Innovative Finance
Framework for Decision Making

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Quantifying the Benefits of Innovative Finance Techniques

Lowell Clary

The object of my presentation is to go over what we consider to be the benefits of innovative finance. To frame the discussion, we should recognize that innovative finance strategies tend to be deployed on high-priority projects that would be done anyway. The critical issue becomes a comparison between completing the high-priority project today versus 10 to 20 years from now.

Thus, in evaluating the benefits of innovative finance, it is important to look at the extent to which capacity and safety improvements are advanced, or accelerated. You also need to know the project cost in today's dollars as opposed to future dollars. And you need to look at the project's net direct and indirect economic benefits. I will spend a little time on the indirect economic benefits because that is probably one of the least understood areas if you look at advancing transportation projects.

But let's first look at inflation savings. In Florida we currently recognize a construction cost inflation factor of about 3.3 percent per year, though we just increased that to almost 4 percent on the basis of recent experience. So let's look at a couple of examples. Consider first a project scheduled to be completed in 2007 at a cost of $66.1 million. By advancing it to 2002, avoided inflation amounts to $9.8 million, thus bringing the project cost down to $56.3 million. In another case, consider a project that will cost $62.9 million when constructed in 2008. By advancing it to 2003, you realize inflation savings of $10.5 million, again assuming an average 3.3 percent construction cost inflator.

But inflation savings are only part of the story. A recent study by the Florida Transportation Commission looked at savings associated with transportation investment in Florida. The commission found that for every dollar invested, you realize about $2.86 in benefits through such things as time savings, vehicle operating cost savings, and savings associated with avoided accidents.

In the same study by the Florida Transportation Commission, researchers looked at a series of indirect economic benefits derived from transportation investment, such as growth in related and unrelated industries. They found that in Florida, each dollar invested generated a 35 percent annual return on the investment. How about elsewhere in the nation? A study by FHWA also showed national rates of return during the 1950s and 1960s, as we were building the Interstate system, of about 35 percent on an annual basis. Those dropped down in the 1980s to around 16 percent, and for 1991 the estimate was 9 percent. During that period the Interstate system was being completed, and we were now moving more into preservation and improvements to a more mature system.

Let's look at a specific project that advanced by 5 years, from 2008 to 2003. As a result of this acceleration, avoided inflation causes construction costs to decline from $172 million to about $145 million. The

project is financed with a $145 million, 10-year GARVEE bond. The associated interest cost is estimated at $40.5 million. So the premium we pay to advance the project is the difference between interest cost ($40.5 million) and the construction cost savings. So the net cost would be about $13.5 million to advance the project by 5 years.

So far we've only looked at costs; we also need to recognize the benefits side. As noted above, the return on investment for major transportation improvements can be very reasonably pegged at about 20 percent. This means that the annual return for this project is $29 million—or 20 percent of the rounded project cost of $145 million. By advancing the project by 5 years, we realize a net benefit of 5 times the $29 million savings, or $145 million, thanks to the use of debt financing to accelerate the project. Thus, in the final calculation, we see construction cost savings of $27 million, economic benefits of $145 million, and an offsetting bond interest cost of about $41 million. This is the basis for a very compelling argument for project acceleration through bond financing.

As a final point, I should note that when performing this kind of analysis, you need to be very realistic about indirect economic benefits. Is the facility in a high- or low-growth area? a high- or low-density area? Is it a new alignment and major capacity improvement, or does it fix what is already there? Again, you need to think through what you are doing and propose what you feel is reasonable. But I suspect that even if you are on the conservative side, the results are still going to be pretty shocking—and encouraging—overall.

GARVEE Bonds/GANs: Trade-Offs Between Paying Now and Paying Later

Heather Dugan

Just like everyone else, we in Colorado face a funding shortfall and a backlog of projects. In 1996 our estimated completion time for some of these backlogged projects was well in excess of 50 years, so we began to look at different ways to organize and fund our program. The Colorado Transportation Commission had noticed that many of our major Interstate systems, connectors, and state highway system projects were not being identified in the local long-range plans, and as a result the commission and the staff at Colorado DOT developed a strategic corridor program. The resulting program centered on 28 major corridors, many spanning local boundaries.

