 23.23 | 10.57% |
| | HPQ | % | IBM | % | IP | % |
| 01/02/80 | 0.30 | | 1.26 | | 0.18 | |
| 02/01/80 | 0.30 | 0.00% | 1.22 | -3.17% | 0.21 | 16.67% |
| 03/03/80 | 0.30 | 0.00% | 1.07 | -12.30% | 0.17 | -19.05% |
| 04/01/80 | 0.27 | -10.00% | 1.06 | -0.93% | 0.18 | 5.88% |
| 05/01/80 | 0.29 | 7.41% | 1.14 | 7.55% | 0.21 | 16.67% |
| 06/02/80 | 0.31 | 6.90% | 1.21 | 6.14% | 0.22 | 4.76% |
| 07/01/80 | 0.38 | 22.58% | 1.34 | 10.74% | 0.26 | 18.18% |
| 08/01/80 | 0.36 | -5.26% | 1.42 | 5.97% | 0.28 | 7.69% |
| 09/02/80 | 0.39 | 8.33% | 1.39 | -2.11% | 0.28 | 0.00% |
| 10/01/80 | 0.39 | 0.00% | 1.44 | 3.60% | 0.27 | -3.57% |
| 11/03/80 | 0.47 | 20.51% | 1.56 | 8.33% | 0.36 | 33.33% |
| 12/01/80 | 0.49 | 4.26% | 1.55 | -0.64% | 0.33 | -8.33% |
| 01/02/81 | 0.45 | -8.16% | 1.47 | -5.16% | 0.33 | 0.00% |
| 02/02/81 | 0.48 | 6.67% | 1.55 | 5.44% | 0.42 | 27.27% |
| 03/02/81 | 0.52 | 8.33% | 1.51 | -2.58% | 0.45 | 7.14% |
| 04/01/81 | 0.56 | 7.69% | 1.41 | -6.62% | 0.41 | -8.89% |
| 05/01/81 | 0.60 | 7.14% | 1.51 | 7.09% | 0.47 | 14.63% |
| 06/01/81 | 0.55 | -8.33% | 1.48 | -1.99% | 0.46 | -2.13% |
| 07/01/81 | 0.55 | 0.00% | 1.44 | -2.70% | 0.48 | 4.35% |
| 08/03/81 | 0.50 | -9.09% | 1.50 | 4.17% | 0.49 | 2.08% |
| 09/01/81 | 0.49 | -2.00% | 1.48 | -1.33% | 0.45 | -8.16% |
| 10/01/81 | 0.54 | 10.20% | 1.40 | -5.41% | 0.43 | -4.44% |
| 11/02/81 | 0.49 | -9.26% | 1.59 | 13.57% | 0.53 | 23.26% |
| 12/01/81 | 0.48 | -2.04% | 1.66 | 4.40% | 0.50 | -5.66% |
| 01/04/82 | 0.54 | 12.50% | 1.86 | 12.05% | 0.49 | -2.00% |
| 02/01/82 | 0.51 | -5.56% | 1.91 | 2.69% | 0.52 | 6.12% |
| 03/01/82 | 0.50 | -1.96% | 1.84 | -3.66% | 0.49 | -5.77% |
| 04/01/82 | 0.55 | 10.00% | 1.98 | 7.61% | 0.53 | 8.16% |
| 05/03/82 | 0.54 | -1.82% | 2.00 | 1.01% | 0.59 | 11.32% |
| 06/01/82 | 0.54 | 0.00% | 1.97 | -1.50% | 0.63 | 6.78% |
| 07/01/82 | 0.53 | -1.85% | 2.14 | 8.63% | 0.59 | -6.35% |
| 08/02/82 | 0.69 | 30.19% | 2.42 | 13.08% | 0.81 | 37.29% |
| 09/01/82 | 0.68 | -1.45% | 2.52 | 4.13% | 0.76 | -6.17% |
| 10/01/82 | 0.80 | 17.65% | 2.74 | 8.73% | 0.90 | 18.42% |
| 11/01/82 | 0.93 | 16.25% | 3.10 | 13.14% | 1.00 | 11.11% |
| 12/01/82 | 0.96 | 3.23% | 3.45 | 11.29% | 1.04 | 4.00% |
| 01/03/83 | 1.04 | 8.33% | 3.54 | 2.61% | 1.07 | 2.88% |
| 02/01/83 | 1.11 | 6.73% | 3.68 | 3.95% | 1.33 | 24.30% |
| 03/01/83 | 1.06 | -4.50% | 3.78 | 2.72% | 1.25 | -6.02% |
| 04/04/83 | 1.00 | -5.66% | 4.35 | 15.08% | 1.34 | 7.20% |
| 05/02/83 | 1.10 | 10.00% | 4.27 | -1.84% | 1.51 | 12.69% |
| 06/01/83 | 1.23 | 11.82% | 4.62 | 8.20% | 1.34 | -11.26% |
| 07/01/83 | 1.15 | -6.50% | 4.62 | 0.00% | 1.36 | 1.49% |

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|----------|------|---------|-------|--------|------|---------|
| 08/01/83 | 1.17 | 1.74% | 4.74 | 2.60% | 1.52 | 11.76% |
| 09/01/83 | 1.13 | -3.42% | 5.03 | 6.12% | 1.51 | -0.66% |
| 10/03/83 | 0.96 | -15.04% | 5.02 | -0.20% | 1.39 | -7.95% |
| 11/01/83 | 1.08 | 12.50% | 4.80 | -4.38% | 1.81 | 30.22% |
| 12/01/83 | 1.16 | 7.41% | 4.99 | 3.96% | 1.82 | 0.55% |
| 01/03/84 | 1.10 | -5.17% | 4.66 | -6.61% | 1.66 | -8.79% |
| 02/01/84 | 0.97 | -11.82% | 4.66 | 0.00% | 1.67 | 0.60% |
| 03/01/84 | 1.02 | 5.15% | 4.81 | 3.22% | 1.81 | 8.38% |
| 04/02/84 | 1.03 | 0.98% | 4.81 | 0.00% | 1.86 | 2.76% |
| 05/01/84 | 0.97 | -5.83% | 4.71 | -2.08% | 1.73 | -6.99% |
| 06/01/84 | 1.02 | 5.15% | 4.62 | -1.91% | 1.79 | 3.47% |
| 07/02/84 | 1.02 | 0.00% | 4.83 | 4.55% | 1.80 | 0.56% |
| 08/01/84 | 1.10 | 7.84% | 5.61 | 16.15% | 2.24 | 24.44% |
| 09/04/84 | 1.06 | -3.64% | 5.63 | 0.36% | 2.01 | -10.27% |
| 10/01/84 | 1.03 | -2.83% | 5.85 | 3.91% | 2.02 | 0.50% |
| 11/01/84 | 0.93 | -9.71% | 5.72 | -2.22% | 2.22 | 9.90% |
| 12/03/84 | 0.97 | 4.30% | 5.78 | 1.05% | 2.36 | 6.31% |
| 01/02/85 | 1.08 | 11.34% | 6.41 | 10.90% | 2.38 | 0.85% |
| 02/01/85 | 1.06 | -1.85% | 6.51 | 1.56% | 2.45 | 2.94% |
| 03/01/85 | 0.99 | -6.60% | 6.17 | -5.22% | 2.36 | -3.67% |
| 04/01/85 | 0.92 | -7.07% | 6.14 | -0.49% | 2.39 | 1.27% |
| 05/01/85 | 0.97 | 5.43% | 6.47 | 5.37% | 2.63 | 10.04% |
| 06/03/85 | 1.03 | 6.19% | 6.23 | -3.71% | 2.54 | -3.42% |
| 07/01/85 | 1.12 | 8.74% | 6.61 | 6.10% | 2.65 | 4.33% |
| 08/01/85 | 1.05 | -6.25% | 6.59 | -0.30% | 2.79 | 5.28% |
| 09/03/85 | 0.97 | -7.62% | 6.45 | -2.12% | 2.62 | -6.09% |
| 10/01/85 | 0.90 | -7.22% | 6.76 | 4.81% | 2.51 | -4.20% |
| 11/01/85 | 1.07 | 18.89% | 7.53 | 11.39% | 2.96 | 17.93% |
| 12/02/85 | 1.11 | 3.74% | 8.38 | 11.29% | 3.13 | 5.74% |
| 01/02/86 | 1.19 | 7.21% | 8.16 | -2.63% | 3.20 | 2.24% |
| 02/03/86 | 1.33 | 11.76% | 8.36 | 2.45% | 3.83 | 19.69% |
| 03/03/86 | 1.34 | 0.75% | 8.40 | 0.48% | 4.10 | 7.05% |
| 04/01/86 | 1.38 | 2.99% | 8.66 | 3.10% | 3.81 | -7.07% |
| 05/01/86 | 1.41 | 2.17% | 8.70 | 0.46% | 4.49 | 17.85% |
| 06/02/86 | 1.26 | -10.64% | 8.36 | -3.91% | 4.51 | 0.45% |
| 07/01/86 | 1.21 | -3.97% | 7.57 | -9.45% | 4.60 | 2.00% |
| 08/01/86 | 1.43 | 18.18% | 8.20 | 8.32% | 5.18 | 12.61% |
| 09/02/86 | 1.20 | -16.08% | 7.95 | -3.05% | 5.19 | 0.19% |
| 10/01/86 | 1.21 | 0.83% | 7.30 | -8.18% | 5.58 | 7.51% |
| 11/03/86 | 1.35 | 11.57% | 7.78 | 6.58% | 6.17 | 10.57% |
| 12/01/86 | 1.32 | -2.22% | 7.35 | -5.53% | 6.06 | -1.78% |
| 01/02/87 | 1.58 | 19.70% | 7.88 | 7.21% | 7.44 | 22.77% |
| 02/02/87 | 1.73 | 9.49% | 8.83 | 12.06% | 7.57 | 1.75% |
| 03/02/87 | 1.80 | 4.05% | 9.50 | 7.59% | 8.92 | 17.83% |
| 04/01/87 | 1.78 | -1.11% | 10.13 | 6.63% | 8.31 | -6.84% |
| 05/01/87 | 2.06 | 15.73% | 10.40 | 2.67% | 7.85 | -5.54% |

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|----------|------|---------|-------|---------|-------|---------|
| 06/01/87 | 1.95 | -5.34% | 10.56 | 1.54% | 8.39 | 6.88% |
| 07/01/87 | 1.95 | 0.00% | 10.46 | -0.95% | 8.43 | 0.48% |
| 08/03/87 | 2.11 | 8.21% | 11.25 | 7.55% | 9.37 | 11.15% |
| 09/01/87 | 2.27 | 7.58% | 10.07 | -10.49% | 9.17 | -2.13% |
| 10/01/87 | 1.61 | -29.07% | 8.19 | -18.67% | 6.58 | -28.24% |
| 11/02/87 | 1.47 | -8.70% | 7.68 | -6.23% | 6.63 | 0.76% |
| 12/01/87 | 1.89 | 28.57% | 8.01 | 4.30% | 7.70 | 16.14% |
| 01/04/88 | 1.84 | -2.65% | 7.79 | -2.75% | 7.06 | -8.31% |
| 02/01/88 | 2.00 | 8.70% | 8.49 | 8.99% | 8.31 | 17.71% |
| 03/01/88 | 1.99 | -0.50% | 7.78 | -8.36% | 7.61 | -8.42% |
| 04/04/88 | 2.00 | 0.50% | 8.19 | 5.27% | 8.10 | 6.44% |
| 05/02/88 | 1.85 | -7.50% | 8.46 | 3.30% | 8.17 | 0.86% |
| 06/01/88 | 1.84 | -0.54% | 9.58 | 13.24% | 9.28 | 13.59% |
| 07/01/88 | 1.67 | -9.24% | 9.46 | -1.25% | 8.70 | -6.25% |
| 08/01/88 | 1.54 | -7.78% | 8.69 | -8.14% | 8.87 | 1.95% |
| 09/01/88 | 1.67 | 8.44% | 8.99 | 3.45% | 8.87 | 0.00% |
| 10/03/88 | 1.69 | 1.20% | 9.56 | 6.34% | 9.07 | 2.25% |
| 11/01/88 | 1.62 | -4.14% | 9.58 | 0.21% | 9.11 | 0.44% |
| 12/01/88 | 1.80 | 11.11% | 9.85 | 2.82% | 9.44 | 3.62% |
| 01/03/89 | 1.96 | 8.89% | 10.56 | 7.21% | 10.31 | 9.22% |
| 02/01/89 | 1.87 | -4.59% | 10.17 | -3.69% | 9.79 | -5.04% |
| 03/01/89 | 1.76 | -5.88% | 9.13 | -10.23% | 9.53 | -2.66% |
| 04/03/89 | 1.95 | 10.80% | 9.55 | 4.60% | 10.29 | 7.97% |
| 05/01/89 | 1.85 | -5.13% | 9.59 | 0.42% | 10.52 | 2.24% |
| 06/01/89 | 1.80 | -2.70% | 9.79 | 2.09% | 9.88 | -6.08% |
| 07/03/89 | 1.87 | 3.89% | 10.06 | 2.76% | 11.09 | 12.25% |
| 08/01/89 | 1.82 | -2.67% | 10.70 | 6.36% | 12.82 | 15.60% |
| 09/01/89 | 1.78 | -2.20% | 9.98 | -6.73% | 12.29 | -4.13% |
| 10/02/89 | 1.69 | -5.06% | 9.16 | -8.22% | 10.97 | -10.74% |
| 11/01/89 | 1.60 | -5.33% | 9.37 | 2.29% | 11.65 | 6.20% |
| 12/01/89 | 1.70 | 6.25% | 9.04 | -3.52% | 12.85 | 10.30% |
| 01/02/90 | 1.61 | -5.29% | 9.47 | 4.76% | 11.48 | -10.66% |
| 02/01/90 | 1.55 | -3.73% | 10.49 | 10.77% | 11.84 | 3.14% |
| 03/01/90 | 1.68 | 8.39% | 10.71 | 2.10% | 11.87 | 0.25% |
| 04/02/90 | 1.60 | -4.76% | 11.01 | 2.80% | 11.63 | -2.02% |
| 05/01/90 | 1.75 | 9.37% | 12.68 | 15.17% | 12.68 | 9.03% |
| 06/01/90 | 1.76 | 0.57% | 12.41 | -2.13% | 12.28 | -3.15% |
| 07/02/90 | 1.61 | -8.52% | 11.78 | -5.08% | 13.61 | 10.83% |
| 08/01/90 | 1.30 | -19.25% | 11.27 | -4.33% | 11.85 | -12.93% |
| 09/04/90 | 1.28 | -1.54% | 11.76 | 4.35% | 10.83 | -8.61% |
| 10/01/90 | 1.00 | -21.88% | 11.67 | -0.77% | 11.57 | 6.83% |
| 11/01/90 | 1.15 | 15.00% | 13.15 | 12.68% | 12.63 | 9.16% |
| 12/03/90 | 1.25 | 8.70% | 13.08 | -0.53% | 13.72 | 8.63% |
| 01/02/91 | 1.53 | 22.40% | 14.67 | 12.16% | 15.10 | 10.06% |
| 02/01/91 | 1.83 | 19.61% | 15.50 | 5.66% | 16.11 | 6.69% |
| 03/01/91 | 2.01 | 9.84% | 13.70 | -11.61% | 16.01 | -0.62% |

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|----------|------|---------|-------|---------|-------|---------|
| 04/01/91 | 2.05 | 1.99% | 12.40 | -9.49% | 16.51 | 3.12% |
| 05/01/91 | 2.18 | 6.34% | 13.40 | 8.06% | 18.98 | 14.96% |
| 06/03/91 | 2.08 | -4.59% | 12.26 | -8.51% | 18.94 | -0.21% |
| 07/01/91 | 2.20 | 5.77% | 12.78 | 4.24% | 18.67 | -1.43% |
| 08/01/91 | 2.16 | -1.82% | 12.85 | 0.55% | 19.13 | 2.46% |
| 09/03/91 | 2.07 | -4.17% | 13.74 | 6.93% | 18.71 | -2.20% |
| 10/01/91 | 2.11 | 1.93% | 13.03 | -5.17% | 20.88 | 11.60% |
| 11/01/91 | 2.01 | -4.74% | 12.90 | -1.00% | 18.71 | -10.39% |
| 12/02/91 | 2.43 | 20.90% | 12.41 | -3.80% | 19.84 | 6.04% |
| 01/02/92 | 2.53 | 4.12% | 12.55 | 1.13% | 20.26 | 2.12% |
| 02/03/92 | 3.12 | 23.32% | 12.79 | 1.91% | 21.12 | 4.24% |
| 03/02/92 | 3.51 | 12.50% | 12.30 | -3.83% | 21.05 | -0.33% |
| 04/01/92 | 3.49 | -0.57% | 13.37 | 8.70% | 21.30 | 1.19% |
| 05/01/92 | 3.31 | -5.16% | 14.10 | 5.46% | 20.56 | -3.47% |
| 06/01/92 | 3.08 | -6.95% | 15.20 | 7.80% | 20.38 | -0.88% |
| 07/01/92 | 3.28 | 6.49% | 14.72 | -3.16% | 19.47 | -4.47% |
| 08/03/92 | 2.56 | -21.95% | 14.21 | -3.46% | 18.57 | -4.62% |
| 09/01/92 | 2.56 | 0.00% | 13.24 | -6.83% | 19.06 | 2.64% |
| 10/01/92 | 2.61 | 1.95% | 10.97 | -17.15% | 19.32 | 1.36% |
| 11/02/92 | 3.05 | 16.86% | 12.05 | 9.85% | 19.91 | 3.05% |
| 12/01/92 | 3.29 | 7.87% | 8.89 | -26.22% | 20.33 | 2.11% |
| 01/04/93 | 3.39 | 3.04% | 9.09 | 2.25% | 19.69 | -3.15% |
| 02/01/93 | 3.47 | 2.36% | 10.02 | 10.23% | 20.02 | 1.68% |
| 03/01/93 | 3.66 | 5.48% | 9.38 | -6.39% | 19.48 | -2.70% |
| 04/01/93 | 3.60 | -1.64% | 8.96 | -4.48% | 20.49 | 5.18% |
| 05/03/93 | 4.01 | 11.39% | 10.17 | 13.50% | 21.25 | 3.71% |
| 06/01/93 | 3.99 | -0.50% | 9.52 | -6.39% | 20.38 | -4.09% |
| 07/01/93 | 3.55 | -11.03% | 8.58 | -9.87% | 20.30 | -0.39% |
| 08/02/93 | 3.65 | 2.82% | 9.02 | 5.13% | 21.18 | 4.33% |
| 09/01/93 | 3.47 | -4.93% | 8.28 | -8.20% | 19.60 | -7.46% |
| 10/01/93 | 3.74 | 7.78% | 9.07 | 9.54% | 19.35 | -1.28% |
| 11/01/93 | 3.74 | 0.00% | 10.84 | 19.51% | 22.18 | 14.63% |
| 12/01/93 | 4.12 | 10.16% | 11.36 | 4.80% | 22.51 | 1.49% |
| 01/03/94 | 4.44 | 7.77% | 11.36 | 0.00% | 24.96 | 10.88% |
| 02/01/94 | 4.72 | 6.31% | 10.83 | -4.67% | 24.57 | -1.56% |
| 03/01/94 | 4.38 | -7.20% | 11.19 | 3.32% | 22.97 | -6.51% |
| 04/04/94 | 4.28 | -2.28% | 11.78 | 5.27% | 22.08 | -3.87% |
| 05/02/94 | 4.19 | -2.10% | 13.13 | 11.46% | 23.95 | 8.47% |
| 06/01/94 | 4.14 | -1.19% | 12.24 | -6.78% | 22.91 | -4.34% |
| 07/01/94 | 4.27 | 3.14% | 12.90 | 5.39% | 25.20 | 10.00% |
| 08/01/94 | 4.95 | 15.93% | 14.51 | 12.48% | 27.18 | 7.86% |
| 09/01/94 | 4.94 | -0.20% | 14.74 | 1.59% | 27.66 | 1.77% |
| 10/03/94 | 5.53 | 11.94% | 15.78 | 7.06% | 26.25 | -5.10% |
| 11/01/94 | 5.52 | -0.18% | 15.19 | -3.74% | 25.68 | -2.17% |
| 12/01/94 | 5.79 | 4.89% | 15.78 | 3.88% | 27.07 | 5.41% |
| 01/03/95 | 5.83 | 0.69% | 15.48 | -1.90% | 25.54 | -5.65% |

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|----------|-------|---------|-------|---------|-------|---------|
| 02/01/95 | 6.67 | 14.41% | 16.38 | 5.81% | 27.92 | 9.32% |
| 03/01/95 | 7.13 | 6.90% | 17.87 | 9.10% | 27.42 | -1.79% |
| 04/03/95 | 7.84 | 9.96% | 20.59 | 15.22% | 28.15 | 2.66% |
| 05/01/95 | 7.82 | -0.26% | 20.46 | -0.63% | 29.23 | 3.84% |
| 06/01/95 | 8.92 | 14.07% | 21.12 | 3.23% | 31.88 | 9.07% |
| 07/03/95 | 9.33 | 4.60% | 23.95 | 13.40% | 31.41 | -1.47% |
| 08/01/95 | 9.58 | 2.68% | 22.95 | -4.18% | 31.05 | -1.15% |
| 09/01/95 | 10.09 | 5.32% | 20.98 | -8.58% | 31.86 | 2.61% |
| 10/02/95 | 11.21 | 11.10% | 21.59 | 2.91% | 28.06 | -11.93% |
| 11/01/95 | 10.04 | -10.44% | 21.67 | 0.37% | 29.44 | 4.92% |
| 12/01/95 | 10.24 | 1.99% | 20.49 | -5.45% | 29.15 | -0.99% |
| 01/02/96 | 10.36 | 1.17% | 24.33 | 18.74% | 31.36 | 7.58% |
| 02/01/96 | 12.32 | 18.92% | 27.74 | 14.02% | 27.90 | -11.03% |
| 03/01/96 | 11.60 | -5.84% | 25.17 | -9.26% | 30.83 | 10.50% |
| 04/01/96 | 13.05 | 12.50% | 24.38 | -3.14% | 31.12 | 0.94% |
| 05/01/96 | 13.13 | 0.61% | 24.47 | 0.37% | 31.50 | 1.22% |
| 06/03/96 | 12.40 | -5.56% | 22.70 | -7.23% | 29.13 | -7.52% |
| 07/01/96 | 10.95 | -11.69% | 24.65 | 8.59% | 29.92 | 2.71% |
| 08/01/96 | 10.89 | -0.55% | 26.56 | 7.75% | 32.01 | 6.99% |
| 09/03/96 | 12.19 | 11.94% | 28.91 | 8.85% | 34.01 | 6.25% |
| 10/01/96 | 11.04 | -9.43% | 29.96 | 3.63% | 34.11 | 0.29% |
| 11/01/96 | 13.48 | 22.10% | 37.42 | 24.90% | 34.42 | 0.91% |
| 12/02/96 | 12.63 | -6.31% | 35.57 | -4.94% | 32.80 | -4.71% |
| 01/02/97 | 13.23 | 4.75% | 36.83 | 3.54% | 33.10 | 0.91% |
| 02/03/97 | 14.11 | 6.65% | 34.07 | -7.49% | 34.12 | 3.08% |
| 03/03/97 | 13.44 | -4.75% | 32.53 | -4.52% | 31.97 | -6.30% |
| 04/01/97 | 13.25 | -1.41% | 38.04 | 16.94% | 34.63 | 8.32% |
| 05/01/97 | 13.00 | -1.89% | 41.00 | 7.78% | 39.67 | 14.55% |
| 06/02/97 | 14.21 | 9.31% | 42.78 | 4.34% | 40.24 | 1.44% |
| 07/01/97 | 17.76 | 24.98% | 50.12 | 17.16% | 46.51 | 15.58% |
| 08/01/97 | 15.60 | -12.16% | 48.23 | -3.77% | 44.13 | -5.12% |
| 09/02/97 | 17.72 | 13.59% | 50.43 | 4.56% | 46.01 | 4.26% |
| 10/01/97 | 15.70 | -11.40% | 46.86 | -7.08% | 37.64 | -18.19% |
| 11/03/97 | 15.57 | -0.83% | 52.30 | 11.61% | 40.17 | 6.72% |
| 12/01/97 | 15.96 | 2.50% | 49.97 | -4.46% | 36.47 | -9.21% |
| 01/02/98 | 15.39 | -3.57% | 47.16 | -5.62% | 38.64 | 5.95% |
| 02/02/98 | 17.15 | 11.44% | 50.08 | 6.19% | 39.85 | 3.13% |
| 03/02/98 | 16.29 | -5.01% | 49.81 | -0.54% | 40.06 | 0.53% |
| 04/01/98 | 19.37 | 18.91% | 55.56 | 11.54% | 44.60 | 11.33% |
| 05/01/98 | 16.02 | -17.29% | 56.56 | 1.80% | 39.70 | -10.99% |
| 06/01/98 | 15.48 | -3.37% | 55.26 | -2.30% | 37.11 | -6.52% |
| 07/01/98 | 14.35 | -7.30% | 63.78 | 15.42% | 38.51 | 3.77% |
| 08/03/98 | 12.55 | -12.54% | 54.39 | -14.72% | 32.32 | -16.07% |
| 09/01/98 | 13.77 | 9.72% | 62.06 | 14.10% | 40.72 | 25.99% |
| 10/01/98 | 15.67 | 13.80% | 71.72 | 15.57% | 40.56 | -0.39% |
| 11/02/98 | 16.28 | 3.89% | 79.99 | 11.53% | 38.37 | -5.40% |

