OPTIONS ON THE OUTS

The popularity of employee stock options is expected to wane with the adoption of a new accounting rule

BY DOUG CAMPBELL

April 27, 2004, was a good day at RF Micro Devices Inc. On that date, the Greensboro, N.C., company reported its first full year in the black since 2001. "We turned the corner on profitability," CEO Bob Bruggeworth said in the day's press release.

RF Micro Devices was founded in 1991 by a small band of local engineers and then built into a multinational firm with offices in Silicon Valley and China. The cellular phone components market in which it competes is a growing but tough business. Turning the corner on profitability was welcome news indeed.

But there was no big move in RF Micro's stock price following the positive earnings report. As is the case with most financial announcements, it would have taken a big surprise for the stock price to have been affected. In fact, the market was already taking into account something that RF Micro wasn't announcing that day — looked at another way, the reported $30 million profit was actually a loss of $25 million.

This news wouldn't officially come until two months later in RF Micro's annual report, filed with the Securities and Exchange Commission. The reason for the difference between the announced net income of $30 million and the "pro forma" loss could be found on page 28 of form 10-K in a footnote headed "Stock-Based Compensation." It showed that in RF Micro's latest fiscal year, the value of stock options (and to a lesser extent, certain outright stock awards) granted to employees was costing the firm about $62 million. Deducting that amount from earnings (plus adding in credit for a few other items) pushed the firm into the red.

It wasn't the first time RF Micro had reported a profit when in an alternate — some would say "economic" — reality, it had lost money. The same thing happened in 2001. And in every other year of its existence, the firm's profits were actually lower than reported because of stock option grants, and its losses likewise larger.

This is not to say that RF Micro was engaged in fraudulent behavior, or even doing anything unusual for that matter. Until this year, practically

PHOTOGRAPHY: GETTY IMAGES

every publicly traded firm in the country reported the cost of expensing employee stock options in footnotes. Scores would have reported losses instead of profits if employee options had been expensed. (In 1999, for instance, the number of U.S. technology firms reporting losses would have doubled if options had been deducted from profits.) RF Micro Devices just happens to be a good example of how this process worked — and perhaps of how managers tend to make decisions based on accounting numbers instead of economic ones.

To many, stock options in the 21st century have become synonymous with corporate greed. But that's hyperbole which ignores some of the positive things that options can do — like align shareholder and employee interests by motivating workers to boost their company's performance and drive stock prices upward, for starters. Stock options help companies like RF Micro grow faster than they otherwise could have.

At the same time, many managers and boards until recently were seemingly blind to the true costs of stock options, an anomaly that economists are striving to explain. And this unawareness had a number of negative implications for investors. Misjudging options as much cheaper than cash, managers were more likely to lavish them on employees. Meanwhile, option grants to top executives grew so widespread that the average CEO today makes about 262 times the average employee. Perhaps the executives are worth every dollar, or perhaps this is what happens when a big chunk of compensation gets accounted for as virtually free. Finally, the recent scandal over the practice of "backdating" employee stock options may have some of its roots in the relatively painless way firms were allowed to account for options.

Today, granting options is no longer painless: 2006 is the first year that public companies are being required to subtract the cost of stock options from their income. The change, which was years in the making, came about in large part because of clamoring for corporate governance reforms. Accounting scandals at Enron and WorldCom gave the Financial Accounting Standards Board (FASB) support for a long-proposed rule to make stock option expensing mandatory, instead of something that since 1995 was relegated to footnotes in annual company filings. (And before 1995, usually not reported at all.)

Across the nation, this one small accounting change is affecting the use of employee stock options in a significant way.

Stock Option Basics

Employee stock options represent the right to buy a share of stock at a specified price — called the exercise or strike price — before a specified date. Unlike standard, short-lived "call options," employee options usually cannot be sold to outside investors (see sidebar, Google). Also, they tend to have lengthier terms, sometimes of up to 10 years, and usually include vesting periods.

