

ask a senior corporate executive of a typical manufacturing or service company about the firm's derivatives activities, and you'll probably be referred to the treasurer. While companies in the financial sector and those producing or trading commodities have long been familiar with derivatives as strategic tools, top executives in most other industries persistently regard the application of derivatives as essentially tactical, unrelated to the core management challenge of creating and sustaining competitive advantage. That's why they cheerfully delegate the management of the company's derivatives portfolio to in-house financial experts.

The dangers of delegation, of course, have been ruthlessly exposed by a number of corporate scandals in which large risks were taken without appropriate understanding or authority. What is less well recognized is the huge strategic opportunity that senior management and boards of directors are passing up by not paying close attention to the way their companies manage risks.

Thanks to the inventiveness of the modern financial markets, managers can, in principle, engineer a company's capital structure so that virtually the only risks its shareholders, debt holders, trade creditors, pensioners, and other liability holders must bear are what I call value-adding risks. Those are the risks associated with positive-net-present-value activities in which the company has a comparative advantage. All other risks can be hedged or insured against through the financial markets.

In most large companies, equity capital is used to cushion against a great many risks that the firm is no better at bearing than anyone else. If it can strip out the non-value-adding, or passive, risk, a company will be able to use its existing equity capital to finance a lot more value-adding assets and activities than competitors, and its shares will be worth far more. So the potential for creating shareholder value through financial engineering is enormous.

This is not just a theoretical possibility: One innovation—the interest rate swap, introduced about 20 years ago—has already enabled a major industry, banking, to dramatically increase its capacity for adding value to each dollar of invested equity capital. With the range of derivative instruments growing, there is no reason other companies cannot do likewise, potentially creating tens of billions of dollars in shareholder value. The possibilities are especially important for private companies that have no access to public equity markets and therefore cannot easily increase their equity capital by issuing more shares.

In other words, smart financial engineering frees up equity capital for strategic investments, allowing a company to finance more value-adding growth for the same amount of equity. And there is no increase in the level of risk a company bears, just a change in the risk's nature. Better yet, as we shall see, managers can create all this value-adding growth without changing the way their companies currently go about their business.

In this article, I will explore the distinction that managers need to make between value-adding and passive risks. I will then explain how companies can create a *risk balance sheet*, which shows the risk portfolio and sets forth just how much equity cushion each risk requires. Companies can use the risk balance sheet to identify those risks they should not bear directly and determine how much equity capacity they can release for assuming more value-adding risk through the use of financial tools. I will then describe how derivative contracts of various kinds are now being used, and will be used, strategically to hedge or insure against various risks. These instruments alone offer a huge potential for corporate value creation, but they are just the tip of an iceberg—many tools already exist, and more are sure to emerge.

Value-Adding Versus Passive Risks

Executives are used to thinking of strategy in terms of comparative advantage: What assets and capabilities do we have that allow us to do things better than our rivals? The New York Times Company, for instance, has a comparative

advantage in reporting and editing the news, and possibly in printing and distribution, but no particular advantage in, say, producing newsprint. A manufacturer of newsprint such as South Carolina-based Bowater (the largest U.S. producer) would probably have the advantage in that respect. The strategy literature reflects this framework—terms such as “competitive advantage” and “core competence” imply that not all of a company’s assets and activities create value and that the more companies focus on the value-adding ones, the better they do.

What executives seem to forget, however, is that the same comparative-advantage distinction can be made about a company’s risks. The Times has an advantage in bearing the risks of news gathering (thanks to its talented journalists) but no particular advantage in bearing such risks as the cost of paper. That’s not to say newsprint costs are unimportant to the Times, just that it is no better at bearing them than the average company and is probably much less effective than Bowater.

Commercial banking provides a particularly clear example of the distinction. Traditional banks take on essentially two classes of risks. One is associated with banks’ ability to find and service customers (selecting branch sites, developing product packages, and so forth). These are value-adding risks. By taking them on, and managing the associated activities and assets successfully, banks can create returns in excess of the cost of capital. The other class stems from the different needs of customers. Because depositors want to be able to withdraw money at any time while borrowers want to lock in a fixed interest rate and avoid repaying as long as they can, banks are exposed to the risk that the long-term interest they receive on loans will be less than the short-term interest they pay on deposits.