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|----------|-------|---------|--------|---------|-------|---------|
| 12/01/98 | 17.86 | 9.71% | 89.31 | 11.65% | 39.58 | 3.15% |
| 01/04/99 | 20.49 | 14.73% | 88.77 | -0.60% | 34.95 | -11.70% |
| 02/01/99 | 17.37 | -15.23% | 82.45 | -7.12% | 37.55 | 7.44% |
| 03/01/99 | 17.81 | 2.53% | 86.09 | 4.41% | 37.72 | 0.45% |
| 04/01/99 | 20.71 | 16.28% | 101.60 | 18.02% | 47.66 | 26.35% |
| 05/03/99 | 24.77 | 19.60% | 112.94 | 11.16% | 45.13 | -5.31% |
| 06/01/99 | 26.48 | 6.90% | 125.84 | 11.42% | 45.36 | 0.51% |
| 07/01/99 | 27.59 | 4.19% | 122.37 | -2.76% | 46.04 | 1.50% |
| 08/02/99 | 27.77 | 0.65% | 121.39 | -0.80% | 42.88 | -6.86% |
| 09/01/99 | 23.99 | -13.61% | 117.92 | -2.86% | 43.79 | 2.12% |
| 10/01/99 | 19.61 | -18.26% | 95.75 | -18.80% | 47.95 | 9.50% |
| 11/01/99 | 25.08 | 27.89% | 100.57 | 5.03% | 48.09 | 0.29% |
| 12/01/99 | 30.16 | 20.26% | 105.26 | 4.66% | 51.89 | 7.90% |
| 01/03/00 | 28.71 | -4.81% | 109.54 | 4.07% | 43.79 | -15.61% |
| 02/01/00 | 35.67 | 24.24% | 100.37 | -8.37% | 34.24 | -21.81% |
| 03/01/00 | 35.23 | -1.23% | 115.63 | 15.20% | 38.98 | 13.84% |
| 04/03/00 | 35.88 | 1.85% | 108.92 | -5.80% | 33.51 | -14.03% |
| 05/01/00 | 31.94 | -10.98% | 104.95 | -3.64% | 31.95 | -4.66% |
| 06/01/00 | 59.30 | 85.66% | 107.15 | 2.10% | 27.36 | -14.37% |
| 07/03/00 | 51.88 | -12.51% | 109.78 | 2.45% | 30.92 | 13.01% |
| 08/01/00 | 57.29 | 10.43% | 129.26 | 17.74% | 29.48 | -4.66% |
| 09/01/00 | 46.21 | -19.34% | 110.27 | -14.69% | 26.52 | -10.04% |
| 10/02/00 | 44.30 | -4.13% | 96.44 | -12.54% | 33.69 | 27.04% |
| 11/01/00 | 30.13 | -31.99% | 91.67 | -4.95% | 31.55 | -6.35% |
| 12/01/00 | 30.14 | 0.03% | 83.33 | -9.10% | 38.02 | 20.51% |
| 01/02/01 | 35.20 | 16.79% | 109.80 | 31.77% | 36.00 | -5.31% |
| 02/01/01 | 27.56 | -21.70% | 98.05 | -10.70% | 35.32 | -1.89% |
| 03/01/01 | 29.95 | 8.67% | 94.40 | -3.72% | 33.84 | -4.19% |
| 04/02/01 | 27.23 | -9.08% | 113.01 | 19.71% | 36.50 | 7.86% |
| 05/01/01 | 28.08 | 3.12% | 109.86 | -2.79% | 36.11 | -1.07% |
| 06/01/01 | 27.48 | -2.14% | 111.53 | 1.52% | 33.70 | -6.67% |
| 07/02/01 | 23.69 | -13.79% | 103.39 | -7.30% | 38.47 | 14.15% |
| 08/01/01 | 22.30 | -5.87% | 98.35 | -4.87% | 38.13 | -0.88% |
| 09/04/01 | 15.49 | -30.54% | 90.25 | -8.24% | 33.09 | -13.22% |
| 10/01/01 | 16.24 | 4.84% | 106.34 | 17.83% | 34.01 | 2.78% |
| 11/01/01 | 21.22 | 30.67% | 113.88 | 7.09% | 38.18 | 12.26% |
| 12/03/01 | 19.90 | -6.22% | 119.17 | 4.65% | 38.57 | 1.02% |
| 01/02/02 | 21.42 | 7.64% | 106.29 | -10.81% | 39.93 | 3.53% |
| 02/04/02 | 19.49 | -9.01% | 96.79 | -8.94% | 42.06 | 5.33% |
| 03/01/02 | 17.45 | -10.47% | 102.60 | 6.00% | 41.35 | -1.69% |
| 04/01/02 | 16.63 | -4.70% | 82.63 | -19.46% | 39.83 | -3.68% |
| 05/01/02 | 18.57 | 11.67% | 79.52 | -3.76% | 41.67 | 4.62% |
| 06/03/02 | 14.93 | -19.60% | 71.17 | -10.50% | 42.14 | 1.13% |
| 07/01/02 | 13.83 | -7.37% | 69.59 | -2.22% | 38.50 | -8.64% |
| 08/01/02 | 13.12 | -5.13% | 74.67 | 7.30% | 36.64 | -4.83% |
| 09/03/02 | 11.47 | -12.58% | 57.76 | -22.65% | 32.50 | -11.30% |

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|----------|-------|---------|-------|--------|-------|---------|
| 10/01/02 | 15.53 | 35.40% | 78.20 | 35.39% | 34.00 | 4.62% |
| | MCD | % | MMM | % | PG | % |
| 01/02/80 | 0.01 | | 0.09 | | 0.02 | |
| 02/01/80 | 0.01 | 0.00% | 0.10 | 11.11% | 0.02 | 0.00% |
| 03/03/80 | 0.01 | 0.00% | 0.10 | 0.00% | 0.02 | 0.00% |
| 04/01/80 | 0.01 | 0.00% | 0.11 | 10.00% | 0.03 | 50.00% |
| 05/01/80 | 0.01 | 0.00% | 0.12 | 9.09% | 0.03 | 0.00% |
| 06/02/80 | 0.01 | 0.00% | 0.12 | 0.00% | 0.03 | 0.00% |
| 07/01/80 | 0.02 | 100.00% | 0.13 | 8.33% | 0.04 | 33.33% |
| 08/01/80 | 0.02 | 0.00% | 0.15 | 15.38% | 0.04 | 0.00% |
| 09/02/80 | 0.02 | 0.00% | 0.15 | 0.00% | 0.03 | -25.00% |
| 10/01/80 | 0.02 | 0.00% | 0.14 | -6.67% | 0.04 | 33.33% |
| 11/03/80 | 0.02 | 0.00% | 0.17 | 21.43% | 0.04 | 0.00% |
| 12/01/80 | 0.02 | 0.00% | 0.16 | -5.88% | 0.04 | 0.00% |
| 01/02/81 | 0.03 | 50.00% | 0.16 | 0.00% | 0.05 | 25.00% |
| 02/02/81 | 0.04 | 33.33% | 0.19 | 18.75% | 0.06 | 20.00% |
| 03/02/81 | 0.04 | 0.00% | 0.20 | 5.26% | 0.05 | -16.67% |
| 04/01/81 | 0.04 | 0.00% | 0.19 | -5.00% | 0.07 | 40.00% |
| 05/01/81 | 0.05 | 25.00% | 0.19 | 0.00% | 0.07 | 0.00% |
| 06/01/81 | 0.05 | 0.00% | 0.20 | 5.26% | 0.08 | 14.29% |
| 07/01/81 | 0.06 | 20.00% | 0.19 | -5.00% | 0.09 | 12.50% |
| 08/03/81 | 0.06 | 0.00% | 0.20 | 5.26% | 0.09 | 0.00% |
| 09/01/81 | 0.06 | 0.00% | 0.20 | 0.00% | 0.09 | 0.00% |
| 10/01/81 | 0.08 | 33.33% | 0.19 | -5.00% | 0.13 | 44.44% |
| 11/02/81 | 0.08 | 0.00% | 0.24 | 26.32% | 0.13 | 0.00% |
| 12/01/81 | 0.08 | 0.00% | 0.24 | 0.00% | 0.13 | 0.00% |
| 01/04/82 | 0.08 | 0.00% | 0.25 | 4.17% | 0.17 | 30.77% |
| 02/01/82 | 0.09 | 12.50% | 0.27 | 8.00% | 0.17 | 0.00% |
| 03/01/82 | 0.10 | 11.11% | 0.27 | 0.00% | 0.17 | 0.00% |
| 04/01/82 | 0.10 | 0.00% | 0.27 | 0.00% | 0.22 | 29.41% |
| 05/03/82 | 0.13 | 30.00% | 0.29 | 7.41% | 0.21 | -4.55% |
| 06/01/82 | 0.14 | 7.69% | 0.30 | 3.45% | 0.21 | 0.00% |
| 07/01/82 | 0.17 | 21.43% | 0.30 | 0.00% | 0.27 | 28.57% |
| 08/02/82 | 0.19 | 11.76% | 0.40 | 33.33% | 0.30 | 11.11% |
| 09/01/82 | 0.19 | 0.00% | 0.41 | 2.50% | 0.31 | 3.33% |
| 10/01/82 | 0.24 | 26.32% | 0.47 | 14.63% | 0.39 | 25.81% |
| 11/01/82 | 0.25 | 4.17% | 0.52 | 10.64% | 0.44 | 12.82% |
| 12/01/82 | 0.25 | 0.00% | 0.53 | 1.92% | 0.44 | 0.00% |
| 01/03/83 | 0.28 | 12.00% | 0.53 | 0.00% | 0.46 | 4.55% |
| 02/01/83 | 0.31 | 10.71% | 0.60 | 13.21% | 0.46 | 0.00% |
| 03/01/83 | 0.32 | 3.23% | 0.60 | 0.00% | 0.49 | 6.52% |
| 04/04/83 | 0.32 | 0.00% | 0.65 | 8.33% | 0.53 | 8.16% |
| 05/02/83 | 0.34 | 6.25% | 0.72 | 10.77% | 0.47 | -11.32% |
| 06/01/83 | 0.35 | 2.94% | 0.70 | -2.78% | 0.48 | 2.13% |
| 07/01/83 | 0.38 | 8.57% | 0.66 | -5.71% | 0.50 | 4.17% |

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|----------|------|--------|------|---------|------|---------|
| 08/01/83 | 0.37 | -2.63% | 0.71 | 7.58% | 0.51 | 2.00% |
| 09/01/83 | 0.39 | 5.41% | 0.76 | 7.04% | 0.54 | 5.88% |
| 10/03/83 | 0.48 | 23.08% | 0.77 | 1.32% | 0.58 | 7.41% |
| 11/01/83 | 0.49 | 2.08% | 0.84 | 9.09% | 0.62 | 6.90% |
| 12/01/83 | 0.49 | 0.00% | 0.81 | -3.57% | 0.60 | -3.23% |
| 01/03/84 | 0.53 | 8.16% | 0.76 | -6.17% | 0.58 | -3.33% |
| 02/01/84 | 0.50 | -5.66% | 0.81 | 6.58% | 0.54 | -6.90% |
| 03/01/84 | 0.54 | 8.00% | 0.79 | -2.47% | 0.55 | 1.85% |
| 04/02/84 | 0.53 | -1.85% | 0.82 | 3.80% | 0.60 | 9.09% |
| 05/01/84 | 0.57 | 7.55% | 0.89 | 8.54% | 0.63 | 5.00% |
| 06/01/84 | 0.63 | 10.53% | 0.92 | 3.37% | 0.67 | 6.35% |
| 07/02/84 | 0.76 | 20.63% | 0.90 | -2.17% | 0.74 | 10.45% |
| 08/01/84 | 0.81 | 6.58% | 1.07 | 18.89% | 0.79 | 6.76% |
| 09/04/84 | 0.80 | -1.23% | 0.98 | -8.41% | 0.79 | 0.00% |
| 10/01/84 | 0.91 | 13.75% | 1.05 | 7.14% | 0.91 | 15.19% |
| 11/01/84 | 0.89 | -2.20% | 1.11 | 5.71% | 0.90 | -1.10% |
| 12/03/84 | 0.89 | 0.00% | 1.11 | 0.00% | 0.89 | -1.11% |
| 01/02/85 | 1.07 | 20.22% | 1.19 | 7.21% | 0.97 | 8.99% |
| 02/01/85 | 1.13 | 5.61% | 1.26 | 5.88% | 0.98 | 1.03% |
| 03/01/85 | 1.11 | -1.77% | 1.27 | 0.79% | 0.96 | -2.04% |
| 04/01/85 | 1.14 | 2.70% | 1.19 | -6.30% | 1.00 | 4.17% |
| 05/01/85 | 1.35 | 18.42% | 1.27 | 6.72% | 1.03 | 3.00% |
| 06/03/85 | 1.38 | 2.22% | 1.32 | 3.94% | 1.07 | 3.88% |
| 07/01/85 | 1.43 | 3.62% | 1.36 | 3.03% | 1.20 | 12.15% |
| 08/01/85 | 1.40 | -2.10% | 1.43 | 5.15% | 1.21 | 0.83% |
| 09/03/85 | 1.41 | 0.71% | 1.42 | -0.70% | 1.18 | -2.48% |
| 10/01/85 | 1.57 | 11.35% | 1.45 | 2.11% | 1.46 | 23.73% |
| 11/01/85 | 1.76 | 12.10% | 1.72 | 18.62% | 1.55 | 6.16% |
| 12/02/85 | 1.90 | 7.95% | 1.83 | 6.40% | 1.61 | 3.87% |
| 01/02/86 | 2.01 | 5.79% | 1.85 | 1.09% | 1.65 | 2.48% |
| 02/03/86 | 2.25 | 11.94% | 2.18 | 17.84% | 1.73 | 4.85% |
| 03/03/86 | 2.42 | 7.56% | 2.32 | 6.42% | 1.84 | 6.36% |
| 04/01/86 | 2.50 | 3.31% | 2.31 | -0.43% | 1.98 | 7.61% |
| 05/01/86 | 2.67 | 6.80% | 2.53 | 9.52% | 2.10 | 6.06% |
| 06/02/86 | 2.85 | 6.74% | 2.70 | 6.72% | 2.16 | 2.86% |
| 07/01/86 | 2.58 | -9.47% | 2.64 | -2.22% | 2.25 | 4.17% |
| 08/01/86 | 2.54 | -1.55% | 2.86 | 8.33% | 2.32 | 3.11% |
| 09/02/86 | 2.29 | -9.84% | 2.56 | -10.49% | 1.97 | -15.09% |
| 10/01/86 | 2.65 | 15.72% | 2.78 | 8.59% | 2.35 | 19.29% |
| 11/03/86 | 2.66 | 0.38% | 3.04 | 9.35% | 2.44 | 3.83% |
| 12/01/86 | 2.56 | -3.76% | 3.17 | 4.28% | 2.39 | -2.05% |
| 01/02/87 | 3.04 | 18.75% | 3.52 | 11.04% | 2.95 | 23.43% |
| 02/02/87 | 3.32 | 9.21% | 3.68 | 4.55% | 2.91 | -1.36% |
| 03/02/87 | 3.45 | 3.92% | 3.73 | 1.36% | 3.08 | 5.84% |
| 04/01/87 | 3.49 | 1.16% | 3.68 | -1.34% | 3.03 | -1.62% |
| 05/01/87 | 3.56 | 2.01% | 3.92 | 6.52% | 3.27 | 7.92% |

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|----------|------|---------|------|---------|-------|---------|
| 06/01/87 | 3.59 | 0.84% | 4.34 | 10.71% | 3.50 | 7.03% |
| 07/01/87 | 3.85 | 7.24% | 4.52 | 4.15% | 3.52 | 0.57% |
| 08/03/87 | 4.04 | 4.94% | 5.01 | 10.84% | 3.88 | 10.23% |
| 09/01/87 | 3.75 | -7.18% | 5.13 | 2.40% | 3.82 | -1.55% |
| 10/01/87 | 3.27 | -12.80% | 3.70 | -27.88% | 3.57 | -6.54% |
| 11/02/87 | 2.96 | -9.48% | 3.77 | 1.89% | 3.29 | -7.84% |
| 12/01/87 | 3.16 | 6.76% | 4.16 | 10.34% | 3.45 | 4.86% |
| 01/04/88 | 3.25 | 2.85% | 3.91 | -6.01% | 3.67 | 6.38% |
| 02/01/88 | 3.41 | 4.92% | 3.96 | 1.28% | 3.65 | -0.54% |
| 03/01/88 | 3.12 | -8.50% | 3.86 | -2.53% | 3.37 | -7.67% |
| 04/04/88 | 3.10 | -0.64% | 3.97 | 2.85% | 3.59 | 6.53% |
| 05/02/88 | 3.26 | 5.16% | 4.30 | 8.31% | 3.56 | -0.84% |
| 06/01/88 | 3.42 | 4.91% | 4.60 | 6.98% | 3.61 | 1.40% |
| 07/01/88 | 3.34 | -2.34% | 4.45 | -3.26% | 3.78 | 4.71% |
| 08/01/88 | 3.33 | -0.30% | 4.36 | -2.02% | 3.76 | -0.53% |
| 09/01/88 | 3.64 | 9.31% | 4.64 | 6.42% | 4.03 | 7.18% |
| 10/03/88 | 3.65 | 0.27% | 4.38 | -5.60% | 4.46 | 10.67% |
| 11/01/88 | 3.69 | 1.10% | 4.52 | 3.20% | 4.42 | -0.90% |
| 12/01/88 | 3.91 | 5.96% | 4.64 | 2.65% | 4.70 | 6.33% |
| 01/03/89 | 4.22 | 7.93% | 5.13 | 10.56% | 5.37 | 14.26% |
| 02/01/89 | 4.21 | -0.24% | 5.07 | -1.17% | 5.17 | -3.72% |
| 03/01/89 | 4.28 | 1.66% | 5.21 | 2.76% | 5.39 | 4.26% |
| 04/03/89 | 4.59 | 7.24% | 5.56 | 6.72% | 5.99 | 11.13% |
| 05/01/89 | 5.10 | 11.11% | 5.86 | 5.40% | 6.43 | 7.35% |
| 06/01/89 | 5.01 | -1.76% | 5.74 | -2.05% | 6.78 | 5.44% |
| 07/03/89 | 5.33 | 6.39% | 6.12 | 6.62% | 7.91 | 16.67% |
| 08/01/89 | 5.01 | -6.00% | 6.58 | 7.52% | 8.51 | 7.59% |
| 09/01/89 | 5.16 | 2.99% | 6.26 | -4.86% | 7.95 | -6.58% |
| 10/02/89 | 5.38 | 4.26% | 5.97 | -4.63% | 9.10 | 14.47% |
| 11/01/89 | 5.78 | 7.43% | 6.65 | 11.39% | 9.12 | 0.22% |
| 12/01/89 | 6.06 | 4.84% | 6.87 | 3.31% | 9.90 | 8.55% |
| 01/02/90 | 5.73 | -5.45% | 6.74 | -1.89% | 9.25 | -6.57% |
| 02/01/90 | 5.61 | -2.09% | 7.17 | 6.38% | 9.24 | -0.11% |
| 03/01/90 | 5.65 | 0.71% | 7.29 | 1.67% | 9.80 | 6.06% |
| 04/02/90 | 5.39 | -4.60% | 7.11 | -2.47% | 10.47 | 6.84% |
| 05/01/90 | 6.25 | 15.96% | 7.67 | 7.88% | 12.25 | 17.00% |
| 06/01/90 | 6.41 | 2.56% | 8.04 | 4.82% | 12.92 | 5.47% |
| 07/02/90 | 5.66 | -11.70% | 8.39 | 4.35% | 13.13 | 1.63% |
| 08/01/90 | 5.11 | -9.72% | 7.58 | -9.65% | 11.65 | -11.27% |
| 09/04/90 | 4.77 | -6.65% | 7.42 | -2.11% | 11.03 | -5.32% |
| 10/01/90 | 4.63 | -2.94% | 7.60 | 2.43% | 12.22 | 10.79% |
| 11/01/90 | 5.24 | 13.17% | 8.11 | 6.71% | 12.88 | 5.40% |
| 12/03/90 | 5.43 | 3.63% | 8.56 | 5.55% | 13.47 | 4.58% |
| 01/02/91 | 5.31 | -2.21% | 8.48 | -0.93% | 12.64 | -6.16% |
| 02/01/91 | 5.89 | 10.92% | 9.15 | 7.90% | 12.96 | 2.53% |
| 03/01/91 | 6.57 | 11.54% | 9.15 | 0.00% | 13.57 | 4.71% |

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|----------|-------|--------|-------|--------|-------|---------|
| 04/01/91 | 6.33 | -3.65% | 9.21 | 0.66% | 13.69 | 0.88% |
| 05/01/91 | 6.71 | 6.00% | 10.21 | 10.86% | 13.89 | 1.46% |
| 06/03/91 | 6.30 | -6.11% | 10.04 | -1.67% | 12.63 | -9.07% |
| 07/01/91 | 6.28 | -0.32% | 9.41 | -6.27% | 13.51 | 6.97% |
| 08/01/91 | 6.35 | 1.11% | 9.66 | 2.66% | 13.97 | 3.40% |
| 09/03/91 | 6.81 | 7.24% | 10.02 | 3.73% | 14.20 | 1.65% |
| 10/01/91 | 6.76 | -0.73% | 10.12 | 1.00% | 14.34 | 0.99% |
| 11/01/91 | 6.63 | -1.92% | 10.00 | -1.19% | 13.89 | -3.14% |
| 12/02/91 | 7.50 | 13.12% | 10.98 | 9.80% | 16.10 | 15.91% |
| 01/02/92 | 8.58 | 14.40% | 10.49 | -4.46% | 18.18 | 12.92% |
| 02/03/92 | 8.08 | -5.83% | 10.87 | 3.62% | 17.81 | -2.04% |
| 03/02/92 | 7.96 | -1.49% | 10.60 | -2.48% | 17.92 | 0.62% |
| 04/01/92 | 8.86 | 11.31% | 11.20 | 5.66% | 18.49 | 3.18% |
| 05/01/92 | 9.46 | 6.77% | 11.82 | 5.54% | 18.40 | -0.49% |
| 06/01/92 | 9.29 | -1.80% | 11.99 | 1.44% | 16.48 | -10.43% |
| 07/01/92 | 8.86 | -4.63% | 12.36 | 3.09% | 18.33 | 11.23% |
| 08/03/92 | 8.69 | -1.92% | 12.58 | 1.78% | 16.97 | -7.42% |
| 09/01/92 | 9.07 | 4.37% | 13.09 | 4.05% | 17.88 | 5.36% |
| 10/01/92 | 9.38 | 3.42% | 13.14 | 0.38% | 19.36 | 8.28% |
| 11/02/92 | 10.13 | 8.00% | 13.44 | 2.28% | 19.86 | 2.58% |
| 12/01/92 | 10.08 | -0.49% | 13.26 | -1.34% | 19.63 | -1.16% |
| 01/04/93 | 10.05 | -0.30% | 12.91 | -2.64% | 18.41 | -6.21% |
| 02/01/93 | 10.57 | 5.17% | 14.36 | 11.23% | 19.24 | 4.51% |
| 03/01/93 | 11.04 | 4.45% | 14.90 | 3.76% | 18.46 | -4.05% |
| 04/01/93 | 10.05 | -8.97% | 15.14 | 1.61% | 18.39 | -0.38% |
| 05/03/93 | 10.39 | 3.38% | 15.83 | 4.56% | 18.39 | 0.00% |
| 06/01/93 | 10.37 | -0.19% | 15.14 | -4.36% | 19.46 | 5.82% |
| 07/01/93 | 10.88 | 4.92% | 14.72 | -2.77% | 18.47 | -5.09% |
| 08/02/93 | 11.47 | 5.42% | 15.85 | 7.68% | 18.33 | -0.76% |
| 09/01/93 | 11.07 | -3.49% | 14.88 | -6.12% | 18.00 | -1.80% |
| 10/01/93 | 12.29 | 11.02% | 15.01 | 0.87% | 20.80 | 15.56% |
| 11/01/93 | 12.63 | 2.77% | 16.28 | 8.46% | 21.76 | 4.62% |
| 12/01/93 | 12.28 | -2.77% | 16.24 | -0.25% | 21.86 | 0.46% |
| 01/03/94 | 13.09 | 6.60% | 16.02 | -1.35% | 23.06 | 5.49% |
| 02/01/94 | 13.18 | 0.69% | 16.27 | 1.56% | 22.29 | -3.34% |
| 03/01/94 | 12.37 | -6.15% | 15.28 | -6.08% | 20.74 | -6.95% |
| 04/04/94 | 13.05 | 5.50% | 15.13 | -0.98% | 22.31 | 7.57% |
| 05/02/94 | 13.48 | 3.30% | 16.03 | 5.95% | 22.11 | -0.90% |
| 06/01/94 | 12.68 | -5.93% | 15.60 | -2.68% | 20.93 | -5.34% |
| 07/01/94 | 11.91 | -6.07% | 16.70 | 7.05% | 22.15 | 5.83% |
| 08/01/94 | 12.49 | 4.87% | 17.61 | 5.45% | 24.18 | 9.16% |
| 09/01/94 | 11.67 | -6.57% | 17.65 | 0.23% | 23.69 | -2.03% |
| 10/03/94 | 12.77 | 9.43% | 17.69 | 0.23% | 25.26 | 6.63% |
| 11/01/94 | 12.63 | -1.10% | 16.65 | -5.88% | 25.11 | -0.59% |
| 12/01/94 | 13.02 | 3.09% | 17.34 | 4.14% | 24.91 | -0.80% |
| 01/03/95 | 14.52 | 11.52% | 17.01 | -1.90% | 26.46 | 6.22% |

