

INVESTING IN TECHNOLOGY:

THE MICHAEL MURPHY APPROACH

By Maria Crawford Scott

Murphy regards technology as *the* growth driver of the U.S. economy. His approach seeks to identify firms that are most likely to be the future leaders, and then buy the stocks when they become undervalued relative to their growth potential.

Growth stock investing typically starts with a broad analysis of the economy in a search for sectors that are growing more quickly than average. But one well-known growth investor, Michael Murphy, finds this analysis unnecessary. Why? He firmly believes that today's true growth opportunity is quite obvious—the world of high-technology.

Murphy is editor of the California Technology Stock Letter (800/998-2875; www.ctsl.com), a highly-regarded and well-followed investment advisory newsletter that tracks and makes recommendations on technology stocks.

Murphy regards technology not so much as a sector, but rather as *the* growth driver of the U.S. economy, covering a relatively diversified group of companies. His approach seeks to identify technology stocks that are most likely to be the future leaders, and then buy those stocks when they become undervalued relative to their growth potential.

Murphy outlines his approach in "Every Investor's Guide to High-Tech Stocks & Mutual Funds," published by Broadway Books (800/323-9872; \$27.50), which is the primary source for this article.

WHY TECHNOLOGY STOCKS?

Murphy believes that the U.S. economy is currently in the midst of a paradigm shift—a "once-in-a-century revolution" that is creating massive changes in almost all areas of the U.S. economy, creating new infrastructures, jobs and sources of wealth, while destroying old ones. The changes are similar to those brought about by other major innovations—for instance, the industrial revolution and later the introduction of mass production and a consumer-based economy. In today's economy, the change is being brought about by technology—electronics and computer technology, as well as medical and biotechnology.

The result of this shift, says Murphy, is that the technology sector is the fastest-growing and will quickly dominate all other sectors in terms of size. It is also a sector that is becoming very diversified, with seven major industry groups. Yet the market in general has not fully recognized this massive change. Most investors, he says, are underinvested in technology stocks. Although technology receives a lot of coverage in the media, Murphy states that fewer than 10% of Wall Street analysts cover technology stocks, and only a few mutual funds specialize in technology. He also argues that the valuations of the dominant technology companies are relatively low given that they are growing three times faster than average.

Murphy says this relative lack of coverage provides investors with a great opportunity to buy leading technology companies with significant growth potential at very reasonable—and sometimes cheap—prices.

He also explicitly rejects investment guru Peter Lynch's dictum that individuals should not invest in things that can't be easily understood. Individuals don't need to understand the underlying technology, only the company and its competitive environment—the same way an individual may invest in a car manufacturer without understanding the technology behind how a car actually runs.

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IDENTIFYING THE STOCKS

The real basis of a technology company's success, according to Murphy, stems from its commitment to research and development.

R&D is aimed at identifying advances, incorporating the advances into specific products and then bringing them to market. The result is either new products or new variations of old products. These new or significantly improved products drive rapid sales growth, often by creating their own demand—the World Wide Web being a perfect example. New products also carry higher profit margins, he notes, because there is usually little competition when they are first introduced. Thus, R&D spending is the company's investment in its future growth.

For that reason, heavy spending on R&D is the key to identifying profitable high-tech companies under Murphy's approach.

How can you identify "heavy spending?" If R&D spending is significant, it will be listed as a separate line item on the company's income statement (found in the firm's annual report and usually in its quarterly reports). Dividing the company's R&D spending by its annual sales tells you in percentage terms how much a company is spending on R&D.

Murphy requires a company to spend a minimum of 7% of revenues on R&D spending.

Of course, companies need to be spending their R&D funds and managing their business wisely. Other factors Murphy seeks include:

- **Sales growth of at least 15% per year.** Murphy regards this as a crucial test and suggests that companies failing this are not worth pursuing. This level of sales growth indicates that the company has a growing market for its products, and that its investments in new products are paying off.
- **Pretax profit margins (net income divided by revenues) of 15% or**

better. This indicates that the company's products are delivering a substantial profit, and that sales growth is not being driven by "give-aways."

- **Return on equity (aftertax profits divided by shareholders equity) of 15% or more.** Murphy regards this as more important in capital-intensive technology sectors such as semiconductor manufacturing. The figure indicates that a company is capable of financing its own growth without resorting to outside financings that dilute earnings.

On a more qualitative level, Murphy suggests asking: Does the company turn out a steady stream of new, successful products?

Annual reports will provide some answers to this question. If research discussed one year turns into a product launch the following year and is a success the third year, it is a good indication the company is able to turn out a steady stream of new products.

Murphy also suggests calling the investor relations department of the prospective company and asking what percentage of revenues today come from products introduced in the last three years. If the company's research is productive, the answer should be over 50%.

THE GROWTH-FLOW MODEL

Identifying a potentially profitable technology stock is the first step, but Murphy does not believe in paying any price for growth. Instead, he prefers to follow the potential companies and then purchase them once valuations reach attractive levels.

