CHAPTER THREE

Structuring and Restructuring the SRFs

Introduction

Of the many unique features contributing to the SRF's success as an environmental financing mechanism, perhaps the most significant is the latitude and flexibility it provides the states in structuring their individual programs. Unlike most federal programs aimed at providing financial assistance to accomplish a public objective, the SRF program is not tightly circumscribed with rigid, uniform rules and requirements for state or local compliance. In the more traditional Federal model, each state program, with limited variations, is usually a mirror image of the others, dictated by Federal statutory and administrative rules and regulations. The amendments to the Clean Water Act of 1987 broke that mold, giving the states broad latitude in how they design, structure and administer their SRF loan programs. The 1996 amendments to the Safe Drinking Water Act, setting up a comparable loan assistance program, replicated this flexibility for state implementation and management.

As a result, no one state SRF program is identical to the other. Each has unique characteristics, either in its financial structure or its administration, allowing to adapt to the state's individual needs and administrative characteristics. For example, some states like New York and Ohio, identified or created special independent financing authorities to administer the state loan programs. Others located the programs in the state agency responsible for environmental regulation and compliance. Still others have bifurcated or divided the loan program responsibilities between two or even more state agencies; one managing the lending and financial part of the program and the other developing the state management plan, prioritizing and approving the projects and monitoring their construction.

The SRF financial structures in the individual states vary significantly, based often on the public finance experience of the designated agency, the needs and demand in the state for project loan assistance and the preference of the state government for how it wishes to implement and manage such a program. Some states pursue relatively dynamic loan financing structures that include leveraging the proceeds of the Federal capital grants and state match in the municipal bond market. Others design their systems along fairly conservative and traditional models of lending, and while no two states are totally identical in their management approach or structure, most correspond to one of two general prototypes; a **Direct Loan Structure** or a **Leveraged Loan Structure.**

The purpose of this chapter is to describe these two prototypes, some of the variations within each, and the criteria and application of the program models which guide a state in the selection of its choice. While some of this is **post facto**, since states have already made their choices and are well into the implementation and administration of their programs (especially the Clean Water SRF), it can still be a useful training tool, especially to those just entering the SRF program at either the state or federal level. For those entry-level employees, and for others

wishing to gain an understanding of some of the basic considerations in making the programmatic choice for a state program, this chapter should have utility. It should also be useful in assisting state SRF managers to reevaluate their loan program and review the options available for possible financial restructuring, as in a possible move from a direct to a leveraged loan prototype, or transition from a reserve fund to a cash flow leveraged approach.

The SRFs are dynamic lending programs, always subject to adjustment and restructuring as state circumstances change. Demands for loans may increase substantially, political changes within the state government may favor a more aggressive type of financial management, or internal changes in the designated state SRF agencies may encourage a new look at the financial structure of the program and available management options. For example, some states that originally leveraged their program on the basis of a reserve fund model are reexamining the advisability of shifting to a leveraged structure based on cash flow from the growing repayment stream of outstanding loans. Other states, faced with increasing current demand for SRF loans, are reexamining their direct lending program to determine if a leveraged program will more efficiently meet their changing needs. Still others, with new management or employees, may find this chapter useful in understanding the key criteria and decisions the state already went through in selection of their existing financial structure.

What follows is first a description of the basic criteria influencing the choice of a particular financial structure, be it a direct or leveraged loan program. Second, a description of the various types of models used to evaluate a state program's needs and determine its most appropriate financial structure, prepared by **Marlin Mosby** with **Public Finance Management** who, as a financial advisor to a number of SRF programs over the years, has hands on experience in SRF financial structuring. This is followed by a basic explanation of the elemental structures of the different types of SRFs, either direct or leveraged reserve funded, cash flow or blended rate structures, prepared by **Neil Flanagan**, with **Bear Stearns and Co., Inc.,** who has been intricately involved in structuring bond issues for a number of leveraged state funds. This is followed by an elementary description of what an SRF manager, considering approaching the bond market for the first time, needs to know with respect to assembling a financial team. This, together with the discussion of basic criteria, was prepared by the editor of these materials, **James N. Smith**. Following these general descriptions of financial programmatic structures, are some specific descriptions of three SRF programs, which provide instructive examples of how states have defined their own needs based on differing circumstances. Included in this are **Montana** and **Washington's** direct lending programs and **Massachusetts'** leveraged loan structure. (See Appendices H, I and J respectively.)

Factors Influencing Selection Criteria

Demand for Lending

In making the choice between a direct or leveraged SRF program, current and anticipated loan demand is the most weighted factor. Demand has been the convincing factor leading many states to select the direct loan program structure as most appropriate for their needs. Certainly, a state where legitimate loan demand is less or approximately equal to available funds from capital grants, state match and loan repayments, would not seem to be a reasonable candidate for

borrowing to leverage the fund for additional lending. Why borrow money to lend in a limited lending market?

It should be said, however, that demand is often a factor of other program elements including how effectively or aggressively the state loan program is marketed, how much outreach and assistance is provided the potential borrower, and the attractiveness and competitiveness of the loan rates and other arrangements. The loan rate is especially a factor. Under conditions of falling interest rates, where communities may be able to directly access lending sources outside the SRF, including the municipal bond market, at terms that are close or comparable to SRF rates, loan demand will fall off. Like anything else in the banking area, rates need to be periodically adjusted to reflect the market. Without significant savings, a city may be strongly inclined to pass-over the SRF borrowing option which, like all federally initiated programs, carries a burden of other federal requirements and regulation such as the so called "cross-cutters".

Another factor indirectly influencing loan demand is the diligence of state environmental regulation and enforcement of drinking water and clean water requirements. If a city assumes no threat of enforcement against its noncompliance, it probably will not give much priority to major capital investment in water quality clean up or drinking water treatment. In other words, lagging demand for environmental loans can also reflect a quiescent state program that neither earnestly markets its program nor enforces its environmental laws.

Administrative Requirements

It is axiomatic that more financially complex and sophisticated loan programs require more administrative personnel, trained or experienced in the complexities of the financial market. Lack of familiarity with this field has undeniably been a constraint on moving some state programs toward a leveraged structure. This is especially true where the loan program is administered exclusively or primarily by the state environmental regulatory agency or drinking water program, where lending and financing are not normal in-house capabilities. Nevertheless, lawyers, engineers and environmental scientist, frequently find themselves in the loan business. Or more accurately, the public banking business, with a need to understand more about its essentials or, conversely, obtain the appropriate professional staff to assist them in the area of finance and lending. Unfortunately, in many states this is not always an option. State budgets may be a constraint or state ceilings on hiring, even when administrative funds are available, may make it impossible to bring on additional staff proficient in these areas. Consequently, some state SRFs may avoid turning to more innovative financing approaches because of a mismatch of staff qualifications to run the program

Necessary Authority

Just as significant, many state environmental and drinking water agencies lack the legal authority to issue debt on behalf of the state, and must pair with other state agencies or authorities to gain access to the bond market. While this limitation can be, and frequently is overcome by turning to another state agency or authority, with access to and experience in the market, to issue the bonds for the leveraged SRF, it is an option that for a variety of reasons internal to the state and

the managing agency, may be foreclosed or approached with apprehension. All the same, a number of state SRF programs pair with another state agency or authority such as the treasures office, an independent finance authority, or the state public finance agency, to issue their bonds and help financially structure their lending program. There are abundant examples throughout the SRF program of this type of pairing arrangement.

Timeliness of Expenditure

Another factor, all other things being equal, that can weigh in the equation of a state's choice to select a direct or leverage program, is the concept of **"present value"** of money, both from an economic perspective as well as for meeting environmental concerns. What is the value of a project built today as opposed to one built a decade or two from now? Assuming the need, a dollar spent today on water clean up or health protection is probably a more economic and efficient expenditure than a dollar saved for lending some years from now. Moreover, the benefits of timely project construction of environmental facilities must be weighted against the deferral of such costs into the future. Admittedly, this is a difficult factor to measure with any exactness, but should be a critical concern of any state program with a backlog of need for capital facilities. As demonstrated in the following sections of this chapter, a leveraged program can virtually immediately double the available funds for SRF project loans, even though, in the longer term (20 to 30 years), the direct loan fund will have more funds available for lending than will the leveraged SRF. This variability of short and long term lending capacity between a direct and leveraged fund is discussed and demonstrated in the next two sections of this Chapter which deal respectively with "Managing for Long-term Objectives" and the "Elemental Structure of Leveraged SRF Programs".

Modeling for Long Term Management Objectives

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Type of Models

There are four different models used by state SRF agencies in the management of their programs: (1) **Program Capacity Models**, (2) **Program Cash-Flow Models**, (3) **Bond-Sizing Models**, and (4) **Program Default Models**. Any program manager may use the first two of these models to manage and plan their SRF programs while the last two models are specific to leveraged programs. The purpose of this section is to define each of these models and discuss how program managers are using them to manage their SRFs.