The corridor approach helped us zero in on the statewide projects that fell through the cracks in the local planning process. It also offered an important side benefit as a mechanism to obtain funding. Our existing plans showed thousands and thousands of projects listed, and we had no way to bring them together into a compact plan of funding priorities. The corridor plan helped us frame funding discussions with local and state legislators; we could also use it to demonstrate short- and long-term accomplishments.

How are these strategic corridors to be funded? In Colorado, before 1996, all of our funds were divvied up into little pots of funding associated with our six engineering regions. As I mentioned before, this approach failed to address some key interconnectivity issues. So we came up with a funding source, which we affectionately call the "seventh pot," to represent a statewide pot of money that is not parceled out to the six engineering regions.

Given this new approach to funding statewide corridors, how did we get to the next step of using GARVEEs? You need to understand the history. We had a governor at that time who was very debt-averse, as is the state as a whole. We also faced—and continue to face—enormous resistance to tax increases, and in fact any increase must be approved by a vote of the entire state.

The first initiative for a tax increase to fund the seventh pot came about in 1997. This effort to raise the gasoline tax went before a vote of the people, and it failed overwhelmingly. That same year we went to a vote of the people for a transit tax increase, which also failed miserably. Then in 1998 we sought to use a cash surplus, which otherwise would have to be rebated to the taxpayers, for both education and transportation purposes. That one failed too. That is when we really started getting creative. At the same time we had a change in administration, and our new governor was much more receptive to the bonding idea.

One reason why we looked at GARVEEs was statewide resistance to the use of state funds to repay debt. Use of our federal transportation funds to repay bonds—in other words, a GARVEE—started to look like a very good solution for us.

Finally, in 1999, we obtained enabling legislation to issue Transportation Revenue Anticipation Notes (TRANs) and obtained necessary voter approval as well. I should note that under the legislation and companion referendum, we face a number of constraints on the debt. First, all of our bond proceeds must be used on "seventh pot" projects. Second, the maximum principal amount is $1.7 billion, with maximum repayment of $2.3 billion. This dual constraint really turned out to be a problem for us because with interest rates going up, the $2.3 billion really capped the principal we could put

out; nonetheless, we were happy to get the legislation passed in the first place. Third, annual principal and interest is limited to 50 percent of the previous year's federal-aid reimbursement, which is a really key point. We wanted to satisfy the legislature with the knowledge that there were limits to how much we could borrow and to the claims we could place on future federal funds.

One real key to managing this 50 percent rule is Colorado DOT's use of advance construction. We actively use advance construction in Colorado, and in a year that I am trying to gear up for debt service, I convert more projects and bill the federal government accordingly. In other years I opt not to convert, or I slow down the amount I am converting. So advance construction is a great cash management tool, and it helps me ramp up for debt service.

One item that we thought might be a big hurdle was that the payment of debt service is still subject to annual allocation by our transportation commission. I know this varies from state to state, but in Colorado we are fairly lucky in that all the federal funds come directly to the transportation commission to distribute or allocate. We were lucky not to have to worry about legislative approval through annual appropriation, but we did face the requirement that debt service appear in the commission-approved budget each year.

We were a little worried about that, but it worked out in the end as far as ratings went. Our first bond sale, with proceeds totaling more than $535 million, closed on June 1, 2000. The issue was rated AA by Standard & Poor's, AA by Fitch, and Aa3 by Moody's, and we were very pleased by that. Again, we had been a little nervous about the annual appropriation, but I think we were able to demonstrate, with the help of our bankers, that the transportation commission had a history of being able to appropriate money and follow through with projects appearing in approved transportation plans.

Our interest rates vary between 5 and 6 percent, depending on the maturity. We have a Memorandum of Agreement with FHWA on our GARVEE program. We felt we had to push a little bit because of the diverse nature of our program. After all, we not only had these 28 corridors, but also hundreds of distinct projects within each corridor. This posed some administrative complexities, but Max Inman, Suzanne Sale, and Jen Mayer sat down with us all day and worked through the issues. Our agreement identifies how debt service payments and individual projects will be tracked through both the state and federal systems. We are very proud of it, and if anybody would like a copy, we would be happy to e-mail it to you. Our next bond issue is scheduled for April 1, 2001.