| | | | | | | |
|----------|-------|---------|-------|---------|-------|---------|
| 02/01/95 | 14.88 | 2.48% | 18.10 | 6.41% | 27.02 | 2.12% |
| 03/01/95 | 15.27 | 2.62% | 19.22 | 6.19% | 26.92 | -0.37% |
| 04/03/95 | 15.67 | 2.62% | 19.71 | 2.55% | 28.68 | 6.54% |
| 05/01/95 | 17.05 | 8.81% | 20.14 | 2.18% | 29.50 | 2.86% |
| 06/01/95 | 17.61 | 3.28% | 19.26 | -4.37% | 29.50 | 0.00% |
| 07/03/95 | 17.39 | -1.25% | 19.01 | -1.30% | 28.60 | -3.05% |
| 08/01/95 | 16.53 | -4.95% | 18.66 | -1.84% | 28.81 | 0.73% |
| 09/01/95 | 17.32 | 4.78% | 19.26 | 3.22% | 31.98 | 11.00% |
| 10/02/95 | 18.56 | 7.16% | 19.43 | 0.88% | 33.98 | 6.25% |
| 11/01/95 | 20.30 | 9.38% | 22.65 | 16.57% | 36.29 | 6.80% |
| 12/01/95 | 20.53 | 1.13% | 23.00 | 1.55% | 34.82 | -4.05% |
| 01/02/96 | 22.86 | 11.35% | 22.35 | -2.83% | 35.56 | 2.13% |
| 02/01/96 | 22.84 | -0.09% | 22.89 | 2.42% | 34.71 | -2.39% |
| 03/01/96 | 21.92 | -4.03% | 22.72 | -0.74% | 35.88 | 3.37% |
| 04/01/96 | 21.87 | -0.23% | 23.11 | 1.72% | 36.11 | 0.64% |
| 05/01/96 | 22.08 | 0.96% | 24.32 | 5.24% | 37.55 | 3.99% |
| 06/03/96 | 21.45 | -2.85% | 24.59 | 1.11% | 38.72 | 3.12% |
| 07/01/96 | 21.28 | -0.79% | 23.16 | -5.82% | 38.55 | -0.44% |
| 08/01/96 | 21.38 | 0.47% | 24.85 | 7.30% | 38.38 | -0.44% |
| 09/03/96 | 21.84 | 2.15% | 25.21 | 1.45% | 42.11 | 9.72% |
| 10/01/96 | 20.52 | -6.04% | 27.61 | 9.52% | 43.16 | 2.49% |
| 11/01/96 | 21.66 | 5.56% | 30.64 | 10.97% | 47.41 | 9.85% |
| 12/02/96 | 21.02 | -2.95% | 30.36 | -0.91% | 46.92 | -1.03% |
| 01/02/97 | 21.08 | 0.29% | 31.19 | 2.73% | 50.81 | 8.29% |
| 02/03/97 | 20.14 | -4.46% | 34.08 | 9.27% | 52.79 | 3.90% |
| 03/03/97 | 22.00 | 9.24% | 31.35 | -8.01% | 50.43 | -4.47% |
| 04/01/97 | 24.91 | 13.23% | 32.23 | 2.81% | 55.68 | 10.41% |
| 05/01/97 | 23.51 | -5.62% | 34.43 | 6.83% | 61.05 | 9.64% |
| 06/02/97 | 22.60 | -3.87% | 38.32 | 11.30% | 62.54 | 2.44% |
| 07/01/97 | 25.15 | 11.28% | 35.51 | -7.33% | 67.80 | 8.41% |
| 08/01/97 | 22.25 | -11.53% | 34.07 | -4.06% | 59.34 | -12.48% |
| 09/02/97 | 22.40 | 0.67% | 35.04 | 2.85% | 61.56 | 3.74% |
| 10/01/97 | 21.07 | -5.94% | 34.69 | -1.00% | 60.83 | -1.19% |
| 11/03/97 | 22.92 | 8.78% | 37.36 | 7.70% | 68.15 | 12.03% |
| 12/01/97 | 22.57 | -1.53% | 31.46 | -15.79% | 71.39 | 4.75% |
| 01/02/98 | 22.27 | -1.33% | 32.01 | 1.75% | 70.32 | -1.50% |
| 02/02/98 | 25.91 | 16.34% | 33.12 | 3.47% | 76.15 | 8.29% |
| 03/02/98 | 28.49 | 9.96% | 35.33 | 6.67% | 75.70 | -0.59% |
| 04/01/98 | 29.38 | 3.12% | 36.64 | 3.71% | 73.97 | -2.29% |
| 05/01/98 | 31.29 | 6.50% | 36.37 | -0.74% | 75.48 | 2.04% |
| 06/01/98 | 32.90 | 5.15% | 32.28 | -11.25% | 81.96 | 8.59% |
| 07/01/98 | 31.86 | -3.16% | 29.50 | -8.61% | 71.67 | -12.55% |
| 08/03/98 | 27.00 | -15.25% | 27.29 | -7.49% | 69.07 | -3.63% |
| 09/01/98 | 28.58 | 5.85% | 29.35 | 7.55% | 64.22 | -7.02% |
| 10/01/98 | 32.12 | 12.39% | 31.72 | 8.07% | 80.36 | 25.13% |
| 11/02/98 | 33.68 | 4.86% | 32.52 | 2.52% | 79.39 | -1.21% |

| | | | | | | |
|----------|-------|---------|-------|---------|--------|---------|
| 12/01/98 | 36.92 | 9.62% | 28.73 | -11.65% | 82.73 | 4.21% |
| 01/04/99 | 37.89 | 2.63% | 31.35 | 9.12% | 82.61 | -0.15% |
| 02/01/99 | 40.86 | 7.84% | 30.36 | -3.16% | 81.36 | -1.51% |
| 03/01/99 | 43.66 | 6.85% | 29.00 | -4.48% | 89.03 | 9.43% |
| 04/01/99 | 40.83 | -6.48% | 36.48 | 25.79% | 85.53 | -3.93% |
| 05/03/99 | 37.20 | -8.89% | 35.61 | -2.38% | 85.13 | -0.47% |
| 06/01/99 | 39.73 | 6.80% | 36.10 | 1.38% | 80.35 | -5.61% |
| 07/01/99 | 40.28 | 1.38% | 36.51 | 1.14% | 82.86 | 3.12% |
| 08/02/99 | 40.07 | -0.52% | 39.69 | 8.71% | 90.81 | 9.59% |
| 09/01/99 | 41.88 | 4.52% | 40.35 | 1.66% | 85.78 | -5.54% |
| 10/01/99 | 39.95 | -4.61% | 39.93 | -1.04% | 96.27 | 12.23% |
| 11/01/99 | 44.40 | 11.14% | 40.59 | 1.65% | 99.14 | 2.98% |
| 12/01/99 | 39.12 | -11.89% | 41.57 | 2.41% | 100.58 | 1.45% |
| 01/03/00 | 36.27 | -7.29% | 39.76 | -4.35% | 93.03 | -7.51% |
| 02/01/00 | 30.81 | -15.05% | 37.95 | -4.55% | 80.89 | -13.05% |
| 03/01/00 | 36.27 | 17.72% | 38.10 | 0.40% | 52.24 | -35.42% |
| 04/03/00 | 36.94 | 1.85% | 37.27 | -2.18% | 55.26 | 5.78% |
| 05/01/00 | 34.76 | -5.90% | 37.38 | 0.30% | 61.50 | 11.29% |
| 06/01/00 | 31.97 | -8.03% | 36.18 | -3.21% | 52.48 | -14.67% |
| 07/03/00 | 30.75 | -3.82% | 39.26 | 8.51% | 53.03 | 1.05% |
| 08/01/00 | 29.01 | -5.66% | 41.04 | 4.53% | 57.53 | 8.49% |
| 09/01/00 | 29.30 | 1.00% | 40.20 | -2.05% | 62.34 | 8.36% |
| 10/02/00 | 30.09 | 2.70% | 42.63 | 6.04% | 66.79 | 7.14% |
| 11/01/00 | 31.14 | 3.49% | 44.61 | 4.64% | 69.99 | 4.79% |
| 12/01/00 | 33.21 | 6.65% | 53.82 | 20.65% | 73.33 | 4.77% |
| 01/02/01 | 28.67 | -13.67% | 49.42 | -8.18% | 67.49 | -7.96% |
| 02/01/01 | 28.72 | 0.17% | 50.90 | 2.99% | 66.23 | -1.87% |
| 03/01/01 | 25.94 | -9.68% | 46.90 | -7.86% | 58.81 | -11.20% |
| 04/02/01 | 26.86 | 3.55% | 53.72 | 14.54% | 56.45 | -4.01% |
| 05/01/01 | 29.58 | 10.13% | 54.08 | 0.67% | 60.72 | 7.56% |
| 06/01/01 | 26.43 | -10.65% | 52.04 | -3.77% | 60.30 | -0.69% |
| 07/02/01 | 28.47 | 7.72% | 51.02 | -1.96% | 67.49 | 11.92% |
| 08/01/01 | 29.33 | 3.02% | 48.01 | -5.90% | 70.47 | 4.42% |
| 09/04/01 | 26.51 | -9.61% | 45.38 | -5.48% | 69.18 | -1.83% |
| 10/01/01 | 25.47 | -3.92% | 48.14 | 6.08% | 70.49 | 1.89% |
| 11/01/01 | 26.47 | 3.93% | 53.39 | 10.91% | 74.01 | 4.99% |
| 12/03/01 | 26.11 | -1.36% | 55.08 | 3.17% | 75.61 | 2.16% |
| 01/02/02 | 26.81 | 2.68% | 51.72 | -6.10% | 78.42 | 3.72% |
| 02/04/02 | 25.74 | -3.99% | 55.56 | 7.42% | 81.40 | 3.80% |
| 03/01/02 | 27.37 | 6.33% | 54.18 | -2.48% | 86.49 | 6.25% |
| 04/01/02 | 28.01 | 2.34% | 59.27 | 9.39% | 87.02 | 0.61% |
| 05/01/02 | 29.53 | 5.43% | 59.67 | 0.67% | 86.33 | -0.79% |
| 06/03/02 | 28.06 | -4.98% | 58.52 | -1.93% | 86.76 | 0.50% |
| 07/01/02 | 24.41 | -13.01% | 59.86 | 2.29% | 86.90 | 0.16% |
| 08/01/02 | 23.43 | -4.01% | 60.02 | 0.27% | 86.57 | -0.38% |
| 09/03/02 | 17.42 | -25.65% | 52.83 | -11.98% | 87.28 | 0.82% |

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|----------|-------|-------|-------|--------|-------|--------|
| 10/01/02 | 17.86 | 2.53% | 60.98 | 15.43% | 86.76 | -0.60% |
|----------|-------|-------|-------|--------|-------|--------|

| | T | % | UTX | % |
|----------|--------|--------|------|---------|
| 01/02/80 | 70.70 | | 0.02 | |
| 02/01/80 | 69.65 | -1.49% | 0.02 | 0.00% |
| 03/03/80 | 68.77 | -1.26% | 0.02 | 0.00% |
| 04/01/80 | 74.43 | 8.23% | 0.02 | 0.00% |
| 05/01/80 | 76.02 | 2.14% | 0.02 | 0.00% |
| 06/02/80 | 74.77 | -1.64% | 0.02 | 0.00% |
| 07/01/80 | 74.41 | -0.48% | 0.02 | 0.00% |
| 08/01/80 | 76.55 | 2.88% | 0.03 | 50.00% |
| 09/02/80 | 74.40 | -2.81% | 0.03 | 0.00% |
| 10/01/80 | 71.34 | -4.11% | 0.03 | 0.00% |
| 11/03/80 | 68.83 | -3.52% | 0.04 | 33.33% |
| 12/01/80 | 69.20 | 0.54% | 0.04 | 0.00% |
| 01/02/81 | 75.34 | 8.87% | 0.04 | 0.00% |
| 02/02/81 | 75.36 | 0.03% | 0.05 | 25.00% |
| 03/02/81 | 75.00 | -0.48% | 0.05 | 0.00% |
| 04/01/81 | 80.29 | 7.05% | 0.05 | 0.00% |
| 05/01/81 | 84.88 | 5.72% | 0.06 | 20.00% |
| 06/01/81 | 82.49 | -2.82% | 0.05 | -16.67% |
| 07/01/81 | 82.86 | 0.45% | 0.05 | 0.00% |
| 08/03/81 | 81.80 | -1.28% | 0.05 | 0.00% |
| 09/01/81 | 85.49 | 4.51% | 0.05 | 0.00% |
| 10/01/81 | 87.89 | 2.81% | 0.05 | 0.00% |
| 11/02/81 | 88.29 | 0.46% | 0.07 | 40.00% |
| 12/01/81 | 87.35 | -1.06% | 0.06 | -14.29% |
| 01/04/82 | 89.03 | 1.92% | 0.06 | 0.00% |
| 02/01/82 | 81.82 | -8.10% | 0.07 | 16.67% |
| 03/01/82 | 84.24 | 2.96% | 0.07 | 0.00% |
| 04/01/82 | 81.44 | -3.32% | 0.07 | 0.00% |
| 05/03/82 | 79.79 | -2.03% | 0.10 | 42.86% |
| 06/01/82 | 76.95 | -3.56% | 0.10 | 0.00% |
| 07/01/82 | 78.84 | 2.46% | 0.11 | 10.00% |
| 08/02/82 | 86.05 | 9.15% | 0.15 | 36.36% |
| 09/01/82 | 85.29 | -0.88% | 0.15 | 0.00% |
| 10/01/82 | 90.04 | 5.57% | 0.17 | 13.33% |
| 11/01/82 | 91.80 | 1.95% | 0.20 | 17.65% |
| 12/01/82 | 90.85 | -1.03% | 0.21 | 5.00% |
| 01/03/83 | 105.95 | 16.62% | 0.23 | 9.52% |
| 02/01/83 | 101.58 | -4.12% | 0.28 | 21.74% |
| 03/01/83 | 99.27 | -2.27% | 0.29 | 3.57% |
| 04/04/83 | 104.87 | 5.64% | 0.31 | 6.90% |
| 05/02/83 | 101.59 | -3.13% | 0.33 | 6.45% |
| 06/01/83 | 98.55 | -2.99% | 0.36 | 9.09% |
| 07/01/83 | 94.67 | -3.94% | 0.32 | -11.11% |

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|----------|--------|---------|------|---------|
| 08/01/83 | 101.66 | 7.38% | 0.38 | 18.75% |
| 09/01/83 | 101.49 | -0.17% | 0.39 | 2.63% |
| 10/03/83 | 96.81 | -4.61% | 0.36 | -7.69% |
| 11/01/83 | 99.93 | 3.22% | 0.47 | 30.56% |
| 12/01/83 | 96.65 | -3.28% | 0.47 | 0.00% |
| 01/03/84 | 103.52 | 7.11% | 0.45 | -4.26% |
| 02/01/84 | 34.11 | -67.05% | 0.45 | 0.00% |
| 03/01/84 | 31.78 | -6.83% | 0.47 | 4.44% |
| 04/02/84 | 32.53 | 2.36% | 0.49 | 4.26% |
| 05/01/84 | 31.27 | -3.87% | 0.55 | 12.24% |
| 06/01/84 | 35.00 | 11.93% | 0.57 | 3.64% |
| 07/02/84 | 36.28 | 3.66% | 0.61 | 7.02% |
| 08/01/84 | 39.08 | 7.72% | 0.72 | 18.03% |
| 09/04/84 | 40.81 | 4.43% | 0.70 | -2.78% |
| 10/01/84 | 38.00 | -6.89% | 0.74 | 5.71% |
| 11/01/84 | 38.51 | 1.34% | 0.72 | -2.70% |
| 12/03/84 | 40.24 | 4.49% | 0.73 | 1.39% |
| 01/02/85 | 42.03 | 4.45% | 0.86 | 17.81% |
| 02/01/85 | 43.85 | 4.33% | 0.89 | 3.49% |
| 03/01/85 | 44.55 | 1.60% | 0.87 | -2.25% |
| 04/01/85 | 43.51 | -2.33% | 0.81 | -6.90% |
| 05/01/85 | 48.17 | 10.71% | 0.93 | 14.81% |
| 06/03/85 | 50.16 | 4.13% | 0.88 | -5.38% |
| 07/01/85 | 44.71 | -10.87% | 0.88 | 0.00% |
| 08/01/85 | 44.19 | -1.16% | 0.91 | 3.41% |
| 09/03/85 | 43.33 | -1.95% | 0.84 | -7.69% |
| 10/01/85 | 43.33 | 0.00% | 0.91 | 8.33% |
| 11/01/85 | 49.08 | 13.27% | 1.01 | 10.99% |
| 12/02/85 | 52.40 | 6.76% | 1.05 | 3.96% |
| 01/02/86 | 44.79 | -14.52% | 1.13 | 7.62% |
| 02/03/86 | 47.41 | 5.85% | 1.34 | 18.58% |
| 03/03/86 | 46.55 | -1.81% | 1.35 | 0.75% |
| 04/01/86 | 52.33 | 12.42% | 1.27 | -5.93% |
| 05/01/86 | 52.61 | 0.54% | 1.34 | 5.51% |
| 06/02/86 | 53.58 | 1.84% | 1.31 | -2.24% |
| 07/01/86 | 49.88 | -6.91% | 1.09 | -16.79% |
| 08/01/86 | 51.99 | 4.23% | 1.28 | 17.43% |
| 09/02/86 | 48.23 | -7.23% | 1.18 | -7.81% |
| 10/01/86 | 52.72 | 9.31% | 1.20 | 1.69% |
| 11/03/86 | 57.49 | 9.05% | 1.32 | 10.00% |
| 12/01/86 | 53.18 | -7.50% | 1.36 | 3.03% |
| 01/02/87 | 52.65 | -1.00% | 1.46 | 7.35% |
| 02/02/87 | 47.86 | -9.10% | 1.69 | 15.75% |
| 03/02/87 | 50.43 | 5.37% | 1.57 | -7.10% |
| 04/01/87 | 51.77 | 2.66% | 1.43 | -8.92% |
| 05/01/87 | 54.97 | 6.18% | 1.48 | 3.50% |

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|----------|--------|---------|------|---------|
| 06/01/87 | 59.15 | 7.60% | 1.70 | 14.86% |
| 07/01/87 | 68.53 | 15.86% | 1.88 | 10.59% |
| 08/03/87 | 72.28 | 5.47% | 1.95 | 3.72% |
| 09/01/87 | 72.47 | 0.26% | 1.97 | 1.03% |
| 10/01/87 | 64.14 | -11.49% | 1.20 | -39.09% |
| 11/02/87 | 57.98 | -9.60% | 1.15 | -4.17% |
| 12/01/87 | 58.16 | 0.31% | 1.23 | 6.96% |
| 01/04/88 | 64.35 | 10.64% | 1.40 | 13.82% |
| 02/01/88 | 63.27 | -1.68% | 1.58 | 12.86% |
| 03/01/88 | 58.35 | -7.78% | 1.51 | -4.43% |
| 04/04/88 | 57.27 | -1.85% | 1.51 | 0.00% |
| 05/02/88 | 58.61 | 2.34% | 1.56 | 3.31% |
| 06/01/88 | 58.00 | -1.04% | 1.60 | 2.56% |
| 07/01/88 | 57.72 | -0.48% | 1.56 | -2.50% |
| 08/01/88 | 53.93 | -6.57% | 1.65 | 5.77% |
| 09/01/88 | 56.57 | 4.90% | 1.79 | 8.48% |
| 10/03/88 | 62.27 | 10.08% | 1.87 | 4.47% |
| 11/01/88 | 64.99 | 4.37% | 1.93 | 3.21% |
| 12/01/88 | 62.74 | -3.46% | 1.97 | 2.07% |
| 01/03/89 | 68.75 | 9.58% | 2.12 | 7.61% |
| 02/01/89 | 66.02 | -3.97% | 2.23 | 5.19% |
| 03/01/89 | 68.94 | 4.42% | 2.31 | 3.59% |
| 04/03/89 | 76.34 | 10.73% | 2.65 | 14.72% |
| 05/01/89 | 77.98 | 2.15% | 2.75 | 3.77% |
| 06/01/89 | 76.79 | -1.53% | 2.69 | -2.18% |
| 07/03/89 | 89.14 | 16.08% | 2.94 | 9.29% |
| 08/01/89 | 88.05 | -1.22% | 3.12 | 6.12% |
| 09/01/89 | 98.67 | 12.06% | 3.12 | 0.00% |
| 10/02/89 | 97.29 | -1.40% | 2.99 | -4.17% |
| 11/01/89 | 96.19 | -1.13% | 3.04 | 1.67% |
| 12/01/89 | 100.24 | 4.21% | 3.19 | 4.93% |
| 01/02/90 | 85.92 | -14.29% | 2.93 | -8.15% |
| 02/01/90 | 87.57 | 1.92% | 3.17 | 8.19% |
| 03/01/90 | 92.75 | 5.92% | 3.55 | 11.99% |
| 04/02/90 | 88.62 | -4.45% | 3.41 | -3.94% |
| 05/01/90 | 95.25 | 7.48% | 3.82 | 12.02% |
| 06/01/90 | 85.22 | -10.53% | 3.73 | -2.36% |
| 07/02/90 | 81.90 | -3.90% | 3.86 | 3.49% |
| 08/01/90 | 71.68 | -12.48% | 3.37 | -12.69% |
| 09/04/90 | 68.55 | -4.37% | 2.95 | -12.46% |
| 10/01/90 | 75.50 | 10.14% | 3.11 | 5.42% |
| 11/01/90 | 71.35 | -5.50% | 3.28 | 5.47% |
| 12/03/90 | 67.10 | -5.96% | 3.52 | 7.32% |
| 01/02/91 | 72.69 | 8.33% | 3.49 | -0.85% |
| 02/01/91 | 74.36 | 2.30% | 3.87 | 10.89% |
| 03/01/91 | 76.52 | 2.90% | 3.77 | -2.58% |

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|----------|--------|---------|-------|---------|
| 04/01/91 | 83.51 | 9.13% | 3.58 | -5.04% |
| 05/01/91 | 82.96 | -0.66% | 3.88 | 8.38% |
| 06/03/91 | 85.68 | 3.28% | 3.69 | -4.90% |
| 07/01/91 | 89.33 | 4.26% | 3.86 | 4.61% |
| 08/01/91 | 87.36 | -2.21% | 4.21 | 9.07% |
| 09/03/91 | 84.21 | -3.61% | 3.96 | -5.94% |
| 10/01/91 | 87.31 | 3.68% | 4.28 | 8.08% |
| 11/01/91 | 81.70 | -6.43% | 4.42 | 3.27% |
| 12/02/91 | 88.10 | 7.83% | 5.04 | 14.03% |
| 01/02/92 | 83.87 | -4.80% | 4.71 | -6.55% |
| 02/03/92 | 83.60 | -0.32% | 4.93 | 4.67% |
| 03/02/92 | 91.97 | 10.01% | 5.09 | 3.25% |
| 04/01/92 | 97.62 | 6.14% | 5.28 | 3.73% |
| 05/01/92 | 95.92 | -1.74% | 5.40 | 2.27% |
| 06/01/92 | 97.28 | 1.42% | 5.38 | -0.37% |
| 07/01/92 | 99.27 | 2.05% | 5.86 | 8.92% |
| 08/03/92 | 95.58 | -3.72% | 5.93 | 1.19% |
| 09/01/92 | 98.93 | 3.50% | 5.28 | -10.96% |
| 10/01/92 | 98.93 | 0.00% | 4.93 | -6.63% |
| 11/02/92 | 106.86 | 8.02% | 5.13 | 4.06% |
| 12/01/92 | 115.86 | 8.42% | 5.50 | 7.21% |
| 01/04/93 | 120.13 | 3.69% | 5.36 | -2.55% |
| 02/01/93 | 126.94 | 5.67% | 5.42 | 1.12% |
| 03/01/93 | 129.14 | 1.73% | 5.73 | 5.72% |
| 04/01/93 | 127.16 | -1.53% | 5.97 | 4.19% |
| 05/03/93 | 139.95 | 10.06% | 6.73 | 12.73% |
| 06/01/93 | 143.59 | 2.60% | 6.88 | 2.23% |
| 07/01/93 | 144.46 | 0.61% | 6.91 | 0.44% |
| 08/02/93 | 143.32 | -0.79% | 7.56 | 9.41% |
| 09/01/93 | 134.43 | -6.20% | 7.38 | -2.38% |
| 10/01/93 | 131.28 | -2.34% | 8.24 | 11.65% |
| 11/01/93 | 124.72 | -5.00% | 8.56 | 3.88% |
| 12/01/93 | 120.08 | -3.72% | 8.58 | 0.23% |
| 01/03/94 | 129.80 | 8.09% | 9.32 | 8.62% |
| 02/01/94 | 120.08 | -7.49% | 9.76 | 4.72% |
| 03/01/94 | 117.44 | -2.20% | 8.91 | -8.71% |
| 04/04/94 | 117.44 | 0.00% | 9.15 | 2.69% |
| 05/02/94 | 125.19 | 6.60% | 9.90 | 8.20% |
| 06/01/94 | 124.84 | -0.28% | 9.59 | -3.13% |
| 07/01/94 | 125.41 | 0.46% | 8.99 | -6.26% |
| 08/01/94 | 125.41 | 0.00% | 9.93 | 10.46% |
| 09/01/94 | 124.19 | -0.97% | 9.77 | -1.61% |
| 10/03/94 | 126.49 | 1.85% | 9.83 | 0.61% |
| 11/01/94 | 112.99 | -10.67% | 9.56 | -2.75% |
| 12/01/94 | 115.79 | 2.48% | 10.28 | 7.53% |
| 01/03/95 | 114.94 | -0.73% | 10.50 | 2.14% |

| | | | | |
|----------|--------|---------|-------|---------|
| 02/01/95 | 118.97 | 3.51% | 11.30 | 7.62% |
| 03/01/95 | 119.47 | 0.42% | 11.77 | 4.16% |
| 04/03/95 | 117.16 | -1.93% | 12.45 | 5.78% |
| 05/01/95 | 117.16 | 0.00% | 13.39 | 7.55% |
| 06/01/95 | 122.59 | 4.63% | 13.79 | 2.99% |
| 07/03/95 | 122.01 | -0.47% | 14.83 | 7.54% |
| 08/01/95 | 130.98 | 7.35% | 15.20 | 2.49% |
| 09/01/95 | 152.31 | 16.28% | 16.11 | 5.99% |
| 10/02/95 | 148.26 | -2.66% | 16.18 | 0.43% |
| 11/01/95 | 152.59 | 2.92% | 17.67 | 9.21% |
| 12/01/95 | 150.23 | -1.55% | 17.88 | 1.19% |
| 01/02/96 | 155.14 | 3.27% | 19.34 | 8.17% |
| 02/01/96 | 147.63 | -4.84% | 20.83 | 7.70% |
| 03/01/96 | 142.05 | -3.78% | 21.77 | 4.51% |
| 04/01/96 | 142.33 | 0.20% | 21.43 | -1.56% |
| 05/01/96 | 144.96 | 1.85% | 21.78 | 1.63% |
| 06/03/96 | 144.30 | -0.46% | 22.90 | 5.14% |
| 07/01/96 | 121.61 | -15.72% | 22.41 | -2.14% |
| 08/01/96 | 122.19 | 0.48% | 23.02 | 2.72% |
| 09/03/96 | 121.84 | -0.29% | 24.58 | 6.78% |
| 10/01/96 | 89.23 | -26.76% | 26.29 | 6.96% |
| 11/01/96 | 100.06 | 12.14% | 29.27 | 11.34% |
| 12/02/96 | 110.85 | 10.78% | 27.65 | -5.53% |
| 01/02/97 | 102.17 | -7.83% | 29.11 | 5.28% |
| 02/03/97 | 103.47 | 1.27% | 31.80 | 9.24% |
| 03/03/97 | 91.71 | -11.37% | 32.01 | 0.66% |
| 04/01/97 | 87.16 | -4.96% | 31.96 | -0.16% |
| 05/01/97 | 95.61 | 9.69% | 34.39 | 7.60% |
| 06/02/97 | 91.46 | -4.34% | 35.52 | 3.29% |
| 07/01/97 | 96.02 | 4.99% | 36.19 | 1.89% |
| 08/01/97 | 101.74 | 5.96% | 33.80 | -6.60% |
| 09/02/97 | 115.69 | 13.71% | 35.07 | 3.76% |
| 10/01/97 | 127.79 | 10.46% | 30.31 | -13.57% |
| 11/03/97 | 146.09 | 14.32% | 32.87 | 8.45% |
| 12/01/97 | 160.54 | 9.89% | 31.94 | -2.83% |
| 01/02/98 | 164.00 | 2.16% | 35.64 | 11.58% |
| 02/02/98 | 159.73 | -2.60% | 39.61 | 11.14% |
| 03/02/98 | 172.42 | 7.94% | 40.94 | 3.36% |
| 04/01/98 | 157.68 | -8.55% | 43.65 | 6.62% |
| 05/01/98 | 159.65 | 1.25% | 42.17 | -3.39% |
| 06/01/98 | 150.07 | -6.00% | 41.50 | -1.59% |
| 07/01/98 | 159.26 | 6.12% | 43.01 | 3.64% |
| 08/03/98 | 131.68 | -17.32% | 32.96 | -23.37% |
| 09/01/98 | 153.77 | 16.78% | 34.72 | 5.34% |
| 10/01/98 | 164.45 | 6.95% | 43.26 | 24.60% |
| 11/02/98 | 163.63 | -0.50% | 49.23 | 13.80% |