Program Capacity Model

A program capacity model is designed to project loan capacity in each period of a planning cycle, given a set of program assumptions. They are used to test the impact changes in program structure or economic conditions will have upon the program's ability to make future loans. For example, one could use a simple program capacity model to determine the dollar volume of loans that could be closed in each of the next eight quarters, when given the current program cash balances, a monthly forecast for additional federal and state funding over the next two years, a monthly forecast of repayments from existing loans over the same period, and a monthly forecast of interest rates the agency could expect to earn on its cash balances and on the loans it would originate. At the other extreme, a much more complex capacity model could be developed to determine loan capacity by the month, quarter or year for each of the next thirty years, given anywhere from five to twenty-five different assumptions about the future characteristics of and inputs into the program. As such, capacity models are critical tools in being able to make informed policy decisions about the future structure of the program. Topics such as whether to leverage or not, the level of subsidy, or the term of the loans, can all be addressed with a well-designed program capacity model.

Program capacity models can be built based upon individual loans, both existing and planned, or can be built based upon one or more generic loans. Or the model can be built based upon a combination of individual existing loans and generic future loans. Capacity models do not have to be exact. They are meant to be planning models to give management an educated guess on their ability to make future loans, given certain key program assumptions.

Program capacity models should be custom built in Excel or Lotus. However, even the most sophisticated and complex models do not have to be extremely large. It is more important that they are useable and accessible, designed in a way that the agency staff can easily interpret the input and output.

Program Cash-Flow Model

A program cash-flow model is designed to explicitly track the flow of funds from their source, through the agency, to the borrowers and back to the program. The primary goal is to identify the flow of cash and to prove the financial integrity of the program. How much money is there to lend out, who are the borrowers, how much do they owe, when do they owe it, and what investments does the program have? A cash-flow model that simplifies the flow of funds down to the essential components, is often more useful as a policy tool, than a fully integrated accounting system.

While a good cash-flow model does not necessarily have to track the flow of funds through every single account and sub account, it does need to track the funds in enough detail to accurately portray the nature of the program. For example, in a direct loan program it may not be necessary to track loans into specific construction sub accounts. Likewise, in a reserve fund leveraged program, it may not be necessary to divide the reserve fund into borrower sub accounts, or in any program, to identify individual investments.

Like program capacity models, program cash-flow models have to be custom built. In fact, of all four models, a good cash-flow model has to be the most customized to an agency's specific program. Unlike program capacity models, cash-flow models are always large programs with large amounts of stored data. Many SRF programs use Excel or Lotus to build their cash–flow models although, some larger programs use database models or custom built accounting-like packages that produce management as well as accounting reports.

Cash-flow models are often used as the front-end of a capacity model, or the platform upon which a comprehensive default model is built. In leveraged programs, cash-flow models are the basis for all rating analysis. Direct loan programs, on the other hand, can often be managed with just a good cash-flow model.

Bond-Sizing Model

SRF program managers that leverage their program use a bond-sizing model to determine the size and structure of a particular SRF bond issue. In most SRF programs, the bond-sizing model is used, along with the program cash flow model and the default model, to demonstrate to the bondholders and the rating agencies the strength of the program's cash flow. In many leveraged programs, the bond-sizing model is a part of the cash-flow model. In others, a commercial bond-sizing program is used in conjunction with the cash-flow model to determine the size and structure of a particular bond issue. The output from that bond-sizing model is integrated, either manually or electronically, into the program cash-flow model to provide information to the rating agencies relative to program security.

By themselves, bond-sizing models are not really long-term planning tools. However, they are generally used in tandem with the cash flow and default models to generate reports that can be used by management to make long-term policy decisions. For example, future capacity in a leveraged program is a function of future loan income relative to future bond debt service. The

bond-sizing model can be used to estimate future debt service associated with future bond deals. This information is then automatically or manually put into the cash-flow model to project future loan capacity. The bond-sizing model is especially useful when an agency's management wants to evaluate the impact on the program of changes in future interest rates.

Program Default Model

Program default models are unique to leveraged programs. At its core, a default model is a form of a cash-flow model; a cash flow model that projects future program income and expenses from existing loans and bond issues, given different assumptions about the default rate of the loans. They are the reason that bonds issued to fund SRF leveraged programs, even programs made-up of relatively weak credits are, as a whole, rated by the rating agencies in one of the two highest rating categories.

Prior to the advent of default models, all bond pool programs were rated based upon the weakest credit or group of credits in the pool. In 1990, Standard and Poor's (S&P) and subsequently Moody's and Fitch, adopted a different perspective towards pooled financing programs, especially those with a source of equity other than debt. This analysis allows for the reasonable assumption that not all of the loans will go into default at one time. Such an approach was used prior to 1990, to evaluate and rate single-family mortgage bonds. In the case of single-family mortgage bonds the rating agencies had extensive historical data about the average default rate of mortgage loans. Using this data a bond issue could be structured so that it could pay the bondholders all their interest and principal, even assuming default of a given percentage of the loans. A similar analysis could be used on pools of governmental loans if given a database of prior governmental loan default rates. S&P developed just such a database and subsequently set default criteria based upon the historical data.

Once default criteria had been developed and made public, the SRF agencies could use those criteria to structure their programs to achieve desired ratings. For the most part, existing default models are based upon program cash-flow models. Default models are used extensively with the rating agencies to determine the rating of a program's bond. However, these models can also be used by management to evaluate the impact a specific rating might have upon the program's capacity to make loans.

Application of the Models

Capacity vs. Needs Analysis

One of the major issues that face all SRF program managers is the ability to meet funding needs. Are there enough funds to make all the required loans? A number of factors impact on the program's ability to make those loans. The most significant is the level of funding, next the level of subsidy, and finally the structure and term of the loans. The program capacity model is the tool used by management to make those evaluations.

The term "program capacity" encompasses two different concepts: (1) how many loans can be made today and (2) how many loans can be made over a given planning horizon. Typically, the capacity to make loans today has been expressed as a percentage of federal program equity, known as the **leverage ratio**.

Leverage Ratio = Maximum Total Loans / Federal Capitalization Grant

In a **direct loan program**, the leverage ratio would equal (Federal Capitalization Grant + State Match – Loan Origination Fees and Charges – Program Administration Fees) Federal Capitalization Grant. If loan origination fees and charges equal 0. 75% of the loans, program administration fees are 3. 0% of the grant and the state match is 20. 0% of the federal capitalization grant, the leverage ratio would be 1. 161. One dollar of Federal capitalization grant minus three cents of program administration fees equals ninety-seven cents plus twenty cents of state match funds equals a dollar-seventeen available to make loans, less point seventy-five percent (88 cents) for loan origination fees. Total loans equal one dollar – sixteen point one cents. The leverage ration equals $1. 161/$1. 00 or 1. 161 times the Federal capitalization grant.

In other words, the program can make $1. 161 in initial loans for every dollar of capitalization grant awarded. This is a simple loan capacity model. A program manager can use the model to evaluate the impact of a change in the level of state match funding relative to the capitalization grant, or the impact a change in the administrative fee or the origination fee will have upon the initial volume of loans that could be funded, the level of subsidy given, or capacity of the program to meet future loan demand.

By expanding the model to include the interest rate on the loans **(Annual Reinvestment Rate)** and the term of the loans (N), a direct loan program manager can determine the loans outstanding at the end of any period **N**.

Total loans outstanding at the end of any period **N** in the future equals:

Loans Outstanding at End of Period N = (Leverage Ratio X Capitalization Grant) X (1 + Annual Reinvestment Rate) ^ N

Expanding the model further to include a **loan amortization schedule** for each year in the planning period, allows the manager to calculate total loans made over the entire planning period. This can all be accomplished with a relatively small model that assumes a single one-dollar loan in period one and then single smaller loans from the recycled funds in each subsequent planning period. With this model, the program manager can evaluate the impact proposed changes in the loan rate, the loan term, the administrative fee, the loan origination fee, or the state match will have upon the volume of initial loans, the volume of loans outstanding at any point in the future, and the total volume of loans made over a given period of years.

For **leveraged programs** the model can be expanded to take into consideration the impact leveraging will have upon the initial loan capacity and upon the annual reinvestment rate.

The Leverage Ratio for Leveraged Program = Leverage Ratio for Direct Program / (1 – (Loan Rate / Market Rate))

Annual Reinvestment Rate = (1-(Actual Initial Loans / Program Capacity Initial Loans)) X Loan Rate

With this expanded capacity model, a program manager can compare the program's capacity to make initial loans in a leveraged program to the program's capacity to make initial loans in a direct loan program, as well as determine when the loans outstanding in a direct loan program will equal the loans outstanding in a leveraged program. By incorporating all these formulas into a spreadsheet, they can find the point where the two different programs will have made the same dollar volume of loans. Then by introducing the **concept of present value**, determine when the present value of the two loan streams will be equal.

A program manager of a leveraged loan pool can use this model to estimate the impact a change in the subsidy level or the fee structure will have on the program's ability to meet current or future loan demand. If loan demand is currently less than program capacity, the model can be used to estimate the magnitude of the future capacity that is, in effect, being banked in the current period by not using all of the programs capacity today.

This same model can be used to evaluate the impact of changing the term of the loans. The initial leverage ratio is not affected by changes to the term of the loans; therefore the program's capacity to make initial loans is unchanged. However, as the term of the loans is extended, the level of loans being repaid in any given year is being reduced, i. e. the total capacity to make recycled loans in a given period is reduced as the term of the initial loans is extended. This is of

particular concern to the **Environmental Protection Administration** and may be of concern to program management. A capacity model allows the manager to quantify the impact, if any, longer term loans will have upon the program capacity and actual loans made.