I would like to spend a few minutes on the enormous benefits that Colorado is realizing through use of the GARVEE instrument. Key to these benefits is our high construction cost index; inflation in this sector is running about 9 percent right now. We expect that to diminish somewhat within the next year or so; however, looking at recent history, we consistently see a rate between 6 and 9 percent in Colorado. This provided us with a good reason to issue bonds, since the interest we will pay on the bonds is significantly less than the lowest inflationary factor we had seen in the last 6 to 9 years.

As far as the overall savings, we assembled some evaluations that predicted progress on the 28 strategic corridors with and without bonding. In short, we showed that on a pay-as-you-go basis, we were looking at a 50-year program. The use of bonds not only accelerated projects, but also created some very real cost savings. On the basis of the $500 million issued to date, our savings are about $200 million to $250 million in avoided inflation—even when you include the interest cost we will pay. That excludes the next two bond issues we anticipate, so those savings will go up significantly. And none of this even takes into account the value of attaining the indirect benefits—such as safety improvements—sooner. We have a real air quality problem in Denver; advancing these projects will offer considerable assistance in combating congestion and the associated problems with air quality.

Here are a few lessons learned. First, know specifically what you want to use the bond funds for. In negotiations it is extremely helpful if you can be specific about what you want to use the funds for and how it will benefit the community. It is also helpful to demonstrate both tangible and intangible benefits. People want to know the big dollar amounts, but they also want to know if you can get them to work 3 minutes faster.

Second, early discussion and clarification with FHWA can be extremely helpful. Every state believes it has a unique situation, as we certainly did, and you should explain your unique situation as early as possible. Also, I feel that you should look at all the financing mechanisms available and use them in tandem. In Colorado, we have used design/build, which is a recent thing for us, as well as a codevelopment process that involves the private sector.

I cannot say enough about advance construction. I know it is something people take for granted, but it is one of my favorite cash flow tools. We are lucky to have a lot of state funds, but advance construction definitely allows me to regulate the amount of debt service I can handle in a given year. It also allows me to move projects during the summertime, before the beginning of the federal fiscal year, since we cannot do a lot of construction in the wintertime.

I would like to close by saying that we in Colorado feel very privileged to have been able to implement

some of these tools. At this time last year we at Colorado DOT were hearing about how horrible the roads were and how life is miserable in Colorado. This year, we are hearing about how miserable life is because of all the construction. In the big picture, that is a much nicer message to hear.

Transit Grant Anticipation

Paul Marx

Grant anticipation debt issues have been a gleam in people's eye for a while, but they did not really come to fruition until recently. For transit, the basic idea is that a transit operator, otherwise not able to access the capital markets at a reasonable rate, could use the expectation of federal grant funds as a beginning point. The transit grant programs were intended to provide a basic level of funding for ongoing investment in existing and new transit systems. One of the basic funding sources is the Section 5307 formula program, which, as the name implies, distributes funds on an annual basis, essentially on a formula that has not changed over 10 years. During this federal Fiscal Year 2000, the formula program allocates in excess of $3 billion to ongoing transit operations for capital expenditures only.

Section 5309 of the transit program comprises several elements, including the fixed-guideway modernization and rail new starts program. Funding for the fixed-guideway modernization program is distributed by formula, but the formula is limited to urban areas that have rail or other fixed-guideway operations that have been running for 7 years or more. That formula has been tinkered with, but basically the old-line transit cities, about 18 of them, get the bulk of the money. The remainder is divided among new entrants to the rail business, such as St. Louis and New Orleans.

The new starts program is a discretionary program, which, as its name implies, is for new transit projects, such as a new bus system or a dedicated busway. But most of the time it has concentrated on light rail and rapid rail implementations. The idea behind the new starts program is that it is project-specific, in contrast to the 5307 formula program and the 5309 fixed-guideway modernization program.

For highways, you have probably heard about the GARVEE deal in New Mexico. The first major transit example was New Jersey. New Jersey Transit is the transit operator for the state and receives approximately 6 percent of the formula allocation nationwide, which this year probably comes to a little over $180 million. New Jersey Transit issued $151 million in bonds in 1999 against transit formula funds. New Jersey Transit ultimately achieved a credit rating of A+, reflecting a coverage ratio of 1.35 times debt service. As a result, New Jersey Transit was able to issue a second series in early 2000 to buy rail equipment and is currently planning a third formula-based grant anticipation issue.