Most bankers would acknowledge that they are not especially good at forecasting and managing interest rate risk and that banks’ physical and intangible assets (customer databases and relationships, say) do not help them bear it. A bank that *does* have expertise in forecasting interest rates can

make a lot more money applying it in the third-party asset-management business, and some large banks have done just that. From the perspective of the core banking business, however, bearing interest rate risk is not value adding (and the risks that are value adding for the bank would not be value adding for the asset management business).

Why is the distinction important? Whether a company's risks are value adding or not, they still require a cushion of risk capital, most of which is usually provided by the holders of a company's liabilities, primarily the holders of its equity. Unless the company can hedge or insure against its risks in other ways, its ability to bear them is largely limited by the size of that cushion. Thus, the larger the risks the company has to bear directly, the larger the required cushion.

Let's suppose that we have a company whose risks are cushioned entirely by equity, so that all of its outstanding debt is rated AAA. Let's further suppose that the other side of the balance sheet, the asset side, contains virtually no value-adding assets or capabilities. The returns generated by those assets would be unremarkable—neither greater nor less than what any passive investor could earn. But the company's shares would sell in the market below the resale or book value of the assets. That's because the cost of equity is not wholly determined by the risks of the assets and activities that the equity helps to finance. First, equity carries a tax burden—debt interest is tax deductible, but dividends are not. More significantly, there are considerable agency costs related to the nature of the equity contract, which heavily favors managers over shareholders. (By contrast, debt capital has explicit covenants that favor bondholders over managers.) Finally, the transaction costs associated with issuing equity are much heavier than for other forms of risk insurance. If not for these costs, the company's shares would trade at or just below book value and its managers would raise a lot more equity capital than they do—indeed, the optimal capital structure would be to issue so much equity (holding the proceeds in passive financial assets that could be drawn down to pay for new business investments, if and when they became

available) that all debt and other obligations of the firm would be rated AAA. The extra costs, however, make equity a highly expensive way to finance risk, so managers in the real world limit its use. (For more on agency and transaction costs, see the sidebar “The High Cost of Equity Capital.”)

The High Cost of Equity Capital

Equity capital is by far the most versatile form of risk protection. There are no strings attached to it—managers have absolute control over the money raised and have no contractual obligation to pay it back. Shareholders have rights only to elect the corporation’s board and receive distributions. Equity capital can thus be used to cover any business risk, which is why highly capitalized companies usually have the soundest credit ratings.

But equity has the highest premium rate of any kind of corporate-risk insurance policy. For ceding their rights, shareholders demand compensation beyond what they expect for bearing the risks of the investments to be made with their money.

Equity’s agency costs, as they are called, are magnified by the equity fund-raising transaction. Publicly traded companies have to make their shares available to all

But if the equity cushions the risk of investments that are expected to receive higher returns, on a risk-adjusted basis, than the company could expect to get from putting its money into passive, market investments with the same risk, then the stock will sell for more than the amount put into the company. That has considerable implications for strategy. Since the assets associated with passive risk do not contribute to a company’s premium over net book value, the company can, in principle, create value without adding new equity capital simply by eliminating existing passive risk and thereby creating risk capacity to expand value-adding investments. The value that can be created in this way, as we shall see, can do a lot more than compensate investors for the deadweight costs of equity. Furthermore, if no such new investments are available at the moment, management can still create value by using the risk

potential investors, favoring no group. This highly regulated, sometimes lengthy process consumes a lot of management time. Management and underwriting fees on an IPO typically amount to around 7% of the value of the shares issued. Companies can cut out their underwriters (or at least reduce their fees) through rights issues, whereby funds are solicited purely from existing shareholders, but in those cases, companies forgo the opportunity to broaden their investor base and still have to offer discounts to persuade shareholders to participate or sell their rights to third parties.