> The price that the firm would fetch in the market for this asset would be its economic value. Anything less, and shareholders arguably are being ill-served.

Here is how it works. A firm issues an option to an employee. The option usually has an exercise price identical to the price of the firm's stock on the day the option is issued. So if the stock is trading at $10 on that day, the exercise price is also set at $10. If the option vests in four years, then the employee will have the right to buy a share of stock four years later at $10, no matter what the firm's stock price is at that future time. If the firm's stock price has doubled to $20, an employee can buy that $20 share for just $10, then immediately turn around and sell it at the market price, pocketing the $10 difference as profit.

The vesting period is the key to an option's utility in retaining and motivating employees. The idea is that workers will perform at a higher level so as to raise the stock price, knowing that a higher price is in their direct interest. At the same time, other shareholders benefit — a seeming resolution to the age-old agency problem, aligning incentives of both the owners and the agents. (As an added bonus, the tax treatment for stock options is less expensive compared with cash payments and stock grants.)

Employee stock options were still something of a rarity in 1972 when a new rule was established to require that companies treat options as an expense as measured by their "intrinsic value" — which is the difference between the stock price when issued and the exercise price. Thus, the intrinsic value sets a lower bound on the exercise price, and hence its valuation. If the exercise price is set at the trading price of a stock on the day it is issued, then no expense is recorded. For example, a company whose stock was trading at $10 would issue options with strike prices of $10 on that day so as to avoid the expense. Because of this, virtually all employee options issued after 1972 were "at the money," or with identical exercise and trading prices on the day they were issued. Another way to view it is that firms were essentially allowed to ignore the cost of employee stock options.

In 1995, as option grants grew more popular, the FASB issued a new rule that firms must also, at the very least, report the "fair value" of employee options in footnotes to their regulatory filings. (The FASB had wanted this information to appear in the main income statement, but firms lobbied to prevent this from happening.) Fair value is calculated by using formulas that involve estimating the number of granted options which will vest and the expected volatility of the firm's stock price until the exercise date, among other factors that are impossible to nail down with precision.

"Fair value" aims to derive the underlying economic value of granting options. Unlike an accounting valuation, an economic valuation seeks to reflect the "opportunity cost" of a firm's decision about how to deploy its assets. In the case of a stock option, the relevant question is: What else could be done with it? A firm could sell it to an outside investor, for example. The price that the firm would fetch in the market for this asset would be its economic value. Anything less, and shareholders arguably are being ill-served.

Consider the easiest way that firms could account for stock options — they could buy them from third parties and then give them to employees. True, this would trigger an upfront, one-time expense. As Robert Bliss, a former senior economist with the Chicago Fed now at Wake Forest University put it: "That this form of employee stock option is not widely adopted reveals something of the motive behind their current usage — to transfer value to the employee without the appearance of an actual expenditure."

Wayne Guay, an accounting professor at the University of Pennsylvania, acknowledges that valuing employee options is tricky. But that's the nature of accounting, he says. Placing a dollar value on things like "goodwill" and pension plans likewise is fraught with assumptions and possible impreciseness. Moreover, just about every single number in a financial statement is an estimate, from cash on hand to inventory. "Of the list of things that are currently reflected in the income statement, valuing employee stock options does not strike me as one of

Google to Introduce Transferable Options

Internet search and information firm Google recently introduced a novel kind of stock option, one that employees can sell to outside investors. Historically, most employee stock options have been nontransferable, though firms like Microsoft have in the past offered one-time programs for employees to sell options.

Google's plan is thought of as the first to be rolled out on an ongoing basis, with a regular market in which financial institutions and other investors can offer to buy employee options. The company pitched the idea as a way to increase the value of employee stock options — or at least the value that employees place on them. The higher perceived value of "sellable" employee options results from the fact that employees nowadays tend to exercise their options almost immediately after they vest. (Google had its initial public offering in 2004, and since then many of its employee options have vested and been exercised.) But profits from options in many cases would have been greater if the employee had waited for the firm's stock price to rise. By selling vested options to optimization-minded investors and financial institutions instead of exercising immediately, employees are likely to pocket bigger profits.

