The Role of Financial Institutions

Factors banks consider when financing technology transfers; a look into the future

BY JAY F. COOK*

Multinational corporations, according to one source, own and manage 95% of the world's proprietary and transferable technology. As an Asian official puts it, "The transfer of technology is, for the developing countries . . . an indispensable vehicle of growth and development—the only hope for ameliorating the living standards of the masses."

With that in mind, I stress three principal points:

1. Banking is deeply involved in technology transfer within its own ranks.

2. That banks are primarily engaged in the *risk* transfer business.

3. And that bankers can use traditional—and emerging—forms of risk transfer expertise to help *you* transfer technology. The principal form—the one I'll zero in on here—is project financing.

I'll also let you know:

—What we bankers do: what we look for—and worry about.

—What bankers make of the world economy.

—How your bank can assist you (and where one bank has done so).

—How we structure credits.

—And where else you can look for infusions of capital.

You might say that we can help pull the sword from the stone. The important thing to remember is that you *can* get there—to Camelot—from here.

One caveat: It's becoming harder to use the old definition of what a bank is. Thanks in large measure to technology, our universe is as turbulent as Arthur's. We're also currently experiencing the pangs and payoffs of deregulation. But given altered legal and technological settings, we're beginning to serve corporations in new and exciting ways.

As Sam Armacost, Bank of America's president, recently said, "We have to increase our market focus by being driven by what our customers want and by adding value to their business . . . " No doubt about it: we bankers are changing our style, becoming more aggressive providers and marketers of corporate financial services.

Perhaps because of that, it seems that we are convened today at a sort of Round Table—working together, synergistically. And as bankers, we aim to be like Merlin in at least two respects—loyal and wise. Bankers in the '80s find themselves immersed in an industry deeply involved in exporting and importing technologies. Consider just a few examples at Bank of America:

—We have a unit—Bank Advisory Services—that has sold state-of-the-art data processing and bank management expertise to nearly 100 indigenous banks in the Third World.

—We're beginning to franchise to other banks cash management computer models developed by our Domestic Consulting Group. And we've long been marketing our foreign exchange consulting package.

—We've sold a networking plan for 250-300 automatic teller machines to a Hong Kong bank. It may be the first in a series of such deals.

—We've recently purchased—through a licensing agreement with a midwestern bank—a software package for a corporate checking account system.

—Even within BofA, implants and transplants of technology are occurring at a dizzying pace. The division I head is called Global Systems Services. It's part of the headquarters side of BofA's international division. Our charter, very simply put, gives us responsibility for moving technology around BofA's world.

Let me say that, if you think bankers aren't sympathetic to what it takes to move intellectual property from country to country, come to BofA. We currently are under a mandate to export data processing intelligence, developed in our London office, to all our offices worldwide. How does Murphy put it? "Technology is dominated by those who manage what they don't understand."

Marketing Services

Bank of America certainly isn't alone in making new technologies appear and disappear. As the *Wall Street Journal* noted this summer, big banks are making big bucks by marketing advanced services to smaller banks. Already on the market are bank-written computer programs, bank-designed specialized accounting systems, and bank-run training programs.

It proves again that technology transfer is the child of innovation. Last year, at the big money center banks, all non-lending activities—including licensing—accounted for about 28% of operating income, up from 24% in 1978. Revenue from specific licensing and consulting is growing rapidly—revenue that may cycle back into the project underwriting loop. The similarities don't end there. I hope it's of some comfort to know that while our approaches differ, much of what we in banking do mirrors what you in licensing do.

We're both faced with similar subjective decisions.

**Senior Vice-President, Bank of America, San Francisco, CA; paper presented at LES U.S.A./Canada Annual Meeting, Quebec City, Canada, September 1983.*

We all plan to cover every base and yet, from time to time, skip something. Every so often, that something comes back to haunt us. We understand technology is a *product*, similar yet different from all others. We're sharing a new era, where both money and technology can, as never before, be treated as commodities. In order for both money and technology to be truly meaningful, they must move.

