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## Cypress President T.J. Rodgers Communicates to Shareholders and Employees Regarding Cypress Share Price

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## For Immediate Release

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SAN JOSE, Calif., October 8, 2002 - Cypress Semiconductor Corporation (NYSE: CY) President and CEO T. J. Rodgers today released a communication to Cypress shareholders and employees providing details about the recent fluctuations in Cypress' share price. A copy of that communication follows.

## A SPECIAL LETTER TO CYPRESS SHAREHOLDERS AND EMPLOYEES

To Our Shareholders:

Last Friday, Cypress shares dropped to an unprecedented $\$ 4$ per share. As you might imagine we had numerous phone calls and emails. I have decided that this unprecedented event warrants a special shareholder letter. I have enclosed two emails I received along with my response to them. The first email is from an investor whose retirement fund contains Cypress stock.

Subject: Concerned Shareholder
Dear Mr. Rodgers,
I own 10,000 shares of Cypress in my retirement account. The shares were purchased at $\$ 11 /$ share. Having the vast majority of my IRA invested in Cypress, I'm naturally concerned with the huge drop in the stock price. What is your level of confidence that the shares will recover in value over the next few years? Does Cypress have the financial strength to survive until the economy recovers?

You have always struck me as an honest business leader. In fact that is one of the main reasons why I invested in Cypress. Your candor would be greatly appreciated.

Many thanks for your response, Shelley S
Dear Shelley:
Thank you for your dignified message. Your worries are shared by most Cypress shareholders and employees. Here's an email I received from an employee on the same day as yours.

Subject: Why?
TJ,
Sorry, I never thought that I would actually email you, but what does the street know that we don't? The stock price is $\$ 4.36$ and going down. I just want to understand.

Thanks,
Sherif H
New England Design Center
What follows are my answers to the questions posed in these emails, including the following:

| QUARTER | (M) |  |  | ING |
| :---: | :---: | :---: | :---: | :---: |
|  |  | EPS | SHARE <br> PRICE <br> HIGHLOW |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Q3 2000 | \$370 | \$0.74 | \$56 | \$33 |
| Q3 2001 | \$180 | \$(0.76) | \$29 | \$14 |
| Q4 2001 | \$191 | \$(0.11) | \$26 | \$14 |
| Q1 2002 | \$193 | \$(0.10) | \$25 | \$18 |
| Q2 2002 | \$202 | \$(0.05) | \$24 | \$14 |
| Q3 2002 | \$205 | \$(0.03) | \$15 | \$6 |
| Q4 2002to date |  |  | \$7 | \$4 |
|  |  |  |  |  |

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ps SHARE PRICE x TOTAL SHARE \(=\) TODAY PRICE x 124M SHARES
            Yearly Sales \(4 \times\) LAST QUARTER'S SALES
        PS (@\$4/SHARE) \(\$ 4.00 /\) SHARE \(\times 124\) MILLION SHARES \(=0.60\)
                        \(4 \times 205 \mathrm{M}\) (Q3 REVEnUE)
    HIGH (90th percentile): PS = 4.11, SHARE PRICE=\$27.27
    MEDIUM (50th percentile): PS \(=2.32\), SHARE PRICE \(=\$ 15.40\)
    LOW (10th percentile): \(\mathrm{PS}=1.53\), SHARE \(\operatorname{PRICE}=\$ 10.17\)
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1. What has caused Cypress's share price to drop to the $\$ 4$ range?
2. What's the near-term outlook for Cypress?
3. Does Cypress have the "staying power" to make it to the next upturn?
4. Will Cypress shares recover in value?

Currently, Cypress's performance is good, much better than it was during the downturns of 19911992 and 1996-1998. The collapse of shipments to our customers in the communications industry cut Cypress's revenue in half from a peak of $\$ 370$ million in the fourth quarter of 2000 to $\$ 180$ million in the third quarter of 2001, causing our first quarterly loss in the current downturn. Since then, our finances have improved every quarter for a year, as underscored by the following table. We are now near breakeven, as shown below:
Thus, the current low share price exists at a time when Cypress has just posted its best results in a year. Obviously, factors other than just quarterly performance must be responsible for the recent share price decline.