Most programs do not operate at capacity. Therefore, while changes in the program structure may change capacity, they may not impact a program's ability to meet local community's demand for funds. It is possible, if a program has traditionally operated at a level below its capacity, to make changes to the program such as increasing the subsidy level or lengthening the term of the loans, without reducing the program's ability to meet its loan demand. This analysis requires inputs from two different models: the program lending capacity by year from the capacity model and a realistic forecast of future governmental loan demand from the needs study. These two models, working in tandem, combine to give managers a powerful management-planning tool. **With these two models almost any question about the structure of the program and the program's ability to make loans, given a level of funding, can be answered**.

Cash Flow Management

The previous section was a discussion of planning models; models that estimate the future size and scope of the program given key assumptions. While those models are extremely important planning tools, bondholders, credit analysts and regulators are not particularly interested in the capacity of the program to make future loans. Instead, they are interested in the ability of the program, given its existing assets and liabilities, to meet all its financial and regulatory obligations. This section will discuss the use of models focusing on the actual program assets and liabilities, and based upon the individual characteristics of those assets and liabilities, forecast the flow of funds into and out of the program. **Generically, these are cash-flow models**.

All cash-flow models have as their foundation, the portfolio of existing assets and liabilities. The assets are primarily program loans and investments and the liabilities are primarily program bonds. The model tracks the flow of funds from their sources (federal grant proceeds, state match proceeds, loan repayments and/or bond proceeds) through the program accounts (construction funds, reserve funds, operating funds, capitalization interest accounts, debt service fund and/or recycled loan account) to the program expenses (administrative fees, cost of issuance, origination fees) or program asset accounts (loans, short term investments and/or reserve investments).

The primary use of a cash-flow model by a **direct loan program** is for cash management and as a tool to demonstrate regulatory compliance. It will answer such questions as, when will the funds be available to fund investments or loans and will the loan repayments, less expenses, at least equal the original program equity? The primary use of a cash-flow model by a **leveraged loan program** is to verify the adequacy of the program income to pay program expenses, i.e., debt service on program bonds, in addition to cash management and regulatory compliance.

The first step in developing any good cash-flow model is a **flow chart** that outlines the movement of funds into and out of the program. If there is a legal description of the program (the operating agreement or in the case of a leveraged program the bond indenture) the flow chart should mirror this description. If there is not a formal legal description of the program, the flow chart can become the source document the cash-flow model replicates.

Once the flow chart is completed and vetted by the finance team, the cash-flow model is created. The largest component and the most detail component of the model is the loan portfolio. Each loan should be included separately and should identify:

- the par amount of the loans,
- the net loan proceeds
- the term of the loans
- the interest rate (both gross and net if applicable)
- any fees associated with the loans
- the amortization schedule
- any prepayment options

At a minimum, the database must have the par amount of the loans and the periodic loan repayment schedule broken down into principal and interest payments.

For a direct loan program, this may be all that is required. By tracking the loan repayments from each of the existing loans over the life of all the loans, the program manager can be assured that the program meets EPA's perpetuity requirements and can have an accurate estimate of how many dollars from recycled funds will be available in each period over the planning horizon. When coupled with a demand study, the manager can determine the program's ability to meet future loan demand or plan future investments of program cash balances.

For leveraged programs, a bond component has to be added to the model. This will include construction, reserve and other funds used to secure the bonds and/or disburse funds to the borrowers. It will also include a debt service schedule. Ideally, each bond issue will be treated as a unique element of the model. Periodic debt service requirements by issue are aggregated into total schedules and then compared to periodic loan repayment and investment income schedules. Summary schedules that compare program income and expense can be used to demonstrate the credit strength of the program.

The greater the complexity and level of detail built into the model, the more useful it will be as a management tool. For example, if each individual loan is built into the program, one can evaluate the impact subtle changes in a given loan might have on the program. For a leveraged program manager, one important use of the cash-flow model is to evaluate the impact various default scenarios will have upon the program's ability to pay the debt service on its bonds. This

particular cash-flow model is referred to as **the default model**, and is the foundation upon which all revolving loan fund ratings are based.

Transaction Management

For a leveraged revolving loan fund there are two separate components of any bond-sizing model. **First**, the project-funding component is central to the sizing of every bond issue. This involves sizing the bonds so that the proceeds of the bond issue, along with any cash contributions made by the issuer, are sufficient enough to fund the project requirements. In the case of the SRF, the project requirements have to be broken down by borrower and therefore add a certain degree of complexity to the analysis. There are several commercially available programs that are very good at this task. **DBC** and **Munex** are the two most widely used programs. Both do a good job of sizing bond issues, given a large number of structuring options. For example, the project size, the project draw schedule, the borrower related fees, program related fees, yields on construction fund investments, level of capitalized interest both at the borrower and program level and the proposed couponing of the bonds relative to the yields, all have an impact on the size of the bonds. The output of the bond-sizing model should, at a minimum, include:

- schedule of sources and uses of funds
- amortization schedule showing principal and interest payments
- schedule of bond prices and net proceeds by maturity
- schedule of the key issue statistics such as True Interest Cost (TIC) and Net Interest Cost (NIC)
- arbitrage yield
- average life of the bonds
- average coupon

The **second component** of the bond-sizing model for a revolving loan fund involves determining the mix of bond proceeds and program equity proceeds that will fund the largest volume of projects at a given subsidy level while guaranteeing the integrity of the equity funds and the payment of all debt service payments in a timely manner**. It is at this point that the output from the classic bond-sizing model must be incorporated into the program cash flow model.** From the bond sizing model, debt service schedules are produced for each new and planned bond issue. The debt service schedules are then incorporated, either manually or electronically, into the cash flow model to determine if the minimum requirements of the bond resolution are satisfied.

Credit Ratings For Bond Pool Programs

The final planning model discussed here is the **loan default model**. A manager of a leveraged SRF program uses a loan default model to determine the impact individual loan defaults will have upon the program's ability to make current and future debt service payments. At the most basic level, individual loan payments in the program cash-flow model can be manually adjusted to reflect nonpayment or partial payment of loan debt service by one or more of the borrowers on one or more payment dates. The loss in program income is then traced through the cash-flow model to determine a resulting inability to make bond debt service payments. Since most programs are under leveraged and therefore have excess capacity built into the program to pay bond debt service, this may, for smaller less complex programs, be all that is necessary.

Larger programs and programs based upon the use of an equity funded reserve fund to generate the program subsidy, will need to develop far more sophisticated models. They will need models that can electronically apply several different default rates for varied periods, depending on the credit rating of the existing loan portfolio and the prospective loans. For example, to obtain a triple-A rating from Standard and Poor's, a program with over fifty loans, where no single loan with a rating less than triple-A is greater than 10% of the program, will have to apply the following default rates to individual loans in the program:

> **AA** rated loans 10%, **A** rated loans 15%, **BBB** rated loans 18%, and non-rated loans 40%. These default rates will need to be applied to every loan; once for the first four years, once for the middle four years, and once for the last four years.

It is important to remember that in default models the cash flows are seldom the same as they are in a fully paying situation. While it may not be necessary to track loan and investment income from specific sub accounts if there is a surplus of funds, it becomes imperative to track these funds down to the lowest sub account level in a default situation. For example, in a program that only pledges a portion of the reserves to specific loans, a bond default may occur when those specific funds are expended even though there are still significant funds in the reserve account. On the other hand, a program that pledges all the reserves to each and every borrower will be able to pay bond debt service for a longer period of time than the program that allocates reserves to individual borrowers.

In summary, the default model has to exactly track the flow of funds as described in the program documents. This is the model that allows a program to achieve a credit rating greater than the credit rating of the underlying loans. The development of this model must be done in close cooperation with the rating agencies. Each agency has slightly different requirements and the default model should be able to prepare reports for each rating agency using that agencies default criteria. The default model is also a useful management tool for the program manager in examining the consequences of a default by a specific borrower. In this case, the model can help the manager determine the exact impact a specific default will have upon the program. Will the default, if it continues, ultimately result in the default of the bonds? If so, when? If not, what impact will it have upon the program's ability to make future loans? The default program can also be used to evaluate the impact of a loan restructure on the program.

Summary

This section has presented four different types of planning models that a program manager can use to structure and manage an SRF program. These models can be anything from simple back of the envelope formulas to huge and complex database/spreadsheet programs. The size and complexity of the models is not what is important. The appropriateness of the model to the task at hand is what should determine which model to use. The SRF manager has all four of these planning models at their disposal. Each has a different use, but all give the manager the capability to plan for the future.

Elemental Structure of Leveraged SRF Programs

Prepared by Neil Flanagan, Bear, Stearns & Co. Inc.

Introduction

State Revolving Funds (SRFs) are initially capitalized with monies received from the Federal Capitalization Grants together with state matching funds equal to 20% of each Federal dollar contributed. This "seed capital" is typically used to provide "below-market" loans to finance eligible wastewater and drinking water projects. One requirement of an SRF is that the seed capital must remain in the fund for perpetuity.

SRF loan programs are either ***Direct*** or ***Leveraged*** with the distinction that a direct loan program uses only seed capital and subsequent loan repayments to generate a supply of loans, while a leveraged loan program supplements the resources of a direct loan program with borrowed funds to generate a greater upfront supply of loans. Depending on the application of the borrowed funds, a leveraged SRF is categorized as a ***Reserve Fund Program*** or as a ***Cash Flow Program,*** as discussed more fully below.