Corporations also take on a tax burden when they issue equity. Interest payments on debt are tax deductible; dividends are not. Indeed, companies can create value by issuing debt instead of equity, accepting lower ratings as long as the increased servicing costs are outweighed by the tax advantages.

If an enterprise's managers want the flexibility of corporate equity, they must pay investors for it. But paying for the all-purpose risk cushion provided by equity is value wasting if an alternative cushion

reduction to change its capital structure to have less equity without negatively affecting its debt rating.

Listing All Sources of Risk

Once a company has identified its risks and determined which are value adding, it can draw up the risk balance sheet and work out how much equity capital it can eliminate by hedging, selling, or insuring its passive risks. (Managers should not confine themselves to the risks associated only with the assets and liabilities that are on the formal balance sheet but should list all the sources of risk, whether on or off the official financial statements, including risks associated with intangible assets such as reputation or key knowledge workers.)

The modeling tools that enable companies to calculate the equity capital requirement are typically based on the concept of value at risk (VAR), a dollar measure of a company's total riskiness. The most sophisticated VAR tools are probably to be found in the securities and the banking industries, which have long applied the value-at-risk concept in

that is more targeted, and therefore usually less expensive, can be used instead.

preparing risk exposure reports for internal senior management and creating capital-adequacy reports for regulators. Applying a VAR tool involves estimating the volatility of the value of the company's business portfolio and calculating,

from that, the maximum potential loss in asset value the company is likely to sustain over a given time period within a given probability confidence level. For example, a bank might look at its operations and estimate that there is a 99% chance it will lose no more than \$500 million over a ten-day period. That is, there's only a 1% chance that the bank will lose more than \$500 million in value over that period. This \$500 million is the ten-day 1% VAR.

The company's estimated equity requirement is usually some multiple of its VAR—a multiple determined by the company's need to protect the value of its other obligations. A company with a large equity cushion will get a higher credit rating from debt holders than a company with a small cushion, given the same asset volatility. The credit rating affects just how much and on what terms debt holders will lend to the company. If the bank just mentioned, after looking at Moody's and Standard & Poor's assessments of its business, determined that the multiple to protect its AAA credit rating was three times VAR, then it would need \$1.5 billion in equity capital (three times \$500 million). In other words, it could lose up to \$1.5 billion worth of assets before it became unable to meet its obligations to debt holders and other stakeholders.

It's important to note that the required amount of the equity cushion is determined not by the cost or size of the company's assets but by their risk (measured here by VAR). Suppose the assets that collectively allow the bank to manage or provide for both the value-adding risk of managing customers and the passive risk of managing interest rates cost \$15 billion to purchase. The bank could finance the purchase of the assets by using the equity (\$1.5 billion) and borrowing \$13.5 billion in AAA debt. But if the same assets (producing the

same VAR) cost \$20 billion, the bank would still need only \$1.5 billion in equity, while the \$18.5 billion balance could be raised by issuing AAA debt. In either case, if the equity portion of the financing were less than \$1.5 billion, say \$1 billion, then the debt of \$14 billion or \$19 billion would no longer be rated AAA, because some of the VAR would now be borne by debt holders, who would expect compensation in the form of higher interest payments.

The amount of equity capital a company needs is also independent of its cost of capital. Companies with relatively high weighted average cost of capital (WACC) don't necessarily need more equity than companies with relatively low capital costs. That's because WACC is determined not by the business's total risk, or VAR, but only by the amount of its systematic risk—measured by the sensitivity of the company's asset value to changes in overall equity-market prices (what financial economists, in the context of Sharpe's Capital Asset Pricing Model, refer to as an asset's beta). Imagine you have a firm that has assets of \$1 billion invested in a project that will either destroy or double the value of the assets. The outcome, let's say, is decided by a flip of a coin. In that case, the project's outcome is uncorrelated with the overall stock market. That means the project has zero systematic risk, and the compensation for the risks of the project will therefore be the same as the risk-free rate. But while the required, or equilibrium, expected return on this equity would be relatively low compared with that of a company in a business sensitive to the overall market, you would need a lot of equity, given the 50% chance of losing everything.