The program "makes the value of [employee] options more tangible," said Allan Brown, director of Recognition and HR Systems on Google's blog. "By showing employees what financial institutions are willing to pay for their options, it is made clear that the value of their options is greater than just the intrinsic value." (By intrinsic value, Brown meant the difference between the exercise price and the current market price.)

Google's plan is an example of how many firms continue to believe in the power of stock options, even as expensing them has made more apparent the economic cost of issuing them. In fact, Google predicts that its cost of issuing options will rise with the plan because it will increase the expected life of the options. The plan will convert all post-IPO options to transferable ones, along with all newly issued options. It is to go into effect in the spring of 2007 and will not be available to senior executives. Google says it awards options to all new employees and then annually to many others.

Google's timing in introducing transferable options has ties to the new requirement of stock option expensing. Google said that one of its aims was to close the gap between the amount of stock option expense that the company has to subtract from earnings and the amount which employees perceive their options are worth. The amount that has to be deducted from earnings is based on options-pricing formulas, with Google using the standard Black-Scholes-Merton (BSM) pricing model.

In a statement about accounting for transferable options, Google explained: "Because traditional employee stock options are not transferable, there is a disconnect between their value as determined using BSM — which, under the new accounting rules, we recognize as stock-based compensation as the options vest — and the value employees ascribe to their options on the date of grant. The [transferable stock option] program diminishes this disconnect."

Carl Luft, a finance professor at DePaul University who has studied stock options, says that Google's effort means it's possible that market-determined prices for employee options will someday be the way that firms value such options in their financial statements. This would help end the debate over the best way to value options and complaints that current formulas are imprecise, even though the prices are likely to come out pretty close to each other. "My guess is that the market price will converge with one of the theoretical pricing models pretty quick," Luft says. "And that will provide a hard number that can be used in reporting rather than the number that is subject to criticism."

— Doug Campbell

LOGO: COURTESY OF GOOGLE

the most difficult things that we currently estimate," Guay says.

Still, managers complain more about valuing options than other items. They note that although it usually takes at least several years for employees to see any economic gain — and gains may never materialize at all — firms have to begin expensing the options immediately. Likewise, they argue that valuations are at best estimates. What's more, the formulas used for valuing employee options were originally developed for standard-issue options. The difference is important because employees tend to exercise options immediately after they're vested, even if they are not optimally priced at that time, which is contrary to what the standard formulas say they should do.

In addition, some firms dispute the very necessity of expensing options. They point out that granting options doesn't affect cash flows, the fundamental measure by which shares are valued. Also, small and young firms in particular claim that expensing options will make their reported earnings lower, which in turn would raise their cost of financing, perhaps then choking off future investment and innovation.

In a 2004 paper, economists R. Glenn Hubbard and Charles Calomiris of Columbia University argued that "the noise produced in accounting earnings by the decisions by the [Financial Accounting Standards Board] about 'true earnings' are ill-advised." Better, Hubbard and Calomiris said, would be to leave the valuation of options to Wall Street professionals, whose sophisticated, informed analyses play a central role in setting stock prices at the margin.

Yes, Hubbard and Calomiris agree, options represent a bona fide expense that needs to be disclosed. But the myriad different ways that they can be valued mean that investors may end up not comparing apples to apples when looking at numbers across different companies. "The primary role for regulation should be in the area of disclosure, which will ensure that competing approaches to measuring option costs are based on the same basic information," Hubbard and Calomiris wrote.

Moreover, the evidence suggests that the footnoted valuations are actually quite effective and informative. A number of studies have concluded that the market properly takes notice of these footnotes and assigns market values accordingly. Summing up the economic argument against an official expensing of options, Cleveland Fed economist Joseph Haubrich said: "Why should it matter if this information is reported on one line rather than another? Put differently, if the market already values these options, there would be little benefit to counting them as an expense."