The problem, however, is that traditional valuation approaches are misleading. R&D spending directly cuts into a company's current earnings, so that the more a company spends on R&D, the worse its current reported earnings will be. The result will be a relatively higher price-earnings ratio for companies that spend more heavily on R&D.

However, from a shareholder's viewpoint, earnings invested for tomorrow in the form of R&D are as important as reported earnings today. Murphy therefore adds per share R&D spending [R&D spending divided by the number of shares outstanding] to aftertax earnings per share to determine what he terms a company's "growth flow." Dividing the current price of a stock by the growth flow per share provides the price-to-growth-flow ratio. It is this ratio that Murphy uses to measure the underlying investment value of a technology stock.

Murphy says the price-to-growth-flow ratio identifies cheap stocks both earlier and more accurately: R&D spending is usually stable, and does not drop when earnings suffer. Thus, when share prices drop due to disappointing earnings, the price-earnings ratio will tend to change little, whereas the stock will immediately look cheaper on a price-to-growth-flow basis.

As a guideline, Murphy views technology stocks as fairly priced when price-to-growth-flow ratios are around 10 to 14; anything under 8 is cheap and below 5 is a real bargain; 16 and over is too expensive.

Murphy points to Tektronix in the late 1980s as an example, when it sold for \$12 per share. At the time, the company's earnings were depressed, at about \$0.35 per share. Based on the company's price-earnings ratio of 34.3 ($\$12 \div \0.35), the stock did not look cheap. At same time, however, it was spending \$8 per share on R&D, so its price-to-growth-flow ratio was 1.4 [$\$12 \div \8.35], a "screaming buy." Murphy says the company continued to successfully develop its products (high-resolution monitors and color printers), and the stock went to over \$60.

Murphy provides a number of other useful rules of thumb for using the price-to-growth-flow model:

- Compare the price-earnings ratio with the price-to-growth-flow ratio. If the price-to-growth-flow figure is a

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Philosophy and Universe

The U.S. is undergoing a major revolution in which technology is the major economic driver. Therefore, technology stocks will be the major area of growth. Investors should focus on a small list of superior companies with rapid growth and excellent financial ratios, then wait for them to become cheap.

Criteria for Initial Consideration

- R&D spending of at least 7% of revenues
- Sales growth of at least 15% per year
- Pretax profit margins of 15% or better
- Return on equity (aftertax profits divided by shareholders equity) of 15% or more

Valuations

Use a company's price-to-growth-flow ratio to determine value:

Per share R&D ÷ EPS = Growth flow

Price ÷ growth flow = Price-to-growth-flow ratio

Guidelines for judging price-to-growth-flow ratio:

Fair: 10 to 14

Cheap: Below 8

Expensive: 16 and above

Other guidelines:

- If price-to-growth-flow ratio is a small fraction of price-earnings ratio, the market is most likely mispricing the stock by placing too much emphasis on current earnings.
- If the price-earnings ratio is below the percentage of sales spent on R&D, the stock is worth a look.
- Pay attention to the actual dollars being spent on R&D. As the sheer dollar amounts get larger, there are few companies that can afford to spend at those levels, which means less competition.

Controlling Risk

Measure the downside risk by taking the average of three worst-case valuation estimates:

- The price-to-sales ratio drops to 1.0
- The price-to-book-value ratio drops to 1.5
- The price-earnings ratio drops to one-third of the growth rate for the last three years

Determine the price to which the stock would fall under each of these scenarios, and take the average of the three. The difference between the current price and the downside price, divided by the current price, produces the percentage risk of the stock—in other words, the percentage amount the current price would fall if the worst were to happen. The lower the percentage risk, the better. A downside risk of 50% is common, and a good buying opportunity is when the downside risk is only 25%.

Portfolio Building

Build a portfolio of 10 to 20 stocks, and make sure to diversify among the seven major groups of technology stocks:

- Semiconductor equipment producers (companies that make the equipment that makes semiconductors)
- Semiconductor producers
- Large computers
- Personal computers
- Software
- Communications, including data communications (computer-to-computer data) and telecommunications
- Medical technology, including both biotechnology and medical devices

To keep the portfolio to a manageable size, add proportionately to existing holdings when adding new money to your portfolio, rather than buying new stocks. If you feel you must buy a new stock, sell your least attractive stock.

When to Sell

On the upside:

Sell if the stock's price-to-growth-flow ratio gets as high as the growth rate. In general, however, sell only when there is a better stock to buy.

If a stock grows so much it represents more than a third of your portfolio, trim it back and reinvest the proceeds in your most attractive other holdings.

On the downside:

If prices fall and the stock is still attractive on a price-to-growth-flow basis, buy more. However, if fundamentals have changed, or management appears to be failing, sell.

small fraction of the price-earnings ratio, it is a strong indication that the market is mispricing the stock by placing too much emphasis on current earnings. Murphy contends that this is a common problem among Wall Street analysts.