Direct Loan Program

The mechanics of a direct loan program are straightforward. The SRF acts as an intermediary, which accepts the program seed capital and originates loans to participating entities (Figure 1). As principal and interest is paid on the loans, the funds are subsequently recycled into new loans each year.

Example (Figure 2): For purposes of this discussion let's assume that the SRF receives $100 in seed capital ($83. 33 Federal and $16. 67 State Match) and such funds are loaned out for twenty years at a below market rate of 3. 0% with equal annual loan payments. The program will originate $100 in loans immediately. One year later, $3 in interest is repaid along with some original principal, and both are recycled into new loans, causing total outstanding loans to increase to $103. Each year this process continues and the loan program continues to grow.

In a direct loan program, the outstanding loan balance increases annually at a rate equal to the loan rate. In the above example, the loan balance will increase 3% annually reaching a total balance of $180 at the end of twenty years (Figure 3). New loans available in any given year are limited to the original seed capital in the initial year and then to the loan repayments received in subsequent years. Accordingly, a direct loan program will meet a program's needs as long as loan demand is below such limits. Assuming all borrowers repay their loan, the perpetuity requirement is met since the original $100 of seed capital will be returned to the program plus additional interest (multiply this basic example by millions, and you get the full impact of the long-term monetary dimension of the program, now in the tens of billions of dollars).

Leveraged Loan Programs[29]

Leveraging is accomplished when an SRF uses borrowed funds to supplement the program's seed capital. To leverage, an SRF agency sells revenue bonds to investors and repays such investors with SRF program revenues. When combined, SRF seed capital and borrowed funds can significantly increase near term loan capacity, and as compared to a direct loan program, allow more projects to be funded sooner. In return for today's increased loan capacity, however, some program resources must be used over time to repay the borrowed funds (Figure 4).

Leveraging is instrumental in situations where loan demand outpaces available capitalization grants as many leveraged programs increase the amount of upfront loan capacity by two to three times. In addition to meeting current demand, a leveraged program affords the ability to accelerate project funding rather than wait for recycled funds to become available. The reason this works so efficiently is the availability of the seed capital, essentially free money which does not need to be repaid to the state or federal government[30].

Leveraged SRF programs can be divided into **Cash Flow Programs** and **Reserve Fund Programs**. The main distinction lies in the expected repayment stream for the leveraged bonds.

Reserve Fund Program

The distinguishing characteristic of a reserve fund program is that Federal and state seed money is deposited to a reserve fund and not used to make loans. Interest earnings on the reserve fund are used to pay the difference between annual debt service on the bonds at the market interest rate and the loan repayments received at a below market interest rate. Unlike a cash flow program, combined loan repayments and reserve interest earnings are usually structured to provide debt service coverage of only 1. 0x. Programmatic credit support and perpetuity requirements are satisfied from the reserve fund, which is maintained as a constant percent of the loan or bond par outstanding. As loan principal is repaid, a proportionate amount of reserves are released and made available to make-up any shortfalls from other borrowers. These released reserves provide programmatic credit support, much like the excess loan repayments do in a cash flow structure.

The reserve fund is typically invested in highly rated liquid investment contracts collateralized by US Treasury securities. Because the reserve fund secures the tax-exempt bonds issued to fund loans, for tax reasons, the maximum investment income that can be retained by the program is generally limited to the borrowing cost of the leveraged bonds (For a more detailed discussion of tax limitations on bond invested funds see Chapter V).

[29] In all of the examples of leveraging it should be noted that the amount of funds leveraged through the issuance of bonds is diminished slightly by transactional costs, i. e. the cost of issuance including the underwriters discount, bond counsel fees and rating agency costs and some costs of the financial advisor. This is treated as a numerical discount in the discussion of "Modeling for Long-term Objectives" in this Chapter.

[30] It should be noted, however, that those states which issue bonds for state match, the payments of which are dependent on SRF loan repayment, diminish somewhat the financing loan capabilities of both direct and leveraged funds.

Example: Figure 5 illustrates how a Reserve Fund Program can immediately leverage $100 of seed capital into $200 of subsidized loans, assuming market interest rates are 6. 0% and the targeted loan rate is 3. 0%.

By investing the entire $100 of program seed capital (consisting of Federal Capitalization Grants and state matching funds) to a reserve earning 6. 0%, the SRF will generate $6 of investment income in the first year. This income is then available to subsidize loans.

If the subsidized loan rate is 3. 0%, the investment income on the reserve fund can subsidize $200 of loans for a leverage ratio of 2:1. The $6 of investment income funds the difference between $200 borrowed by the SRF at 6. 0%, and the same $200 loaned to borrowers at 3. 0%.

Most reserve fund programs maintain the reserve as a constant percent of the loan balance outstanding which means that as loan principal is paid down, the reserve is "freed-up" and made available to leverage additional loans. For reserve fund programs, the reserve fund allocated to the bonds, commonly referred to as "corpus", is equal to the inverse of the leverage factor expressed as a percentage of par, 1:2 equals 50% in this example.

A reserve fund accomplishes maximum upfront funding capacity in a single transaction, as can be seen in Figure 6. For each $1 of seed capital, the loan capacity remains constant for the life of the program so long as the same leverage factor is maintained on subsequent loan recycling. Recycling occurs as loan principal is repaid and corpus is freed-up. New loans originated each year from recycled corpus usually increases, as most loan amortizations have ascending principal similar to a home mortgage.

In the early 90's, when many States were implementing leveraged SRF programs and did not have seasoned loan portfolios, the reserve structure was very popular due to its ability to quickly create start-up loan capacity. Due, in part, to this feature, reserve fund structures are more prevalent than cash flow programs today. A flow of funds for the reserve fund structure used by **New York State Environmental Facilities Corporation** is included as Illustration A. More recently, some states have begun to transition to cash flow programs or initiate a leveraged loan program on a cash flow structure. The principle advantage of a cash flow approach is that it frees up some of the resources, which can then be dedicated to additional lending.

Cash Flow Program

A cash flow program is very similar to a direct loan program in that program assets (Federal cap grants, state match, bond proceeds) are all used to make loans. In SRF parlance, "cash flow" means that the leveraged bonds are expected to be repaid exclusively by the pool of loan repayments from participating borrowers. The program is structured so that in each year total aggregate loan repayments are sufficient to pay the scheduled debt service on the leveraged bonds. In order to protect against non-payment by some borrowers, annual loan repayments are actually structured to exceed debt service payments. For instance, annual loan repayments may total 1. 5x annual debt service payments on the leveraged bonds. In addition to providing added security to bondholders, the excess annual loan repayments are available to be recycled into new loans, which help satisfy SRF perpetuity requirements.

Cash flow programs typically leverage in a two-step process much like a traditional commercial banking institution originates and then securitizes a pool of loans to its customers.

- Step 1: Over time, subsidized, below market interest rate loans are originated from program assets

- Step 2: Once funds are depleted in Step 1, the loan repayments are leveraged and used to secure SRF revenue bonds providing new funds to make additional loans

Example (Figure 7): Using similar assumptions from the direct loan example above, Figure 7 depicts the multi-step leveraging process discussed above. As can be seen in the first instance, the $100 of program assets from cap grants and state match are loaned out at a below market rate of 3. 0%, producing an annual P & I loan repayment stream of approximately $6. 7 annually. Subsequently, the $6. 7 annual loan repayment to be received over the next 20 years from borrowers, is leveraged by selling revenue bonds secured by the initial loan repayments.

> Assuming that annual debt service coverage of 1. 5x is maintained, annual debt service of $4. 4 can be structured at an assumed market interest rate of 6. 00%. The net result is that $50. 1 of bonds can be sold and used to make additional loans. Annually, the $6. 7 of loan repayments are used to pay $4. 4 of debt service and the remaining $2. 3 of coverage is used to maintain program perpetuity and make new loans.
>
> As the process repeats itself, the $50. 1 of bond proceeds can then be loaned at 3. 0% and re-leveraged to produce $26. 2 of bond proceeds available for loans, and the cycle continues. Ultimately, approximately $100 of bonds can be issued, which together with the original $100 of seed capital, will allow the program to originate approximately $200 of loans over the near term, effectively leveraging the original $100 2:1 ($2 dollars in loans are originated for every $1 dollar in seed capital).

Figure 8 illustrates the increased loan capacity of a leveraged cash flow program versus a direct loan program over a twenty-year horizon. Compared to a direct loan program, the cash flow program in this example nearly doubles loan capacity by year five and maintains an outstanding loan balance in excess of a direct loan program through 20 years. Past approximately 20 years, however, the direct loan program will continue its upward trend increasing annually at the loan rate and exceeding the nominal amount of loans outstanding. Under a cash flow program that will remain constant at approximately $187 million.

While a cash flow program may be slow to create leveraging capacity, since loans must be first originated, existing programs can use their vast pool of typically seasoned and diverse direct loans to generate significant additional loan capacity. Moreover, a cash flow model permits additional capacity in excess of the current year's funding resources that may already be needed to meet loan demand. The **State of Florida** recently used a cash flow structure to raise an additional $50 million of loanable proceeds by leveraging its existing direct loan portfolio (see Illustration B), and the **State of California** is currently evaluating a cash flow model to fund an additional $200 million of projects by leveraging its existing direct loans.