Now that New Jersey Transit has broken the ice, transit grant anticipation notes (GANs) are no longer limited to the largest transit properties. Cleveland and Akron are planning grant anticipation issues. Pittsburgh issued a $70 million series 4 to 5 months ago, and San Francisco is planning an issue as well.

The next examples I would like to offer feature GANs that are linked not to the formula concept but rather to so-called full funding grant agreements (FFGAs) associated with the new starts program. In all we have seen a total of $974 million in transit GANs issued to date. They include projects in New Jersey, St. Louis–St. Clair, Salt Lake City, the San Francisco Bay area, and Dallas. Furthermore, Dallas Area Rapid Transit is currently seeking authority to issue more than $2 billion in grant anticipation debt in support of the city's light rail system. All of these transactions have a secondary pledge: tax revenues, or, in the case of New Jersey, a backstop from the state's transportation trust fund and so on.

Again, New Jersey Transit seems to be pushing the envelope on this one. Before the enactment of TEA-21, the current authorization, New Jersey Transit had a grand strategy for a design/build/operate/maintain (DBOM) construction project called the Hudson-Bergen Light Rail. New Jersey Transit wanted to issue grant anticipation bonds to accelerate the project because it did not reasonably expect to get all of its grant and local funding in time to maintain the very aggressive construction schedule. This was probably the largest transit GAN issued until then, and it ultimately required a secondary backstop from the New Jersey Transportation Trust Fund. The bonds were of a relatively short term, with maturities to 2003, and achieved an underlying rating of AAA3 to A+, depending on the rating agency involved.

Finally, probably by the end of this week, you will be able to read about the current New Jersey Transit grant anticipation issue. It is the cornerstone of a program that is going to take another couple years to work through. The instruments are termed naked FFGA GANs. Just as the name implies, New Jersey Transit is going to try to shed the transportation trust fund backstop by refinancing the current bond issue on the Hudson-Bergen Light Rail system.

GANs provide a very real advantage, especially if there is a mismatch between the arrival of grant funds

and the anticipated construction schedule. By employing bond financing in the form of a GAN, New Jersey Transit was able to accelerate construction. The benefit is avoidance of delay costs; estimates show associated savings of about $32 million on this $900 million project segment. You also lower construction cost. Even if you assume that the project was advanced by only 2 years, the cost savings are about $92 million. Of course you must consider interest cost, and assuming again a fairly negative scenario of full debt service coverage for 5 years, that costs you $78.1 million at an interest rate of approximately 4.5 percent. The resulting net cost savings are $45.9 million overall. If you assume that any of the bonds are redeemed before the 5 years, as a result of slightly higher federal grant reimbursements, then that $78 million in interest costs declines radically and your project cost savings are increased correspondingly.

Since we are in Phoenix, I thought I would close with a bit of information on that deal, which relies on discretionary funds from the Section 5309 fixed-guideway modernization program. Essentially, Phoenix Transit needed to buy some buses. The agency has both an existing bus operation for which it receives Section 5307 formula funds and a dedicated busway that makes it eligible for Section 5309 discretionary fixed-guideway modernization funds. That busway has been in operation for 8 years, so the agency has started collecting funds from the 5309 program. As it provides more service on the busway, the level of funding availability rises fairly significantly.

Grant receipts under the two programs total $10.5 million in FY 2000. These funds have to be used for all aspects of Phoenix Transit's ongoing operations as well as capital replacement, leaving insufficient funding for efficient sizes of bus orders. By "buying in bulk," Phoenix Transit can save as much as 10 percent per order, or between $20,000 and $30,000 per bus. Borrowing sufficient up-front cash would have been an obvious means to permit a larger order; however, Phoenix Transit had little to do with capital markets. But Phoenix Transit recognized that the city of Phoenix deals with the capital markets regularly and sought a financial partnership with the city. The city of Phoenix made a loan to Phoenix Transit for $18.5 million, to be repaid with a combination of Section 5307 and 5309 funds. This pledge of future formula and discretionary funds is significantly strengthened by the security afforded under TEA-21 and builds on the GAN concept. The bonds mature in 2012, exactly matching the intended useful lives of the buses, and are insured. Their yield runs from 4.05 to 5.52 percent. Although this does not reflect Phoenix Transit's rating per se, but rather that of the city of Phoenix, for a first debt issue by a transit system, that is pretty phenomenal.