Basic Synergy

As we see, then, there is a basic difference—and a basic synergy—between bankers and borrowers. You might say that corporations are *risk-seeking*, and banks are *risk-avoiding* institutions. The key word is "risk." I think it was John Kenneth Galbraith who said, "Only foolish people are completely secure." If that's so, we in banking strive to stay just this side of foolishness. On the other hand, we frequently find ourselves acting on General Patton's admonition to "take calculated risks—that is quite different from being rash."

It is in that nether world between sure things and outright gambles that banks and corporations do business. Our paths intersect in quest of a sort of Holy Grail. We both seek the rewards that fall to those who lend their strengths—be they monetary or legal—to others. Instead of being looked at according to a single standard, risks must be understood as a series of relationships. They must be analyzed separately and as part of a whole. Handling risk—assessing it, projecting it, parceling it out, extrapolating from it—is very much our stock-in-trade. It's an ad hoc, eclectic business. We put on our armor—and we do our best to see that all other players are similarly protected.

In moving technologies, banks mainly lend or add risk analysis and risk transfer mechanisms. Bankers are society's supreme generalists—although we support all kinds of endeavors, we know what we don't know, and what we must know to be effective. And so we've got to have the wherewithal to tap into the most sophisticated technologies. That's the source of our interest in *mitigating* risk. (It spares us embarrassment as well as cash.)

Just as Merlin helped Arthur achieve what he desired, so we use our "powers," often indirectly, to help you achieve your aims. We facilitate technology transfer by financing projects. We assist in efforts that are *project-specific*. Accordingly, when you're dealing with bankers, here are a few rules to live by:

—Project developers, not banks, shoulder the "technology transfer" risk.

—Banks view licenses as a business risk among many.

—Bank involvement with technology transfer is limited on nonrecourse financing to project sponsors.

If we're asked to finance a particularly ambitious project, we do a market analysis. We break risk into a dozen categories. And, we look at a host of financial issues—debt and tax benefits among them. We worry about operating performance—usually through tests to see that technology works. At BofA, the group that handles such assignments is called Project Finance, and every money center bank has it counterpart.

How do bankers view technology? Reverently, believe me. It's almost a religion at Citicorp. And BofA is heading more and more in that direction. It used to be, in the banking world, the same as Murphy's old adage: "Established technology tends to persist in spite of new technology." We simply cannot afford that attitude. Technology is one of the most critical assets a company possesses. It's a crown jewel, a major source of long-term profitability—even viability. Technology management builds relationships, products, a whole line of business, world markets. Today there's an extraordinary need to move technology around. And licensing is the most flexible means of doing so. As you well know, it encourages local development.

International Jousts

Like knights in Arthur's time, the world's developed and developing nations continue to be locked in seemingly endless jousts. Where an insult to chivalry was once reason for battle, the fiefdoms we defend today are resources, debt commitments—and rights to technology. Viewed from the West, the Mordred—the rebellious leader—in today's milieu would be the so-called Group of 77. The primary face-off for technology transfer is neither West-West nor East-West, but North-South. BofA's economists are cautiously optimistic about near-term prospects for bringing North and South closer together. I must admit, however, that we're always suspicious of the future. As one wag put it, "The handwriting on the wall may be a forgery." But forecasting is always a difficult thing—especially when it deals with the future.

Our view of the future looks like this:

—Aggregate world output for 1984 will grow by 3.6% against 2.1% this year. Merchandise trade will expand slowly next year, with the recovery.

—Global inflation will fall to 10.5%, from 13.5% last year and 12% this year.

—The U.S. is expected to lead the world economy out of its gloom—but we're couching descriptions of that recovery in the most cautious language. We're using adjectives like "fragile" and "unusually slow."