One factor was our September 6, 2002 "pre-announcement" for the third quarter in which we said we would improve less in third-quarter revenue and earnings than we had previously expected. (Our first forecast was for revenue of $\$ 208-\$ 213$ million and proforma breakeven earnings. The actual results were $\$ 205$ million in revenue with a $\$ 0.03$ loss, up from $\$ 202$ million and a $\$ 0.05$ loss in the prior quarter.) Obviously, this pre-announcement alone cannot rationally explain the recent share price decline.

Before I discuss my views on the causes of our share price decline, let me first quantify what "high" and "low" prices are for Cypress shares. To address some of the same share-price concerns expressed by shareholders during the 1996 semiconductor downturn, I wrote a paper entitled "Thinking about Cypress Stock," which was distributed to all shareholders and is still available on our web site or in printed version by sending a request to pxh@cypress.com. In that paper, I pointed out the obvious: that making a gain on Cypress stock required one to "buy low and sell high." The difficult part is to know when Cypress stock is priced "low" and when it is priced "high."

My analysis used a well-known metric, the price-sales (PS) ratio, to value Cypress stock. The PS ratio is simply the total value of all outstanding Cypress shares (our market capitalization), divided by our annual sales.

The paper analyzed Cypress's PS ratio for every trading day from October 1987 to January 1996. The price of Cypress stock displayed three important valuation points during that nine-year period. (I express "stock price" here as a PS ratio because we have grown by a factor of 10, making a revenue-indexed ratio necessary). When Cypress was most highly favored by investors over the 1987-1996 period, our shares traded with a PS ratio of 3.46 or higher. When Cypress was performing poorly, and/or was in disfavor with investors, our shares traded at a PS ratio of 1.43 or lower. The average PS ratio over the decade was 2.23 . At a share price of $\$ 4.00$, our PS ratio is as follows:

That's an all-time, record-low PS ratio. There must be other factors than our current near-breakeven performance causing that result.

One concern hanging over Cypress and the entire semiconductor industry is the possibility of another round of softening in semiconductor sales. I said earlier that our results for Q3 would be up, but not by as much as we thought just 90 days ago. The new problem in the semiconductor market is that, in addition to the well-publicized collapse of the communications market, the personal computer (PC) market is experiencing anemic, but not catastrophic, year-end businesstraditionally when PC sales are strongest.

Investors are concerned that the semiconductor market could stay sluggish for a while. In that case, Cypress's revenue could settle in the range of $\$ 190-\$ 210$ million per quarter, with modest quarterly proforma losses in the $\$(0.08)-\$ 0.00$ range-if we did not make any changes.

We have decided that we will size Cypress to be profitable in the near term. If, after polling our customers once more on their probable demand over the next six months, we can expect modest revenue growth to our current $\$ 210$ million break-even point, we will simply move forward without changes. If we see our revenue becoming stalled in the $\$ 190-\$ 205$ million range, we will cut costs to achieve breakeven at the lower revenue level.

So far, I have made four points: (1) Cypress's recent performance during this downturn has been good, with quarterly improvements in revenue and profit each quarter for the last year. (2) A potential slowdown in the semiconductor market may stall that progress. (3) Cypress will cut costs if needed to achieve profitability in the near term. (4) Our shares are trading at 0.6 times sales, a record low number not in line with our current performance.