Cash Flow Program (Blended Rate)

The **State of New Jersey** uses a Blended Rate Cash Flow Program to accomplish maximum loan capacity immediately, rather than ramping up over time, as discussed above. The actual structure of the New Jersey SRF program is unique among the states, but illustrative of the blended rate approach. Under a blended rate program, each funding commitment consists of a two-part loan. One part is funded from bond proceeds and carries the market interest rate or that rate that the bonds are sold to public investors. The second loan is funded from seed capital and carries a zero percent interest rate. By adjusting the ratio of the two loans, a subsidized blended rate is achieved. In the New Jersey program a blended rate of 50% of the market rate is achieved by funding one-half the loan at zero percent.

> Example: Figure 9 illustrates the mechanics used to immediately leverage $100 of seed capital into $200 of subsidized loans using a blended rate program. The $100 seed capital is loaned at 0. 0% with principal to be paid in equal installments of $5 over twenty years. At the same time, $100 of bond proceeds are used to fund the other half of each loan and carry a market interest rate of 6. 0%. Since the bond proceeds are repaid at the market rate, expected annual repayments of $8. 71 equal the debt service on the bonds. The additional $5. 0 annual principal payments on the zero-interest loan provide an additional boost on annual coverage of debt service to approximately 1. 57x. Excess principal repayments totaling $5 annually can be returned to the SRF and again be re-leveraged 2:1.

Because bond proceeds are raised upfront and combined with the program's seed capital to make loans, a blended rate program can achieve maximum loan capacity immediately. As Figure 10 illustrates, $100 of seed capital creates and maintains $200 in loan capacity for the duration of the program, assuming no defaults. As the programs continue to evolve beyond twenty years, the initial smaller loan capacity of a direct loan program will overtake the loan capacity of a leveraged program in nominal terms.

Leverage and the Effect of Subsidy

The primary variable affecting the available leverage factor and the ability to generate additional loan funds versus a direct loan program is subsidy. Leverage and subsidy are inversely related. As more subsidy is provided, leverage decreases. In each of the above examples we have assumed each SRF program originates loans at 50% of the market rate with the market rate equal to 6. 0% and debt service coverage level of approximately 1. 50x for coverage programs. This results in 2:1 for each program (i.e., for each $1 of seed capital, $2 of subsidized loans are originated immediately or over the near term).

All else being equal, changing the amount of subsidy will inversely change the program's leverage factor. The table below shows the effect of different subsidy levels and leverage for a reserve program. The subsidy level also indicates reserve funds as a percentage of loans originated. A lower reserve will reduce the ability of the program to sustain borrower defaults.

Subsidy as % of Market Rate	Loan Rate as % of Market Rate	Leverage Ratio
50%	50%	2:1
33 1/3%	66 2/3%	3:1
25%	75%	4:1

The inverse relationship between subsidy and leverage for a cash flow program is also true. As leverage increases, the coverage ratio will also be reduced. A lower coverage factor will reduce the ability of the program to sustain borrower defaults.

Subsidy as % of Market Rate	Loan Rate as % of Market Rate	Debt Service Coverage	Leverage Ratio
50%	50%	1. 57x	2:1
33 1/3%	66 2/3%	1. 30x	3:1
25%	75%	1. 15x	4:1

Getting Acquainted with the Bond Market

Prepared by James N. Smith

The municipal bond market is an efficient and fast paced mechanism for bringing state and municipal debt issues to the market place. While simple in concept, to the uninitiated it can seem daunting. The enormity and swiftness of the trading, the complexity of some of the transactions, and the myriad rules and regulations relating to taxation and security requirements can make it seem arcane; a condition that some of the players at times contribute to either deliberately or unwittingly. Certainly, for anyone considering the possibility of taking a public debt issue to the market, either to raise funds to leverage their SRF or provide state match, there are some essentials they need to know, but they should not be intimidated. With a little effort, they can gain a basic understanding of the market and its operation, and for its more complex aspects there is a lot of professional guidance available to lead them through the details of a bond transaction.

Every working day, states, cities, towns, public authorities and charitable institutions go to the public market to borrow, raising hundreds of billions of dollars each year for public finance. As a potential player in this market, an issuer should have a basic, but not sophisticated understanding of how things work and a team of professionals to assist, advise and steer them through to a successful transaction. Two useful guides to the municipal bond market are **The Handbook for Muni-Bond Issuers**, authored by Joe Mysak and published by Bloomberg Press, and the Bond Market Associations book on **The Fundamentals of Municipal Bonds**, now in its fifth edition. Even armed with these useful publications, you will still need a team of professionals to enter the market. Who are they and what services and expertise do they provide?

Financial Adviser

The first thing you will need before venturing into the public finance market is a Financial Adviser, often referred to as a FA. Over time, and with the experience of a succession of bond issues, dependence on the adviser's expertise will lessen and their role diminish, but for the novice entering the market, they are an essential partner. The FA can help decide if going to the market is the appropriate or timely step for your program and, if so, assist in sizing and structuring the issue and generally preparing it for the next steps, including assistance in putting together the rest of your financial team. In addition, the financial adviser will be by your side throughout the transaction, looking after your interests and steering you through the complexities of the process.

There are many good financial advisers or FA's to choose from in the public market and with any indication you are considering a move into the municipal debt market, you will, no doubt, hear from several. Recommendations from other state programs that are already in the market are a good source of reference for FA assistance. Also, the so-called "Red Book", the **Bond Buyer's Directory of the Municipal Marketplace**, is a good reference source. For procuring their services, the **Government Finance Officers Association (GFOA)** has developed a recommended practices advisory for issuers in advertising and selecting an FA, which is an

essential tool. In addition to guidance on structuring the RFP, the GFOA also has advice on what to consider in the fee structure, what to look for in the way of services, and what to look out for. Unethical or dubious practices such as fee splitting, finder fees and overly cozy arrangements between the FA and the rest of the financial team, especially the underwriter, were factors that led the GFOA to develop the advisory in the first place.

Bond Counsel

The next most important player on your public finance team is the Bond Counsel. This is the professional who will steer you through the mind numbing details and complexities of Federal and state requirements associated with a tax exempt bond issue, as well as the increasing requirements of the Security and Exchange Commission (SEC) with respect to fair market practices and appropriate disclosure. For reasons, sometimes seemingly perverse, the U.S. Treasury circumscribes access to tax exempt debt with numerous and often confusing requirements. (See chapter V for a detailed description of these provisions). We will not go into them here, but the advice and assistance of a bond lawyer is a critical component of any issuer's team. Indeed, those who will eventually underwrite and market the debt will demand the assurances of the bond counsel that the issue meets all relevant legal requirements for tax exemption. Otherwise, they could find themselves in the untenable position of selling tax-exempt bonds, which might later be determined to not qualify for preferred tax treatment.

Likewise, real and alleged abuses in the securities market have increased the scrutiny of the SEC over public finance, making it important that any bond issue is reviewed for compliance with SEC requirements. Some experienced issuers prefer obtaining separate counsel on compliance with SEC disclosure rules, but an FA can help you decide what best meets your needs. In addition, an experienced bond counsel can provide invaluable assistance in helping structure the issue to avoid other pitfalls of the market, as well as attest that the bond is a legal obligation of the issuing entity.

In selecting a bond counsel, a word of caution. The issuer should make sure the individual or firm selected is indeed experienced in the area of municipal bonds, as other less experienced and credentialed attorneys often attempt to enter this area of law which requires very expert counsel. Advice from more practiced issuers can be helpful in establishing the right selection criteria for bond counsel, and the "Red Book" (referenced above) also has a comprehensive listing of experienced bond attorneys.

Underwriter

The next player in the finance team is the Underwriter. This is the banker or broker/ dealer who will prepare your issue for the market, underwrite it and assure its sale by competitive pricing and eventual marketing. An absolutely essential part of the bond deal, the underwriter is the one with access to the market and experience in pricing and marketing the bonds. Basically, they buy your issue and then resell it on the market, where their knowledge of the market and experience and skill are critical in getting you the best deal; meaning the lowest possible "true interest costs".

Most large bond issues are underwritten by recognized investment houses and even by a group of bankers referred to as syndicates, with one investment house in the lead. Smaller issues may be underwritten by a single firm or even a local or regional bank.

Through consolidations in the banking industry and lower profit margins, the arena of competing bond houses, in recent years, has contracted substantially. Nevertheless, there are still a number of large players in the municipal underwriting field anxious to have your business and assist in structuring and marketing your bond deal.

How you select your underwriter will depend to a large extent on whether you go out for a **competitive** procurement or **negotiate** an arrangement with one lead banking firm. There are pros and cons to each arrangement. Competitive procurement for an underwriter is a solicitation for sealed bids from a group of pre-qualified banking houses prepared to offer you a price for your bonds that will go to market on a specified day. You, along with your FA, bond counsel and perhaps your board, evaluate the bids and usually accept the most advantageous with respect to "true interest cost". Competitive arrangements tend to be popular with smaller and less complicated issues, although in some states competitive procurements are the rule. Negotiated sales are used more frequently by large issuers with more complicated deals; especially those who want to "time the market" with the expectation they will gain the most advantageous price in this more flexible arrangement. Negotiated sales can be especially attractive in an uncertain market, when bond prices are in flux. In fact, many issuers argue that negotiated sales save them money, which may account for why the ratio of negotiated to competitive sales is roughly 3:1 in terms of both volume and number of issues. Another reason, some cynics would suggest, is that negotiated arrangements are sometime more susceptible to political interference and possible manipulation. In any event, your FA and bond counsel will work with you to select the method of sale that works best for you and your agency.