—North America will be the major growth area, expanding by 5%. Western Europe is expected to grow by just 2.4%, and Asia by only 4.3%—well below recent levels for that region.

—Latin America figures to experience a real turnaround from its deep recession, posting a 2% growth rate. Africa will expand by 2.9%, although individual country rates will vary widely.

—Increased stability in the Middle East will permit that area to move from its current 1.6% growth rate to 4%.

Partly responsible for this upturn, our economic prophets say, are inventions and innovations. Especially in high-technology areas, these kinds of breakthroughs are creating fresh outlets for investment.

Our economists also see dynamic change within the LDCs, the less developed nations:

—In employment. Increased competition from the lower-wage developing nations is only aggravating already high unemployment in the West. As new technology is transferred to these countries, the problem will only grow.

—In new markets. Population dynamics also favor the developing world—both in age composition and total numbers. The working age population of the LDCs has doubled since 1958 and will double again in the next 25 years.

—In credit circles. We all hear debt bombs ticking. The heavy debt service of a number of LDCs complicates the picture enormously. And while investments in know-how pay off in the long term, many non-OPEC nations now face chronic balance-of-payments deficits for technology they're buying today.

A mixed bag of tidings if there ever was one.

Thus far we've looked at how banks view risk and the global economy—and how they've become rather nimble practitioners of technology licensing. Now, let's look at what banks used to do—and still do—to make your lives easier. As I suggested at the outset, banks provide things other than cash. In moving technology, non-credit services—advisory, consulting, and documentary services—can all be as significant as loans. Licensing, as you know, occasionally takes into account process *and* product. Sometimes you've got to sell the product to complete the transfer. These other services make it easier for you to protect your patent, or export a product, or get a project built.

To make all those things happen, most of the really big banks have invested heavily in worldwide networks. Many are more than geographic branch systems. They're communications networks that give your company access to business and financial expertise. If your firm is considering business ventures in an unfamiliar area, for example, banks can help you obtain up-to-date information on markets for foreign expansion, various business climates, trade regulations and antitrust laws, financing opportunities, and market conditions affecting your operations in areas offshore.

Increasingly, large commercial banks are developing their own version of investment banking, offering multinationals and other project developers a potpourri of services, such as loan syndications, private placements, underwriting, distribution, trading of securities outside the U.S., mergers & acquisitions, public finance, leasing, and project financing.

When it comes to moving goods in and out of the nations where they do business, banks have a full complement of services. Trade finance and documentary support means such things as letters of credit and standby letters of credit, banker's acceptances, and collections. But paying for technology transfer—actually getting projects off the ground—is where we begin to pull the sword from the stone. The quest for capital—even for the untried or the esoteric endeavor—can end with money center banks well versed in nontraditional financing techniques.

Common Thread

Whether it's Project Finance or a group by any other name, the common thread is risk assessment and/or funding for complex ventures—energy development, mineral extraction, metal processing, chemical processing, manufacturing. At BofA, our Project Finance Group jumps in when the borrower won't or can't guarantee a project. Project Finance intelligently structures—and can undertake—"pure" projects: new companies and joint ventures with new patent owners.

In such a field—where financial risks are so closely tied to the physical nature of the project—engineers must translate technical data into financial information. Project financing is the business of identifying and evaluating those risks and "allocating" them to someone. With project financing, we're talking about three elements:

1. A credit structure that provides principal funding while minimizing risk and preserving the financing flexibility of the project sponsor.
2. The project itself as the source of repayment.
3. The bank, working as a third party, to analyze client objectives, set priorities, and relate the customer's goals to the global capital markets.

While the role of licensing varies with every venture that uses project financing, my bank—and most other money center banks—routinely helps bring intellectual property and physical property together. Examples are:

—Great Plains Gasification Associates—Financing for the first commercial-scale, high-BTU coal gasification plant in America.

—Graphite Electrode Plant—Union Carbide, Taiwan. Financing of a 20,000-metric-ton graphite electrode plant.