| | | | | |
|----------|--------|---------|-------|---------|
| 12/01/98 | 199.58 | 21.97% | 49.94 | 1.44% |
| 01/04/99 | 239.10 | 19.80% | 54.85 | 9.83% |
| 02/01/99 | 216.36 | -9.51% | 57.40 | 4.65% |
| 03/01/99 | 210.52 | -2.70% | 62.76 | 9.34% |
| 04/01/99 | 199.81 | -5.09% | 67.13 | 6.96% |
| 05/03/99 | 219.60 | 9.90% | 57.95 | -13.67% |
| 06/01/99 | 221.00 | 0.64% | 67.22 | 16.00% |
| 07/01/99 | 206.43 | -6.59% | 62.26 | -7.38% |
| 08/02/99 | 178.20 | -13.68% | 62.06 | -0.32% |
| 09/01/99 | 172.43 | -3.24% | 55.67 | -10.30% |
| 10/01/99 | 185.31 | 7.47% | 56.78 | 1.99% |
| 11/01/99 | 221.50 | 19.53% | 53.41 | -5.94% |
| 12/01/99 | 201.58 | -8.99% | 61.44 | 15.03% |
| 01/03/00 | 209.28 | 3.82% | 50.04 | -18.55% |
| 02/01/00 | 195.91 | -6.39% | 48.52 | -3.04% |
| 03/01/00 | 223.57 | 14.12% | 60.19 | 24.05% |
| 04/03/00 | 182.16 | -18.52% | 59.23 | -1.59% |
| 05/01/00 | 138.72 | -23.85% | 57.74 | -2.52% |
| 06/01/00 | 126.46 | -8.84% | 56.25 | -2.58% |
| 07/03/00 | 123.00 | -2.74% | 55.77 | -0.85% |
| 08/01/00 | 125.70 | 2.20% | 59.84 | 7.30% |
| 09/01/00 | 115.47 | -8.14% | 66.49 | 11.11% |
| 10/02/00 | 92.34 | -20.03% | 66.91 | 0.63% |
| 11/01/00 | 78.12 | -15.40% | 68.10 | 1.78% |
| 12/01/00 | 68.71 | -12.05% | 75.61 | 11.03% |
| 01/02/01 | 95.56 | 39.08% | 72.10 | -4.64% |
| 02/01/01 | 91.62 | -4.12% | 75.14 | 4.22% |
| 03/01/01 | 84.88 | -7.36% | 70.69 | -5.92% |
| 04/02/01 | 88.78 | 4.59% | 75.09 | 6.22% |
| 05/01/01 | 84.36 | -4.98% | 80.57 | 7.30% |
| 06/01/01 | 87.70 | 3.96% | 70.85 | -12.06% |
| 07/02/01 | 84.77 | -3.34% | 70.99 | 0.20% |
| 08/01/01 | 79.86 | -5.79% | 66.36 | -6.52% |
| 09/04/01 | 80.99 | 1.41% | 45.11 | -32.02% |
| 10/01/01 | 63.99 | -20.99% | 52.28 | 15.89% |
| 11/01/01 | 73.39 | 14.69% | 58.64 | 12.17% |
| 12/03/01 | 76.15 | 3.76% | 62.95 | 7.35% |
| 01/02/02 | 74.30 | -2.43% | 66.95 | 6.35% |
| 02/04/02 | 65.24 | -12.19% | 71.31 | 6.51% |
| 03/01/02 | 65.94 | 1.07% | 72.53 | 1.71% |
| 04/01/02 | 55.10 | -16.44% | 68.59 | -5.43% |
| 05/01/02 | 50.27 | -8.77% | 67.56 | -1.50% |
| 06/03/02 | 44.97 | -10.54% | 66.61 | -1.41% |
| 07/01/02 | 42.79 | -4.85% | 68.18 | 2.36% |
| 08/01/02 | 51.36 | 20.03% | 58.49 | -14.21% |
| 09/03/02 | 50.51 | -1.65% | 55.63 | -4.89% |

10/01/02 54.85 8.59% 60.73 9.17%

Appendix C - Price Percentage Change Correlation Matrix

| | AA | BA | C | CAT | DD | DIS | EK | GM | HON |
|-----|------|------|------|------|------|------|------|------|------|
| AA | | 0.34 | 0.21 | 0.48 | 0.43 | 0.09 | 0.24 | 0.36 | 0.34 |
| BA | 0.34 | | 0.34 | 0.35 | 0.47 | 0.11 | 0.23 | 0.35 | 0.40 |
| C | 0.21 | 0.34 | | 0.33 | 0.28 | 0.14 | 0.23 | 0.38 | 0.38 |
| CAT | 0.48 | 0.35 | 0.33 | | 0.46 | 0.18 | 0.29 | 0.38 | 0.42 |
| DD | 0.43 | 0.47 | 0.28 | 0.46 | | 0.16 | 0.30 | 0.36 | 0.52 |
| DIS | 0.09 | 0.11 | 0.14 | 0.18 | 0.16 | | 0.10 | 0.20 | 0.21 |
| EK | 0.24 | 0.23 | 0.23 | 0.29 | 0.30 | 0.10 | | 0.25 | 0.25 |
| GM | 0.36 | 0.35 | 0.38 | 0.38 | 0.36 | 0.20 | 0.25 | | 0.24 |
| HON | 0.34 | 0.40 | 0.38 | 0.42 | 0.52 | 0.21 | 0.25 | 0.24 | |
| HPQ | 0.44 | 0.41 | 0.29 | 0.45 | 0.35 | 0.21 | 0.25 | 0.34 | 0.38 |
| IBM | 0.36 | 0.28 | 0.16 | 0.39 | 0.34 | 0.21 | 0.32 | 0.41 | 0.40 |
| IP | 0.52 | 0.46 | 0.21 | 0.46 | 0.68 | 0.14 | 0.40 | 0.35 | 0.50 |
| MCD | 0.31 | 0.22 | 0.13 | 0.17 | 0.21 | 0.18 | 0.25 | 0.28 | 0.27 |
| MMM | 0.44 | 0.53 | 0.20 | 0.40 | 0.64 | 0.12 | 0.45 | 0.36 | 0.38 |
| PG | 0.09 | 0.20 | 0.14 | 0.17 | 0.16 | 0.20 | 0.21 | 0.15 | 0.24 |
| T | 0.17 | 0.20 | 0.27 | 0.15 | 0.15 | 0.11 | 0.16 | 0.23 | 0.12 |
| UTX | 0.38 | 0.53 | 0.32 | 0.33 | 0.56 | 0.13 | 0.39 | 0.38 | 0.46 |

| | HPQ | IBM | IP | MCD | MMM | PG | T | UTX |
|-----|------|------|------|------|------|------|------|------|
| AA | 0.44 | 0.36 | 0.52 | 0.31 | 0.44 | 0.09 | 0.17 | 0.38 |
| BA | 0.41 | 0.28 | 0.46 | 0.22 | 0.53 | 0.20 | 0.20 | 0.53 |
| C | 0.29 | 0.16 | 0.21 | 0.13 | 0.20 | 0.14 | 0.27 | 0.32 |
| CAT | 0.45 | 0.39 | 0.46 | 0.17 | 0.40 | 0.17 | 0.15 | 0.33 |
| DD | 0.35 | 0.34 | 0.68 | 0.21 | 0.64 | 0.16 | 0.15 | 0.56 |
| DIS | 0.21 | 0.21 | 0.14 | 0.18 | 0.12 | 0.20 | 0.11 | 0.13 |
| EK | 0.25 | 0.32 | 0.40 | 0.25 | 0.45 | 0.21 | 0.16 | 0.39 |
| GM | 0.34 | 0.41 | 0.35 | 0.28 | 0.36 | 0.15 | 0.23 | 0.38 |
| HON | 0.38 | 0.40 | 0.50 | 0.27 | 0.38 | 0.24 | 0.12 | 0.46 |
| HPQ | | 0.44 | 0.42 | 0.27 | 0.35 | 0.21 | 0.27 | 0.39 |
| IBM | 0.44 | | 0.40 | 0.22 | 0.38 | 0.14 | 0.11 | 0.38 |
| IP | 0.42 | 0.40 | | 0.26 | 0.67 | 0.13 | 0.16 | 0.57 |
| MCD | 0.27 | 0.22 | 0.26 | | 0.21 | 0.47 | 0.17 | 0.28 |
| MMM | 0.35 | 0.38 | 0.67 | 0.21 | | 0.16 | 0.11 | 0.62 |
| PG | 0.21 | 0.14 | 0.13 | 0.47 | 0.16 | | 0.20 | 0.14 |
| T | 0.27 | 0.11 | 0.16 | 0.17 | 0.11 | 0.20 | | 0.20 |
| UTX | 0.39 | 0.38 | 0.57 | 0.28 | 0.62 | 0.14 | 0.20 | |

Appendix D - Program Results Tables

| | AA | AA | AA | AA | BA | BA | BA | BA |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | -18.19% | -19.06% | -3.45% | -6.50% | -24.60% | -30.23% | -29.80% | -33.24% |
| | -18.48% | -19.08% | -16.61% | -11.28% | -7.75% | -31.26% | -23.64% | -30.27% |
| | -7.26% | -23.95% | -10.45% | -17.47% | -27.43% | -31.26% | -28.62% | -30.79% |
| | -2.97% | -19.06% | -3.45% | -10.89% | -31.75% | -30.23% | -31.39% | -32.58% |
| | -18.48% | -18.79% | -22.39% | -10.89% | -30.27% | -33.19% | -29.80% | -29.63% |
| | -18.19% | -19.08% | -10.45% | -10.89% | -24.60% | -32.86% | -29.80% | -30.79% |
| | -18.54% | -18.79% | -10.45% | -7.44% | -31.97% | -30.23% | -29.80% | -29.63% |
| | -18.19% | -18.79% | -10.45% | -10.89% | -29.23% | -31.26% | -23.64% | -30.79% |
| | -25.57% | -19.08% | -16.91% | -6.50% | -24.60% | -31.26% | -29.80% | -12.22% |
| | -12.53% | -19.06% | -10.45% | -17.47% | -24.60% | -33.19% | -29.80% | -30.79% |
| | -12.53% | -6.62% | -16.96% | -17.51% | -30.27% | -31.44% | -29.80% | -30.79% |
| | -18.54% | -19.08% | -6.16% | -17.47% | -30.50% | -33.38% | -28.62% | -29.63% |
| | -18.54% | -18.79% | -10.45% | -17.47% | -30.27% | -30.23% | -28.62% | -30.79% |
| | -9.27% | -19.08% | -16.61% | -4.47% | -29.46% | -31.44% | -30.09% | -30.79% |
| | -12.53% | -12.98% | -10.45% | -10.89% | -24.60% | -31.26% | -29.80% | -27.65% |
| | -12.53% | -12.98% | -10.45% | -17.47% | -30.27% | -25.49% | -23.64% | -30.79% |
| | -12.53% | -12.98% | -0.14% | -17.47% | -30.27% | -32.68% | -29.80% | -31.04% |
| | -12.53% | -12.98% | -9.05% | -17.21% | -7.75% | -30.23% | -23.64% | -30.27% |
| | -18.19% | -3.77% | -10.45% | -17.51% | -30.27% | -31.26% | -29.80% | -29.63% |
| | -12.53% | -18.79% | -16.61% | -10.89% | -30.27% | -31.26% | -29.80% | -32.33% |
| Max ROI | -2.97% | -3.77% | -0.14% | -4.47% | -7.75% | -25.49% | -23.64% | -12.22% |
| Min ROI | -25.57% | -23.95% | -22.39% | -17.51% | -31.97% | -33.38% | -31.39% | -33.24% |
| Std Dev | 5.10% | 4.83% | 5.41% | 4.56% | 6.92% | 1.70% | 2.56% | 4.29% |
| Mean ROI | -14.90% | -16.64% | -11.12% | -12.93% | -26.54% | -31.18% | -28.48% | -29.72% |
| DCA ROI | -30.86% | -31.75% | -30.81% | -31.69% | -32.82% | -33.87% | -32.75% | -33.80% |
| Mean/DCA ROI Diff | 15.95% | 15.11% | 19.69% | 18.76% | 6.28% | 2.69% | 4.26% | 4.08% |
| Std Dev Dist to DCA ROI | 3.13 | 3.13 | 3.64 | 4.11 | 0.91 | 1.58 | 1.67 | 0.95 |
| Fee-Based ROI Diff | 1.74% | | 1.81% | | 4.65% | | 1.24% | |
| Interest-Based ROI Diff | | | 3.78% | 3.71% | | | -1.94% | 1.46% |
| | C | C | C | C | CAT | CAT | CAT | CAT |
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | -10.84% | -11.78% | -5.40% | -11.38% | -4.89% | -4.05% | -2.31% | -2.75% |

| | | | | | | | | |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | -5.63% | -10.76% | -10.54% | -12.14% | -3.62% | -1.98% | -2.19% | -3.30% |
| | -11.04% | -10.84% | -5.40% | -5.99% | -3.44% | -4.05% | -1.38% | -3.05% |
| | -9.93% | -11.78% | -10.54% | -11.46% | -4.20% | -5.36% | -2.19% | -3.30% |
| | -10.80% | -4.34% | -5.40% | -11.46% | -3.44% | -5.36% | -2.86% | -2.75% |
| | -6.82% | -10.84% | -10.54% | -11.46% | -4.89% | -4.42% | -1.67% | -4.12% |
| | -9.93% | -10.84% | -10.51% | -10.24% | -1.53% | -1.98% | -2.31% | -3.30% |
| | -9.93% | -10.84% | -11.02% | -11.38% | -4.38% | -4.42% | -1.90% | -3.63% |
| | -10.84% | -7.44% | -10.51% | -5.99% | -3.44% | -4.05% | -1.38% | -2.99% |
| | -10.80% | -10.76% | -10.54% | -2.50% | -4.89% | -3.81% | -3.98% | -3.30% |
| | -9.93% | -11.78% | -10.54% | -11.46% | -4.89% | -3.81% | -1.90% | -4.12% |
| | -10.84% | -1.40% | -10.54% | -11.46% | -4.38% | -4.78% | -3.98% | -3.05% |
| | -10.84% | -6.23% | -10.99% | -5.99% | -3.01% | -3.81% | -2.31% | -1.19% |
| | -10.80% | -10.84% | -10.54% | -11.38% | -4.38% | -5.91% | -1.90% | -1.96% |
| | -9.93% | -10.84% | -10.51% | -11.46% | -4.05% | -4.28% | -2.60% | -2.99% |
| | -10.84% | -10.84% | -5.40% | -12.14% | -3.66% | -4.28% | -2.57% | -2.99% |
| | -10.84% | -10.84% | -10.54% | -5.99% | -4.05% | -5.91% | -3.75% | -1.96% |
| | -11.04% | -12.23% | -2.01% | -11.46% | -3.47% | -5.50% | -3.75% | -2.99% |
| | -6.82% | -10.84% | -5.40% | -10.24% | -4.89% | -1.98% | -3.75% | -2.75% |
| | -10.84% | -6.23% | -2.01% | -5.99% | -4.20% | -4.42% | -2.32% | -1.96% |
| Max ROI | -5.63% | -1.40% | -2.01% | -2.50% | -1.53% | -1.98% | -1.38% | -1.19% |
| Min ROI | -11.04% | -12.23% | -11.02% | -12.14% | -4.89% | -5.91% | -3.98% | -4.12% |
| Std Dev | 1.59% | 2.90% | 3.17% | 2.93% | 0.83% | 1.17% | 0.85% | 0.72% |
| Mean ROI | -9.96% | -9.61% | -8.44% | -9.58% | -3.99% | -4.21% | -2.55% | -2.92% |
| DCA ROI | -11.13% | -12.39% | -11.08% | -12.31% | -2.82% | -4.26% | -2.75% | -4.20% |
| Mean/DCA ROI Diff | 1.16% | 2.77% | 2.63% | 2.73% | -1.17% | 0.06% | 0.20% | 1.28% |
| Std Dev Dist to DCA ROI | 0.73 | 0.96 | 0.83 | 0.93 | -1.40 | 0.05 | 0.23 | 1.78 |
| Fee-Based ROI Diff | -0.35% | | 1.14% | | 0.22% | | 0.37% | |
| Interest-Based ROI Diff | | | 1.52% | 0.03% | | | 1.43% | 1.28% |
| | DD | DD | DD | DD | DIS | DIS | DIS | DIS |
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | -4.70% | -6.08% | -4.16% | -1.24% | -15.50% | -25.32% | -8.61% | -8.84% |
| | -4.42% | -6.18% | -3.36% | -5.12% | -10.92% | -25.41% | -13.64% | -10.65% |
| | -4.76% | -6.20% | -0.55% | -5.51% | -6.85% | -12.80% | -3.95% | -3.62% |
| | -4.42% | -5.72% | -1.43% | -5.48% | -6.87% | -12.80% | -10.37% | -14.68% |
| | -4.74% | -6.18% | -4.15% | -1.86% | -24.88% | -7.21% | -14.62% | -15.07% |
| | -4.87% | -3.84% | -0.99% | -5.71% | -6.85% | -14.29% | -4.18% | -14.68% |
| | -2.76% | -5.86% | 0.05% | -2.24% | -16.36% | -7.11% | -14.26% | -3.62% |
| | -4.76% | -3.45% | -4.16% | -5.71% | -16.36% | -7.51% | -14.62% | -24.38% |

| | | | | | | | | |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | -1.66% | -5.85% | -4.15% | -5.51% | -6.85% | -15.85% | -23.81% | -8.84% |
| | -3.27% | -3.45% | -3.36% | -1.24% | -16.06% | -14.29% | -13.64% | -13.99% |
| | -4.74% | -3.45% | -4.45% | -4.39% | -24.88% | -14.29% | -14.62% | -24.38% |
| | -2.12% | -6.10% | -1.43% | -5.48% | -16.36% | -11.15% | -3.96% | -13.99% |
| | -2.99% | -5.72% | -1.71% | -4.39% | -13.98% | -12.80% | -4.16% | -14.68% |
| | -2.12% | -6.10% | -4.16% | -5.71% | -13.98% | -12.80% | -13.64% | -13.99% |
| | -4.74% | -5.85% | -0.55% | -4.00% | -13.98% | -14.29% | -23.81% | -4.86% |
| | -4.76% | -3.84% | -3.73% | -1.24% | -15.50% | -7.11% | -8.61% | -24.46% |
| | -3.27% | -3.84% | -3.36% | -1.24% | -15.50% | -15.85% | -14.26% | -13.99% |
| | -4.76% | -6.18% | -4.16% | -0.24% | -24.88% | -12.80% | -23.81% | -14.68% |
| | -4.42% | -5.72% | -4.16% | -5.48% | -16.06% | -11.15% | -10.37% | -15.07% |
| | -4.94% | -3.45% | -3.36% | -1.86% | -13.98% | -25.41% | -13.64% | -14.68% |
| Max ROI | -1.66% | -3.45% | 0.05% | -0.24% | -6.85% | -7.11% | -3.95% | -3.62% |
| Min ROI | -4.94% | -6.20% | -4.45% | -5.71% | -24.88% | -25.41% | -23.81% | -24.46% |
| Std Dev | 1.09% | 1.17% | 1.52% | 2.00% | 5.56% | 5.63% | 6.21% | 6.03% |
| Mean ROI | -3.96% | -5.15% | -2.86% | -3.68% | -14.83% | -14.01% | -12.63% | -13.66% |
| DCA ROI | -5.64% | -7.12% | -5.57% | -7.05% | -35.08% | -35.91% | -35.04% | -35.86% |
| Mean/DCA ROI Diff | 1.68% | 1.97% | 2.70% | 3.36% | 20.25% | 21.90% | 22.41% | 22.20% |
| Std Dev Dist to DCA ROI | 1.53 | 1.68 | 1.77 | 1.68 | 3.65 | 3.89 | 3.61 | 3.68 |
| Fee-Based ROI Diff | 1.19% | | 0.82% | | -0.82% | | 1.03% | |
| Interest-Based ROI Diff | | | 1.10% | 1.47% | | | 2.20% | 0.36% |
| | EK | EK | EK | EK | GM | GM | GM | GM |
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | -12.72% | -6.86% | -12.97% | -13.45% | -12.41% | -15.88% | -23.77% | -24.52% |
| | -11.29% | -12.25% | -11.95% | -10.82% | -20.01% | -19.09% | -9.49% | -8.53% |
| | -12.11% | -3.74% | -10.64% | -14.44% | -10.92% | -14.96% | -19.13% | -12.99% |
| | -10.93% | -6.98% | -13.58% | -1.11% | -10.92% | -26.78% | -17.97% | -14.84% |
| | -11.29% | -12.17% | -9.42% | -9.24% | -22.14% | -15.88% | -13.41% | -21.53% |
| | -3.07% | -3.74% | -3.97% | -4.68% | -14.33% | -17.29% | -21.94% | -14.04% |
| | -12.77% | -13.90% | -12.27% | -13.46% | -14.09% | -19.97% | -24.88% | -17.41% |
| | -14.34% | -14.36% | -1.34% | -10.82% | -18.02% | -17.29% | -19.13% | -20.85% |
| | -6.28% | -14.36% | -12.27% | -13.53% | -16.95% | -14.96% | -22.78% | -20.05% |
| | -11.29% | -13.50% | -13.54% | -1.85% | -15.03% | -25.69% | -14.05% | -20.85% |
| | -11.25% | -14.10% | -13.70% | -1.93% | -18.46% | -12.39% | -23.97% | -7.06% |
| | -9.68% | -3.66% | -12.63% | -10.82% | -8.98% | -11.64% | -19.13% | -15.52% |
| | -13.19% | -6.98% | -3.97% | -10.82% | -12.41% | -15.08% | -12.11% | -21.53% |
| | -12.98% | -14.23% | -13.58% | -12.74% | -26.18% | -24.70% | -11.54% | -14.04% |
| | -14.38% | -4.66% | -11.43% | -2.04% | -23.19% | -14.96% | -15.11% | -13.81% |

| | | | | | | | | |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| | -14.04% | -14.44% | -12.27% | -10.82% | -19.53% | -9.53% | -20.76% | -15.52% |
| | -9.68% | -11.68% | -3.97% | -2.92% | -20.83% | -12.39% | -13.21% | -8.53% |
| | -10.17% | -2.95% | -1.34% | -14.88% | -20.83% | -15.88% | -14.76% | -21.53% |
| | -13.19% | -7.06% | -12.31% | -12.74% | -14.33% | -11.64% | -10.34% | -15.52% |
| | -9.68% | -14.36% | -3.27% | -13.53% | -20.65% | -14.33% | -13.41% | -13.13% |
| Max ROI | -3.07% | -2.95% | -1.34% | -1.11% | -8.98% | -9.53% | -9.49% | -7.06% |
| Min ROI | -14.38% | -14.44% | -13.70% | -14.88% | -26.18% | -26.78% | -24.88% | -24.52% |
| Std Dev | 2.74% | 4.50% | 4.56% | 4.89% | 4.69% | 4.71% | 4.89% | 4.88% |
| Mean ROI | -11.22% | -9.80% | -9.52% | -9.33% | -17.01% | -16.52% | -17.04% | -16.09% |
| DCA ROI | -11.57% | -12.97% | -11.50% | -12.92% | -37.54% | -38.33% | -37.45% | -38.23% |
| Mean/DCA ROI Diff | 0.35% | 3.17% | 1.98% | 3.58% | 20.53% | 21.81% | 20.41% | 22.14% |
| Std Dev Dist to DCA ROI | 0.13 | 0.71 | 0.43 | 0.73 | 4.38 | 4.63 | 4.17 | 4.53 |
| Fee-Based ROI Diff | -1.42% | | -0.19% | | -0.49% | | -0.96% | |
| Interest-Based ROI Diff | | | 1.70% | 0.47% | | | -0.03% | 0.43% |
| | HON | HON | HON | HON | HPQ | HPQ | HPQ | HPQ |
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | -26.53% | -22.17% | -28.13% | -27.43% | -30.42% | -24.67% | -17.86% | -25.41% |
| | -21.49% | -27.71% | -20.67% | -26.88% | -13.83% | -14.29% | -23.05% | -25.41% |
| | -28.96% | -31.59% | -27.35% | -28.79% | -27.30% | -24.48% | -24.63% | -23.68% |
| | -26.95% | -10.71% | -28.74% | -19.23% | -24.01% | -32.68% | -22.69% | -18.57% |
| | -28.96% | -23.51% | -13.00% | -26.59% | -23.70% | -16.15% | -30.04% | -18.57% |
| | -24.11% | -31.59% | -23.93% | -19.23% | -25.42% | -13.12% | -24.76% | -23.76% |
| | -28.99% | -22.17% | -25.46% | -30.26% | -23.70% | -28.11% | -26.70% | -25.51% |
| | -31.66% | -15.53% | -22.80% | -20.54% | -19.25% | -16.15% | -26.70% | -21.69% |
| | -30.94% | -27.32% | -26.50% | -35.60% | -25.42% | -24.76% | -11.31% | -27.43% |
| | -30.28% | -27.71% | -28.74% | -28.70% | -19.25% | -28.10% | -24.63% | -21.69% |
| | -24.11% | -31.13% | -28.72% | -27.94% | -22.15% | -26.35% | -22.72% | -12.30% |
| | -20.11% | -26.12% | -28.13% | -23.35% | -31.75% | -22.89% | -31.59% | -23.76% |
| | -15.07% | -29.05% | -26.50% | -24.76% | -23.65% | -24.48% | -30.04% | -21.77% |
| | -28.96% | -28.90% | -22.07% | -31.02% | -22.45% | -24.48% | -24.59% | -21.77% |
| | -29.62% | -26.58% | -10.23% | -19.23% | -22.15% | -16.15% | -26.70% | -11.04% |
| | -27.61% | -27.78% | -30.15% | -24.76% | -23.70% | -28.03% | -19.60% | -23.51% |
| | -24.11% | -27.71% | -30.91% | -30.26% | -11.29% | -26.24% | -28.73% | -18.57% |
| | -27.77% | -30.29% | -26.15% | -26.21% | -28.51% | -26.24% | -24.59% | -23.51% |
| | -13.86% | -15.53% | -16.29% | -31.02% | -27.30% | -28.03% | -19.60% | -21.77% |
| | -26.53% | -19.25% | -27.23% | -25.98% | -19.73% | -21.82% | -17.90% | -25.41% |
| Max ROI | -13.86% | -10.71% | -10.23% | -19.23% | -11.29% | -13.12% | -11.31% | -11.04% |
| Min ROI | -31.66% | -31.59% | -30.91% | -35.60% | -31.75% | -32.68% | -31.59% | -27.43% |