The exhibit "The Risk Balance Sheet" shows what a simplified risk balance sheet for a commercial bank might look like. On the left side, managers would list the assets: loan assets, most obviously, but also physical and intangible assets such as branches, IT equipment, databases, and brands that a bank needs in order to attract customers and provide services. On the right side, they would list the various types of liability: customer deposits, debt, and equity. Managers would report the market or intrinsic value for each type of asset and liability, and they would list the VAR that each asset imposes on the

company and that each liability bears. Where possible, the company would itemize the specific risks associated with a particular asset. In this case, there are two obvious risks associated with customer loans: interest rate risk and credit risk.

The Risk Balance Sheet

Companies seeking to make better use of their equity capital can draw up a risk balance sheet that reports assets in terms of both value and risk, and identifies what proportion of total value and risk each type of liability is cushioning. This document includes all assets and risks faced by the firm (for example, in the case of a bank, the deposit insurance provided to eligible banks for a fee and, of course, all contractual agreements—swaps, options, futures, and pension fund assets), whether off or on the balance sheet, and all significant liabilities (including the company's loan guarantees to customers and suppliers, deferred compensation to employees, and pension liabilities).

In this simplified, hypothetical example, we look at a bank that has value-adding assets related to customer servicing and credit-risk assessment as well as passive assets related to managing interest rate risk. The value at risk (VAR) for each type of asset is shown on the left. On the

The bank's assets amount to \$129 billion, and the total VAR associated with them is determined to be \$3 billion. Since our hypothetical bank wishes to maintain its AAA debt rating (essentially risk-free), requiring equity equal to three times VAR, the VAR is entirely borne by the equity liability. Of course, if the bank were willing to pay more for debt, it could reduce its equity and the amount of VAR cushioned by equity, transferring some VAR to debt.

Of the bank's \$3 billion VAR (requiring \$9 billion in equity capital), \$1.5 billion is associated with interest rate risk and the rest is associated with the value-adding risk of managing and servicing depositors and borrowers and with assessing and bearing credit risk. What if the bank could take that passive VAR out of the portfolio by hedging or insuring against it without affecting the value-adding side of the business? Its total VAR

right, we see the various liabilities and the amount of VAR cushioned by each. In this case, it is assumed that all VAR is cushioned by equity if the amount of equity capital is three times the VAR.

ASSETS		LIABILITIES	
CASH AND EQUIVALENTS		CUSTOMER DEPOSITS	
Value	\$5 billion	Value	\$100 billion
VAR	0	VAR	0
LOAN ASSETS		DEBT	
Value	\$100 billion	Value	\$20 billion
Interest rate VAR	\$1.5 billion	VAR	0
Credit risk VAR	\$0.9 billion	EQUITY	
CUSTOMER SERVICE ASSETS (BRANCHES, IT, DATABASES, BRANDS)		Value	\$9 billion
Value	\$24 billion	VAR	\$3 billion
VAR	\$0.6 billion	TOTAL LIABILITIES	
TOTAL ASSETS		Value	\$129 billion
Value	\$129 billion	VAR	\$3 billion
VAR	\$3 billion		

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would then be only \$1.5 billion. The bank would need only \$4.5 billion of equity capital (three times \$1.5 billion) to both sustain its existing value-adding operations and maintain a AAA debt rating. The company could, therefore, return equity to its shareholders (replacing it with AAA debt), and the company’ s market value would rise by the amount of deadweight equity costs saved less the cost of the hedge or insurance replacing

the equity. The increase could be significant.

Alternatively, since the bank already has the equity to support a \$3 billion VAR, it could choose to add \$1.5 billion of another kind of risk to replace the passive interest rate risks it has just eliminated. If that other kind of risk is value adding, then the company’ s market capitalization will rise above—possibly well above—current levels. And since the bank already has the capacity to bear the \$1.5 billion in new value-adding VAR, it does not have to raise any new equity. In other words, it can finance, say, the acquisition of a new branch network in another region entirely through debt as long as the expansion does not create more than the \$1.5 billion VAR released by disposing of the passive-risk-bearing assets.