—Ivory Coast Refinery Expansion—Financing the extension of that nation's oil refinery by adding new hydroskimming and hydrocracking units that double the refinery's capacity.

But that experience aside, every new proposal seems to turn bankers into Grand Inquisitors. It might be helpful right now if I let you in on a few of the tricks of our trade. When it comes to financing new technologies—or anything—we turn to our own consultants, or we find engineers in the outside world. Our experts probe for all sorts of variations on the theme "will this work?"

—Is the project reasonable? Is its end product something people want?

—Will the dimensions of scale be consistent when you advance beyond the pilot phase?

—If it works, will it do so at a price that will make the end product competitive?

—Do the rights being transferred form the basis of our credit? (As a rule, projects are funded not on the strength of a patent, but on whether they make economic sense.)

—If a patent is critical to the financing, does the host nation honor the Paris Convention? Is a local competitor likely to breach the patent and jeopardize the project?

—Is there any conflict between the life of the patent and the terms of the financing? (Uninterrupted use of the technology in question is critical to the bank.)

These queries emerge from a larger credit evaluation that we at BofA use in financing transfers of technology. Far from being a process one could describe as "magical," our criteria for evaluating risk at first blush may seem obvious. But risk is an 11-headed serpent, any one element of which can jeopardize a project financing. We weight risks and attempt to balance them against each other. At Bank of America, we worry about these risks: Resource, foreign exchange, raw material, operating/performance, political/regulatory, force majeure, management, refinancing, completion, marketing, casualty. Of these, three—completion, operating performance, and political/regulatory—most frequently apply to projects which move technologies.

Completion Risk

Is your project technically feasible? Can construction be finished? Will the product be of demonstrable quality? Can deadlines be achieved? Will cash flows be sufficient? Banks deem completion risks high for projects involving new technology or severe operating conditions.

An open-pit coal mine or on-shore oil field are relatively straightforward developments that have low completion risk. The other end of the risk spectrum might be a processing plant using new and untried technology. And what happens if this exciting new venture with the exotic technology turns out to be a flop? Some projects never do meet performance levels, so the sponsor's guarantee remains. Then the question becomes, is the sponsor financially strong enough? Can he perform? Occasionally, we extend credit for 15 years. Banks generally don't want to lend for more than 10 years, and really prefer 7.

Operating/Performance Risk

Is your completed project producing the expected quanity/quality of output at the expected costs (thus generating needed cash flow)? Did the process of combining factors of production work out as expected?

Operating performance risk is the most typical risk lenders are asked to evaluate and assume. The financial restrictions placed on a project reflect how risky we think that project is, from an operating point of view. Operating risk, especially that associated with technology, may be covered on a limited or contingent basis by the *providers* of that technology. Here, the more prosaic the technology, the lower the risk.

In such an instance, you need a completion and performance guarantee—physical proof that the thing works the way you said it would. The more complex the process, the more weight we put on a sponsor guarantee.

Political/Regulatory Risk

Are political events or regulatory changes apt to impair a project's ability to pay back interest or principal? We know that you in licensing are particularly wary of some LDCs, where intellectual property laws often seem whimsical. Of late, many developing nations have set up domestic regulatory agencies to screen technology transfer transactions. And revolution and repatriation are nearly standard fare in some regions. Pariah nations exist, and—as you well know—they come and go. When we do business in certain Middle East, Eastern European, and Central American nations, for example, we worry less about attitudes toward technology than about getting our money back.

Political considerations can cut across all aspects of project risk: completion, performance, marketing, foreign exchange. It's not so much a separate risk as a dimension of each of the others.