State Infrastructure Banks: Decision Criteria in Selecting Projects for Funding

Shawn Dralle

I have been asked to speak about Arizona's SIB program. Like any good government program, we had to have our own acronym, so we came up with HELP: the Highway Extension and Expansion Loan Program. I will be referring to HELP and SIB interchangeably.

Also like all good government programs, the SIB is governed by an advisory committee. Two members are appointed by the President of our Senate, two members by a Speaker of the House, and two members by the Governor. Mary Peters, our director, serves as the chair of the committee. We have tried to keep politics out of it as much as possible, but frankly, geographic politics always come into play in western states, and we are no different.

I would like to give a bit of history. Arizona was one of the pilot SIB states designated in 1996, so we were one of the first 10 states given that authorization. We received the federal authority but did not have sufficient state enabling legislation. So we got the federal money and we continued to contribute our state match, all looking ahead to the day when we would have sufficient legislative authority to start making loans.

In 1998, we were finally successful in obtaining state enabling legislation. We did not get any additional capital, so we were working with the original federal grants as well as the state match.

Last year we got further legislation through Senate Bill 1201. The governor and the department were very interested in advancing and completing the urban freeway system here in Maricopa County in the Phoenix metropolitan area by 2007—7 years in advance of its original construction schedule.

The bill did three basic things. First, it gave us the ability to issue broad funding obligations. We have a $60 million loan from our state highway fund over 3 years; we received the first $20 million this year. The loan has to be repaid in 8 years but gives us the ability to revolve that $20 million between 2000 and 2008. This may not seem like a lot to some other states, but it is unheard of in Arizona. Second, because this is a political process, the legislation put a couple of requirements on the funds. One focused on geography. We have to manage the amount of the loans that we give in any region, with 50 percent to the Maricopa County region (where Phoenix is located), 25 percent to Pima County (where Tucson is located), and the remaining 25 percent for the rest of the state. Third, the legislation specified what projects would be advanced in Maricopa County and on what schedule.

What of the HELP fund's operations and current status? The fund is able to give loans to cities, towns, counties, Arizona's 21 tribes, and the DOT itself to advance projects in the state transportation plan. We currently have nine loans outstanding totaling $171 million. That activity has happened in the last 12 to 18 months, so it has taken us a while to ramp up and actually get the loans out the door. Those loan amounts range from $300,000 for a signalization project in a very small rural community to $100 million worth of right-of-way purchases for the urban freeway system here in Maricopa County.

Again, this is the wild west—the projects are all highway projects, no transit. So we are not doing any transit loans, even though transit is very important here, particularly for the rural communities that depend on dial-a-ride service and bus services. A lot of interest has been expressed in being able to access that for the smaller communities, and I am hopeful that we can make this change as our reputation grows and we get some experience under our belt.

Next, we offer below-market interest rates. We tie the interest rates to a municipal index and then apply a 90 percent subsidy or 10 percent discount to that. Also, there are no closing costs. Those criteria are the same whether the department or a local community is borrowing the money.

Our total capitalization today has grown from $50 million to $380 million, thanks to one piece of legislation. Given that increased capitalization and the ability to revolve the loans to a short time frame, we anticipate that we have a capacity of about $600 million of loans. The next challenge for us is to really understand the geographic management of the assets. It is not hard to use up $600 million of capacity in the urban areas. It is a little more challenging to use up capacity of $100 million to $150 million in some of the rural areas of Arizona.

Next I would like to speak to our selection and evaluation criteria. We have a 100-point scale, allocated across four criteria. Forty percent of the total score links to financial considerations—after all, we are a bank. These considerations include such things as how quickly the loan will be repaid, the extent of local and private participation, and the credit strength of the overall proposal. One feature of our program that really helps build credit strength is the fact that we have the ability to intercept a borrower's state share of highway user revenue funds. That is a pretty big hammer.