Rating Agency

Technically not members of your financial team, but an integral component of your trip to the market, are the Rating Agencies. Rating agencies basically assess the credit quality of your proposed issue and provide you with a rating, and while some small municipal issuers may go to the market with out a credit rating, few state agencies would attempt it as it might indicate a problem with the overall financial condition of the state that could impact on other state debt issues.

As a rule of thumb, the higher the credit rating the lower the cost of debt or yield on the bond. Top bond ratings in the AAA or Aaa classification are highly sought after and a matter of pride, especially with states, who like to display them as a badge of relative financial stability and economic health. With SRF related bonds, the ratings have been extremely good, especially after the municipal market place learned what they were and how solidly their credit was enhanced through revenue flows, over funded reserves, and in some cases, general obligation pledges as well (called "double barreled" credit). In fact, in a number of states, SRF bonds enjoy higher ratings than the general debt securities of the state.

There are three bond rating agencies that dominate the municipal market: **Moody's Investors Service, Standard and Poor's** and **Fitch**. A rating from anyone of the three is considered an

accurate indicator of the credit worthiness of the bond issue for purposes of the investor, but many issuers will request ratings from at least two of the rating agencies, or even all three, particularly if the issuer is new to the market. Ratings are costly and time consuming, however, and whether three ratings are necessary is questionable, especially now that SRF bonds are a known and sought after commodity in the market. Your FA and underwriter will be the best source of advice on how much credit coverage you need to reassure the market and secure the best deal for your program.

Figure 1

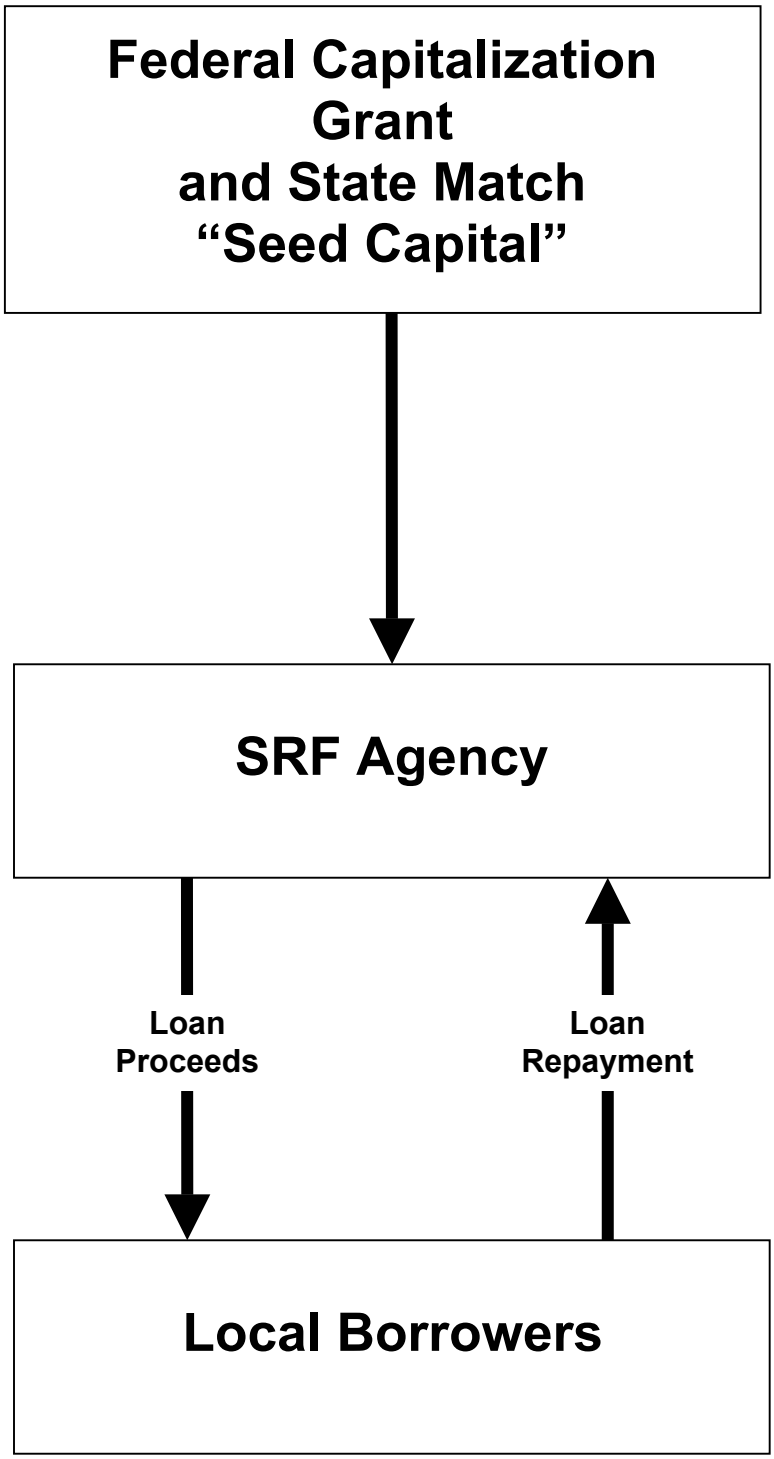

Federal Capitalization Grant and State Match "Seed Capital"
SRF Agency
Loan Proceeds
Loan Repayment
Local Borrowers