Pushback

Haubrich actually is more agnostic about how to deal with stock options than his quote implies. He notes that former Federal Reserve Chairman Alan Greenspan was a moderate proponent of expensing options, in part because he was doubtful that markets actually do fully see their true costs. What's more, even if the market cannot be fooled by stock options, there is ample evidence that boards and managers can.

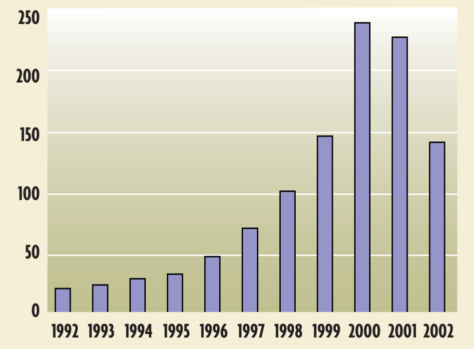
Consider the voluminous comments the standards board received from corporations in advance of adopting the expensing rule. "We continue to believe that, because no corporate assets have been consumed nor liabilities created, the issuance of a stock option conceptually does not result in an expense to the corporation," said Rajeev Bhalla, former controller for Bethesda, Md.-based Lockheed Martin. Or reflect on the words of Billie Rawot of Cleveland-based Eaton Corp.: "Employee stock options do not represent an expense to the company that should be recorded in the income statement."

Though not all firms denied the very existence of a "cost" in issuing employee stock options, many argued in letters to the standards board that the new rule greatly overstated their expense. This complaint was at the heart of doomsday scenarios raised by the likes of Christine Copple of Washington, D.C.-based ASM Resources: "The most talented scientists and researchers are much more likely to depart the United States for other nations. We must maintain our competitive edge in attracting the world's top scientists." In other words, Copple was saying that ASM would have to pare back on its option grants if it had to expense them — even though it was already doing so in the footnotes.

As a result of these kinds of perceptions, U.S. firms were nearly unanimous in their support of maintaining the status quo of keeping option expenses in footnotes. But did this make sense? How could firms simultaneously argue that a) footnotes provide adequate information about stock option expenses and b) incorporating this same information into their main income statements would be harmful? As economist Haubrich notes, "Only if, for some reason, the government both wants to subsidize ... firms and finds that the cheapest way to do so is to ignore the option expense, does this story make sense."

Perhaps something else is going on. To understand what, RF Micro Devices serves as a useful illustration.

Grant-Date Values of Employee Stock Options in the S&P 500



SOURCE: Hall and Murphy, 2003

Grants Galore

From almost the moment it was founded, RF Micro Devices relied on stock options as a major part of its compensation program. Like at a lot of young, high-tech firms, RF Micro's leadership reasoned that the upside to investing in the company was large. Meanwhile, cash on hand was small. Granting options provided employees with the promise of a big future payoff, while costing little in terms of impact on the income statement — thanks to accounting conventions of the day.

In RF Micro's fiscal 2000, subtracting the cost of employee stock options from earnings (along with a few other adjustments) would have dropped profits 36 percent, from $50 million to about $32 million. Dean Priddy, RF Micro Devices' chief financial officer and the fifth employee to be hired at the firm, in an interview did not specifically address whether all those options would have been granted if they had to be expensed. But he did say: "I see why some management teams would like it to be more of a footnote."

In 1998, the adjusted price of RF Micro shares was just more than $1. By early 2000, it was topping $90. Options outstanding during 2000, meanwhile, had exercise prices ranging between 4 cents and $175, with a weighted average strike price of $17.22. For a couple of years, employees holding options to buy RF Micro stock were on the brink of striking it rich. "If [the stock price] appreciates, then the investor is going to be happy. And the employee, too, is going to draw some economic benefit," Priddy says.