- Compare the price-earnings ratio to the percent of sales spent on R&D—for example, a price-earnings ratio of 13.3 and 19.6% of sales spent on R&D. In general, if a company's price-earnings ratio is below its percentage of sales spent on R&D, the stock is worth a look.
- When examining R&D spending, pay attention to the actual number of dollars being spent. Many firms can spend \$3 million; a lot fewer can spend \$30 million. As the sheer dollar amounts get larger, there are few companies that can afford to spend at those levels, and with less competition, the payback should be even greater.

TAMING RISK

The volatility of technology stocks is well-known, and Murphy does not try to play it down.

One approach Murphy suggests to quantify risk is to examine downside risk—the price to

which a technology stock may plummet if everything turns sour. To estimate this, Murphy uses three worst-case valuation estimates:

- The price-to-sales ratio drops to 1.0.
- The price-to-book-value ratio drops to 1.5.
- The price-earnings ratio drops to one-third of the growth rate for the last three years—for instance, if the growth rate were 30% over the last three years, the worst-case price-earnings ratio would drop to 10.

Murphy determines the price level for each of these scenarios and then takes an average of the three. For instance, if sales per share were \$7.84, the first downside price would be \$7.84; if book value per share was \$7.23, the second downside price would be \$10.85 (7.23×1.5); and if the growth rate was 36.3% and earnings per share were \$1.92, the price-earnings ratio would drop to 12.1 and the third downside price would be \$23.23 (12.1×1.92). The average downside price would be \$13.97 ($[7.84 + 10.85 + 23.23] \div 3$).

The difference between the current price and the downside price, divided by the current price, produces the percentage risk of the stock—in other words, the percentage amount the current price would fall if the worst were to happen. Obviously, the lower the percentage risk, the better. A downside risk of 50% is common, and a good buying opportunity is when the downside risk is only 25%.

PORTFOLIO BUILDING

Another important aspect to controlling risk in technology stocks, according to Murphy, is to diversify among the seven major groups:

- Semiconductor equipment producers (companies that make the equipment that makes semiconductors);
- Semiconductor producers;
- Large computers;
- Personal computers;
- Software;
- Communications, including data

communications (computer-to-computer data) and telecommunications; and

- Medical technology, including both biotechnology and medical devices.

Murphy's book includes a considerable amount of information on each of these industries, including descriptions about what drives the industry, its growth cycles and expected changes.

Murphy suggests that investors build a portfolio of at least 10 stocks, with companies from each of the seven industry groups. Keeping an eye on diversification among the various industries is particularly important, he notes, because at any point in time, the cheaper technology stocks are likely to be within one group; paying attention only to valuations, and not to your portfolio mix, can lead to a dangerously concentrated group of holdings.

For portfolios up to \$300,000, he suggests holding up to 12 stocks, and for portfolios over \$300,000, he would increase the number of holdings to 20. However, he says 20 is a good upper limit, since it is difficult for individuals to track more than that number. If new money is added to the portfolio, he suggests adding proportionately to the existing holdings, or putting more in those that are more undervalued rather than buying a new stock. If you simply must buy a new stock, he suggests selling your least attractive. This approach, he says, not only keeps the portfolio to a manageable level, but also is a good way of pruning shares.

WHEN TO SELL

Murphy provides one sell signal on the upside: sell if the stock's price-to-growth-flow ratio gets as high as the growth rate. However, in general, he suggests that investors use relativity to guide their stock sales—sell when there is a better stock to buy, rather than simply because the stock has gone up in price.

On the other hand, if the stock grows so much that it represents more than a third of your portfolio, he suggests that it be trimmed back, with the proceeds reinvested in the most attractive other holdings.

What if prices fall? If the stock is still attractive on a price-to-growth-flow basis, Murphy says these are great buying opportunities.

However, if the fundamentals have changed, or if management appears to be failing—for instance, new products do not get out, or management seriously misleads shareholders—sell.

MURPHY IN SUMMARY

Murphy is firmly wedded to the notion that technology is the major force in the economy. Because of that, his recommendations regarding how much of their total assets individuals should commit to the area is high: 100 minus your current age.

That's probably too high for most investors to stomach, amounting to total domination of many investors' stock portfolios.

Nonetheless, Murphy's book provides a solid approach for individuals who want to invest in technology stocks, combining elements of both the growth and value styles of investing. It also provides an excellent overview of the industry.

Murphy summarizes his approach best:

"Investing is a two-step process. The first step is to identify situations—managements, products and markets—with which you would like to associate your capital. The second step is to decide what price you are willing to pay to associate your capital with those situations.

"[Individuals should] focus on a small list of superior companies with rapid growth and excellent financial ratios. Then wait for each of them to get knocked down by Wall Street to the point where they are cheap on their price/growth-flow ratio." ♦