| | | | | | | | | |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Std Dev | 4.93% | 5.88% | 5.65% | 4.45% | 5.06% | 5.40% | 4.90% | 4.22% |
| Mean ROI | -25.83% | -25.12% | -24.59% | -26.39% | -23.43% | -23.36% | -23.92% | -21.76% |
| DCA ROI | -35.97% | -36.89% | -35.91% | -36.82% | -33.82% | -34.84% | -33.76% | -34.78% |
| Mean/DCA ROI Diff | 10.14% | 11.77% | 11.33% | 10.43% | 10.39% | 11.48% | 9.84% | 13.03% |
| Std Dev Dist to DCA ROI | 2.06 | 2.00 | 2.00 | 2.35 | 2.05 | 2.12 | 2.01 | 3.08 |
| Fee-Based ROI Diff | -0.71% | | 1.80% | | -0.07% | | -2.17% | |
| Interest-Based ROI Diff | | | 1.24% | -1.27% | | | -0.49% | 1.61% |
| | IBM | IBM | IBM | IBM | MCD | MCD | MCD | MCD |
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | -12.79% | -12.61% | -5.84% | -6.09% | -28.47% | -19.10% | -16.80% | -27.98% |
| | -13.26% | -11.91% | -5.26% | -18.84% | -13.05% | -30.55% | -16.77% | -17.25% |
| | -13.80% | -11.19% | -9.60% | -6.62% | -18.65% | -29.03% | -16.80% | -17.25% |
| | -12.79% | -8.70% | -8.72% | -15.39% | -18.65% | -19.10% | -16.77% | -17.25% |
| | -8.69% | -8.27% | -8.14% | -6.37% | -18.65% | -19.10% | -27.30% | -17.25% |
| | -13.26% | -11.19% | -6.68% | -15.64% | -28.47% | -19.01% | -16.80% | -40.85% |
| | -7.93% | -8.27% | -8.72% | -8.95% | -18.61% | -40.91% | -16.77% | -17.25% |
| | -7.47% | -12.61% | -12.07% | -15.04% | -28.47% | -19.10% | -27.34% | -16.18% |
| | -7.93% | -15.73% | -13.76% | -13.75% | -29.93% | -27.02% | -27.34% | -17.17% |
| | -13.26% | -11.19% | -8.72% | -8.95% | -18.65% | -19.10% | -27.34% | -17.25% |
| | -8.69% | -11.19% | -5.26% | -8.95% | -18.61% | -29.03% | -15.69% | -29.49% |
| | -15.31% | -10.76% | -8.14% | -9.49% | -28.47% | -19.10% | -16.80% | -17.25% |
| | -15.43% | -8.70% | -5.84% | -8.95% | -13.05% | -19.10% | -16.80% | -27.98% |
| | -11.93% | -16.37% | -8.14% | -6.62% | -40.15% | -19.01% | -40.09% | -29.57% |
| | -10.42% | -15.54% | -12.95% | -6.09% | -18.65% | -30.55% | -16.80% | -17.17% |
| | -14.56% | -11.19% | -13.74% | -11.06% | -37.81% | -19.10% | -16.80% | -17.25% |
| | -10.42% | -16.24% | -13.58% | -8.95% | -12.40% | -19.10% | -16.77% | -27.98% |
| | -4.21% | -8.70% | -9.60% | -6.62% | -18.65% | -19.01% | -28.94% | -17.17% |
| | -10.18% | -11.19% | -12.07% | -13.88% | -13.05% | -19.10% | -16.80% | -17.25% |
| | -13.26% | -8.27% | -14.62% | -13.75% | -12.40% | -29.03% | -28.90% | -17.25% |
| Max ROI | -4.21% | -8.27% | -5.26% | -6.09% | -12.40% | -19.01% | -15.69% | -16.18% |
| Min ROI | -15.43% | -16.37% | -14.62% | -18.84% | -40.15% | -40.91% | -40.09% | -40.85% |
| Std Dev | 3.03% | 2.71% | 3.10% | 3.89% | 8.35% | 6.32% | 6.84% | 6.85% |
| Mean ROI | -11.28% | -11.49% | -9.57% | -10.50% | -21.74% | -23.21% | -21.22% | -21.20% |
| DCA ROI | -18.60% | -20.00% | -18.41% | -19.82% | -40.19% | -41.05% | -40.15% | -40.99% |
| Mean/DCA ROI Diff | 7.32% | 8.51% | 8.84% | 9.32% | 18.45% | 17.84% | 18.92% | 19.79% |

| | | | | | | | | |
|-------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Std Dev Dist to DCA ROI | 2.42 | 3.14 | 2.86 | 2.40 | 2.21 | 2.82 | 2.76 | 2.89 |
| Fee-Based ROI Diff | 0.21% | | 0.93% | | 1.46% | | -0.02% | |
| Interest-Based ROI Diff | | | 1.71% | 0.99% | | | 0.52% | 2.00% |
| | PG | PG | PG | PG | T | T | T | T |
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% | 0% | 0% | 2% | 2% |
| ROI | 7.60% | 4.83% | 4.66% | 13.76% | -28.01% | -9.53% | -25.14% | -25.53% |
| | 2.73% | 0.68% | 7.88% | 6.76% | -19.23% | -25.29% | -23.95% | -19.35% |
| | 9.62% | 4.83% | 9.42% | 7.13% | -20.32% | -25.29% | -17.77% | -19.35% |
| | 2.84% | 5.28% | 7.88% | 14.39% | -25.93% | -26.34% | -17.77% | -24.38% |
| | 2.01% | 15.42% | 9.74% | 10.07% | -22.99% | -22.48% | -16.15% | -21.27% |
| | 8.02% | 6.96% | 9.74% | 7.13% | -24.84% | -26.34% | -25.14% | -21.31% |
| | 8.02% | 6.46% | 4.09% | 6.76% | -25.93% | -13.31% | -19.38% | -19.57% |
| | 15.33% | 6.92% | 9.74% | 3.79% | -16.61% | -17.18% | -11.09% | -16.45% |
| | 2.84% | 1.61% | 7.88% | 10.07% | -16.61% | -17.18% | -18.19% | -25.53% |
| | 5.93% | 0.64% | 9.42% | 14.75% | -21.90% | -25.29% | -14.96% | -24.38% |
| | 1.38% | 6.46% | 4.00% | 10.07% | -21.90% | -23.56% | -23.95% | -21.31% |
| | 14.14% | 3.25% | 3.40% | 10.07% | -13.20% | -19.69% | -21.91% | -22.41% |
| | 1.72% | 4.83% | 9.42% | 8.27% | -24.84% | -26.34% | -21.91% | -18.42% |
| | 5.93% | 8.60% | 5.03% | 10.07% | -14.26% | -22.50% | -11.05% | -22.41% |
| | 5.93% | 6.92% | 5.30% | 4.53% | -13.16% | -26.34% | -14.33% | -11.16% |
| | 6.35% | 4.83% | 9.56% | 4.04% | -13.20% | -23.53% | -23.95% | -22.41% |
| | 2.84% | 1.41% | 9.74% | 6.76% | -22.99% | -25.29% | -14.33% | -24.38% |
| | 2.73% | 7.40% | 8.20% | 8.27% | -19.54% | -22.48% | -22.19% | -24.38% |
| | 2.01% | 4.83% | 11.10% | 8.63% | -25.93% | -17.18% | -17.77% | -18.20% |
| | 2.01% | 4.83% | 9.42% | 7.13% | -24.84% | -22.48% | -22.19% | -19.57% |
| Max ROI | 15.33% | 15.42% | 11.10% | 14.75% | -13.16% | -9.53% | -11.05% | -11.16% |
| Min ROI | 1.38% | 0.64% | 3.40% | 3.79% | -28.01% | -26.34% | -25.14% | -25.53% |
| Std Dev | 4.05% | 3.29% | 2.42% | 3.13% | 4.85% | 4.76% | 4.50% | 3.51% |
| Mean ROI | 5.50% | 5.35% | 7.78% | 8.62% | -20.81% | -21.88% | -19.16% | -21.09% |
| DCA ROI | 20.40% | 18.56% | 20.52% | 18.69% | -31.89% | -32.42% | -31.70% | -32.19% |
| Mean/DCA ROI Diff | -14.90% | -13.22% | -12.74% | -10.07% | 11.07% | 10.54% | 12.54% | 11.10% |
| Std Dev Dist to DCA ROI | -3.68 | -4.02 | -5.27 | -3.22 | 2.28 | 2.21 | 2.79 | 3.16 |
| Fee-Based ROI Diff | 0.15% | | -0.84% | | 1.07% | | 1.93% | |
| Interest-Based ROI Diff | | | 2.28% | 3.27% | | | 1.66% | 0.79% |
| | | | UTX | UTX | UTX | UTX | | |

| | | | | |
|-------------------------|---------|---------|---------|---------|
| Transaction Amt | \$1,000 | \$1,000 | \$1,000 | \$1,000 |
| Transaction Fee | 1.5% | 3.0% | 1.5% | 3.0% |
| Cash Interest | 0% | 0% | 2% | 2% |
| ROI | -3.32% | -5.45% | 0.96% | -3.71% |
| | -2.44% | -6.37% | 0.96% | -0.91% |
| | -2.08% | -5.14% | 0.97% | -0.91% |
| | -1.50% | -3.33% | -4.29% | -4.09% |
| | -1.19% | -6.37% | -4.29% | -3.71% |
| | -1.50% | -6.31% | -0.31% | 2.14% |
| | -2.08% | -3.02% | -4.45% | -4.09% |
| | -5.37% | -3.02% | 0.88% | -5.23% |
| | -6.55% | -5.45% | -3.23% | 0.07% |
| | -5.36% | -2.09% | -4.29% | -0.93% |
| | -4.17% | -2.78% | -0.31% | -0.93% |
| | -5.01% | -5.45% | -0.23% | -5.43% |
| | -0.71% | -5.14% | -4.45% | -0.93% |
| | -5.37% | -6.37% | 0.88% | -5.43% |
| | -5.36% | -6.31% | -4.29% | -0.91% |
| | -2.39% | -1.22% | -0.23% | -4.84% |
| | -1.50% | -6.00% | 0.88% | -3.71% |
| | -2.08% | -5.45% | -0.66% | -5.43% |
| | -5.37% | -6.37% | 0.28% | -5.43% |
| | -5.02% | -6.31% | -3.23% | -0.91% |
| Max ROI | -0.71% | -1.22% | 0.97% | 2.14% |
| Min ROI | -6.55% | -6.37% | -4.45% | -5.43% |
| Std Dev | 1.85% | 1.66% | 2.29% | 2.31% |
| Mean ROI | -3.42% | -4.90% | -1.42% | -2.77% |
| DCA ROI | -4.38% | -5.80% | -4.29% | -5.70% |
| Mean/DCA ROI Diff | 0.97% | 0.91% | 2.86% | 2.94% |
| Std Dev Dist to DCA ROI | 0.52 | 0.54 | 1.25 | 1.27 |
| Fee-Based ROI Diff | 1.48% | | 1.34% | |
| Interest-Based ROI Diff | | | 2.00% | 2.13% |

Appendix E - Full Program Output

AA

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
 -30.8571%

| | |
|-----------|-----------------------|
| -18.1879% | SSHSSHHBBBBBBHBSHSSSB |
| -18.4817% | HSBSHHBBBBBBHBSHSHB |
| -7.26041% | SSHSSSBHHHBSBSHSSSH |
| -2.97387% | SSHSSSBHHHSHSHSSSH |
| -18.4817% | HSBSHHBBBBBBHBSHSHB |
| -18.1879% | SSBSHHBBBBBBHBSHSHB |
| -18.5415% | SSHSSHHBBHBBHBSHSSSB |
| -18.1879% | SSBSHHBBBBBBHBSHSHB |
| -25.5695% | SSBSHHBBBBBBHBSHSHB |
| -12.5251% | SSHSSHHBBHBBHBSHSHSB |
| -12.5251% | SSHSSHHBBHBBHBSHSHSB |
| -18.5415% | SSHSHHBBHBBHBSHSHSB |
| -18.5415% | HSHSHHBBHBBHBSHSHSB |
| -9.26558% | SSHSSHHBBHBSBSHSSSH |
| -12.5251% | SSHSHHBBHBBHBSHSHSB |
| -12.5251% | SSHSHHBBHBBHBSHSHSB |
| -12.5251% | SSHSSHHBBHBBHBSHSSSH |
| -12.5251% | SSHSHHBBHBBHBSHSHSH |
| -18.1879% | SSBSHHBBBBBBHBSHSHB |
| -12.5251% | SSHSSHHBBHBBHBSHSSSB |

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
 -30.8085%

| | |
|------------|----------------------|
| -3.45251% | SSSSSBHHHBSBSSSSSH |
| -16.6114% | SSHSHHBBBBBBHBSHSHSB |
| -10.452% | SSHSSHHBBHBBHBSHSHSB |
| -3.45251% | SSSSSBHHHBSBSSSSSH |
| -22.3876% | HSBSHHBBBBBBHBSHSHB |
| -10.452% | SSHSHHBBHBBHBSHSHSB |
| -10.452% | HSHSHHBBHBBHBSHSHSB |
| -10.452% | HSHSHHBBHBBHBSHSHSB |
| -16.9098% | SSHSHHBBBBBBHBSHSHSB |
| -10.452% | SSHSSHHBBHBBHBSHSSSH |
| -16.96% | SSHSSHHBBHBBHBSHSHSB |
| -6.16361% | SSHSSHHBBHHHBSHSHSH |
| -10.452% | SSHSSHHBBHBBHBSHSHSB |
| -16.6114% | SSBSSHBBBBBBHBSHSHSB |
| -10.452% | SSHSHHBBHBBHBSHSHSH |
| -10.452% | SSHSSHHBBHBBHBSHSHSH |
| -0.142046% | SSHSSSBHHHSHSHSSSH |
| -9.0487% | SSHSSHHBBHBBHBSHSSSH |
| -10.452% | SSHSHHBBHBBHBSHSHSB |
| -16.6114% | SSHSHHBBBBBBHBSHSHSB |

----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
 -31.7472%

-19.0623% SSHSSHBBBHHBBHBSHSHSB
 -19.084% HSBSHHBBBBBBBHHBBSHSHSB
 -23.951% SSBSSBBBBBBBHHBSBSHSHSB
 -19.0623% SSHSSHBBBHHBBHBSHSHSB
 -18.7901% SSBSSHBBBBBBBHHBSBSSSB
 -19.084% HSBSHHBBBBBBBHHBBSHSHSB
 -18.7901% SSBSSHBBBBBBBHHBSBSHSHSB
 -18.7901% SSBSSHBBBBBBBHHBSBSHSHSB
 -19.084% HSBSHHBBBBBBBHHBBSHSHSB
 -19.0623% SSHSHHBBBBHHBBHBSHSHSB
 -6.61952% SSHSSSBHHHBSBSHSSSH
 -19.084% HSHSHHBBBBBBBHHBSHSHSB
 -18.7901% SSBSSHBBBBBBBHHBSBSSSB
 -19.084% SSBSSHBBBBBBBHHBBSHSHSB
 -12.9753% SSHSSHBBHHBBHBSHSSSB
 -12.9753% HSHSHHBBHHBBHBSHSHSB
 -12.9753% SSHSSHBBHHBBHBSHSSSH
 -12.9753% SSHSHHBBHHBBHBSHSHSB
 -3.77246% SSHSSSBHHHSHSHSSSH
 -18.7901% SSBSSHBBBBBBBHHBSBSSSB
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
 -31.6896%

-6.49808% HSHSHHBBHHHHHBSHSHSH
 -11.2762% SSHSSSBHHBBSBSSSSSB
 -17.4688% HSHSHHBBBHHBBHBSHSHSB
 -10.8942% SSHSHHBBHHBBHBSHSHSB
 -10.8942% HSHSHHBBHHBBHBSHSHSB
 -10.8942% SSHSHHBBHHBBHBSHSHSB
 -7.4417% SSHSSHBBHHBBSHSSSH
 -10.8942% SSHSHHBBHHBBHBSHSHSB
 -6.49808% SSHSSHBBHHHHHBSHSHSH
 -17.4688% SSHSHHBBBHHBBHBSHSHSB
 -17.505% SSHSHHBBBBBBBHHBSHSHSB
 -17.4688% HSHSHHBBBHHBBHBSHSHSB
 -17.4688% SSHSSHBBBHHBBHBSHSSSB
 -4.47409% SSHSSHBBHHHBSHSSSH
 -10.8942% SSHSHHBBHHBBHBSHSHSB
 -17.4688% SSHSSHBBBHHBBHBSHSHSB
 -17.4688% SSHSSHBBBHHBBHBSHSSSB
 -17.2066% SSBSSHBBBBBBBHHBSHSHSB
 -17.505% HSHSHHBBBBBBBHHBSHSHSB
 -10.8942% SSHSHHBBHHBBHBSHSHSB

BA
 ----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
 -32.8151%

-24.6029% SHHHBBBBHHHHSSHSSSH
 -7.75246% SSSSHBBHHHSHHSSSSSH

-27.429% SSSSBBBBBBSHSSSSSSSH
-31.7462% SHHHBBBBBBBBBBBSHSHSHB
-30.2729% SHHHBBBBBBBHBSSSSSSSB
-24.6029% SSSHBBBBBHHHHHSSSSSSH
-31.9715% HHHHBBBBBBBBBBBSHSHSHB
-29.2302% SSSHBBBBBHHHHHSSSSSSH
-24.6029% SHHHBBBBBHHHHHSSHSSSH
-24.6029% SHHHBBBBBHHHHHSSHSSSH
-30.2729% SHSHBBBBBBBHBHSSSSSSH
-30.4982% HHHHBBBBBBBHBSSSSSSSB
-30.2729% SHHHBBBBBBBHHHSSSSSSH
-29.4555% HHHHBBBBBBBHHHHHSHSHSH
-24.6029% SHHHBBBBBHHHHHSSHSSSH
-30.2729% SHHHBBBBBBBHBHSHHHSH
-30.2729% SHHHBBBBBBBHHHSSSSSSH
-7.75246% SSSHBBHHHSHHSSSSSSSH
-30.2729% SHHHBBBBBBBHBHSSSSSSH
-30.2729% SHHHBBBBBBBHHHSSSSSHH
----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-32.7467%

-29.796% SHHHBBBBBBBHBHHHSSSSB
-23.6353% SHHHBBBBBHHHHHSSSSSSH
-28.6225% SHHHBBBBBBBHHHSSSSSSH
-31.3917% SHHHBBBBBBBBBBSSSSSSB
-29.796% SHHHBBBBBBBHBBSHSSSSB
-29.796% SHSHBBBBBBBHBHSSSSSSB
-29.796% SHHHBBBBBBBHBHSSSSSSH
-23.6353% SHHHBBBBBHHHHHSSSSSSH
-29.796% SHHHBBBBBBBHBHSSSSSSB
-29.796% SHHHBBBBBBBHHHSHSHSH
-29.796% SSSHBBBBBBBHBHSSSSSSB
-28.6225% SHSHBBBBBBBHHHHSSSSSSH
-28.6225% SHHHBBBBBBBHHHSSHSSSH
-30.0858% HHHHBBBBBBBHBHSSSSSSB
-29.796% SHSHBBBBBBBHBHSSSSSSH
-23.6353% SHHHBBBBBHHHHHSSSSSSH
-29.796% SHHHBBBBBBBHBHHHSSSSH
-23.6353% SHHHBBBBBHHHHHSSSSSSH
-29.796% SHHHBBBBBBBHBBSHSHSB
-29.796% SHHHBBBBBBBHHHSSSSSHH
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
-33.8687%

-30.2295% SHSHBBBBBBBHHHHSSSSSSH
-31.2611% SHSHBBBBBBBHBHSSSSSSB
-31.2611% SHHHBBBBBBBHBHSSSSSSH
-30.2295% SHHHBBBBBBBHHHSSHSSSH
-33.1934% SHHBBBBBBBBBBSSHHHSB
-32.8644% HHHHBBBBBBBBBBSSSHSSB

-30.2295% SHSHBBBBBHHHHSSSSSSH
 -31.2611% SHHHBBBBBBBHHHSSHSSSH
 -31.2611% SHHHBBBBBBBHHSSHHHSB
 -33.1934% SHHBBBBBBBBBBSSSHHHB
 -31.4448% HHHHBBBBBBBHHSHSSSSSH
 -33.3772% HHHBBBBBBBBBBSSSHHSB
 -30.2295% SSSHBBBBBHHHHSSSSSSH
 -31.4448% HHHHBBBBBBBHHHHSSHSSH
 -31.2611% SHHHBBBBBBBHHBSSHSSSB
 -25.4892% SHSHBBBBBHHHHSSSSSSH
 -32.6806% SHHHBBBBBBBBBSHSHSSB
 -30.2295% SHSHBBBBBHHHHSSSSSSH
 -31.2611% SHHHBBBBBBBHHHSSSSSSH
 -31.2611% SSSHBBBBBBBHHSSSSSSH
 ---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] ----
 -33.8023%

-33.2407% HHHBBBBBBBBBBSSSSHSB
 -30.2747% SSSBBBBBBBHHSSSSSB
 -30.7923% SHHHBBBBBBBHHSHSHSSB
 -32.5756% HHHHBBBBBBBBBBHHHSSSB
 -29.6343% SHSHBBBBBHHHHSSSSSSH
 -30.7923% SHHHBBBBBBBHHHSSSSSSH
 -29.6343% SHHHBBBBBBBHHHSSSSSSH
 -30.7923% SHHHBBBBBBBHHSSSSSSH
 -12.2237% SSSBBBHHHSHHSSSSSSH
 -30.7923% SHHHBBBBBBBHHHSSHSSSH
 -30.7923% SHHHBBBBBBBHHHHSHSSSH
 -29.6343% SHHHBBBBBBBHHHSSHSSSH
 -30.7923% SHSHBBBBBBBHHSSSSSSH
 -30.7923% SHHHBBBBBBBHHSSSSSB
 -27.649% SSSBBBBBBHSHSSSSSSH
 -30.7923% SHSHBBBBBBBHHHSSSSSSH
 -31.0395% HHHHBBBBBBBHHSSHSSHB
 -30.2747% SSSBBBBBBBHHHSSSSSSH
 -29.6343% SHSHBBBBBHHHHSSSSSSH
 -32.3284% SHHHBBBBBBBBBBSSHHSHB

C
 ---- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] ----
 -11.1277%

-10.8379% SHSSBHBBBBBBBBSSSSHH
 -5.63304% SHSSHBBBBBHHHSSSSSH
 -11.0414% HHSBBBBBBBBBBHHSSHH
 -9.92902% SSSSHBBBBBBHHSSSSS
 -10.7974% SHHSBHBBBBBBBBHHSSHH
 -6.82354% SSSSHBBBHHBHHSSSSSH
 -9.92902% SHSSHBBBBBBBHHSHSSHH
 -9.92902% SHSSHBBBBBBBHHSSSSSH
 -10.8379% SHSSHBBBBBBBBBHSSSHH

-10.7974% SHHSBHBBBBBBBHHHSSHH
 -9.92902% SHSSHHBBBBBBBHHSHSSHH
 -10.8379% SHHSBHBBBBBBBHHSHSSHH
 -10.8379% SHSSHHBBBBBBBHHSSSSHS
 -10.7974% HHHSHHBBBBBBBHHHSSHH
 -9.92902% SHSSHHBBBBBBBHHSSSSHH
 -10.8379% SHSSHHBBBBBBBHHSSSSHS
 -10.8379% SHSSHHBBBBBBBHHSSSSHH
 -11.0414% SBHSBBBBBBBBBBHHSBHH
 -6.82354% SHSSHHBBBBBBBHHSSSSHS
 -10.8379% SHSSBHBBBBBBBHHSHSSHH
 ----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
 -11.078%

-5.39548% SHSSHHBBBHHBBHHSSSSHH
 -10.5439% SHSSBHBBBBBBBHHSSSSHS
 -5.39548% SHSSHHBBBHHBBHHSHSSHH
 -10.5439% SSSSHHBBBBBBBHHSSSSHS
 -5.39548% SSSSHHBBBHHBBHHSSSSHS
 -10.5439% SHSSBHBBBBBBBHHSSSSHS
 -10.5078% SHHSBHBBBBBBBHHHSSHH
 -11.0219% SHHSBBBBBBBBBBBHSSSHH
 -10.5078% SHHSBHBBBBBBBHHHSSHH
 -10.5439% SHSSBHBBBBBBBHHSHSSHH
 -10.5439% SHSSHHBBBBBBBHHSSSSHS
 -10.5439% SHSSHHBBBBBBBHHSHSSHH
 -10.9858% HHSBHHBBBBBBBHHHSSHH
 -10.5439% SHSSBHBBBBBBBHHSSSSHH
 -10.5078% SHHSHHBBBBBBBHHHSSHH
 -5.39548% SHSSHHBBBHHBBHHSSSSHS
 -10.5439% SHSSBHBBBBBBBHHSSSSHH
 -2.00597% SSSSHHBBBHHHHHSSSSSS
 -5.39548% SHSSHHBBBHHBBHHSSSSHH
 -2.00597% SHHSHHBBBHHHHHSHSSHH
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----

-12.3879%

-11.7832% SHHSBHBBBBBBBHHSHSSHH
 -10.7567% SHHSHHBBBBBBBHHHSSHH
 -10.8377% SHSSHHBBBBBBBHHSHSSHH
 -11.7832% SHSSBHBBBBBBBHHSSSSHS
 -4.34486% SHSSHHBBBHHHHHSHSSHH
 -10.8377% SSSSHHBBBBBBBHHSSSSSS
 -10.8377% SHHSHHBBBBBBBHHSHSSHH
 -10.8377% SSSSHHBBBBBBBHHSSSSSS
 -7.43668% SHSSHHBBBHHBBHHSSSSHH
 -10.7567% HHHSHHBBBBBBBHHHSSHH
 -11.7832% SHSSBHBBBBBBBHHSSSSHH
 -1.39883% SSSSHHBBBHHHHHSSSSSS
 -6.2278% SSSSHHBBBHHHHHSSSSHS

-10.8377% SHSSHHBBBBBBHHSSSSHH
 -10.8377% SHSSHHBBBBBBHHSSSSHH
 -10.8377% SHSHHHBBBBBBHHSHSSHH
 -10.8377% SHSSHHBBBBBBHHSHSSHH
 -12.2262% SHSSBBBBBBBBBSSSSSHS
 -10.8377% SHSSHHBBBBBBHHSHSSHH
 -6.2278% SHSSHHBBBHHHSSSSSHS
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
 -12.3128%