This is precisely what the banking industry has been doing over the past two decades, thanks to a financial contract known as the interest swap.

Setting Free the Banks

A quarter century ago, the only way banks could manage interest rate risks without adversely affecting the value-adding side of their business was to make large capital provisions or develop skills in forecasting interest rate

movements. This essentially meant a diversion of risk-bearing capacity away from their value-adding activities and their main source of competitive advantage.

There was no way to avoid making these provisions, because the interest rate risk was imposed on banks by customers. In principle, a bank could refuse to extend long-dated, fixed-rate loans or to accept short-dated, floating-rate deposits, but if it did, it would very soon go out of business. In effect, the interest rate risk was bundled with the company's value-adding activities and could not be avoided. It tied up a lot of expensive equity capital.

Enter the interest rate swap, a bilateral contract in which two organizations agree to exchange cash flows. Take, for example, a bank's anticipated cash inflows from interest earned on a long-term, fixed-rate loan. The bank can swap those cash inflows with a pension fund that wants fixed-rate interest payments to cover its long-term liabilities (to pensioners). In return, the bank receives the cash flows from floating-rate interest applied to the same principal amount as the loan. In practice, the bank and the pension fund simply net off the difference between the cash flows: If the fixed interest rate of the swap exceeds its floating rate, the bank pays the difference to the pension fund. If the reverse is true, the pension fund makes the payment to the bank. This kind of contract is known as a hedge, in that (unlike an insurance policy or an option) it shields the bank from both favorable and unfavorable movements in interest rates.

The beauty of the swap contract is that it is noninvasive. A bank can strip out its interest rate risk without affecting its customers. Borrowers still pay a fixed interest rate on a long-term loan; depositors still have a safe short-term asset. What's more, bank employees do not have to change their value-adding behaviors in any way. They look for the same customers and pitch the same products and services as before.

Even better, interest rate swaps are easily reversible. If customers' tastes change—for instance, if a bank's borrowers decide they want to borrow at floating interest rates—the bank can easily switch its interest rate exposures by taking out another swap the other way. Unwinding an interest rate risk position doesn't involve any renegotiation with swap counterparties, nor does the bank have to sell off its existing swap contracts. Nor must it try to get customers to change their preferences to suit the bank's risk needs.

The strategic implications are broad: With the swap, bearing interest rate risk is no longer an inevitable cost of doing business, which means that banks do not have to tie up as much equity in cushioning passive risks, and the capital they raise can be more precisely targeted at areas where it will create the most advantage. It's not clear exactly when the first interest rate swap agreement was struck, but certainly by the early 1990s, the swaps desk had become as much a fixture in the securities trading rooms of most large commercial banks as the foreign exchange desk.

Today, the numbers suggest that companies of all kinds have swapped interest rates on some \$147 trillion worth of assets. The swap contract has now become a highly standardized document, and a large body of case law has grown up around the terms and conditions, so that no ambiguity exists around the rights and obligations of the parties to a deal. The swap market is now a highly liquid, deep, and safe market in which to operate.

Escaping Credit-Limit Tyranny

Interest rate risk is not the only kind of customer-related risk that has acted as a brake on banks' capacity to grow. Just as important is the credit risk that banks take on when they extend loans. The more a bank lends to an individual customer, the more exposed it is to the risk that the customer will default. To keep that exposure within bounds, banks have traditionally placed formal limits on the amount of money they lend to any one client. Without such limits, banks would be forced by regulators to raise more equity capital. Just

like interest rate risk, credit risk was once thought to be a necessary part of the banking business, a burden that bankers had to take on in order to service customers.

But a new kind of derivative called the credit-default swap largely frees banks from the tyranny of credit limits. Without having to raise more equity, the banks can do as much business with their prime clients as they want. Like the interest rate swap, the credit-default swap is a bilateral contract. But it is not a hedge. Instead, it resembles an insurance policy in that a bank will pay the equivalent of a premium to the swap counterparty in return for the right to a full payment of a loan if a borrower defaults. (A common practice is for a bank to buy credit-default-swap protection in cases where it wants to keep lending to a single name for relationship reasons—even if it is concerned by too much exposure to that particular company's credit.)