You have asked whether or not we have the "financial strength to survive until the economy recovers." The answer is an emphatic, "Yes." Other investors have shared that concern with us, and I believe it is another factor pushing our share price down. Here again, it is instructive to look at the facts. Cypress has approximately $\$ 240$ million in cash. That's $\$ 140$ million more than we had in the bank at the bottom of the 1992 or 1996 downturns. Furthermore, our operations are cash-flow positive-equipment we have already bought and paid for is producing more than $\$ 10$ million per quarter in cash. Our cash balance goes down only when we spend more than $\$ 10$ million per quarter on acquisitions or on new wafer fabrication equipment. Right now, we are carefully managing spending on both, and we expect to keep our cash balance at or above the $\$ 200$ million mark. The only time we will want to spend money on wafer fabrication equipment will be in the case of an upturn in demand, exactly when the financial constraints will be lifted.

Another concern of some investors about Cypress's financial health is the fact that we have two outstanding "convertible debentures," essentially $\$ 469$ million in debt convertible to stock. This debt is very favorably priced (we pay only $3.9 \%$ interest, compared with the current high yield bond rate of $10 \%-12 \%$ ), and it is not due until 2005. If we had raised that $\$ 469$ million by selling shares at $\$ 10$, the dilutive impact on Cypress shareholders would have been 47 million shares, added onto the current 124 million shares outstanding. At this time, we do not foresee any problem in retiring these convertibles.

Regarding the issue of the extent and timeframe of the recovery in value of our shares, I am legally restricted from answering, and really cannot give an accurate reply, anyway. But I will provide some facts about Cypress share-price values. First, attached is an updated graph of our PS ratio , which covers the entire period from our initial public offering in May 1986 through last Friday-4,201 trading days, 16 trading years. I have annotated that graph with some of the events that affected share price.

Over our 16-year history as a public company, Cypress's current share price, given the third quarter's $\$ 205$ million in revenue, would have been valued as follows:

Our current share price is therefore low, even when compared to our worst performance.
Cypress management uses the PS metric to make decisions. With the approval of Cypress's directors, we repurchased $\$ 334$ million of our shares at an average price of $\$ 19.10$ during 20002002. That program ended when we reached our pre-agreed safe cash level of $\$ 200$ million. I purchased $\$ 2,451,870$ worth of shares partly for my own retirement fund, some from the open market during 2001 and 2002 at prices ranging from $\$ 17.10$ to $\$ 19.91$. Over two thousand Cypress employees have purchased $\$ 100.6$ million worth of Cypress shares through our shareholder-approved Stock Purchase Assistance Program at an average price of \$19.73. (Cypress Directors and I were ineligible for that program.) These are meaningful statements about the value of Cypress stock made by Cypress employees. Obviously, with a better crystal ball, I would have waited until now to make my $\$ 2.5$ million share purchase-my own record says that I didn't predict market prices as well as you did.

The final problem that I believe is currently crippling the stock market in general is a lack of investor confidence-even outright fear-promoting irrational decision making. (Don't misinterpret my point. Cypress should simply be one of the minority of semiconductor companies that are still profitable. That's our problem, not the market's.) But I still don't believe a great company like Sun Microsystems should be valued at $\$ 2.42$ per share. I don't believe Lucent and Nortel are worth less than $\$ 1.00$ per share. And, it does not make sense for AMCC's market value to be less than the cash it has in the bank!

I have always believed in free markets and their demonstrated superior accuracy in determining value. But in the short term, fears or fads can produce irrational results. Gold prices during the Carter administration shot up to $\$ 900$ per ounce, despite the fact that gold could be mined for less than $\$ 300$ per ounce, its current price. Investors in that gold rush lost money due to irrational decisions. As a technologist in Silicon Valley who knows that any group of computersavvy college students can create a web site, I was appalled with the high valuations awarded to several companies whose only business was selling pet supplies over the Internet. Again, the market corrected itself with the dot.com collapse. I believe it will correct itself again. I believe investors earning 1-1/2\% interest on their bank accounts will see the opportunities in technology stocks.