Country Risk

A corollary to political/regulatory risk is "country risk," a critical risk-assessment index on which banks rely. At Bank of America, country risk is our shorthand for evaluating the economic and political climate for debt service within any of 170 nations. We have a thing called a DSCI, or Debt Service Capacity Index, which is a statistician's delight. The DSCI is based on leading economic indicators, fiscal and monetary policies, and economic structure. Ranges vary from 0 to 100%. Once we establish a DSCI number, we play schoolmaster, assigning letter grades A through F for political and economic risk. These apply to government, bank, and corporate sectors within the relevant country.

What do you need to know about country risk? Briefly, here's a banker's lexicon of the building blocks of country risk: We have things known as *country outstandings* and *country guidelines, commitment limits* and *country limits,* and a few others that pertain to *currency.* They're our means of quantifying *risk,* that old bugaboo. They let us keep tabs of how much exposure we've allowed ourselves.

So far, we've seen what project financing consists of, and what criteria we review when structuring loans. *Let's move now from theory to practice*—to one major example of technology transfer in which my bank has been lead magician.

I'm referring to the New Zealand Synthetic Fuels Corporation, a joint venture of the New Zealand Government and Mobil Oil. This entailed financing a natural gas-to-gasoline project in Waitara, New Zealand. It offered a chance to blend the financial strength of banks like us, the technology and capital of Mobil, and the resources and skills of New Zealand. The problem was, how to use New Zealand's vast natural gas reserves. Mobil had developed a brand-new process (methanol, converted by a catalyst, to gasoline). Chemically, their synthetic gasoline strongly resembled the real thing.

Since all hydrocarbons are owned by the government, the banks never asserted ownership as they do in conventional loan arrangements. The basic financing, then, was a tolling agreement. The government and Mobil paid so much for exercising the patent, and that paid for operations. The plant is under construction now: financing is for 12 years. Ownership: 51% government, 25% Mobil.

Initial syndication consisted of eight lenders, in for roughly $260 million each. The ultimate syndication involved 50 banks. The top eight pitched in and hired a consultant to evaluate the technology. Mobil participated in the financing *and* as licensor. Mobil Research licensed it Mobil subsidiary there.

The major risk factor? Shifting the process from the pilot plant stage to full-blown commercial development. Banks allocated or mitigated risk for this process. We listened to the consultant, who urged us to place our bets on this adaptation of *proven* technology. With those assurances, the credit support structure avoided traditional completion guarantees, and minimized the obligations of the government as a tolling customer.

Now, let's shift gears a bit. We've seen how banks contribute to the dispersion of technology right now. But the future is certain to bring us even nearer Camelot, as the financial community gains new flexibility, new territory, and new opportunities.

Any halfway accurate assessment of what's happening these days must take into account the current commercial banking environment. Things that didn't appear threatening or even possible in the '50s and '60s—things like microchips, satellites, a highly-volatile economy, and stiff competition from non-banks—became just that in the '70s and '80s. New laws and new capabilities are even now altering the very notion of trade. Trade will soon be a global information opportunity, not merely a "goods-handling" problem.

Banks have long been well-equipped to handle export finance tasks, for example. That is, arranging export financing packages, participating in export credits and financial credits, etc.—the hardware side of technology transfer. BofA has handled everything from offshore drilling equipment in Brazil to LNG vessels in Malaysia. But things are going to get even more interesting. BankAmerica Corporation, along with other banks, is taking advantage of a new law that permits bank holding companies to buy or form export trading companies—domestic counterparts to the Mitsubishis of Japan. It's an exciting example of where "banking" is going, and might go. Even Sears—perhaps banking's most formidable non-bank competitor—is entering the ETC game, with its own banking-cum-venture capital organization.

Much is in flux right now, but . . .

—Export Trading Companies will handle the export of American goods and services as the first arm of a transaction. There will be other arms: countertrade, switch business, barter, multinational transactions.

—ETCs will largely be dealing in goods, but technology and licensing business will also come under their purview.

—Target customers will be those firms abroad involved in distributing, manufacturing, and using American goods.