Then in the winter of 2000, RF Micro shares began to plunge, following the general southward trend of the technology sector. With shares quickly dipping to about $5, almost all the outstanding options granted to employees became worthless. And RF Micro stock remained mired south of $10 a share for the next few years. With the 2006 adoption of the new accounting rule regarding expensing options, those worthless options would suddenly be costing RF Micro a chunk of profits.

For that reason, RF Micro in 2005 was one of about 900 firms nationwide that accelerated its stock option vesting schedule. By speeding up the vesting period, firms essentially erased them off the books so that they wouldn't need to expense them in their income statements when the time came. There was nothing necessarily sinister about the practice, although for firms that intend to keep on using employee stock options — or substitute some other sort of compensation in lieu of options — it may mean that reported 2005 expenses appear abnormally low and likely to jump up the following year.

In RF Micro's case, all of the accelerated-vesting options were "out of the money," meaning the exercise price was below the trading price at the time. The company vested 10.2 million shares, and in its fiscal 2005 annual report said the move cost it $22.1 million. But again, this charge appeared only in the footnotes, instead of in the main report if they had carried over to the next year. "That was a legitimate way to avoid the expense on those particular options," says Priddy. "We decided it would be a prudent thing to do."

One earnings bullet was dodged, but the new accounting rule loomed. How would RF Micro Devices respond? First, it has begun duly reporting its options expenses in the regular income statement. But it also began doing something else — providing its own version of how investors might view the firm's financial reports. It's called "non-GAAP" results. GAAP stands for Generally Accepted Accounting Principles, and the non-GAAP numbers take out expenses for stock options, as well as some one-time charges. For the firm's second quarter this year, the GAAP results showed a loss of $20 million while the non-GAAP results showed a profit of $23.7 million.

"To the extent that [stock-option expense] are in the GAAP results, it does stand out," Priddy says. "We're less concerned about where it shows up than being able to show the investment community what we believe our core operating results are. That gets to the non-GAAP presentation."

Broad-Based Options

Whether RF Micro Devices provides two versions of financial results or 200 ultimately doesn't matter. The important thing is that a) the market gets the information it needs to properly value the firm and b) the firm's managers and board members recognize the true economic cost of granting options as they go about making decisions about how to deploy the company's assets. The problem with stock options centers more on the latter point.

Kevin Murphy, an economist at the University of Southern California (USC), believes that scores of firms had a blind spot with regards to options, thanks in part to their previous disclosure location in the footnotes, and he has evidence to back that assertion up.

Murphy, along with Harvard University economist Brian Hall, found an enormous spike in the value of option grants during the 1990s. In 1992, the average grant-date value of employee stock options among firms in the S&P 500 was $22 million; by 2000, it was $238 million. But the big story in that growth was who was receiving the options — rank-and-file employees. By 2002, about 90 percent of stock options were granted to employees below the top-executive level.

The thing is, the utility of options among such lower-level employees is limited. Options would seem useful in attracting entrepreneurial, risk-taking workers. But usually only the performance of employees with a lot of responsibility and decisionmaking opportunities can directly affect company stock prices. When options are so liberally given, they can create a free-rider problem, with many employees benefiting from stock price gains that occurred largely because of the actions of others. Also, as a retention tool, options can backfire in times of bear markets, as employees ditch their firms in search of companies offering other compensation packages.

Therein lies the big question: Taking for granted that all of these problems with granting options to lower- and mid-level employees are true, what reason would rational, incentive-minded boards and managers have in lavishing options across the payroll? The only plausible answer is that they regard them as free, or at least as costing less than cash.

"The conclusion that these … firms will be hurt [by the new rule requiring expensing of options] and not benefited is based on the incorrect assumption that these options are free, or cost very little," Murphy says. "But there's an inherent fallacy in that logic. My own view is that companies are always helped when they make decisions based on the economic cost."