A broader problem for banks than exposure to an individual client was exposure to a particular sector. If a bank felt that a customer's borrowings were increasing the likelihood of default, it could avoid lending more to that customer. But a bank would often have to turn down new business with, say, a strong publishing company that was a good risk, simply because of the bank's existing exposures to other publishing companies. Thus, the bank's attempts to serve the individual customer would be compromised by its overall risk exposure to the industry sector. But now a bank can separate the risk of an individual name from the risk of the sector. It can enter into a credit-default swap on a portfolio of publishing companies that expressly excludes the strong one, thereby covering itself against the credit risk of every publisher except the customer with which it wants to do business.

Once again, we see a derivative contract reducing the amount of passive VAR, enabling a bank to take on more value-adding VAR. In the case just described, the bank is clearly not protected from the risk that the publishing company in question will experience some kind of catastrophe. But it is the bank manager's job to assess such risks. Knowing its customers is one of the

sources of the bank's advantages—it is a value-adding activity—and the bank manager's special knowledge of a customer is what enables him or her to surpass a competitor in deciding how much business to do with that customer. In contrast, bearing the risks of the publishing sector in general is a passive, non-value-adding activity, from the bank's perspective. And as with interest rate risk, if a bank did have a valuable (and presumably expensive) capability in sector analysis, it could create more value for shareholders by using that ability in some other line of business, such as asset management.

Of course, the bank still has to pay for the contract, which represents an opportunity cost. Money invested in premiums cannot be invested in acquiring new accounts. But the cost of the insurance provided by the swap is usually considerably lower than the cost of providing the same insurance through equity capital. I think of equity as a kind of all-purpose risk insurance. The broader your coverage, the more expensive it is. Credit-default swaps, on the other hand, are precisely defined (and by now standardized) contracts struck between a company and one other professional party. They are focused on a specific risk and cannot serve to reduce any risk other than the default of the customers involved, which means that they do not impose the same deadweight contract-related (or agency) costs as equity. What's more, the transaction costs associated with issuing new equity do not apply to credit swaps, which can be arranged in minutes by phone.

Recent and ongoing regulatory changes will increase banks' appetites for credit-default swaps. Under the Basel II agreement on banking regulation, banks will be obliged to factor credit risk into their VAR calculations along with interest rate and other market risks, increasing their potential need for equity capital. The pressure on them will be considerably reduced if they can use swaps to take generic credit risks such as sector exposures off their books. Their remaining credit-related VAR will be of the value-adding, growth-contributing kind, which will make the need for any extra equity capital to support risk taking a much more pleasing prospect.

Banks are not the only companies that can benefit from credit-default swaps. In fact, the value of almost any company that sells on credit can be enhanced through the use of these agreements. To take a simple case, suppose you are an aircraft manufacturer like Boeing or Airbus. Your competitive advantage lies in your expertise in designing, manufacturing, and delivering superior aircraft. Unfortunately, your customers—airlines—are almost universally weak credit risks, and they all operate in the same sector, which means your company has a highly concentrated exposure to the vagaries of the air travel business. But managing the risks that your customers will default is outside your area of competitive advantage. From your perspective, they are passive risks, and your only reason for bearing them is that the customer insists on it.

The value of almost any company that sells on credit can be enhanced through the use of credit-default swaps.

Here, too, the credit-default swap gives you a noninvasive and reversible way to lay off the risks of customer default or to reduce sector credit exposure. You might choose to protect yourself by purchasing a credit-default swap on a group of names, as I described previously for the banking industry. If an airline goes out of business in an isolated event, its assets (its routes and aircraft) will be taken over by some other airline, and you're not concerned by who is paying for or leasing the aircraft. You just want to sell as many planes to as many customers as you can. Your customers don't have to see anything of the swap transaction; from their perspective, you are providing them with exactly what you have done before and on the same terms. And if your credit exposure to the airlines changes at all, you can back out of the swap simply by providing some other company with a swap in which you provide the default guarantee.