Figure 2

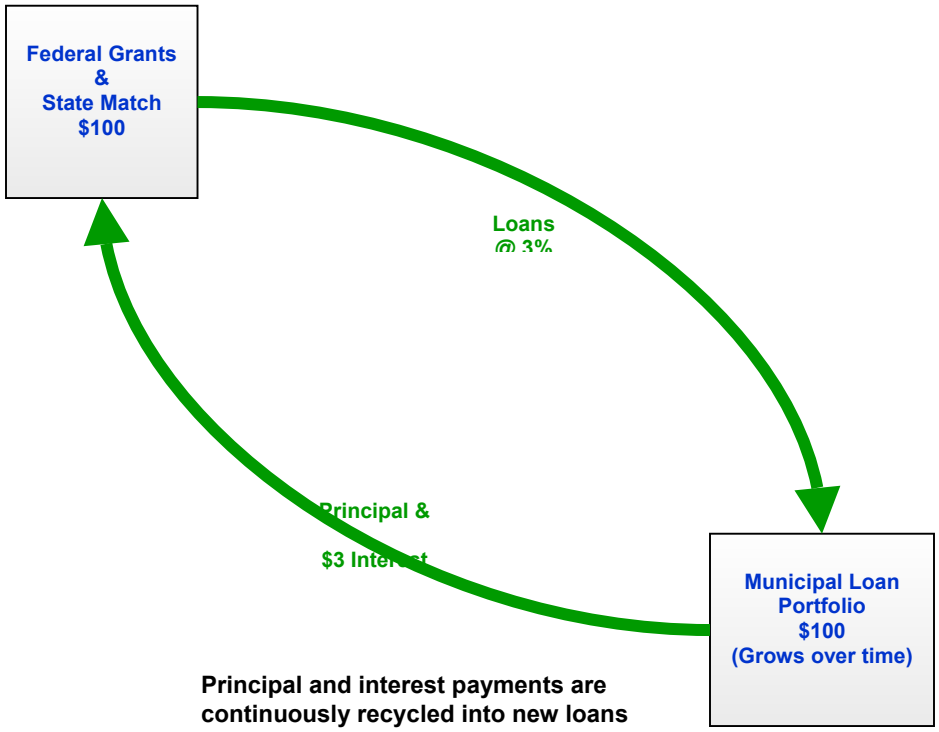


Figure 3

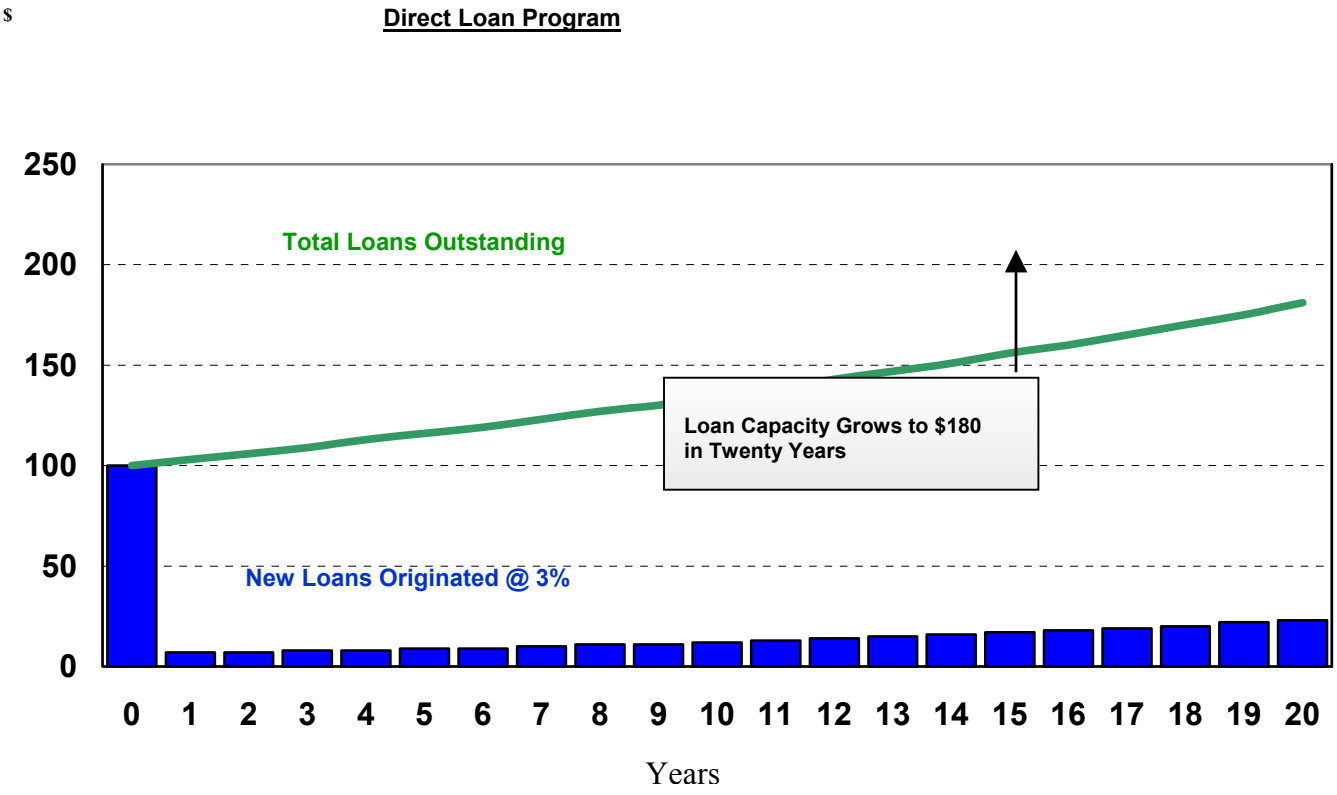


Figure 4

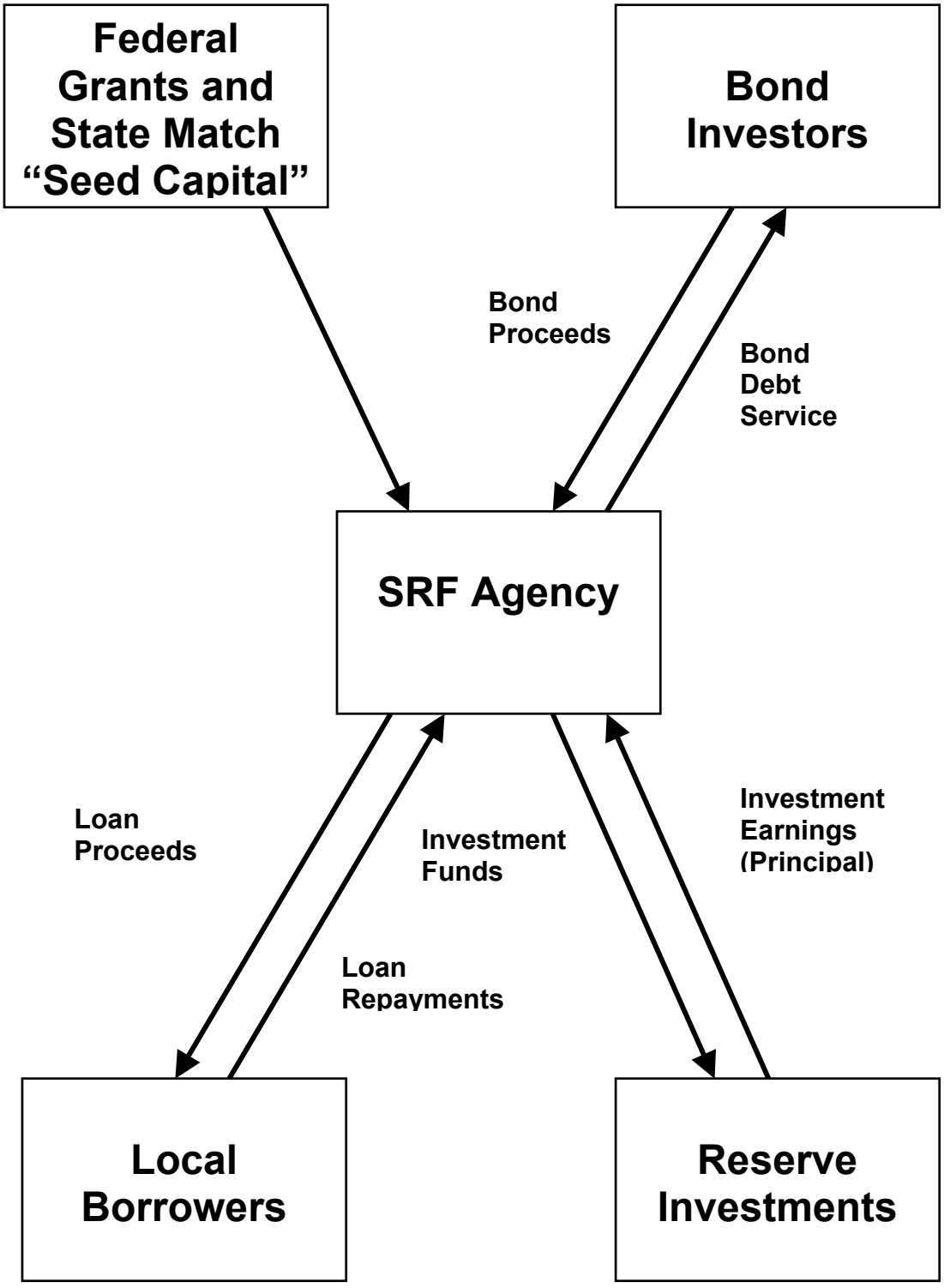

Federal Grants and State Match "Seed Capital"
Bond Investors
Bond Proceeds
Bond Debt Service
SRF Agency
Loan Proceeds
Investment Funds
Investment Earnings (Principal)
Loan Repayments
Local Borrowers
Reserve Investments