How is it that boards and managers don't seem to recognize the economic costs of options while the market does? The leading hypothesis is that managers don't pay attention to economic numbers because their compensation is based on accounting numbers. Equally, managers perceive that hitting their accounting number targets is key to keeping their stock prices steady and rising. "There's a lot of literature out there that seems to suggest that managers care a whole lot about accounting treatments for various types of things even though the market sees through it," says Guay, the University of Pennsylvania accounting professor. "This whole notion of meeting or beating forecasts has evolved into this complex game of signaling that didn't evolve out of any economic significance."

Economists Hall and Murphy have looked beyond stock options and found other evidence that managers often respond to accounting concerns in ways that seem irrational, citing the 1993 rule change imposing a charge for anticipated post-retirement health care liabilities. Firms predicted that stock prices would fall because of the impact on income, but prices remained the same because the market was already valuing this economic liability — and yet companies still cut back on their retiree medical benefits. Such seeming irrationality remains hard to explain, but it's worth noting that, despite such cases, firms generally behave in ways that are consistent with mainstream economic theory.

Backdating

The historical practice of making options essentially free in accounting terms may be at the heart of one of the more recent scandals engulfing corporate America — options backdating.

Backdating is the term given to the practice of retroactively matching strike prices of stock options so that they correspond to a particularly low price for the company's stock. The result is that employees with backdated options have greater opportunity to enhance their profit from exercising them. Backdating is not necessarily illegal, so long as shareholders are properly informed and earnings are properly adjusted — but in practice few firms seem to have met those requirements.

The vast majority of firms that have announced they expect to restate earnings to reflect backdating of options are in the technology sector, many based in Silicon Valley. Among the more than 100 of those firms is only one in the Fifth District — ePlus Inc., a computer products reseller based in Herndon, Va., according to a *Wall Street Journal* compilation of reports on firms that have disclosed government investigations. The company in August said it would have to account for $3 million in stock option compensation expenses from April 1997 through March 31, 2006, and that further expenses arising from an internal investigation "will be significant."

Erik Lie, a finance professor at the University of Iowa, is one of the leading researchers of the backdating phenomenon. Lie estimates that at least 2,000 firms have engaged in backdating over the years.

Backdating is much less likely to happen today for two reasons. The first is due to a 2002 requirement by the SEC that option grants be reported within two business days. Firms that want to dabble in backdating today have to engage in outright fraud rather than play around the edges of legality as before. "Now you have to come up with one more lie about how you made the grant,"

Views on Stock Options and Reaction to FAS No. 123(R) from Around the Fifth District

"The concept behind using stock options is that it aligns employees' interests with those of our shareholders. As they work to increase the value of the firm, employees in turn are rewarded with the growing value of their stock option grants."

— Linda Brewton, manager, investor relations, Red Hat Inc., Durham, N.C.

"Stock options align well with Sonoco's shareholder interests and provide a good vehicle for employee stock ownership, and until recently had an advantageous accounting treatment … With the anticipation of FAS No. 123(R) several years ago, Sonoco began to shift more of its incentives at the senior level from stock options to long-term incentive plans based on restricted stock."

— Roger Schrum, director, corporate communications, Sonoco Products Co., Hartsville, S.C.

Since the adoption of FAS No. 123(R), "The substantial majority of employees receiving awards have received restricted stock instead of stock options."

— Katharine Kenny, assistant vice president, investor relations, CarMax Inc., Richmond, Va.

"We are very concerned that the cost of expensing employee stock options would restrict the ability of companies to offer this important benefit in the future … In addition, we are concerned with the impact the proposal would have on small businesses."

— Steven Anderson, CEO, National Restaurant Association, Washington, D.C.

Lie says. "That may help curb backdating."

Second, some analysts argue that expensing options serves as a deterrent to backdating. If firms had to immediately recognize the cost of granting options, then there likely would have been more scrutiny over the practice of backdating and its accompanying costs. Rebecca McEnally, a director with the CFA Institute, a Charlottesville, Va.-based nonprofit financial markets organization, says the requirement that firms expense options is one of several important changes that will ease the problem. "Both preparers of financial statements and auditors pay too little attention to the numbers that are reported in the footnotes," McEnally says. "If it's not expensed, it looks like a free good at the time, even though it is costly to investors."