In my opinion, the Enron scandal is also a big factor behind today's stock market problems. If investors can't trust that their money will be well managed and that they will be told the truth, they would be foolish not to take their money out of the market. It will take quarters, if not years, for investors to be reminded that most companies are honestly and competently managed. Enron and the other companies involved in scandals represent fewer than 10 of the approximately 17,500 publicly traded companies. That's a $0.06 \%$ failure rate. Any corporate scandal rate is unacceptable, but the corporate failure rate is more than 10 times better than the record for: (1) the percentage of members of Congress who have bankrupted companies, or (2) who can't get credit cards due to poor credit ratings, or (3) who were expelled for committing a felony, and (4) the percent of U.S. presidents impeached while in office.

Our political leaders should have seized their chance to lead and calm the market by pointing out that the Enron perpetrators were fired, broke and probably going to jail-and that the vast majority of America's companies are run right. Instead, they magnified the fear generated by the

Enron debacle for political advantage. Shame on them, but Enron is a problem, not an excuse.
Cypress Semiconductor spent approximately $\$ 210$ million last quarter to make 141 million chips it sold for only $\$ 205$ million-that's my problem, not an Enron issue. All I can do is be honest, run Cypress right, and bring it back to profitability-which is my commitment to you and our other shareholders.

## T.J. Rodgers

P.S. Please note that we sold 141 million chips last quarter. That's close to our all-time record high of 157 million units sold in the third-quarter of the 2000 boom. There is plenty of demand for our products. It's the prices that make it difficult to make a profit. Our industry operates on the math of "Moore's Law." We consistently cut our costs at the rate of about 30\% per year. In every semiconductor recession during the 45 -year history of our industry, costs have eventually caught up to ever-lowering prices to end the recession.

## Thinking About Cypress Stock

Last Updated: 05/24/2012

## THE PROBLEM FOR SMALL INVESTORS

This is an analysis of the historical valuation of Cypress stock. It is not a recommended strategy for trading shares, although the method used to study stock valuation entails the use of hypothetical trading strategies carried out on actual Cypress historical stock price trends.

We have recently had an unprecedented number of calls from individual investors who bought Cypress shares near the all-time-high price of $\mathbf{\$ 2 7 . 3 8}$ per share. Many of the investors ask, "The stock is down $50 \%$; what's wrong with the company?" Since Cypress met or exceeded Wall Street expectations for earnings per share in every quarter of 1995, the answer relates more to a stock market situation than to a performance problem. The intent of this analysis is to provide data and analytical methods to help shareholders better answer the following questions:

- Did I pay too high a price for Cypress when I purchased its shares at $\$ 20-\mathrm{plus}$ ?
- If I choose to hold my shares, how long will I have to wait to break even?
- If I trade Cypress shares in the future, how will I know if the shares are high priced-or a bargain?

No analysis can provide answers to questions that require a prediction of the future. However, we can analyze data for Cypress's 2,515 trading days over the last ten years, and show typical trends for the pricing of Cypress stock, and for the time required historically for an investment to produce a capital gain. Shareholders should not expect that an historical analysis of share price data can be extended accurately into the future (the data itself shows just that), but this ten-year analysis should provide useful added information for making trading decisions.

Semiconductor stock prices declined at the end of 1995 after analysts' reports on softness in the semiconductor market. Cypress's share price fell following a series of reports detailing the "crash" in prices of our highest volume product, the 256 K -bit static RAM. Despite $47 \%$ revenue growth and $82 \%$ earnings growth in 1995, our P/E ratio fell to 8.3 at year-end. We believed that our shares had become
undervalued, and decided to buy back $\$ 70$ million of stock with the express intent of reselling those shares at a higher price in the future to raise money for expansion. At year-end, many analysts advised investors to "hold" (usually a euphemism to sell) our shares-while Cypress was buying. Some of the pessimistic news about the semiconductor market was carried on financially oriented cable TV programs which are literally displayed in windows on the computer screens of some stock traders. The problem: How can a small investor who may always be late in reacting to the latest news on the spot-market price for the 256 K static RAM hope to compete against institutional investors and stock traders with real-time television hook-ups?