-11.3834% HHHSHHBBBBBBHHHSSHH
 -12.1372% SHSSBBBBBBBBBSHSSHH
 -5.99424% SHSSHHBBBHHHSSSSHH
 -11.4601% SHSSHHBBBBBBHSSSSHS
 -11.4601% SSSSBHBBBBBBBBSSSSHS
 -11.4601% SHSSBHBBBBBBBBSHSSHH
 -10.2405% SSSSHHBBBBBBHHSSSSSS
 -11.3834% HHSBHBBBBBBBBHHSSHH
 -5.99424% SHSSHHBBBHHHSSSSHH
 -2.49859% SSSSHBBBHHHHHSSSSSS
 -11.4601% SHSSBHBBBBBBBBSHSSHH
 -11.4601% SHSSBHBBBBBBBBHSSSSHS
 -5.99424% SHSSHHBBBHHHSSSSHH
 -11.3834% SHHSBHBBBBBBBBHHSSHH
 -11.4601% SHSSBHBBBBBBBBSHSSHH
 -12.1372% SHHSBBBBBBBBBSHSSBH
 -5.99424% SHSSHHBBBHHHSSSSHS
 -11.4601% SHSSHHBBBBBBHSSSSHH
 -10.2405% SSSSHHBBBBBBHHSSSSSS
 -5.99424% SHSSHHBBBHHHSSSSHH

CAT
 ----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
 -2.82103%

-4.89424% SSSHHBBBBBBHHSSSSSS
 -3.62254% HSHHHBHBBBBBBHHHSSSSS
 -3.43996% SSSHHBHBBBBBBHHSSSSSS
 -4.2011% HSHHHBBBBBBBHSSSSSS
 -3.43996% SSSHHBHBBBBBBHHSSSSSS
 -4.89424% SSSHHBBBBBBHHSSSSSS
 -1.52952% SSSHHHHBBBBHHHSSSSSS
 -4.38368% HSHHHBBBBBBBBHHHHHSS
 -3.43996% SSSHHBHBBBBBBHHSSSSSS
 -4.89424% SSSHHBBBBBBBHSSSSSS
 -4.89424% SSSHHBBBBBBBHSSSSSS
 -4.38368% HSHHHBBBBBBBBHHSSSSS
 -3.01222% SSSHHBBBBBBBBSSSSSS
 -4.38368% HSHHHBBBBBBBBHHSSSSS
 -4.0489% SSSHHHHBBBBBBHHSSSSSS
 -3.65578% HSHHHHHBBBBBHHHHSSHS

-4.0489% SSHHHHHBBBBBHHSSSSSS
-3.4732% SSSSHHHBBBBHBHSSSSSS
-4.89424% HSHHHBBBBBBBBHHSSSSSS
-4.2011% HSHHHBBBBBBBBHHSSSSSS
----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-2.74759%

-2.31158% SSSSHHHBBBBBHHSSSSSS
-2.18791% HSHHHBHB BBBBHHHSSHS
-1.38401% SSSSHHHBBBBHBHSSSSSS
-2.18791% HSHHHBHB BBBBHHHSSHS
-2.85961% HSHHB BBBB BBBBHHSSSHS
-1.66878% HSHHHHHBBBBHBHSSSSSS
-2.31158% SSSSHHHBBBBBHHSSSSSS
-1.90312% SSHHHBHB BBBBHHSSSSSS
-1.38401% HSHHHHHBBBBHBHSSSSSS
-3.98416% HSHHHB BBBB BBBBHHHSSHS
-1.90312% SSHHHBHB BBBBHHSSSSSS
-3.98416% HSHHHB BBBB BBBBHHHSSSS
-2.31158% HSHHHHHBBBBBHHSSSSSS
-1.90312% SSHHHBHB BBBBHHSSSSSS
-2.59635% HSHHHHHBBBBBHHHSSHS
-2.57483% SSHHB BBBB BBBBSSSSSS
-3.75493% HHHHHB BBBB BBBBHHSSHS
-3.75493% HSHHHB BBBB BBBBHHSSSS
-3.75493% HSHHHB BBBB BBBBHHSSHS
-2.31927% HHHB BBBB BBBBHHSSSSSS
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
-4.2643%

-4.04592% SSSHHHHBBBBHBHSSSSSS
-1.97996% SSHHHHHBBBBHHHSSSSSS
-4.04592% SSHHHHHBBBBHBHSSSSSS
-5.35813% SSHHHB BBBB BBBBHHSSSSSS
-5.35813% SSHHHB BBBB BBBBSSSSSS
-4.41882% HSHHHBHB BBBBHHHSSSSSS
-1.97996% SSHHHHHBBBBHHHSSSSSS
-4.41882% HSHHHBHB BBBBHHHSSSSSS
-4.04592% SSSHHHHBBBBHBHSSSSSS
-3.80617% HSHB BBBB BBBB BBBBHHSSSS
-3.80617% HSHB BBBB BBBB BBBBHHSSSS
-4.78064% SSSHHHHBBBBBHHSSSSSS
-3.80617% HSHB BBBB BBBB BBBBHHSSHS
-5.90567% HSHHHB BBBB BBBBHHSSSSSS
-4.27611% SSSHHBHB BBBBHHSSSSSS
-4.27611% SSHHHBHB BBBBHHSSSSSS
-5.90567% HSHHHB BBBB BBBBHHSSSSSS
-5.50084% HSHHHB BBBB BBBBHHHSS
-1.97996% SSHHHHHBBBBHHHSSSSSS
-4.41882% HHHHHBHB BBBBHHHSSHS
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----

-4.20329%

-2.74806% HSHHHBHBBBBBHSSSSSS
-3.29683% HSHHHHHBBBBBBHHSSSSSS
-3.05347% SSHHHHHBBBBBBHHSSSSSS
-3.29683% HSHHHHHBBBBBBHHSSSSSS
-2.74806% SSSHBBBHHSSSSSS
-4.11517% HHHHBBBBBBBBBBSHSSSS
-3.29683% HSHHHHHBBBBBBHHSSSSSS
-3.6336% HHHBBBBBBBBBBBBBSHSSSS
-2.99144% HHHHHBHBBBBBBHHSHHHS
-3.29683% HSHHHHHBBBBBBHHSSSSSS
-4.11517% HHHHBBBBBBBBBBSHSSSS
-3.05347% HSHHHHHBBBBBBHHSSSSSS
-1.19007% SSSSHHBBBBHHSSSSSS
-1.96168% SSSSHHHBBBBBHSSSSSS
-2.99144% HSHHHBHBBBBBBHHSSSSSS
-2.99144% HSHHHBHBBBBBBHHSHSS
-1.96168% SSSSHHBBBBBHSSSSSS
-2.99144% HSHHHBHBBBBBBHHSSSSSS
-2.74806% SSSSHBHBBBBBHSSSSSS
-1.96168% HSHHHHHBBBBBHSSSSSS

DD

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----

-5.63997%

-4.69577% SSSSHBBBHHBBSHSHHS
-4.41751% SSSSHBBBHHBBSHSHSS
-4.7643% SSSHSBBBBBHHBBSHSHHH
-4.41751% SSSSHBBBHHBBSHSHHS
-4.74169% SSSHSBBBBBBBBBBSHSHHH
-4.86962% HSSHHBBBBBBBBBBSHSHHH
-2.76318% SSSSHHBBBHHBBSHSHSS
-4.7643% SSSHSBBBBBHHBBSHSHHH
-1.66199% SSSSHHHHHBHHBBSHSHSS
-3.27052% SSSSHBBBHHBBSHSHSHHH
-4.74169% SSSHSBBBBBBBBBBSHSHHH
-2.12169% SSSSHHBBBHHBBSHSHSS
-2.99223% SSSSHBBBHHBBSHSHSHHS
-2.12169% SSSSHHBBBHHBBSHSHSS
-4.74169% SSSHSBBBBBBBBBBSHSHHH
-4.7643% SSSHSBBBBBHHBBSHSHHH
-3.27052% SSSSHBBBHHBBSHSHSHHH
-4.7643% SSSHSBBBBBHHBBSHSHHH
-4.41751% SSSSHBBBHHBBSHSHSHHS
-4.94265% HSSHSBBBBBHHBBSHSHHH

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----

-5.56612%

-4.15839% SSSHSBBBBBHHBBSHSHHS

-3.35684% SSSSHBHHBBBBSHSHHH
 -0.549208% SSSSHHHBHHBHHBSHSHHS
 -1.42605% SSSSHBHHBHHBHHBSHSHHS
 -4.14953% SSSHSBBBBBBBBBSHHHHH
 -0.994412% SSSSHBHHBHHBHSSSSSS
 0.0533529% SSSSHHHBHHHHBHHHHHH
 -4.15839% SSSHSBBBBHHBBBBSHSHHS
 -4.14953% SSSHSBBBBBBBBBSHSHHS
 -3.35684% SSSSHBHHBBBBSHSHHHH
 -4.445% SSSHSBBBBHHBBBHHHHHHH
 -1.42605% SSSSHBHHBHHBHHBSHSHHHH
 -1.71266% SSSSHBHHBHHBHHHHHHH
 -4.15839% SSSHSBBBBHHBBBBSHSHHS
 -0.549208% SSSSHHHBHHBHHBSHSHHHH
 -3.72676% SSSSBBBBHHBBBBSHSHSS
 -3.35684% SSSSHBHHBBBBSHSHHHH
 -4.15839% SSSHSBBBBHHBBBSHHHHH
 -4.15839% SSSHSBBBBHHBBBBSHSHHH
 -3.35684% SSSSHBHHBBBBSHSHHS
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----

-7.12023%
 -6.08287% SSSHSBBBBHHBBBBSHSHHS
 -6.17923% HSSHSBBBBHHBBBHHHHHHH
 -6.19648% SSSHSBBBBBBBBBHHHHH
 -5.72275% SSSSHBHHBBBBSHSHHHH
 -6.17923% HSSHSBBBBHHBBBHHHHHHH
 -3.84173% SSSSHBHHBHHBBSHSHSS
 -5.86319% SSSSBBBBBBBBBSHSHHS
 -3.44742% SSSSHHHBHHBHHBSHSHSS
 -5.84594% SSSSBBBBHHBBBBSHSHHS
 -3.44742% SSSSHHHBHHBHHBSHSHHS
 -3.44742% SSSSHHHBHHBHHBSHSHHH
 -6.10012% SSSHSBBBBBBBBBSHSHHH
 -5.72275% SSSSHBHHBBBBSHSHHHH
 -6.10012% SSSHSBBBBBBBBBSHSHHH
 -5.84594% SSSSBBBBHHBBBBSHSHHS
 -3.84173% SSSSHBHHBHHBBSHSHSS
 -3.84173% SSSSHBHHBHHBBSHSHHS
 -6.17923% SSSHSBBBBHHBBBHHHHHHH
 -5.72275% SSSSHBHHBBBBSHSHHHH
 -3.44742% SSSSHHHBHHBHHBSHSHSS
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----

-1.24058% SSSSHHHBHHBHHBSHSHHS
 -5.12298% SSSSBBBBBBBBBSHSHSS
 -5.51094% SSSHSBBBBBBBBBSHSHHS
 -5.48028% SSSHSBBBBHHBBBBSHSHHHH
 -1.85522% SSSSHBHHBHHBHSSSSSS

-5.71392% HSSHSBBBBBBBBBHHHHHH
-2.24315% SSSSHBHBHBHBSHSHHH
-5.71392% HSSHSBBBBBBBBBHHHHHH
-5.51094% SSSHSBBBBBBBBBBSHSHHS
-1.24058% SSSSSHBBHBHBHBSHSSSS
-4.39102% SSSSHBHBHBHBSHSHHH
-5.48028% SSSHSBBBBBBBBBSHSHHH
-4.39102% SSSSHBHBHBHBSHSHHH
-5.71392% SSSHSBBBBBBBBBHHHHHH
-4.00306% SSSSSHBBHBHBHBSHSHSS
-1.24058% SSSSSHBBHBHBHBSHSHSS
-1.24058% SSSSHBHBHBHBSHSHHS
-0.244271% SSSSSHBBHBHBSHSHSS
-5.48028% SSSHSBBBBBBBBBSHSHHS
-1.85522% SSSSSHBBHBHBHBSHSHHS

DIS

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
-35.084%

-15.502% HBHHBHHBBSSBSSSHSSB
-10.922% HHHHBHHHHBSSBSSSSSSB
-6.85387% HHSSBHHHHSSHSSSSSSB
-6.8742% HHSSBHHBHBSSBSSSSSSB
-24.8751% BBHHBBBBBBSSBSSSSSSB
-6.85387% HHSSBHHHHSSBSSSSSSB
-16.36% BBHHBHHBBSSBSSSHSSB
-16.36% BBHHBHHBBBHSBSSSHSSB
-6.85387% HHSSBHHHHBSSBSSSSSSB
-16.0625% HBHHBHHBBSSBSSSHSSB
-24.8751% BBHHBBBBBBSSBSSSSSSB
-16.36% BBHHBHHBBBHHBSSSHSSB
-13.9779% HHHHBHHBBSSBSSSHSSB
-13.9779% HHHHBHHBBSSBSSSHSSB
-13.9779% HHHHBHHBBHBSBSSSHSSB
-15.502% HBHHBHHBBHBSBSSSHSSB
-15.502% HBHHBHHBBBHSBHHSHSSB
-24.8751% BBHHBBBBBBHBBHSHSSB
-16.0625% HBHHBHHBBBHHBSSSHSSB
-13.9779% HHHHBHHBBSSBSSSSSSB

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-35.0422%

-8.61489% HHHHBHHHHBSSBSSSSSSB
-13.6354% HBHHBHHBBSSBSSSHSSB
-3.94664% HHSSBHHHHBSSBSSSSSSB
-10.3732% HHHHBHHBHBBSBSSSHSSB
-14.6191% BBHHBHHBBBHSBSSSHSSB
-4.183% HHSSBHHBHBSSBSSSSSSB
-14.2563% HBHHBHHBBSSBSSSSSSB
-14.6191% BBHHBHHBBBHSBSSSHSSB

-23.8076% BBBHBBBBBBHSBSSSHHSB
-13.6354% HBHHBHHBBBSSBSSSHSSB
-14.6191% BBHHBHHBBBSSBSSSHSSB
-3.95821% HHHSBHHBBBSSBSSSSSSB
-4.16369% HHSSBHHBBBSSBSSSSSSB
-13.6354% HBHHBHHBBBHSBSSHSSB
-23.8076% BBBHBBBBBBHSBSSHSHB
-8.61489% HHHHBHHHHBSSBSSSHSSB
-14.2563% HBHHBHHBBBHSBSSSHSSB
-23.8076% BBBHBBBBBBHSBSSHSHB
-10.3732% HHHHBHHBHHBSSSHSSB
-13.6354% HBHHBHHBBBHHBSSSHSSB
---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] ----
-35.9113%

-25.3171% BBBHBBBBBBHSBSSSHSHB
-25.4093% BBHHBBBBBBHBBHSHSHB
-12.8048% HHHHBHHBHBSSBSSSSSSB
-12.8048% HHHHBHHBHBSSBSSSHSSB
-7.2148% HHHSBHHBHBSSBSSSSSSB
-14.2904% HHHHBHHBBBHSBSSSHSSB
-7.11349% HHHSBHHHHBSSBSSSSSSB
-7.5127% HHSSBHHBBBSSBSSSSSSB
-15.8537% HBHHBHHBBBHSBSSSHSSB
-14.2904% HHHHBHHBBBSSBSSSSSSB
-14.2904% HHHHBHHBBBSSBSSSSSSB
-11.1548% HHHHBHHHHBSSBSSSSSSB
-12.8048% HHHHBHHBHBSSBSSSHSSB
-12.8048% HHHHBHHBHBSSBSSSHSSB
-14.2904% HHHHBHHBBBHSBSSSHSSB
-7.11349% HHHSBHHHHBSSBSSSSSSB
-15.8537% HBHHBHHBBBHSBSSHSHB
-12.8048% HHHHBHHBHBSSBSSSHSHB
-11.1548% HHHHBHHHHHSSSHSSSHB
-25.4093% BBHHBBBBBBHSBSSHSHB
---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] ----
-35.8576%

-8.8441% HHHHBHHHHBSSBSSSSSSB
-10.645% HHHHBHHBHBSSBSSSSSSB
-3.62412% HHSSBSHHHHSSBSSSSSSB
-14.6757% HBHHBHHBBBSSBSSSHSSB
-15.0729% BBHHBHHBBBHSBHHSHSSB
-14.6757% HBHHBHHBBBHSBSSHSHSSB
-3.62412% HHSSBSHHHHSSSHSSSSSSB
-24.3766% BBBHBBBBBBHSBHHHSHB
-8.8441% HHHHBHHHHBSSBSSSSSSB
-13.9866% HBHHBHHBBBHSBSSHSHSSB
-24.3766% BBBHBBBBBBHBBSSSHSSB
-13.9866% HBHHBHHBBBSSBSSSSSSB
-14.6757% HBHHBHHBBBSSBSSSHSSB

-13.9866% HBHHBHBBSSBSSSHSSB
-4.85658% HHSSBHBBSSBSSSSSSB
-24.455% BBHHBBBBBBHHBHSSSHSSB
-13.9866% HBHHBHBBBSBSSSHSSB
-14.6757% HBHHBHBBSSBSSSHSSB
-15.0729% BBHHBHBBSSBSSSHSSB
-14.6757% HBHHBHBBBSBSSSHSSB

EK

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
-11.5719%

-12.72% SSSHHHSBBBBBBBBBBHHH
-11.2914% SSSSSHSHBBBBBBHHHSS
-12.1089% SSSSHSHBBBBBBHHSH
-10.9271% SSSHSHSHBBBBBBHHHHH
-11.2914% SSSSSHSHBBBBBBHHHSS
-3.06873% SSSSSSHHHBBBBHHHSS
-12.7748% SSSSSSHHBBBBBBHHSS
-14.3375% SSSHSHSHBBBBBBHHSH
-6.2812% SSSSSHSHHBBBBBBHHHSS
-11.2914% SSSSSSHHBBBBBBHHSS
-11.2505% SSSSSHSHBBBBBBHHSH
-9.68478% HSHSHSHHBBBBBBHHHHH
-13.1916% SSSSSHSHBBBBBBHHSH
-12.9833% HSSSSHSHBBBBBBHHHHH
-14.3784% SSSSSSHBBBBBBSS
-14.0438% HSSSSBSBBBBBBBHH
-9.68478% HSHSHSHHBBBBBBHHHHH
-10.1677% SSSSHSHHBBBBBBHHHSH
-13.1916% SSSSSHSHBBBBBBHHSH
-9.68478% HSHSHSHHBBBBBBHHHHH

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-11.4984%

-12.9716% SSHSHSBBBBBBBBBBHH
-11.9481% SSHSHSBBBBBBBBBBHH
-10.6448% SHSHSHSHBBBBBBHHHHH
-13.5767% SSSHSHSBBBBBBBHHSH
-9.42357% SSSHSHSHHBBBBBBHHHHH
-3.96873% SSSSSHSHHBBBBBBHHHSS
-12.2734% SSSSSHSHBBBBBBHHSH
-1.33832% SSSSSSHHHBBBBHHHSS
-12.2734% SSSSSHSHBBBBBBHHSH
-13.5448% SSSSSHSHBBBBBBBHHSH
-13.6951% HHHSSHSHBBBBBBBHHSH
-12.6343% HSSSSHSHBBBBBBHHSH
-3.96873% SSSSSHSHHBBBBBBHHHSS
-13.5767% SSSSHSBBBBBBBHHSH
-11.432% SSHSHSHHBBBBBBHHSH
-12.2734% SSSSSHSHBBBBBBHHSH

-3.96873% SSSSSSHHHBBBBBHHHSS
-1.33832% SSSSSSHHHBBBBBHHHSS
-12.3099% SSSSSSHBBBBBBBBBHHHSS
-3.26955% HSSSHSHHHBBBBBHHHSH
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
-12.9729%

-6.86007% HHSSSHSHHHBBBBBHHHSH
-12.2519% SSSSSSHBBBBBBBHHHSS
-3.74264% SSSSSSHHHBBBBBHHHSS
-6.97622% SSSSSSHHHBBBBBHHHSH
-12.1701% SSSSSSHHBBBBBBBHHHSH
-3.74264% SSSSSSHHHBBBBBHHHSS
-13.9023% SSSSSSHHBBBBBBBHHHSS
-14.3578% SSSSSSHBBBBBBBHHHSH
-14.3578% SHSHSHSHBBBBBBBHHHSH
-13.5043% SHHSHSHHHBBBBBBBHHHSH
-14.1041% SSHSHSHBBBBBBBHHHSH
-3.66079% SSSSSSHHHBBBBBHHHSH
-6.97622% SSSSSSHHHBBBBBHHHSH
-14.2336% SSSSSSHBBBBBBBHHHSS
-4.66026% SSSSSSHHHBBBBBHHHSS
-14.4397% SSSSSSHBBBBBBBHHHSS
-11.6792% SSSSSSHHBBBBBBBHHHSH
-2.95011% SSSSSSHHBBBBBHHHSS
-7.05808% SSSSSSHHHBBBBBHHHSS
-14.3578% SHSSSHSHBBBBBBBHHHSH
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
-12.9171%

-13.4504% SSHSHSHBBBBBBBHHHSH
-10.8246% SSSSSSHHBBBBBBBHHHSS
-14.441% SSSSHSHBBBBBBBHHHSH
-1.109% SSSSSSHHHBBBBBHHHSS
-9.24472% SHSSSHSHHHBBBBBHHHSH
-4.6798% SHSHSHSHHHBBBBBHHHSH
-13.4553% SSSSSSHHBBBBBBBHHHSH
-10.8246% SSSSSSHHBBBBBBBHHHSS
-13.5328% SSSSSSHBBBBBBBHHHSS
-1.85199% SSSSSSHHHHHBBBBBHHHSH
-1.92944% SSSSSSHHHHHBBBBBHHHSS
-10.8246% SSSSSSHHBBBBBBBHHHSS
-10.8246% SSSSSSHHBBBBBBBHHHSS
-12.7423% SSSSSSHHBBBBBBBHHHSH
-2.03583% SSHSSSHHHHHBBBBBHHHSH
-10.8246% SSSSSSHHBBBBBBBHHHSS
-2.92294% SSSSSSSSHBBBBBSSSSS
-14.8778% SSSSSSHBBBBBBBHHHSH
-12.7423% SSSSSSHHBBBBBBBHHHSH
-13.5328% SSSSSSHBBBBBBBHHHSS

GM

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
-37.5378%

-12.4115% SSSSHSHHHBBBBHHHSHS
-20.0146% HSHHHHHBBBBBBBHHS
-10.9248% SSSSHSHHHBBBBHHHSHS
-10.9248% SSSSSSHHHBBBBHHHSHS
-22.1419% HSSSHSHBBBBBBBHHS
-14.3337% SSSSHSHHHBBBBHHHSHS
-14.0889% SSSSSSHHHBBBBHHHSHS
-18.0247% HSSHHHHHHBBBBHHHSHS
-16.951% HSSHHHHHHBBBBHHHSHS
-15.0314% SSSSHSHHHBBBBHHHSHS
-18.4606% HSSHHHHHHBBBBBHHS
-8.98376% SSSSHSHHHHHBBBBHHHSHS
-12.4115% SSSSHSHHHHHBBBBHHHSHS
-26.1806% HSSHBHHBBBBBBBBS
-23.1873% HSSSBHBBBBBBBBS
-19.5343% HSSHHHHHHBBBBBHHS
-20.8258% HSHHHHHHHBBBBBHHS
-20.8258% HSHHHHHHHBBBBBHHS
-14.3311% HSSHHHHHHHHBBBBHHHSHS
-20.6529% HSSSHSHBBBBBBBHHS

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-37.4532%

-23.7664% HSHHHHHHHBBBBBHHS
-9.49149% SSSSHSHHHBBBBHHHSHS
-19.1312% HSSSHSHHHBBBBBHHS
-17.969% HSSHHHHHHBBBBBHHS
-13.4127% HSSHHHHHHHHBBBBHHHSHS
-21.9431% SSSSBHBBBBBBBBS
-24.8823% HSSSBHHBBBBBBBBS
-19.1312% SSSSHSHHHBBBBBHHS
-22.7796% HSSHHHHHHBBBBBHHS
-14.0478% SSSSHSBHHBBBBBHHS
-23.9699% HSSHHHHHHBBBBBHHS
-19.1312% SSSSHSHHHBBBBBHHS
-12.1105% SSSSSSBHHBBBBBHHS
-11.5371% SSSSHSHHHHHBBBBHHHSHS
-15.11% HSSHHHHHHBBBBHHHSHS
-20.7638% HSSSHSHHHBBBBBBBBS
-13.2059% SSSSHSBHHBBBBBHHS
-14.763% HSSSHSHHHBBBBBHHS
-10.3401% HSSHHHHHHHHBBBBHHHSHS
-13.4127% HSSHHHHHHHHBBBBHHHSHS

----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
-38.3297%

-15.8848% SSSSHSHHHBBBBBHHS

-19.0876% HSSSHHHBBBBBBBHHSHS
 -14.9593% SSSSSSBTTTTTBHHSS
 -26.7794% HSSHBHHBBBBBBBBBSHS
 -15.8848% SSSSHSHBBBBBBHHSS
 -17.2916% HSSSHSHBBBBBBHHSHS
 -19.9713% SSSSHSBTTTTTBHHSS
 -17.2916% HSSSHSHBBBBBBHHSHS
 -14.9593% SSSSSSBTTTTTBHHSS
 -25.694% HSSHHHHBBBBBBBBBSHS
 -12.3851% SSSSHSHBBBBBBHHSS
 -11.6361% SSSSHSHBBBBBBHHSS
 -15.0838% SSSSHSHBBBBBBHHSS
 -24.7019% HSSSHHHBBBBBBBBBSHS
 -14.9593% SSSSSSBTTTTTBHHSS
 -9.53129% SSSSHSHBBBBBBHHSS
 -12.3851% SSSSHSHBBBBBBHHSS
 -15.8848% SSSSHSBTTTTTBHHSS
 -11.6361% SSSSSSHBBBBBBHHSS
 -14.3348% SSSSHSHBBBBBBHHSS
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
 -38.2306%

-24.524% HSSHHHHBBBBBBBBBSHS
 -8.53228% SSSSHSHHHBHHHHHS
 -12.989% SSSSSSHBBBBBBHHSS
 -14.8435% SSSSHSBTTTTTBHHSS
 -21.5265% SSSSHSHBBBBBBBBBSHS
 -14.0424% SSSSHSHBBBBBBHHSS
 -17.4092% HSSSHHHBBBBBBHHSHS
 -20.8514% SSSSHSBTTTTTBHHSS
 -20.0502% SSSSHSBTTTTTBHHSS

-20.8514% SSSSHSBTTTTTBHHSS
 -7.05605% SSSSHSHHHBHHHHHS
 -15.5186% SSSSHSHBBBBBBHHSS
 -21.5265% SSSSHSHBBBBBBBBBSHS
 -14.0424% SSSSHSHBBBBBBHHSS
 -13.8071% HSSSHSHHHBBBBBBHHSS
 -15.5186% HSSSHSHBBBBBBHHSS
 -8.53228% SSSSHSHHHBHHHHHS