—ETCs will offer one-stop export marketing: they will open new markets, expand sales and profits, make better use of fixed assets, and spread fixed costs over larger unit output.

—U.S. law has now liberated trade-related insurance activities, so that ETCs can start to provide essentially any international trade-related insurance—including expropriation insurance.

But it would take a good bit of magic indeed for me to convince you that we can meet all your needs. So where else can you go? Simply put, it depends on how much money you want. Seabed mining, for example, has been a mega-syndication effort. Nobody's got enough to risk on untried technology. No traditional syndication has really been up to the task either. So we continue to come up with ways of amassing capital that somehow foots the bill—and funds the process—if only in stages. Nonetheless, there are several solid non-bank sources. They are institutional investors (life insurance companies, pension funds), feeding into private placements, export credits (e.g. the Exim Bank), other export programs (e.g. OPIC), the new issues market, and venture capital.

Let's take a brief look at each:

Institutional Market and Private Placements

They account for the major source of capital aside from banks. Corporate securities are sold directly to life insurance companies, without SEC registration. These are nonpublic offerings, and they constitute the private placements market. In the U.S. alone, private placements account for $20 billion annually. Most of that business involves direct credits to borrowers, not projects.

Insurance companies play the game a bit differently than we do. They usually extend credit for 15 years, banks for 10 years. They offer credit at fixed rates: our rates are generally floating. And insurance companies are a bit more skittish about country risk than we are. They're not set up—legally or logistically—to do the kind of country risk analysis banks do. When private placements finance projects offshore, they follow about the same credit considerations as commercial banks. In fact, insurance companies and pension funds, in multinational deals, need outside credit support in the form of bank guarantees.

If you thought banks were conservative, look at the pecking order for risk acceptance among institutions: because of their fiduciary nature, pension funds virtually shun risk. Insurance companies are only slightly less averse to risk. By those standards, banks are downright impetuous.

Export Credits

Next, export credits for equipment and services, from export credit banks. In the U.S. granting those credits falls to the export-import (Exim) Bank, an independent, wholly-owned federal government agency. Most developed nations have similar agencies.

Exim supplements and encourages but does not compete with private capital. It guarantees commercial banks. Exim loans money at competitive fixed rates for U.S.-made components bound for the country hosting the project.

Exim isn't exactly overflowing with cash, however. It supports only 5% of the U.S. exports of manufactures. For Exim's French and Japanese counterparts, the figure is 40%.

OPIC (Overseas Private Investment Corp.)

OPIC is a self-supporting, U.S. government corporation providing insurance (and in some cases partial financing) to U.S. private investment in developing countries. In eligible countries, OPIC provides political risk insurance to American investors for new capital investment. And it also offers direct loans and loan guarantees to new U.S. investment projects. OPIC is particularly eager to do business with small firms.

There's also the International Finance Corp., an affiliate of the World Bank. IFC is a potential source of loans and equity financing.

Venture Capital

Venture capital is a financing option, but funds tend not to be in the right place—or the right quantity—to move much technology. Most venture capital is cycled into domestic, high-tech endeavors. In the U.S., you can't get venture money for a project owned by a foreign company or foreign national. And with venture capital, sponsors of moderate-sized projects risk losing control to their financiers.

New Issues

New issues represent an even less likely financing option. As a rule, firms issue new or preferred stock they're newly public or involved in a joint venture. Although forming a joint venture is a smart way to put some fresh technology in place, new issues usually can't be used to fund new projects. The SEC frowns on that kind of speculation.

So there's an abbreviated primer on the capital markets—just a few possible sources of funding for your good ideas. Banks encourage technology transfer by moderating risk and/or by supplying financing. We do so with loans, guarantees, and insurance. To paraphrase the tag line of one of our non-bank competitors, "We're bullish on technology."

We all occupy a world that sports a radically different complexion—one that technology has helped make newly entrepreneurial, newly competitive. We offer our best response through a willingness to find new ways to pull swords from stones.