Future Options

But what place will garden-variety employee stock options hold in the future? The evidence so far is that companies are paring back their employee option grants. Murphy, the USC economist, says his recent surveys have found that while in 2001, firms were granting 2.6 percent of their compensation in the form of stock options, in 2005 it was down to 1.3 percent. "There's a tremendous amount of evidence that managers and directors respond to changes in accounting rules," Murphy says.

In other words, now that there is both an economic and accounting cost to be reported, employee stock options seem unlikely to be offered in the volume they were in years past. When it became obvious that stock option expensing would become the norm, many firms began cutting back on their use. Perhaps the most famous firm to swear off options is Microsoft. Since 2003, the Redmond, Wash., company has only made outright stock grants to workers. In firms where stock options continue to be issued, Murphy and Hall believe, they are "likely to be reduced and concentrated among those executives and key technical employees who can plausibly affect company stock prices." That category would include young and small firms, as well as possibly struggling firms for which employee loyalty and high performance is particularly important.

Of course, for firms that believe stock prices already reflected the cost of options, then reporting them should not matter much, says the Cleveland Fed's Haubrich. "So if options are the proper compensation tool, their use should continue." In Greensboro, RF Micro Devices remains a believer in stock options. Last year, the firm's shareholders approved a plan that canceled 9.4 million old options and awarded half as many new ones. The old options were worthless, with strike prices as high as $87.50 at a time when RF Micro shares were trading well below $10. The newly issued shares (one awarded for every two canceled shares) came with much more friendly exercise prices of $6.06 and vesting over two years.

Thus, options remained a part of RF Micro's compensation program. The firm continues to believe in the utility of stock options, so much so that to this day, every new domestic employee at RF Micro Devices gets an award of stock options upon hiring. The firm has 2,000 domestic employees, so this is no trifling matter. It speaks to management's philosophy about employee impact. As CFO Priddy says, "We believe that every single employee has the ability to improve the long-term operating results for the company, whether it's someone working in wafer fabrication to help improve the product, or if it's a person in customer service. To us, all of our employees are valuable assets, and we believe these employees recognize the value of our stock options."

In a way, one can think of RF Micro Devices' enduring faith in stock options as a natural experiment: How much can a firm rely on stock options to motivate employees in a time when granting them now carries immediate and perhaps more obvious costs? Priddy is optimistic. "It's something we certainly continue to plan on doing. I really don't know if this company as we know it today would be here without stock options," he says. "That's how powerful an incentive tool I believe they are." **RF**

Readings

Bliss, Robert. "Common Sense about Executive Stock Options." Federal Reserve Bank of Chicago, *Chicago Fed Letter* no. 188, April 2003.

Bulow, Jeremy, and John B. Shoven. "Accounting for Stock Options." *Journal of Economic Perspectives*, Fall 2005, vol. 19, no. 4, pp. 115-134.

Calomiris, Charles, and R. Glenn Hubbard. "Options Pricing and Accounting Practice." American Enterprise Institute Working Paper no. 103, January 2004.

Deshmukh, Sanjay, Keith M. Howe, and Carl Luft. "Executive Stock Options: To Expense or Not?" *Financial Management*, Spring 2006, vol. 35, no. 1, pp. 87-106.

Guay, Wayne, S.P. Kothari, and Richard Sloan. "Accounting for Employee Stock Options." *American Economic Review*, May 2003, vol. 93, no. 2, pp. 405-409.

Hall, Brian, and Kevin Murphy. "The Trouble with Stock Options." National Bureau of Economic Research Working Paper no. 9784, June 2003.

Haubrich, Joseph. "Expensing Stock Options." Federal Reserve Bank of Cleveland *Economic Commentary*, November 2003.

Lie, Erik. "On the Timing of CEO Stock Option Awards." *Management Science*, May 2005, vol. 51, no. 5, pp. 802-812.