## SEMICONDUCTOR ECONOMICS DEFIES COMMON SENSE

The prices for 256K static RAMs are currently falling-but static RAM price "crashes" have been a constant in our business since the static RAM's invention in 1970. During this period of dramatic price reductions, the semiconductor industry has grown from $\$ 2.6$ billion in 1970 to $\$ 144$ billion in 1995. We can all appreciate how industry sales might grow during a period of dramatic price reductions, but what problem might that present to a company like Cypress, whose price for a 256 K -bit static RAM might drop as much as $50 \%$ in 1996? (Consider the effect of an equivalent drop in car prices from $\$ 20,000$ to $\$ 10,000$ in one year.) The answer is that semiconductor companies routinely absorb significant price reductions with no long-term negative impact.

Price reductions measured in percent per year imply that exponential equations describe our industry's economics. Exponential equations are notoriously difficult to comprehend. Even slow exponential growth rates like that of population create counter-intuitive results, like this fact caused by exponential growth: "More people are living on earth today than the total number of people who have lived and died in all history." In an industry that is governed by the implausible outcomes of exponential mathematics, how should an investor make quick, rational decisions-especially if that investor's position is "under water" and the analysts are strapping on their life jackets?

## DATA-DRIVEN DECISIONS: BUY LOW AND SELL HIGH

Cypress's share price has behaved like that of many good technology companies: up and down, but up over the long haul. Nonetheless, investors sometimes buy Cypress at an inopportune time, just before the share price drops-in many cases, exactly at a time when many analysts are pushing the "strong fundamentals" of Cypress and the semiconductor industry at large. So-called momentum investors "buy high" and hope for the stock to go higher. In some cases, that strategy traps investors into having to hold their shares for years before realizing a profit. Or, if the investor's patience or courage runs out, the momentum strategy may end up as a "buy high, sell low" strategy-a loser.

The strategy to buy low and sell high is, to use a phrase from GE's Jack Welch, "simple, but difficult." "Buying low" often means going against analysts' warnings, and "selling high" often means selling into a bull market; in other words "buy low, sell high" often translates into "overcome fear, resist greed"-a very difficult task for investors or analysts.

## VALUATION METHOD

In the semiconductor business, our process yield-the number of chips we ship divided by the number of chips we start on our lines-can vary from $5 \%$ for a new product to $90 \%$ for a mature product. Our "learning curve," the rapidity with which we move from $5 \%$ yield to $90 \%$ yield, separates winners and losers in our business. In the semiconductor struggle, we have learned to act more on what the data presents, and less on our instincts. This analysis of Cypress share price is based solely on data. The data is available to all investors: daily share price and Cypress's sales for the prior quarter. The analysis eschews the analysis du jour in favor of a statistical look at ten years of daily Cypress trading data. I use this model to help make Cypress's buy-back decisions, and my personal trading decisions.

The most common stock valuation method is the P/E ratio: the price per share, divided by analysts' forward-looking earnings per share estimates. The P/E ratio tends to fluctuate dramatically because it not only depends on predictions, but also on fluctuations in profitability. To reduce the volatility inherent in the $P / E$ ratio, I have chosen for a valuation index the " $P / S^{\prime}$ " ratio, the ratio of our price per share, divided by our annualized sales per share, where "annualized sales" equals four times the revenue of the last reported quarter. The P/S ratio also equals Cypress's market capitalization divided by its sales. As defined, the $\mathrm{P} / \mathrm{S}$ ratio needs no predictions, and can be calculated and trended by any investor.