Next we look at economic benefits, which account for 20 percent of the total score. We actually ask the applicant to summarize, as best it can, the economic benefits of completing the project and accelerating construction. Another key question is whether the applicant has other available sources of funding or the SIB is serving as a lender of last resort.

Next we award up to 20 percent of the total score for project improvements to mobility, air quality, and the environment more generally. Finally, we award up to 20 percent of the total score for impacts on safety. This is very important to the HELP advisory committee and the state transportation board. Positive safety impacts are likely to increase in point value as time goes by.

Let me close with some remarks about where we are headed. I think we have put in place some decent criteria that make sense and make the program accessible to local communities as well as to the department. As I mentioned, we have $171 million worth of loans outstanding at the moment, but we also have a $125 million fund balance. So the money is not necessarily a problem at this point. Rather, one of our challenges is to get the money out the door in an appropriate and prioritized way. We have scheduled a study session in which we will talk with our HELP advisory committee about potential adjustments to the program that could entice local communities to look at the fund as an important resource. For example, we might look at the repayment term; we currently require that most loans be repaid within 5 years, but obviously the longer you can stretch that out, the more beneficial it is to the community's cash flow. We may also look at broadening the types of projects that we allow, with transit and local street projects providing two examples. At the same time, we realize that there is a certain contingent in the state that certainly does not want to open that floodgate. Those are just a few of the issues that we will probably consider over the next few months.

Measuring the Rate of Return on Innovative Approaches

Elizabeth Pinkston

I work for the Congressional Budget Office (CBO) and thus bring a very different perspective to this issue from that of the previous presenters. When the people I work for are thinking about new legislation, they want a full analysis of broad impacts, including the effects on the economy, the effects on the budget, and the implied trade-offs in light of other priorities such as health, education, and other services. Also, many people on Capitol Hill, and especially the budget committees, become concerned when some proponents of innovative financing imply that you can get something for nothing. Economics is called "the dismal science"

for a reason, and therefore when we look at innovative financing measures, we focus on somebody ultimately having to pay, either now or later.

Innovative financing can help or hinder economic efficiency, depending on the structure of that financing, and indirect subsidies associated with some financing measures can mask who is actually bearing the cost burden. Part of my job is trying to figure out who ultimately will bear the cost of innovative financing measures.

By way of background, I use the term innovative finance to refer to any funding measure other than traditional pay-as-you-go, user-based taxes. Some examples of innovative finance include SIBs, federal credit assistance, private-sector participation, advance construction, and flexible match. The key feature of all of these is that they make funding available sooner than it would be otherwise.

When we are trying to analyze innovative financing measures, one element that makes a difference is whether we are comparing innovative financing with the existing federal-aid highway program or with a baseline with no federal subsidies. Often policy makers look at innovative measures such as loans and loan guarantees in isolation—that is, in comparison with a baseline of no federal assistance—and innovative financing suffers in that comparison. But if you compare loans against the outright grant program, suddenly innovative financing compares quite favorably because loans generally cost less than grants and may promote greater economic efficiency in the use of resources.

What criteria might we use to evaluate innovative financing? First is financing potential. However, since previous speakers have covered that matter amply, I will skip over that. I will also skip over administrative feasibility and the effect on the federal budget. I should note that even though we at CBO think the effect on the federal budget is extremely important, it is a bit of a parochial issue. So I would like to focus on two other criteria: economic efficiency and distribution effects.

What do I mean by economic efficiency? It goes back to what we were taught in Economics 101—are we putting society's resources to their most highly valued uses? Are the net benefits to society being maximized? Are there incentives for the right projects and the right amount of use of a facility? Are projects put to a market test?

But wait: is a market test appropriate for transportation projects? The question arises because roads have traditionally been provided by governments due to their so-called "public good" characteristics, such as nonexcludability (that is, the inability to exclude people who benefit from a project but who are not paying for it) and spillover benefits and costs. There are a lot of spillover benefits that work to the advantage of more than just the immediate users of a highway system, and that is one of the reasons why traditionally we have had public financing. It would be difficult for a private firm to be able to charge users enough to approximate the full range of benefits conferred by its investment.