-21.5265% HSSSHSHBBBBBBBBBSHS
 -15.5186% SSSSHSHBBBBBBHHSS
 -13.132% SSSSHSHBBBBBBHHSS

HON
 ----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
 -35.9736%

-26.5305% HSHSHBBBBBBHHHHSS
 -21.4874% HSSHHHHBBBBBBHHSS

-28.9559% SSSHBBBBBBBBBSHSSHHS
 -26.949% SSHHSBBBBBBBBBHSHSSSSS
 -28.9559% SSSHBBBBBBBBBSHSSHHS
 -24.1108% SSSHHHHBBBBBBHHHSHSH
 -28.9887% SSSHBBBBBBBBBHSHSSSSH
 -31.656% SHSHBBBBBBBBBSHSSSHS
 -30.944% HSSHBBBBBBBBBSHSHSSS
 -30.2754% SSSHBBBBBBBBBSBSSHHS
 -24.1108% SSSHHHHBBBBBBHHHSHSH
 -20.1068% HSSHHHHBBBBBBHHHSSHHS
 -15.0695% SSSSSHHHBBBHSHSSSSS
 -28.9559% SSSHBBBBBBBBBSHSSHHS
 -29.6245% HSSHHBBBBBBBBHHHSSSS
 -27.6081% SSSHBBBBBBBBBHSHSSSSS
 -24.1108% SSSHHHHBBBBBBHHHSHSH
 -27.7691% HSHHHHBBBBBBBHSHHSSSS
 -13.8615% SSSHSHHHBBHHHHHHHSSH
 -26.5305% HHHHSHBBBBBBBHSHHHS
 ----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
 -35.9147%

-28.1336% HHHHSBBBBBBBHSHHSHHH
 -20.6733% HHS SHHBBBBBBHSHSSHS
 -27.3481% HSSHSBBBBBBBBBSHSHHS
 -28.7415% HSSHHBBBBBBBBBSHSSHS
 -13.0046% SSSHSHHHBBBHSHSSSSS
 -23.931% SSSHSHBBBBBBBHSHSSSSS
 -25.4636% HSHSHBBBBBBBHHHSSSSS
 -22.7955% HSHHHHHBBBBBBBHSHSHSS
 -26.503% SHSHHBBBBBBBBSHSHSSS
 -28.7415% HSSHBBBBBBBBBBHHHSSSS
 -28.7232% SSHHHBBBBBBBBBBHHHSHSH
 -28.1336% HHHHSBBBBBBBHHHSHSH
 -26.503% SHSHHBBBBBBBHHHSSSHS
 -22.0667% HSHHHHHBBBBBBHHHSSSS
 -10.2335% SSSSSHHHBBBHSSSSSSS
 -30.1456% SSHHBBBBBBBBBBHSHSHS
 -30.9081% SSSHBBBBBBBBBSBHSSSH
 -26.1512% SSHHSHBBBBBBBHHHSHHH
 -16.2937% SSSHSHHBBBBBBHHHSSSSS
 -27.2318% SSHHHBBBBBBBHHHSSSS
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
 -36.8901%

-22.1714% SSSHSHBBBBBBBHSHHSSHS
 -27.7058% SSHHSBBBBBBBBHHHSHSHS
 -31.5898% SSHHBBBBBBBBBSHHSSSS
 -10.705% SSSSSHHHBBBHSSSSSSS
 -23.5123% SHSHSHHBBBBBBHHHSHSH
 -31.5898% SHHHBBBBBBBBBSBSSHHS
 -22.1714% SSSHSHHBBBBBBBHSHSHSHS

-15.5294% SSSSHHHBBBHHSSSSSS
 -27.3202% SHSHHHBBBBBBHHHSHHHS
 -27.7058% SSHHSBBBBBBBHHHSSSHS
 -31.1331% SHSHBBBBBBBBSHSSSHS
 -26.1221% SSSSHBBBBBBBHHHSSSHS
 -29.0467% SHHHSBBBBBBBBSHSSHHH
 -28.9039% SHHHHBBBBBBBHHHSHHSS
 -26.5788% SSHHSBBBBBBBBSHSSSSS
 -27.7769% SSHHHBBBBBBBBSHSHSHS
 -27.7058% SSHHSBBBBBBBHHHSSSHS
 -30.2916% SHHHHBBBBBBBBSHSHHSS
 -15.5294% SSSSHHHBBBHHSSSSSS
 -19.2547% SHHSHHBBBBBHHHSHSHS
 ---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] ----
 -36.8196%

-27.4346% SHSHSBBBBBBBHHHSSHH

 -26.8756% HSSHHBBBBBBBHHHSSSHS
 -28.7852% SHSHHBBBBBBBBSHSHSHS
 -19.2283% SSSSHHBBBBBSSSSSSS
 -26.5884% SSHHSBBBBBBBBSHSHSSS
 -19.2283% SSSSHHBBBBBSSSSSSS
 -30.2639% SSSHBBBBBBBBSHSHSSS
 -20.5393% SSSSHHBBBBBBSHSSSSS
 -35.599% BSHBBBBBBBBSHSHSHS
 -28.6991% HSHHHBBBBBBBHHHSSSSS
 -27.939% SHHHHBBBBBBBHHHSHSS
 -23.3532% HHHSHHBBBBBHHHSSSSH
 -24.7648% SSSSHBBBBBBBHHHSSSSS
 -31.024% HSHHBBBBBBBBSBSSSHS
 -19.2283% SSSSHHBBBBBSSSSSSS
 -24.7648% SSSSHBBBBBBBBSHSSSHS
 -30.2639% SSSHBBBBBBBBSHSHSSS
 -26.2148% SSSSHBBBBBBBBSHSHSHH
 -31.024% HSHHBBBBBBBBSBSSSHS
 -25.9846% SSSHSBBBBBBBBSHSSSSS

HPQ
 ---- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] ----
 -33.8176%

-30.4165% HBBBBBBBBBSHSSSHSSH
 -13.8331% HHHHBBBBBHHHSHSHHSHS
 -27.301% HHBBBBBBBBSHSSSHSSS
 -24.0095% HHHBBBBBBBHHHSHSHSHS
 -23.6957% HHHBBBBBBBBSHSSSSSHS
 -25.4165% HHBBBBBBBBSHSSSSSHS
 -23.6957% HHHBBBBBBBBSHSSSSSHS
 -19.2482% HHHBBBBBBBHHHSSSSSSS
 -25.4165% HHBBBBBBBBSHSSSSSHS

-19.2482% HHHBBBBBHHHSSSSSSSS
 -22.1451% HHHBBBBBHHSSSSSSSS
 -31.7467% BBBBBBBBBBHHSHSSSSH
 -23.6543% HHHBBBBBHHHHHSHSS
 -22.4472% SHHBBBBBBHSSSSSSSS
 -22.1451% HHHBBBBBHHSSSSSSSS
 -23.6957% HHHBBBBBHHSSSSSSSS
 -11.2905% HHHHHHHHHSSSSSSSS
 -28.5107% HBBBBBBBBBSSSHSSHS
 -27.301% HHHBBBBBSSSHSSSS
 -19.7349% SSHBBBBBHHSSSSSSSS
 ---- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] ----
 -33.7597%

-17.8641% HHHBBBBBHHHSSSHSSHS
 -23.054% HHHBBBBBHHSHSSSHSSH
 -24.6299% HHBBBBBBHSSSHSSSS
 -22.6869% HHHBBBBBHHHSHSHSS
 -30.0397% HBBBBBBBBBSHSSSSHH
 -24.758% HHHBBBBBHHSHSSSHSH
 -26.6989% HHBBBBBBBBSHHSHSHS
 -26.6989% HHBBBBBBBBSSSSSSSS
 -11.309% HHHHHHHHSSSHSSSSH
 -24.6299% HHBBBBBBHSSSSSSSS
 -22.7238% HHHBBBBBHHSSSHSSSS
 -31.5871% BBBBBBBBBBSHSSSSHH
 -30.0397% HBBBBBBBBBSSSHSSHH
 -24.5931% HHBBBBBBHSHSSSHSS
 -26.6989% HHBBBBBBBSHSSSSSS
 -19.5964% SHHBBBBBBHSSSSSSSS
 -28.7332% HHBBBBBBBBSHSSSHSSH
 -24.5931% HHBBBBBBHSHSSSSSS
 -19.5964% SHHBBBBBBHSSSSSSSS
 -17.901% HHHBBBBBHHHSSSSSSHS
 ---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] ----
 -34.8379%

-24.6739% HHHBBBBBHHHSHSSSHH
 -14.2851% HHHHHHHHSSSHSSSS
 -24.4812% HHHBBBBBHHSSSSSSSS
 -32.6815% BBBBBBBBBBSBHSBHSBH
 -16.1513% HHHHHHHHSSSHSHSHH
 -13.1193% SHHHHHHSSSSSSSS
 -28.114% HHBBBBBBBSHSHSHSS
 -16.1513% HHHHHHHHSSSHSHSHH
 -24.7567% HHHBBBBBHHSSSHSSSH
 -28.1019% HHBBBBBBHSHHSHSH
 -26.3475% HHHBBBBBBSHSSSHHH
 -22.8905% HHHBBBBBHHSHSSSHS
 -24.4812% HHHBBBBBBSHSSSHHS
 -24.4812% HHHBBBBBBSHSSSHHS

-16.1513% HHHHBBBBHHHSSSHSHSHH
-28.0311% HHBBBBBBBBBHSSSSSHSS
-26.2357% HHBBBBBBBBBHSHSSSHSSS
-26.2357% HHBBBBBBBBBHSSSHSHSSS
-28.0311% HHBBBBBBBBBHSSHHSSHS
-21.8214% HHHBBBBBBHHHSSSHSHSHH
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
-34.7839%

-25.4082% HHBBBBBBBBBHSHSSSHSSHS

-25.4082% HHBBBBBBBBBHSSHHHSHHS
-23.6819% HHHBBBBBBBHHHSHSHHHH
-18.565% HHHBBBBBBBHHHSHSHHHSS
-18.565% HHHBBBBBBBHHHSHSHHHHS
-23.7602% HHHBBBBBBBHHHSHSHSHSH
-25.5067% HHHBBBBBBBBSHSSSHSSH
-21.6891% HHHBBBBBBBHHHSHSSSSS
-27.4317% HHBBBBBBBBBHSSSHSSHS
-21.6891% HHHBBBBBBBHHHSSSSSSHS
-12.3004% HHHHBBBBBHHHSHSSSSS
-23.7602% HHHBBBBBBBHHSSSHSSSH
-21.7675% HHHBBBBBBBHSHSHSHSHS
-21.7675% HHHBBBBBBBHHSSSSSSHS
-11.0408% SHHHBBBBBHHHSSSSSSSS
-23.5139% HHHBBBBBBBBSHSSSHSSS
-18.565% HHHBBBBBBBHHSSSSSSSS
-23.5139% HHHBBBBBBBBSHSHSSSHS
-21.7675% HHHBBBBBBBHHSSSHSSSS
-25.4082% HHBBBBBBBBBHSSSHSHSS

IBM
----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
-18.6026%

-12.7905% HSHSSBBBBBBBBBHSSSSS
-13.257% HSHSHBBBBBBBBBHSSSSS
-13.8038% HSHSBBBBBBBBBHSHSSS
-12.7905% SSHSSBBBBBBBBBHSSSSS
-8.69205% HSHHHHHBHHBHHHSHSSS
-13.257% HSHSHBBBBBBBBBHSSSSS
-7.93165% HSHSHHHBBBBBHHHSHSSS
-7.46517% SSHSSHBBBBBHHHSHSSS
-7.93165% HSHSHHHBBBBBHHHSHSSS
-13.257% HSHSHBBBBBBBBBHSHSSS
-8.69205% HSHHHHHBBBBBHHHSHSSS
-15.3131% HSHHBBBBBBBBBHSHHHS
-15.4346% HSHHBBBBBBBBBHSHSSS
-11.9313% HSHHHHHBBBBBBHSHSHS
-10.4221% HSHSHBBBBBBBBBHSSSSS
-14.5642% HSHHBBBBBBBBBHSHHHS

-10.4221% HSHSHHBBBBBBBHHSHSSS
-4.21094% SSSSSHBBBHHSSSSSSS
-10.1763% HHHHHBBBBBBBHHSHSSS
-13.257% HSHSHBBBBBBBHHSSSSS
----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-18.4135%

-5.83757% HSHSHHBBBBBBBHHSHSSS
-5.25892% HSHSSHBBBHHSSSSS
-9.60135% HSHHHBBBBBBBHHSHSSS
-8.72079% HSHSHHBBBBBBBHHSHSSS
-8.14214% HSHSSHBBBBBBBHHSSSSS
-6.6833% HSHHHHHBBBBBBBHHSSSH
-8.72079% HSHSHHBBBBBBBHHSHSSS
-12.0672% HSHSHBBBBBBBHHSHSSS
-13.7627% HSHHHBBBBBBBHHSHSHH
-8.72079% HSHSHHBBBBBBBHHSSSSS
-5.25892% HSHSSHBBBBBBBHHSSSSS
-8.14214% HSHSSHBBBBBBBHHSSSSS
-5.83757% HSHSHHBBBBBBBHHSSSSS
-8.14214% HSHSSHBBBBBBBHHSSSSS
-12.9478% HSHHHBBBBBBBHHSHSSS
-13.7427% HSHSBBBBBBBBHHSHSSS
-13.5754% HSHHBBBBBBBHHSHSHS
-9.60135% HSHHHBBBBBBBHHSHSSS
-12.0672% HSHSHBBBBBBBHHSSSSS
-14.6233% HSHHBBBBBBBHHSHSSS
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
-19.9967%

-12.6132% HSHHHHBBBBBBBHHSHSHS
-11.9055% HSHHHHBBBBBBBHHSHSSS
-11.1865% HSHSHHBBBBBBBHHSSSSS
-8.69581% HSHSHHBBBBBBBHHSHSSS
-8.26951% HSHSSHBBBBBBBHHSSSSS
-11.1865% HSHSHHBBBBBBBHHSHSSS
-8.26951% SSHSSHBBBBBBBHHSSSSS
-12.6132% HSHHHHBBBBBBBHHHHSHS
-15.727% HSHSBBBBBBBBHHSHSSS
-11.1865% HSHSHHBBBBBBBHHSHSSS
-11.1865% HSHSHHBBBBBBBHHSHSSS
-10.7602% HSHSSHBBBBBBBHHSSSSS
-8.69581% HSHSHHBBBBBBBHHSSSSS
-16.3678% HSHHBBBBBBBHHSSSH
-15.5372% HSHHBBBBBBBHHSHSSS
-11.1865% HSHSHHBBBBBBBHHSHSSS
-16.2448% HSHHBBBBBBBHHHHHHS
-8.69581% HSHSHHBBBBBBBHHSSSSS
-11.1865% HSHSHHBBBBBBBHHSHSSS
-8.26951% HSHSSHBBBBBBBHHSSSSS
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----

-19.8192%

-6.08512% HSHSSHBBBHHSSSSS
-18.8407% HSBHBBBBBBBBBSHSS
-6.62189% HSHSHHHBBBBHHSSSS
-15.3899% HSHHBBBBBBBBBHSHSHS
-6.36812% SSSSHBBBBBBHSSSSS
-15.6366% HSHHBBBBBBBBBHSHSSS
-8.95073% SSHSSHBBBBBBHSSSSS
-15.0409% HSBSBBBBBBBBBHSSSSS
-13.7455% HSHSBBBBBBBBBHSHSSS
-8.95073% HSHSSHBBBBBBHSSSSS
-8.95073% HSHSSHBBBBBBHSSSSS
-9.48749% HSHSHHBBBBBBHSSSSS
-8.95073% HSHSSHBBBBBBHSSSSS
-6.62189% HSHSHHBBBBBBHSSSSS
-6.08512% SSHSSHBBBBHHSSSSS
-11.0579% HSHHHHBBBBBBHSHSHH
-8.95073% SSHSSHBBBBBBHSSSSS
-6.62189% HSHSHHBBBBBBHSSSSS
-13.8786% HSHHBBBBBBBBBHSHSSS
-13.7455% HSHSBBBBBBBBBHSHSSS

MCD

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----

-40.1944%

-28.4715% SHHBBBHHBSSBSSHSHB
-13.0457% SSSHBBHHHBSSSSSSSB
-18.6522% SHHHBBHHBSSBSSSSSB
-18.6522% SHHHBBHHBBHSHSSSSB
-18.6522% SHHHBBHHBSSBSSSSHBB
-28.4715% SHHBBBHHBSSBSSHSHB
-18.6108% HHHHBBHHBBHSHSSSB
-28.4715% SHHBBBHHBBHSHSSHB
-29.926% SHHBBBBBBBHSBSSHSHB
-18.6522% SHHHBBHHHBSSBSSSSSB
-18.6108% HHHHBBHHHBSSHSSSSSB
-28.4715% SHHBBBHHBSSBSSHSSSB
-13.0457% SSSHBBHHHBSSSSSSSB
-40.1516% SBHHBBBBBBSSBSSHSHB
-18.6522% SHHHBBHHHHSHSHSSSB
-37.8143% HHBBBBBBBBSSBSSSSSB
-12.404% SHHHBBHHHHSSHSSSSH
-18.6522% SHHHBBHHBSSBSSHSSSB
-13.0457% SSSHBBHHHBSSSSSSSB
-12.404% SHHHBBHHHHSSHSHSHB

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----

-40.1459%

-16.8048% SHHHBBHHHBSSBSSSSSB

-16.768% HHHHBBHHHBHSBHSSSSB
-16.8048% SHHHBBHHBSSBSSSSSHB
-16.768% HHHHBBHHBSSBSSSSSSB
-27.3027% HHHBBBHHBBBHSBSSSSB
-16.8048% SHHHBBHHBSSBSSSSSHB
-16.768% HHHHBBHHBSSBSSSSSHB
-27.3395% SHHBBBHHBSSBSSSSSSB
-27.3395% SHHBBBHHBSSBSSSSSHB
-27.3395% SHHBBBHHBSSBSSSSSHB
-15.688% SSHHBBHHBSSBSSSSSSB
-16.8048% SHHHBBHHBSSBSSSSSHB
-16.8048% SHHHBBHHBSSBSSSSSSB
-40.0925% SBBBBBBBBBHSBSSSSB
-16.8048% SHHHBBHHBSSBSSSSSSB
-16.8048% SHHHBBHHHBHSBSHSSHB
-16.768% HHHHBBHHBSSBSSSSSHB
-28.9404% SHHBBBBBBBHSBSSSHSB
-16.8048% SHHHBBHHHBSSBSSSSSSB
-28.9035% HHHBBBBBBBSSBSSSSB
---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] ----
-41.0456%

-19.0958% SHHHBBHHBSSBSSSSSSB
-30.5533% SHHBBBBBBBSSBSSSSSSB
-29.0306% HHHBBBHHBSSBSSSSSHB
-19.0958% SHHHBBHHBSSBSSSSSHB
-19.0958% SHHHBBHHBSSBSSSSSHB
-19.0131% HHHHBBHHBSSBSSSSSHB
-40.9144% SBBBBBBBBBHSBSSSHSB
-19.0958% SHHHBBHHBSSBSSSSSHB
-27.024% SSHBBBHHBSSBSSSSSSB
-19.0958% SHHHBBHHBSSBSSSSSHB
-29.0306% HHHBBBHHBSSBSSSSSHB
-19.0958% SHHHBBHHBSSBSSSSSHB
-19.0958% SHHHBBHHBSSBSSSSSSB
-19.0131% HHHHBBHHHBHSBSSSSSHB
-30.5533% SHHBBBBBBBHSBSSSSSSB
-19.0958% SHHHBBHHBSSBSSSSSHB
-19.0958% SHHHBBHHBSSBSSSSSHB
-19.0131% HHHHBBHHBSSBSSSSSHB
-19.0958% SHHHBBHHBSSBSSSSSSB
-29.0306% HHHBBBHHBSSBSSSSSHB
---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] ----
-40.9943%

-27.9848% SHHBBBHHBSSBSSSSSHB
-17.2521% SHHHBBHHBSSBSSSSSHB
-17.2521% SHHHBBHHBSSBSSSSSHB
-17.2521% SHHHBBHHBSSBSSSSSHB
-17.2521% SHHHBBHHBSSBSSSSSHB
-40.8498% SBBBBBBBBBHSBSSSSSHB

| | |
|-----------|-----------------------|
| -17.2521% | SHHHBBHHHBSSBSSSSSHSB |
| -16.1773% | SSHHBBHHHBSSHSSSSSSB |
| -17.1738% | HHHHBBHHHBHHHSSSHSHB |
| -17.2521% | SHHHBBHHHBBSBHSSSHHSB |
| -29.4895% | HHHBBBBBBBBSHBSHHHSHB |
| -17.2521% | SHHHBBHHBBSHBSHSSSSB |
| -27.9848% | SHHBBBBHHBBSBSSHSSSB |
| -29.5677% | SHHBBBBBBBBSSBSSSHHSB |
| -17.1738% | HHHHBBHHBBSHBSSSHSSB |
| -17.2521% | SHHHBBHHBBSBSSSHSHHB |
| -27.9848% | SHHBBBBHHBHHBSHSHSHB |
| -17.1738% | HHHHBBHHBBSBSSHSHHHB |
| -17.2521% | SHHHBBHHBBSBHSSSHSHHB |
| -17.2521% | SHHHBBHHHBSSBSSSSSSB |

PG

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
20.397%

| | |
|----------|-----------------------|
| 7.60417% | SSBSBSSHBBHBBSBBSBHSB |
| 2.73267% | SSBSHSSHBHHBHSBSBHSB |
| 9.61904% | SSBSBHHHBBHBBSBHBHBB |
| 2.8374% | SSBSHSSSBHBHSHSBHSB |
| 2.00865% | SSBSHSSSBHHBHSBSBHSB |
| 8.02141% | SSBSBSHHBBHBBSBHBHBB |
| 8.02141% | SSBSBSHHBBHBBSBHBHBB |
| 15.3324% | SSBSBSHBBBBBBSBHBHBB |
| 2.8374% | SSBSHSSSBHBHSHSBHSB |
| 5.92952% | SSBSHSSHBHBHSHHBSBHSB |
| 1.37635% | SSBSHSSSBHSBHSBSBHSB |
| 14.1356% | HHBHBHHHBBBBBHBHBBHB |
| 1.72397% | SSBSHSSSBBSBHSBSBHSB |
| 5.92952% | SSBSHSSHBHBHSHHBBHBB |
| 5.92952% | SSBSHSSHBHBHSHHBBHBB |
| 6.34677% | SSBSHSHHBBHBBSBHBHBB |
| 2.8374% | SSBSHSSSBHBHSHSBHSB |
| 2.73267% | SSBSHSSHBHHBHSBHBBHBB |
| 2.00865% | SSBSHSSSBHHBHSBSBHSB |
| 2.00865% | SSBSHSSSBHHBHSBSBHSB |

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
20.5186%

| | |
|----------|----------------------|
| 4.66259% | SSBSHSSHBHHHSHHBBHBB |
| 7.87797% | SSBSHSSHBHBHBSBHBHBB |
| 9.42083% | SSBSBSSHBBHBBSBHBHBB |
| 7.87797% | SSBSHSSHBHBHSHSBHSB |
| 9.74338% | SSBSBSHHBBHBBSBHBHBB |
| 9.74338% | SSBSBSHHBBHBBSBHBHBB |
| 4.09266% | SSBSHSSSBBSBSSHSBSSB |
| 9.74338% | SSBSBSHHBBHBBSBHBHBB |
| 7.87797% | SSBSHSSHBHBHBSBHBHBB |

9.42083% SSBSBSSHBBHBHSBSBHSB
4.00109% SSBSHSSSBHHHSHSBHSH
3.39538% SSBSHSSSBHSHHSHSBHSH
9.42083% SSBSBSSHBBHBHSBSBHSB
5.0295% SSBSHSSSBHBBHSHSBHSH
5.30067% SSBSHSSHBHBBHSHSBHSH
9.55547% HSBSHHHHBBHBHHHHBHHB
9.74338% SSBSBSHHBBHBSBHBHHB
8.20053% SSBSHSHHBBHBHSBHBHHB
11.0983% SSBSBHHHBBHBHSBHBHHB
9.42083% SSBSBSSHBBHBSBHBHHB
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----
18.5646%

4.82789% SSBSHSSHBHBBHSHHBBHSB
0.679959% SSBSHSSSBHBSBHSBHSBHSB
4.82789% SSBSHSSHBHBBHSHSBHSH
5.2828% SSBSHSHHBBHBHSHHBBHHB
15.4199% SSBSBHHBBBBBBSBHBHHB
6.96253% SSBSHHHHBBHBHSBHBHHB
6.46316% SSBSBSSHBBHBHSBHBHSB
6.91808% SSBSBSHHBBHBSBHBHHB
1.61402% SSBSHSSSBHBBHSHSBHSH
0.642969% SSSHSSSBHHHSHSBHSH
6.46316% SSBSBSSHBBHBSBHBHHB
3.24931% SSBSBSSSBHBBBSBHSBHSB
4.82789% SSBSHSSHBHBBHSHHBBHHB
8.59782% SSBSBHHHBBHBHBBHBBHHB
6.91808% SSBSBSHHBBHBHSBHBHHB
4.82789% SSBSHSSHBHBBHBSBHSBHSB
1.40735% SSBSHSSHBHHHSHSBHSH
7.39601% SSBSBSSSBHBBBSBBSB
4.82789% SSBSHSSHBHBBHSHHBBHSB
4.82789% SSBSHSSHBHBBHBSBHBHHB
----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
18.6882%

13.7609% SSBSBHHHBBBBBSBHBHHB
6.76423% SSBSHSSHBHBBHBSBHBHSB
7.12589% SSBSHSHHBBHBHSHHBBHHB
14.3859% SSBSBSSBBBBBBSBHBHHB
10.0682% SSBSBHHHBBHBHBSBHBHHB
7.12589% SSBSHSHHBBHBHBSBHBHHB
6.76423% SSBSHSSHBHBBHBSBHBHSB
3.79033% SSBSHSSSBHBBHSHSBHSH
10.0682% SSBSBHHHBBHBSBHBHHB
14.7475% SSBSBSHBBBBBBSBHBHHB
10.0682% SHBHBHHHBBHBBHBBHHB
10.0682% SSBSBHHHBBHBBHBBHHB
8.26578% SSBSBSSHBBHBHSBHBHSB
10.0682% SSBSBHHHBBHBBHBBHHB

| | |
|----------|----------------------|
| 4.52697% | SSBSHHHHBHHHSHHBHBB |
| 4.0365% | SSBSHSSHBHHHSHHBHBS |
| 6.76423% | SSBSHSSHBHBBHSHSBHBS |
| 8.26578% | SSBSBSSHBHBBHSHBHHB |
| 8.62743% | SSBSBSHHBHHBBSBHHB |
| 7.12589% | SSBSHSHHBBHBSHHBHHB |