Of course, there are other ways for an aircraft manufacturer to insure against customer credit risks. Banks have been providing letters of credit and credit lines to companies for a long time. But except in the case of government

export-import banks, bank guarantees to third parties are relatively rare, difficult, and expensive to arrange. Such a guarantee may be better than raising more equity capital, but it is more expensive than entering into a credit-default swap. Obviously, big banks can use the credit-default-swap market too, so prices for this service have fallen, and availability has grown, as this market has gotten bigger.

The market in credit-default swaps is burgeoning; at last count, credit risk derivatives were available for some 400 or 500 companies, and the value of outstanding contracts stands at some \$8.2 trillion, according to a recent report by the International Swaps and Derivatives Association. The market is now sufficiently large and liquid to sustain the kind of growth that we saw a decade ago with interest rate swaps.

From Credit to Equity

Let's now suppose that you, the hypothetical aircraft manufacturer, in common with many other large manufacturers (and, indeed, like Boeing), carry large pension liabilities, which are fixed in nominal terms and have long durations. Let's further suppose that the pension assets that were expected to cover these liabilities were invested in the stock markets, whose returns are highly volatile and highly correlated with the risks of most firms' business assets.

General stock-market risk is a passive risk for an aircraft manufacturer—indeed, for any company—since investors can easily obtain that exposure for themselves from professional financial-asset managers. Hence, even for fully funded pension plans, a mismatch of risk between pension plan assets and liabilities would impose a large amount of passive risk on the company's other liability holders, and most of it would be borne by the shareholders. This mismatch of risk between pension assets and liabilities is often more serious an issue than a shortfall in funding measured by the dollar amount of their difference. (For a discussion of companies' costs of bearing this passive risk, see my article "The *Real* Problem with Pensions," HBR December 2004.)

Enter another derivative product: the equity swap, which enables you, the manufacturer, to exchange the returns on your stock-market-invested pension assets for a fixed-rate, long-duration return that can be tailored to your pension liabilities. If your company (or its designated fund managers) were particularly good at managing the equity portfolio, the swap would even allow the firm to retain that value added, because the company could engage only in a swap that exchanged returns on a stock market index rather than the specific returns on its portfolio. In this way, it could eliminate the non-value-adding market risk of the portfolio but retain the value-adding risk of the superior fund-management performance.

There is no shortage of potential counterparties for such a transaction; any professional investor seeking to increase its exposure to equity returns would be interested. The amount of equity that companies can release by eliminating their pension risks in this way is significant. Indeed, for some companies, the estimated VAR created by the pension asset-liability risk mismatch alone actually exceeds the entire capitalization of their equity.

Equity swaps can do more than remove specific market-related risks, such as those associated with a company's pension plan, from the firm's risk balance sheet. They can also be used to strip away the market-related risks of the operating business itself. As we saw with credit risks, it becomes possible for companies to break down their operating business risks and separately manage the different components so as to retain only those risks that are value-adding for the company.

The online stockbroker Ameritrade is a case in point. Its operating business is exposed to general market risk in two ways. First, when the stock markets fall, Ameritrade's customers become poorer, which means that the dollar value of their trades falls, reducing commission income. Second, customers' propensity to trade falls as the market declines, because dropping market values usually go hand in hand with decreases in trading volumes. This again

translates into reduced commission revenues for Ameritrade. The exposure to these risks increases the company's total VAR, most of which it has to cover through equity.

But while Ameritrade's business is sensitive to the stock market, figuring out what the stock market is going to do is not its value-adding business. It adds value by persuading customers to trade through Ameritrade and by providing excellent execution of trades. If Ameritrade could strip out its exposures to equity-trading volumes and market values, it could make more equity available to support the added risk from expanded investments in better customer databases, faster computers, and easier customer interfaces and from the enlargement of its customer base through marketing or M&A activity.