$\underline{P}=$ Price/Share $=$ Market Capitalizations<br>S Annualized Sales/Share Annualized Sales

Cypress's daily $\mathrm{P} / \mathrm{S}$ ratio for ten years appears below. Our $\mathrm{P} / \mathrm{S}$ ratio dropped dramatically the week of "black Tuesday" in October 1987. Since that time, the P/S ratio has been relatively stable with a median value of 2.23 , and 10th and 90th percentile points of 1.43 and 3.46 , respectively. One can then say quantitatively, for example, that Cypress shares were relatively "low" whenever the P/S ratio was below 1.43 , because on $90 \%$ of the 2148 trading days between $10 / 26 / 87$ and $1 / 24 / 96$, the share price was relatively more highly valued.

## BUYING LOW

The portion of the P/S curve from 1992 to 1993 highlights the period during which Cypress bought back about 10 million shares of its stock because-as we said to investors consistently at the time-we felt our shares were undervalued. We had just restructured after our only loss year in 1992, and we had a plan to improve in every quarter of 1993 and 1994. Analysts and investors did not believe in that plan, and our stock remained a great investment opportunity for us at less than $\$ 5$ per share. The dot on the P/S chart highlights the point at which we sold most of the buy-back shares at a substantial gain in our $\$ 110$ million convertible subordinated debenture offering. The proceeds were needed to fund Fab IV in Minnesota. In that sale, we did not follow the practice to "sell high," based on the P/S ratio; we needed the funds for growth and simply took the gain presented to us at the time. The final highlighted section on the P/S graph in late 1995 represents our current $\$ 70$ million buy-back program-again at "buy low" prices. We are committed to the current buy-back program because we believe in our future.

We believe:

- Total semiconductor sales will grow more in absolute dollars in the next 5 years than they have in all of the last 35 years (as do the majority of semiconductor analysts).
- Cypress can continue to meet its plan to grow faster than the market, as we have in nine of the last eleven years.
- Our buy-back program will therefore provide us with the funds for plant and equipment with less dilution.

Of course, the challenge for us is to turn our beliefs into reality.

The analysts generally believe:

- The slow PC market at Christmas, and the problems it caused semiconductor companies, should be a sign of caution.
- There may be over-capacity in our static RAM market, and in the semiconductor market in general.
- Despite pervasive bullish five-year forecasts for the total semiconductor market, the worries and
rumors surrounding the current market make investment unwise.
Consequently, many analysts have recommended to "hold" our shares recently, which means, we believe, to "sell low." Cypress is acting on the reverse strategy to "buy low," based on our plans for the future and an analysis of our share price history.


## SELLING HIGH: HAL, THE INVESTOR

The time it takes to make the first incremental gain on an investment in Cypress's shares may be referred to as the "time to money," or TTM. The time to money for every Cypress trading day is graphed below as a function of the P/S ratio. The insert explains the graph: for buyers who bought Cypress on one of the 8 days in the last eight years when the P/S ratio was $2.23,3$ saw the stock go up the next day, 1 saw the stock go up in two days, and the least fortunate investor waited for 19 days until the stock closed above its purchase price. The complete graph, therefore, represents the time to money for every trading day, sorted by $\mathrm{P} / \mathrm{S}$ ratio. The time to money has consistently been below 30 days, but waits of hundreds of days for a capital gain have occurred. Long TTM times were more likely to happen to investors who bought at a high $\mathrm{P} / \mathrm{S}$ ratio; i.e., for momentum investors.

On the other hand, buyers who bought low, as defined by a P/S ratio equal to or less than the median of 2.23 or less, achieved a time to money of 130 trading days or less with a $99.2 \%$ probability, as shown below. The future cannot always be predicted from history. For example, using the P/S ratio trends from May 1986 to October 1987 (before the steep decline on the P/S ratio graph) would not have been good investment predictors after October 1987. But after that point and through January 1996, the P/S ratio was reasonably stable, and simple investment rules would have been effective in making trading decisions. The algorithmic trading rules outlined below probably would have been preferable to momentum investing during the period of the study for the small investor who was unable to react quickly to semiconductor news and rumors on "the street."