T

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----
-31.8865%

| | |
|-----------|----------------------|
| -28.0089% | BSBHSHHBBBBBBBBBSBHS |
| -19.2311% | HSSSHSSSHBBBBBSSSS |
| -20.3221% | HHHSSHSHSHBBBBBSHHH |
| -25.9279% | BHSHSHSBHHBBBBBSSSH |
| -22.9938% | BHHHSSSHSBBBBBBSHHH |
| -24.8369% | BHSSHHHHBBBBBBSHHS |
| -25.9279% | BHHHSSHHBBBBBBSHHH |
| -16.61% | HSSSSSHSHBBBBBSHSS |
| -16.61% | HSHSSSHSHBBBBBSHSS |
| -21.9028% | HHSSHHHSBBBBBBSHHS |
| -21.9028% | BHSHSSHSBBBBBBSHSS |
| -13.2029% | HHSSHSHSHHHBBBHSSSS |
| -24.8369% | HSSHHHHHHBBBBBSSSS |
| -14.255% | HHHSHSSSHHHBBBHSSSH |
| -13.164% | HSSSSSHSHHHBBBHSSSS |
| -13.2029% | HSSSSSSSHHHBBBHSSSS |
| -22.9938% | HSHHHHSHSBBBBBBSHHH |
| -19.544% | HSSHSHSHHHBBBBBSHSS |
| -25.9279% | BHSHSHSBHHBBBBBSSHH |
| -24.8369% | BHSSHSBHHBBBBBBSBHS |

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----
-31.6954%

| | |
|-----------|----------------------|
| -25.1411% | HSSSHSHHHBBBBBBSHSH |
| -23.9525% | HHSSSHHHBBBBBBSHSS |
| -17.7709% | HHHSHSHSHBBBBBBSHSS |
| -17.7709% | HSSHSHHHSHBBBBBSSSS |
| -16.146% | HSHSSSHSHBBBBBSHHH |
| -25.1411% | HHSBHHHHBBBBBBSHSS |
| -19.3811% | HSSHSSHHHHBBBBBSHSH |
| -11.0936% | HHSSHSSSHHHBBBBBSHHS |
| -18.1925% | HSSHSSHHHHBBBBBSHSS |
| -14.9574% | HSSSSSSSHBBBBBSHSS |
| -23.9525% | HHSSHHHHBBBBBBSHSH |
| -21.906% | BSSSBHHSBBBBBBSHSH |
| -21.906% | BSSHSSSHSBBBBBBSHSH |
| -11.0503% | HHSSSHHSHHHBBBHSSSS |
| -14.3286% | HSSSHSSHHHHBBBBBSHSS |
| -23.9525% | HSHSHSSHHBBBBBBSHSS |
| -14.3286% | HHHSHHHHHHHBBBBBSHHS |

-22.1946% HHHSHSHHHHBBBBBBSHHH
-17.7709% HHSSSHSHSHBBBBBBSHHS
-22.1946% HSHSHSHHHHBBBBBBSHHH
---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] ----
-32.4199%

-9.52738% HSSSSSHSHHHBBBHSSSS
-25.2922% HSHSHSHHHHBBBBBBSSSS
-25.2922% BSSSSSHSHHBBBBBBSSSS
-26.3434% BHHHSSHHHBBBBBBSHHH
-22.4771% HSSSHSSHSBBBBBBSSSS
-26.3434% BHSSSHSHHBBBBBBSHH
-13.3102% HSSSHSHSHHBBBBBHSSSS
-17.1765% HSSHSSSHHHBBBBHSHSH
-17.1765% HHHSHHHHHHBBBBBHSSSH
-25.2922% BHSSSHHHHBBBBBBSSSS
-23.5557% HHSSSHSHHHBBBBBBSHH
-19.6893% HSSSHHHSHHBBBBBBSSSS
-26.3434% BSHHHSHHHHBBBBBBSHH
-22.5045% HSSSHSHHHHBBBBBBSSSS
-26.3434% BHHSSSHHBBBBBBSHSH
-23.5283% HHSSSHSHSBBBBBBSHHH
-25.2922% HSSHSSSHHBBBBBBSHHS
-22.4771% BHSSHSHSBBBBBBSHHS
-17.1765% HSHSHSHHHHHBBBBHSSHH
-22.4771% HSSSSSHSBBBBBBSSSS
---- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] ----
-32.1916%

-25.5261% BHHSBHSHHBBBBBBSHSH
-19.3479% HSSSSHHSHHBBBBBBSHH
-19.3479% HSHSHSSSHHBBBBBBSHH
-24.3788% HHHHHHHHHHBBBBBBSHHS
-21.2672% BHSSHSHSBBBBBBSSSS
-21.3122% HSHSHSHHHHBBBBBBSHSS
-19.5661% HHSSSHSHHHBBBBBHSSSH
-16.4546% HHSSSHSHSHHBBBBBHSSHH
-25.5261% HSHSSSHHHHBBBBBBSSSH
-24.3788% BHHHHSSBHBBBBBBSSSS
-21.3122% HSSSSSHHHHBBBBBBSHSH
-22.4145% BHHHSHSBSBBBBBBSHH
-18.4189% HSSSHSHHHHBBBBBHSSSS
-22.4145% BHHSSSHSSBBBBBBSHH
-11.1611% HSSSSSSSHHBBBHSSSS
-22.4145% BSHSSSHSBBBBBBSHH
-24.3788% BSBSHSHHBBBBBBSBS
-24.3788% BSHSHSHHBBBBBBSSSS
-18.2006% HSSSSSHSHBBBBBBSSSS
-19.5661% HHSSSHSHHHBBBBBHSSSH

UTX

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 0%] -----

-4.38479%

| | |
|------------|-----------------------|
| -3.32268% | SSSSSBSSBBBHHBHSBSSB |
| -2.43592% | SSSSSBHHBBHHBHSBHHB |
| -2.08368% | SSSSSBHBBBHHBHSBHSB |
| -1.49831% | SSSSSBSSBBHHHHHSBHSB |
| -1.18754% | SSSSSBSSBBHHBHSBHSB |
| -1.49831% | SSSSSBSSBBHHHHHSBHSB |
| -2.08368% | SSSSSBHBBBHHBHSBHSB |
| -5.37446% | HSSHSBHHBBBBBBBHHBHHB |
| -6.5496% | SSSSSBSSBBBBBBBSBHHB |
| -5.35833% | SSSSSBHHBBBBBBBHSBHHB |
| -4.17408% | SSSSSBSSBBBBBBHSSBSSB |
| -5.00611% | SSSSSBHBBBBBBBHSBHHB |
| -0.712174% | SSSSSBHBBHHHHHSBHSB |
| -5.37446% | HSSSSBHHBBBBBBBHHBHHB |
| -5.35833% | SSSSSBHHBBBBBBBHSBHHB |
| -2.39447% | SSSSSBHBBBHHHHHSBHSB |
| -1.49831% | SSSSSBSSBBHHHHHSBSSB |
| -2.08368% | SSSSSBHBBBHHBHSBHHB |
| -5.37446% | HSSSSBHHBBBBBBBHHBHHB |
| -5.02223% | SSSSSBHBBBBBBBSBHHB |

----- [Transaction Amount: \$1000, Transaction Fee: 1.5%, Interest: 2%] -----

-4.28587%

| | |
|------------|-----------------------|
| 0.958984% | SSSSSBSSBBHHHHSSBSSB |
| 0.958984% | SSSSSBSSBBHHHSSSHSSB |
| 0.965234% | SSSSSBSSBBHHBHSBHSB |
| -4.29013% | SSSSSBHHBBBBBBHHBHHB |
| -4.29013% | HSSSSBHHBBBBBBHHBHHB |
| -0.312988% | SSSSSBHBBBHHHHHSBHSB |
| -4.45487% | HSSHHBHHBBBBBBBHHBHHB |
| 0.878885% | SSSSSBSSBBHHHHHSBSSB |
| -3.22511% | SSSSSBHHBBBBBHHHHBHHB |
| -4.29013% | HSSHSBHHBBBBBBBHHBHHB |
| -0.312988% | SSSSSBHBBBHHHHHSBHSB |
| -0.226617% | SSSSSBHBBBHHBHSBHHB |
| -4.45487% | HSHHSBHHBBBBBBBHHBHHB |
| 0.878885% | SSSSSBSSBBHHHHHSBSSB |
| -4.29013% | HSSSSBHHBBBBBBBHHBHHB |
| -0.226617% | SSSSSBHBBBHHBHSBHSB |
| 0.878885% | SSSSSBSSBBHHHHHSBHSB |
| -0.656793% | SSSSSBHHBBHHBHSBHHB |
| 0.275065% | HHSBHHBBHHBHHHHBHHB |
| -3.22511% | SSSSSBHHBBBBBHHHHBHHB |

----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 0%] -----

-5.80378%

| | |
|-----------|-----------------------|
| -5.4541% | SSSSSBHHBBBBBHHHHBHHB |
| -6.36884% | SSSSSBHHBBBBBBBHHBHHB |

-5.14322% SSSSSBSHBBBHBHHSBHHB
 -3.32951% SSSSSBHHBBHHHHHHBHHB
 -6.36884% SSSSSBHHBBBBBBBBBHHBHHB
 -6.31259% HSSSSBHHBBBBBBHHHBHHB
 -3.01861% SSSSSBSHBBHHHHHSBHSB
 -3.01861% SSSSSBSHBBHHHHHSBHHB
 -5.4541% SSSSSBHHBBBHHHHBHHB
 -2.08595% SSSSSBSSBBHHBHHSBSSB
 -2.78091% SSSSSBSHBBHHBHHSBHSB
 -5.4541% HSHHSBHHBBBBBHHHHBHHB
 -5.14322% SSSSSBSHBBBHBHHSBHHB
 -6.36884% SSSSSBHHBBBBBBBBBHHBHHB
 -6.31259% SSSSSBHHBBBBBBHHHBHHB
 -1.22312% SSSSSBSHBBHHHHHSHHHB
 -6.00169% SSSSSBSHBBBBBBHSBHHB
 -5.4541% HSSHBSHHBBBBBHHHHBHHB
 -6.36884% HSSSSBHHBBBBBBBBBHHBHHB
 -6.31259% SSSSSBHHBBBBBBHHHBHHB
 ----- [Transaction Amount: \$1000, Transaction Fee: 3%, Interest: 2%] -----
 -5.70334%

-3.70734% SSSSSBSHBBBHBHHSBHSB
 -0.91263% SSSSSBSHBBHHBHHSBHHB
 -0.91263% SSSSSBSHBBHHBHHSBHSB
 -4.09497% SSSSSBHHBBBBBHHHHBHHB
 -3.70734% SSSSSBSHBBBHBHHSBHHB
 2.14377% SSSSSBSSBHHHHHSSHSSB
 -4.09497% SSSSSBHHBBBBBHHHSBHHB
 -5.22682% SSSSSBHHBBBBBBBHHBHHB
 0.0735569% SSSSSBSSBBHHBHHSBHSB
 -0.93316% SSSSSBSHBBHHHHHSBHSB
 -0.93316% SSSSSBSHBBHHHHHSBHSB
 -5.4339% SSSSSBHHBBBBBBBBBSBHHB
 -0.93316% SSSSSBSHBBHHHHHSBHHB
 -5.4339% SSSSSBHHBBBBBBBBBHHBHHB
 -0.91263% SSSSSBSHBBHHBHHSBHHB
 -4.83919% SSSSSBSHBBBBBBHSBHSB
 -3.70734% SSSSSBSHBBBHBHHSBHSB
 -5.4339% HSSHHBHHBBBBBBBBBHHBHHB
 -5.4339% SSSSSBHHBBBBBBBBBSBHHB
 -0.91263% SSSSSBSHBBHHBHHSBHSB

Appendix F - Program Source Code

```
/////////////////////////////////////////////////////////////////
// This program is designed to use a genetic algorithm to devise a mechanical //
// investment strategy that can best the practice of dollar cost averaging. //
// It builds its strategy based on the history of share price changes of a //
// given investment. //
// //
// The software for this work uses the GALib genetic algorithm package written //
// by Matthew Wall at the Massachusetts Institute of Technology. The copyright //
// for GALib belongs to Matthew Wall (1996-1999) and to the Massachusetts //
// Institute of Technology (1995-1996.) All other code contained in this //
// program, excluding any C++ libraries utilized, has been written by James //
// Maxlow and its copyright is held by James Maxlow (2003.) //
/////////////////////////////////////////////////////////////////

#include <ga/ga.h>
#include <iostream>
#include <string>
#include <fstream>
#include <vector>
#include <ctime>

float Objective(GAGenome &);
void IntInitializer(GAGenome &);
void applyToNewData(GA1DArrayGenome<int>& chromosome, ofstream& output);
int whichGene(float percent);
void dollarCost(ofstream& output);

struct portfolio {
    float Cash;
    int Shares;
}; // end struct portfolio

portfolio Port;
vector<float> temp; // as many prices as in a data file
vector<float> prices; // as many prices as in a data set
vector<float> changes; // 1 less than the number of prices in a data set
float maxChange=0.0; // maximum % price change in a data set
float minChange=0.0; // minimum % price change in a data set
float rangeUnit; // 1/20 of % change range; to be used to scale whichGene function calculations
int timeStart; // first price to be considered in the data set
float transactionAmount; // fixed to be analogous to dollar cost averaging
float fee; // cost of a transaction (%)
float interest; // for cash account (%)
char action[3] = {'S', 'B', 'H'}; // meanings of gene values
char fullOutput = 'n'; // shows the chromosome in the output file
float tempShares;
```

```

string name, symbol, timeBasis, dates; // data file headers

int main (int argc, char* argv[]) {

    //////////////////////////////////////
    // Starting error message //
    //////////////////////////////////////
    if (argc!=5) {
        cout << "Usage: sim [pricefile] [transaction amount] [transaction fee (%)] [cash account interest (%)]";
        exit(0);
    }

    //////////////////////////////////////
    // Copy price data from file to vector - oldest to newest //
    //////////////////////////////////////
    float f;
    ifstream priceFile(argv[1], ios::in);
    priceFile >> name >> symbol >> timeBasis >> dates;
    while (priceFile >> f) {
        temp.push_back(f);
    }
    priceFile.close();

    //////////////////////////////////////
    // Calculate % changes, write to file - oldest to newest //
    //////////////////////////////////////
    ofstream changeFile((symbol + "-changes.txt").c_str(), ios::out);
    for(unsigned int k=0; k<temp.size()-1; k++) { // number of % changes is number of prices - 1
        changes.push_back((temp[k+1]-temp[k])*100/temp[k]);
        changeFile << "Change " << k << ": " << changes[k] << "%" << endl;
        if (changes[k]>maxChange)
            maxChange=changes[k];
        else if (changes[k]<minChange)
            minChange=changes[k];
    }
    changeFile << "Maximum change: " << maxChange << "%" << endl;
    changeFile << "Minimum change: " << minChange << "%" << endl;
    changeFile.close();
    rangeUnit = (maxChange - minChange)/20.0;

    //////////////////////////////////////
    // Set initial values from command line //
    //////////////////////////////////////
    transactionAmount = atof(argv[2]);
    fee = atof(argv[3]);
    interest = atof(argv[4]);

    timeStart = 0;

```

```

cout << endl;

for (unsigned int i=timeStart; i<temp.size(); i++) // only copy desired data into prices vector
    prices.push_back(temp[i]);

ofstream output((symbol+"-output.txt").c_str(), ios::app);

////////////////////////////////////
// Show initial portfolio state //
////////////////////////////////////
cout << "---- [Transaction Amount: $" << transactionAmount << ", Transaction Fee: ";
cout << fee << "%, Interest: " << interest << "%] ----" << endl;
output << "---- [Transaction Amount: $" << transactionAmount << ", Transaction Fee: ";
output << fee << "%, Interest: " << interest << "%] ----" << endl;
dollarCost(output); // calculate and show the dollar cost result over the same time period

////////////////////////////////////
// Set genetic algorithm parameters //
////////////////////////////////////
int length = 20; // number of genes in each chromosome
int popsize = 50; // number of chromosomes
int ngen = 5000; // number of generations
float pmut = 0.002; // probability of mutation
float pcross = 0.6; // probability of crossover

for (int run=0; run<20; run++) {

////////////////////////////////////
// Create and run the genetic algorithm //
////////////////////////////////////
GA1DArrayGenome<int> chromosome(length, Objective); // pass in the chromosome length and fitness
                                                    // function
chromosome.initializer(IntInitializer); // will be used later to seed the chromosome with 0, 1, or 2
//GASimpleGA ga(chromosome); // make the genetic algorithm shell
GADemeGA ga(chromosome); // make the genetic algorithm shell using parallel populations
ga.populationSize(popsize);
ga.nGenerations(ngen);
ga.pMutation(pmut);
ga.pCrossover(pcross);
//GASRSSelector selector;
//GADSSelector selector;
//GARouletteWheelSelector selector;
//GATournamentSelector selector;
GARankSelector selector;
ga.selector(selector);
ga.terminator(GAGeneticAlgorithm::TerminateUponConvergence); // conditional end of evolution
ga.pConvergence(.999); // ratio of older generation high score to current high score
ga.nConvergence(200); // look back over last 200 generations for terminating condition
}

```

```

ga.evolve(); // run the genetic algorithm

chromosome = ga.statistics().bestIndividual(); // the best chromosome at the end of the evolution

applyToNewData(chromosome, output); // use the best chromosome's advice

} // end while loop

output.close();

exit(0);

} // end main

/////////////////////////////////////////////////////////////////
// This function is used by the genetic algorithm to rate the fitness of each chromosome.
// For each % change in the data set change vector it will lookup the corresponding gene
// position (chromosome index) and check the value there. It will sell, buy, or hold based
// on that value (0, 1, or 2) assuming that it has sufficient cash or shares to do so.
// Each buy or sell transaction carries a fee that is deducted from the portfolio's cash
// reserve. The fitness score is determined by the sum of the portfolio's cash and the
// value of the portfolio's shares at the end of the given time period.

float Objective(GAGenome& g) {
// The first price in any data set is for reference only, not action

    GA1DArrayGenome<int> & chromosome = (GA1DArrayGenome<int> &)g;
    float score = 0.0;
    Port.Cash=0.0;
    Port.Shares=0;

    // go through % changes (1 less than total month span)
    for (unsigned int i=timeStart; i<prices.size()-37; i++) {
    // leave 36 prices to apply to
        Port.Cash=Port.Cash+transactionAmount;
        switch (chromosome.gene(whichGene(changes[i]))) {
            case 0: // sell
                tempShares=transactionAmount/prices[i+1];
                // can only sell if you have enough shares, otherwise hold
                if (Port.Shares >= int(tempShares)) {
                    Port.Shares=Port.Shares-int(tempShares);
                    Port.Cash=Port.Cash+int(tempShares)*prices[i+1]*(1-fee/100);
                    // sell full shares, but deduct fee from cash
                }
                break;

            case 1: // buy
                tempShares=transactionAmount*(1-fee/100)/prices[i+1];
                if (tempShares<1)
                    break;

```

```

else {
Port.Shares=Port.Shares+int(tempShares);
Port.Cash=Port.Cash-int(tempShares)*prices[i+1]*(1+fee/100);
// spend full $, but part of cash goes to fee instead of shares
}
break;

case 2: // hold
break;

} // end switch on lookup of B, S, H in chromosome via % change converted to index

Port.Cash=Port.Cash*(1+interest/12/100); // for savings or money-market account

} // end for progression through % changes vector

score = Port.Cash + Port.Shares*prices[prices.size()-37];

return score;

} // end Objective

```

```

////////////////////////////////////
// This function uses a given % change to lookup and return a number that represents
// the position (gene) in the chromosome with which that % change is associated. It
// slices the range of % changes for a given data set into 20 equal pieces that match
// the 20 genes in the chromosome. The Objective and applyToNewData functions call upon
// this function to decide where to look in the chromosome for the advice associated
// with a given % change.

```

```

int whichGene(float percent) {

if (minChange<=percent&&percent<minChange+rangeUnit)
return 0;
else if (minChange+rangeUnit<=percent&&percent<minChange+2*rangeUnit)
return 1;
else if (minChange+2*rangeUnit<=percent&&percent<minChange+3*rangeUnit)
return 2;
else if (minChange+3*rangeUnit<=percent&&percent<minChange+4*rangeUnit)
return 3;
else if (minChange+4*rangeUnit<=percent&&percent<minChange+5*rangeUnit)
return 4;
else if (minChange+5*rangeUnit<=percent&&percent<minChange+6*rangeUnit)
return 5;
else if (minChange+6*rangeUnit<=percent&&percent<minChange+7*rangeUnit)
return 6;
else if (minChange+7*rangeUnit<=percent&&percent<minChange+8*rangeUnit)
return 7;
else if (minChange+8*rangeUnit<=percent&&percent<minChange+9*rangeUnit)
return 8;

}

```

```

else if (minChange+9*rangeUnit<=percent&&percent<minChange+10*rangeUnit)
    return 9;
else if (minChange+10*rangeUnit<=percent&&percent<minChange+11*rangeUnit)
    return 10;
else if (minChange+11*rangeUnit<=percent&&percent<minChange+12*rangeUnit)
    return 11;
else if (minChange+12*rangeUnit<=percent&&percent<minChange+13*rangeUnit)
    return 12;
else if (minChange+13*rangeUnit<=percent&&percent<minChange+14*rangeUnit)
    return 13;
else if (minChange+14*rangeUnit<=percent&&percent<minChange+15*rangeUnit)
    return 14;
else if (minChange+15*rangeUnit<=percent&&percent<minChange+16*rangeUnit)
    return 15;
else if (minChange+16*rangeUnit<=percent&&percent<minChange+17*rangeUnit)
    return 16;
else if (minChange+17*rangeUnit<=percent&&percent<minChange+18*rangeUnit)
    return 17;
else if (minChange+18*rangeUnit<=percent&&percent<minChange+19*rangeUnit)
    return 18;
else if (minChange+19*rangeUnit<=percent&&percent<=maxChange)
    return 19;
else {
    cout << "error in whichGene - aborting" << endl;
    cout << "Percent: " << percent << " minChange: " << minChange << " range unit: " << rangeUnit;
    exit(1);
}

} // end whichGene

////////////////////////////////////
// This function is called by the genetic algorithm to seed the
// initial chromosome batch with gene values of 0, 1, or 2. By
// doing so any gene mutation is also restricted to one of those
// three values.

void IntInitializer(GAGenome & g) {

    GA1DArrayGenome<int>& chromosome = (GA1DArrayGenome<int> &)g;

    srand(time(0));
    for (int i=0; i<chromosome.length(); i++)
        chromosome.gene(i, rand()%3);

} // end IntInitializer

////////////////////////////////////
// This function displays the outcome of buying a fixed dollar amount of shares
// at 12 intervals immediately following the training intervals. It is needed

```

// to compare the effectiveness of the genetic algorithm's devised strategy.

```
void dollarCost(ofstream& output) {  
  
    Port.Shares=0;  
    Port.Cash=0;  
    for (unsigned int i=prices.size()-37; i<prices.size()-1; i++) {  
        // apply to last 36 prices  
        tempShares=transactionAmount*(1-fee/100)/prices[i+1];  
        if (tempShares<1)  
            Port.Cash=Port.Cash+transactionAmount;  
        else {  
            Port.Shares=Port.Shares+int(tempShares);  
            Port.Cash=Port.Cash+(tempShares-int(tempShares))*prices[i+1];  
        }  
        Port.Cash=Port.Cash*(1+interest/12/100); // for savings or money-market account  
    }  
  
    float total = Port.Cash + Port.Shares*prices[prices.size()-1];  
  
    cout << "Dollar costing: $" << Port.Cash << " cash, " << Port.Shares << " shares @ " <<  
    prices[prices.size()-1];  
    cout << " for $" << total << " total (";  
    cout << (total-transactionAmount*36)*100.0/(transactionAmount*36) << "% ROI.)" << endl;  
    output << (total-transactionAmount*36)*100.0/(transactionAmount*36) << "%" << endl << endl;  
  
} // end dollarCost
```

```
////////////////////////////////////  
// This function first displays the values of the genes of the best chromosome and then  
// proceeds to apply the chromosome's advice at 12 intervals immediately following the  
// training intervals. This results in a final portfolio value for the best chromosome.  
// The function then optionally writes the winning chromosome to a file.
```

```
void applyToNewData(GA1DArrayGenome<int>& chromosome, ofstream& output) {  
  
    Port.Cash=0.0;  
    Port.Shares=0;  
  
    //////////////////////////////////////  
    // Apply chromosome advice //  
    //////////////////////////////////////  
    for (unsigned int i=prices.size()-37; i<prices.size()-1; i++) {  
        // apply to last 36 prices  
        Port.Cash=Port.Cash+transactionAmount;  
        switch (chromosome.gene(whichGene(changes[i]))) {  
            case 0: // sell  
                tempShares=transactionAmount/prices[i+1];  
                // can only sell if you have enough shares, otherwise hold  
                if (Port.Shares >= int(tempShares)) {
```

```

        Port.Shares=Port.Shares-int(tempShares);
        Port.Cash=Port.Cash+int(tempShares)*prices[i+1]*(1-fee/100);
        // sell full shares, but deduct fee from cash
    }
    break;

    case 1: // buy
        tempShares=transactionAmount*(1-fee/100)/prices[i+1];
        if (tempShares<1)
            break;
        else {
            Port.Shares=Port.Shares+int(tempShares);
            Port.Cash=Port.Cash-int(tempShares)*prices[i+1]*(1+fee/100);
            // spend full $, but part of cash goes to fee instead of shares
        }
        break;

    case 2: // hold
        break;

} // end switch on lookup of B, S, H in chromosome via % change converted to index

Port.Cash=Port.Cash*(1+interest/12/100); // for savings or money-market account

} // end for progression through % changes vector

////////////////////////////////////
// Show final result //
////////////////////////////////////
float total = Port.Cash + Port.Shares*prices[prices.size()-1];
cout << "Devised:\t$" << Port.Cash << " cash, " << Port.Shares << " shares @ " <<
prices[prices.size()-1];
cout << " for $" << total << " total\t(");
cout << (total-transactionAmount*36)*100.0/(transactionAmount*36) << "% ROI.)" << endl;
output << (total-transactionAmount*36)*100.0/(transactionAmount*36) << "%\t";
for (int i=0; i<chromosome.length(); i++)
    output << action[chromosome.gene(i)];
output << endl;

////////////////////////////////////
// Write chromosome advice for each % change to file //
////////////////////////////////////
if (fullOutput=='y') {
    int k=0;
    for (k=0; k<chromosome.length(); k++)
        output << minChange+k*rangeUnit << "% " << action[chromosome.gene(k)] << " ";

    output << minChange+k*rangeUnit << "% " << endl;
}

```

```
} // end applyToNewData
```

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