What factors are appropriate to consider in looking at transportation finance in the light of economic efficiency? Well, first of all, classic economic theory dictates that price should be set equal to marginal cost—that is, the additional cost per use. Many innovative financing measures stack up very well on that criterion because many innovative financing measures rely on tolls, fares, parking fees, and other user fees that link directly to how much users are willing to pay in order to use a facility. That is a good indication of how much they believe they are benefiting.

A second element of economic efficiency is whether you can cover the full cost of the investment through user fees or taxes paid by other beneficiaries. Again, projects that are financed innovatively tend to stack up very well on that criterion because they are put to a market test. This is especially true of public-private ventures or other ventures that rely on revenue bond financing, because potential financiers are unwilling to put their money up for the project unless they think the project is going to pay for itself and yield a reasonable return on investment.

What factors might contribute to inefficiency? As one example, subsidies that lead to artificially low interest rates can in turn lead a sponsor to undertake a project that would not be feasible at market rates. If you are thinking from the standpoint of the economy, resources should be deployed to projects that yield the highest (nonsubsidized) returns. Still, I should note that this is one place where innovative financing may not stack up as well against a "no-subsidy" baseline, but quite well compared with the standard federal-aid highway grant program.

Another "inefficient" characteristic of most debt-financed transportation infrastructure is that municipal bonds bear interest that is exempt from the federal income tax. This exemption represents a subsidy as well, since from the standpoint of the federal government, of course, less tax revenue is received and thus the exemption represents a cost to the federal budget.

As a final item on economic efficiency, I would like to touch on the point that several speakers raised about accelerating projects. If innovative financing makes funding available sooner than otherwise, and projects are completed sooner, and those projects have a high rate of return, then society benefits from having those facilities in place sooner. The analysis depends on applying a proper discount rate to the net benefits.

Now we come to distribution effects. Economists often talk about principles of fairness in three different ways. Under one view, those who receive the benefits

should pay the cost; this is simply the "beneficiary-pays" principle. Second is the view that those who occasion the cost should bear the cost. The third view, which is less relevant to transportation financing, is that those who are the most needy should receive the greatest subsidy.

The beneficiary-pays criterion is met whenever repayments match the use or the benefit received. So, as with several projects mentioned earlier, if you finance them using debt and taxpayers or users pay for it such that over the next 10 to 15 years their payments match the benefits they receive, you have satisfied this first view of a fair distribution. Examples could be a debt-financed toll road where total revenues cover the debt service, or a municipal investment with broad benefits to the community, with debt repaid by those future taxpayers who enjoy the benefits over a comparable period of time.

Why not use debt financing for all long-lived transportation investments? That is really an open question. The reason that we do not like it at the federal level, and probably at the state level too, is fiscal control. There are enough uncertainties in the realm of benefit-cost analysis that a wholly debt-financed program might be risky—repayment is not a sure thing. As I said, debt financing tends to shift the cost burden to future users and taxpayers, which again may accord well with the principle of having beneficiaries pay. However, if a project defaults, bondholders or taxpayers are left bearing the cost.

These basic points apply to any pay-as-you-use instrument, be it a municipal bond, a TIFIA credit instrument, or a SIB loan. With GANs or longer-term GARVEEs, you borrow against future federal grants. The big benefit here is that you get the project completed sooner, but not for free, as we well know. Again, the issue here is that you shift the cost to the future. If you commit future federal funding, then you are essentially taking money away from future projects. It is important to make sure that the projects you are financing now yield a good enough rate of return to increase the economy's wealth and enable more investment—public or private—in the future.

My final point centers on public-private partnerships. I would say that the profit motive does indeed provide incentives for economic efficiency in private-sector undertakings. Nonetheless, government should be careful about structuring those agreements so as to create the right incentives for high-quality work, completed on schedule, at the minimum overall life-cycle cost.

In conclusion, to achieve economic efficiency we would like to match as closely as possible the price paid through taxes, tolls, and other fees; the costs occasioned; and the benefits received. Transportation projects usually offer a combination of private and public benefits that make analyzing those factors complicated and implementing them more difficult still. A more detailed look at the analysis appears in a CBO study I completed a couple of years ago. The study, "Innovative Financing of Highways: An Analysis of Proposals," is available at www.cbo.gov and from CBO's publications office.