We named our computer HAL, and programmed him to make trades in Cypress shares according to our predetermined rules over an 8.3-year period from 10/26/87 to the most recent trading day in this analysis, $1 / 24 / 96$. For the first simulation, we gave HAL these instructions:

- Start with $\$ 100$,
- invest the cash at 5\% money market,
- buy low: put all cash into the market for $\mathrm{P} / \mathrm{S}<1.43$ (10th percentile),
- sell high: put all cash back into the money market for P/S > 3.46 (90th percentile),
- pay $\$ 0.10$ for each share traded,
- calculate annual return based on combined trading gains and money market returns,
- but do not count the last trade if a sell transaction is pending. (This rule gave roughly equivalent results to a forced sell on the last day of the study.)

With these instructions, HAL made only two trades in eight years:

| Action | Date | Share <br> Price | $\#$ <br> Shares | Value |
| :--- | :---: | :---: | :---: | :---: |
| Deposit | $10 / 26 / 87$ | $\$ 3.13$ | - | $\$ 100.00$ |
| Withdraw | $4 / 13 / 92$ | $\$ 5.19$ | - | $\$ 124.25$ |
| Buy | $4 / 13 / 92$ | $\$ 5.19$ | 23.5 | $\$ 121.91$ |
| Sell | $5 / 23 / 95$ | $\$ 18.250$ | 23.5 | $\$ 426.53$ |
| Deposit | $5 / 23 / 95$ | $\$ 18.250$ | - | $\$ 426.53$ |
| Withdraw | $1 / 24 / 96$ | $\$ 14.375$ | - | $\$ 440.29$ |

That trade provided a $49.7 \%$ per year capital gain over the holding period, and a $19.7 \%$ annualized capital gain over the eight-year period, when blended with the $5 \%$ money market rate. The capital gain was great, but few investors would want to follow a strategy that required watching a stock for more than four years before investing for the first time. The computer then ran approximately 1,000 scenarios for rules-based investment identical to the one above, but with different buy/sell criteria.

One successful rules-based strategy was to "buy below average" and "sell above average." That strategy was designed to buy any time the shares were below the 50th percentile point of $P / S=2.23$, and to sell at some higher $\mathrm{P} / \mathrm{S}$ ratio. The graph below shows HAL's actual trades for the Buy $\mathrm{P} / \mathrm{S}=2.25$, Sell $P / S=2.75$ strategy, which yielded a $26.4 \%$ per year gain by making five high-gain trades in eight years. The table on the next page shows that the average "buy below/sell above average" strategy worked for a wide variety of cases to produce an annual return of approximately $25 \%$. During the same 10/26/87 1/24/96 time frame, the most favorable "buy and hold" strategy, which allowed for purchasing shares at the all-time low price of $\$ 3.13$, yielded $19.7 \%$ per year, while the S \& P 500 index appreciated $12.9 \%$ per year.

A second set of simulations showed that a strategy to buy low and sell high would have yielded a reasonable gain over a very wide variety of buy and sell points in the middle of the P/S range. HAL ran 330 simulations with the Buy P/S between 1.6 and 3.2, and the Sell P/S ratio higher than the Buy P/S ratio by 0.4 to 1.75 .

These were large-gain scenarios with the capital gain per trade ranging from more than $10 \%$ to over $100 \%$. The total range of annual return figures for these widely varying strategies was stable, with a minimum gain of $16.8 \%$, a maximum gain of $33.0 \%$, and an average gain of $23.7 \%$. These yields are graphed below.

No one can predict the future, but investors should at least consider that in following analysts' advice, they may sometimes be making the "buy high" mistake when they are purchasing our shares. Investors should also be prepared to hold our shares for an appropriate TTM time to avoid having to sell shares at a loss.

For investors who cannot react rapidly to Wall Street news and rumors, and who are prepared to hold shares for 300 -plus days, a simple rules-based "buy low, sell high" trading strategy might be superior to the strategy of reacting real-time to the counter-intuitive and erratic semiconductor market. At a minimum, the analysis presented here provides an independent check on trading decisions.

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