To reduce its exposure to stock market volatility, Ameritrade could enter into an equity swap agreement with a mutual fund or some other investing institution. Ameritrade could swap the returns on a notional portfolio invested in the overall market index in exchange for the returns on an equivalent amount invested at a floating interest rate, which has a zero VAR. If the stock market did well, Ameritrade would be able to pay its obligations out of its improved commission revenues. If the stock market fell, the payments from the swap counterparty would cushion the blow. (For a discussion about other considerations related to this form of swap, see the sidebar "The Thorny Realities of Reporting Risk.")

The Thorny Realities of Reporting Risk

There are practical difficulties associated with transactions that, like some of those described in this article, involve using a

Other types of organizations can benefit from using equity swaps, too. In the HBR List of Breakthrough Ideas (February 2005), I described in "Swapping Your Country's Risks" how investors and governments in developing countries can use equity swaps to diversify market risks

financial contract to protect a company against a general risk that is hard to specify in advance.

For instance, under current accounting rules (specifically, FAS 133), it would be virtually impossible for a company to obtain hedge accounting treatment for an equity swap used to hedge against a general strategic risk such as the one described in the Ameritrade example. (A company almost surely would be able to use such a treatment if it used the same equity swap for a tactical, more precisely defined hedge of an existing contract or asset that is explicitly, rather than implicitly, linked to an equity return.) If Ameritrade were to engage in the swap proposed, it would have to report on a marked-to-market basis the value for its contract, which would fluctuate depending on the vagaries of the equity market. On the other hand, it would not be permitted to net off on its accounts the offsetting but unrealized value gains or losses from changes in expected future cash flows in its business activities. Reporting only the swap-value changes in the financial transaction, however, could make the company look more risky than it is, because the firm might appear to be speculating on the stock

without diverting capital from strong domestic industries. The government of Taiwan, for example, could reduce the country's dependence on global demand for electronic products without sinking billions into attempts to diversify. Instead it could exchange the returns on a world electronics portfolio for the returns on a well-diversified world-equity portfolio. And as opposed to selling off shares in Taiwanese companies to foreign investors, this approach would allow Taiwan to retain the benefits and risks of its special expertise in manufacturing chips. If electronics did well, Taiwan could easily afford to meet its obligations. If the world electronics market fell, the blow would be cushioned. Because only the returns on the portfolios are exchanged, the principal could still be invested in the domestic electronics industry, allowing Taiwan to extend its competitive advantage (in factories and expertise), even as it protects itself from the associated risks that are beyond its control.

Relative to notional amounts outstanding in the interest-rate-swap and credit-default-swap

market when it has simply hedged a preexisting strategic business exposure not reported under current rules.

For that reason, I believe that companies conducting these transactions have to engage in deeper communication with shareholders and ratings agencies than they currently do in order to ensure that investors have access to the information they need to assess the company's financial dealings properly. The additional transparency will also help the managers remain disciplined about dealings in the financial markets. In any event, concerns with accounting treatment should not blind companies to the possibilities for value creation offered by the derivatives markets.

markets, the equity-swap market is small. According to statistics from the Bank for International Settlements, as of June 2003, the outstanding notional dollar amounts of assets covered by equity swaps and comparable agreements came to \$601 billion. But the conditions for growth clearly exist. • • •

The derivatives markets—both those already established and those yet to be—contain rich possibilities for value creation through strategic risk management. Most corporations bear substantial amounts of passive risk, some of which is imposed upon them by decisions made when cost-effective means for shedding these risks were not available, and some of which is an inevitable consequence of their industries' competitive dynamics.

Thus we see significant amounts of the equity of many large companies tied up as a cushion for the risk mismatch between their pension assets and pension liabilities. In other cases, companies that compete by offering ever more complete and integrated solutions to customers' needs are forced to take on assets and activities that they have no special facility for managing or bearing. All these passive risks can, in principle, be either capped or outright eliminated and removed from the risk balance sheet by hedging, selling, or insuring. Corporate leaders everywhere owe it to their shareholders to take a closer look at the strategic risk-management opportunities made possible by the world's extraordinarily inventive financial institutions and markets.