Figure 5

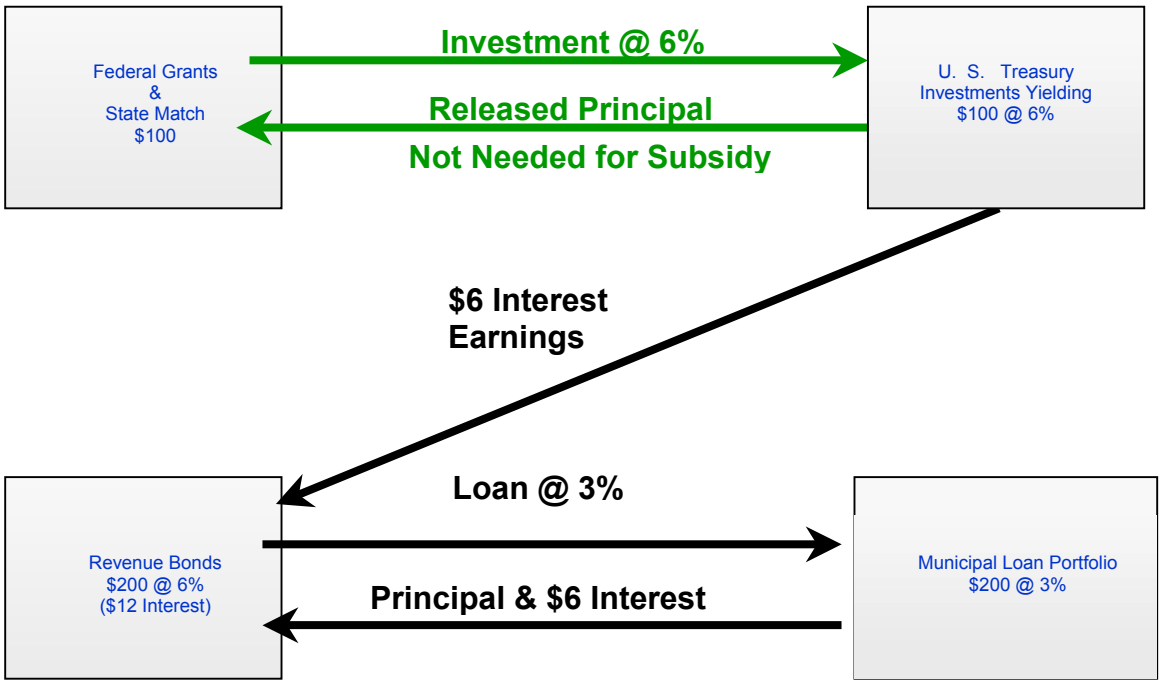


Figure 6

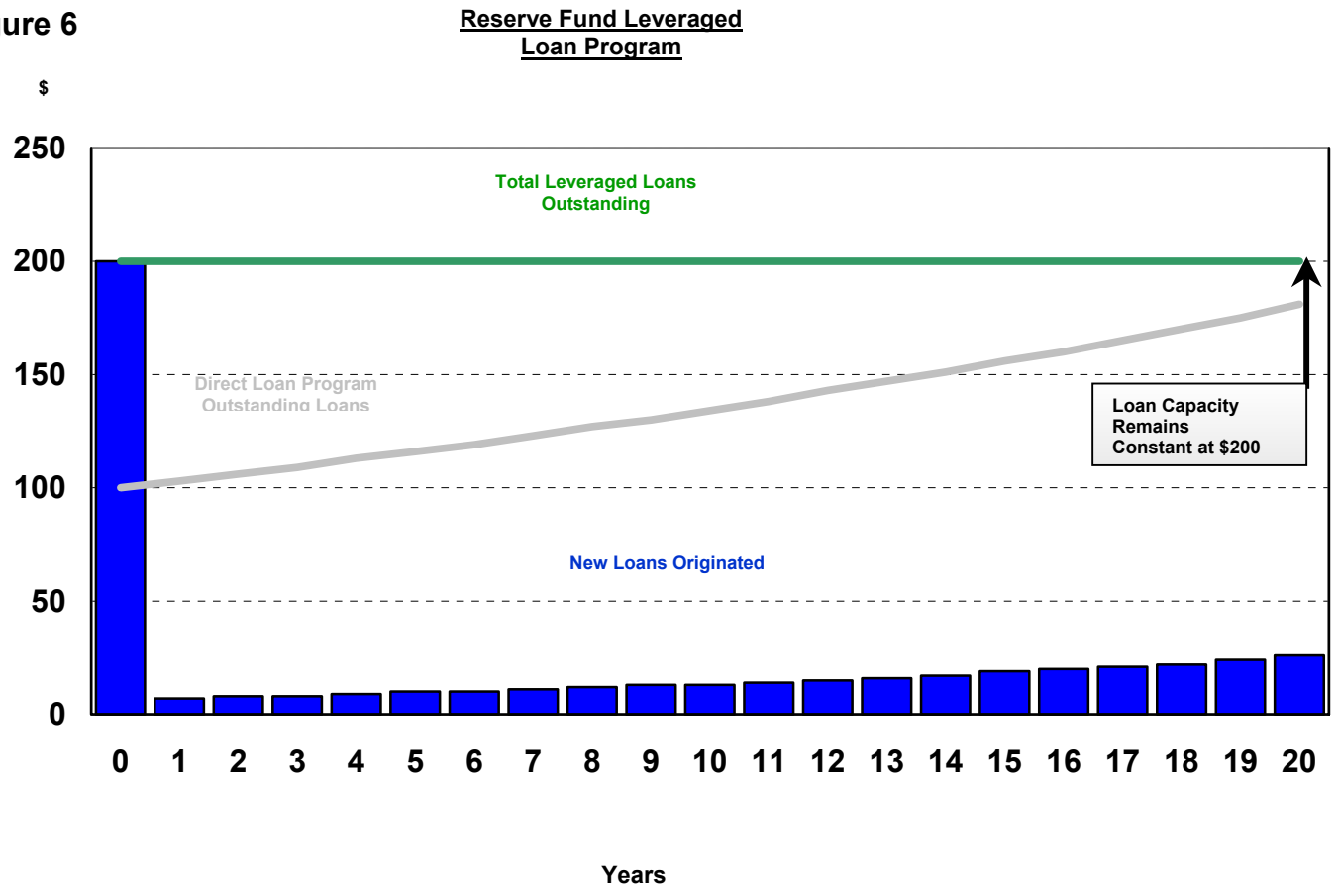


Figure 7

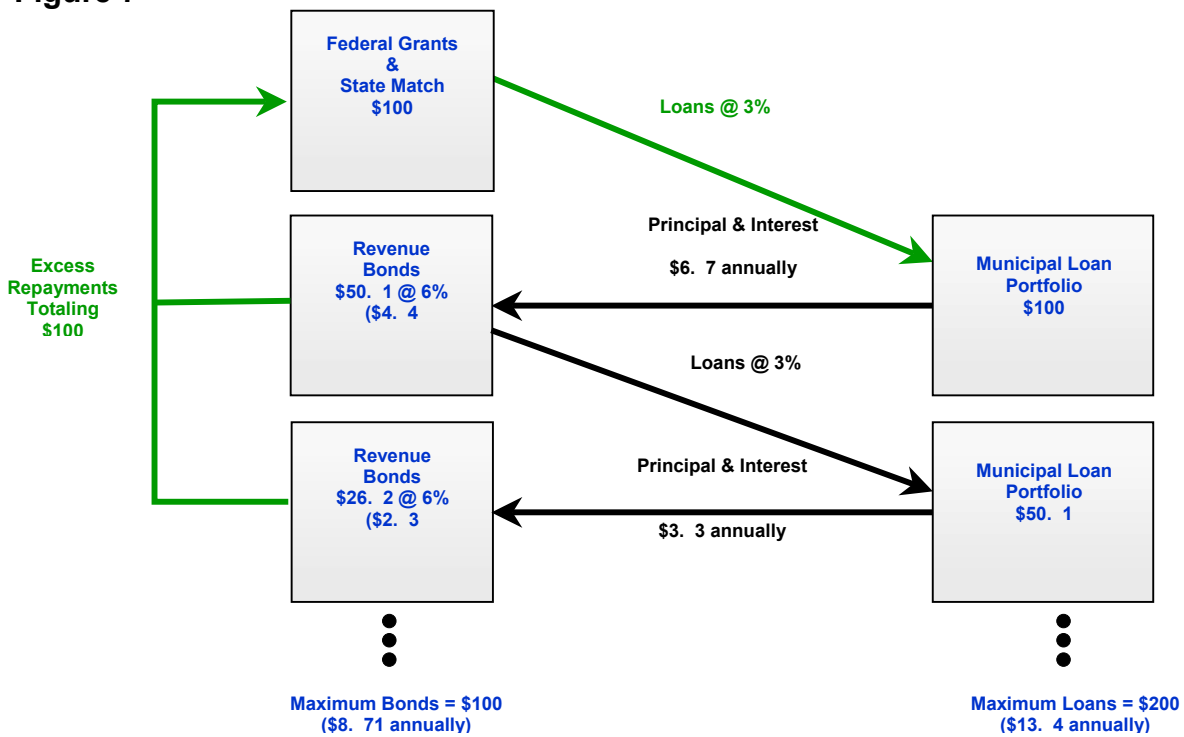


Figure 8

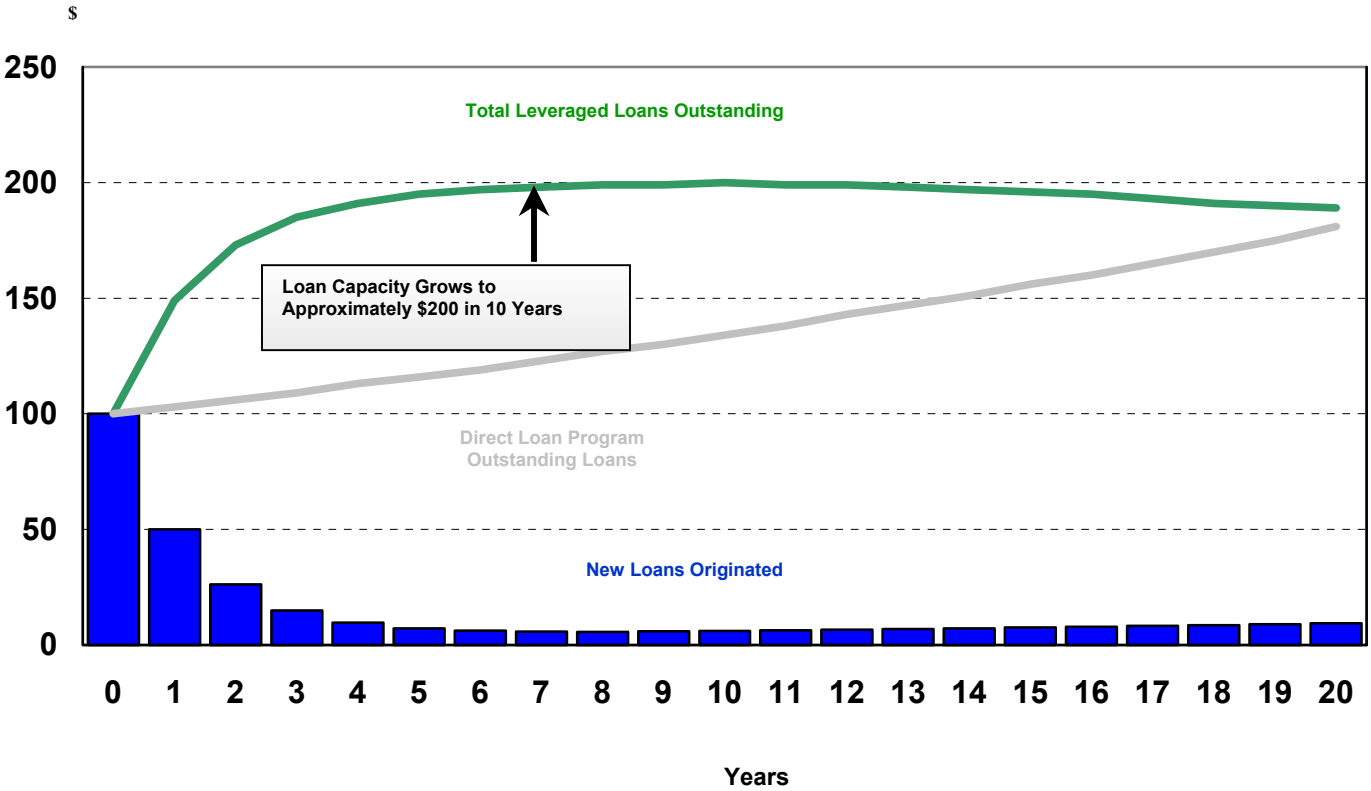


Figure 9

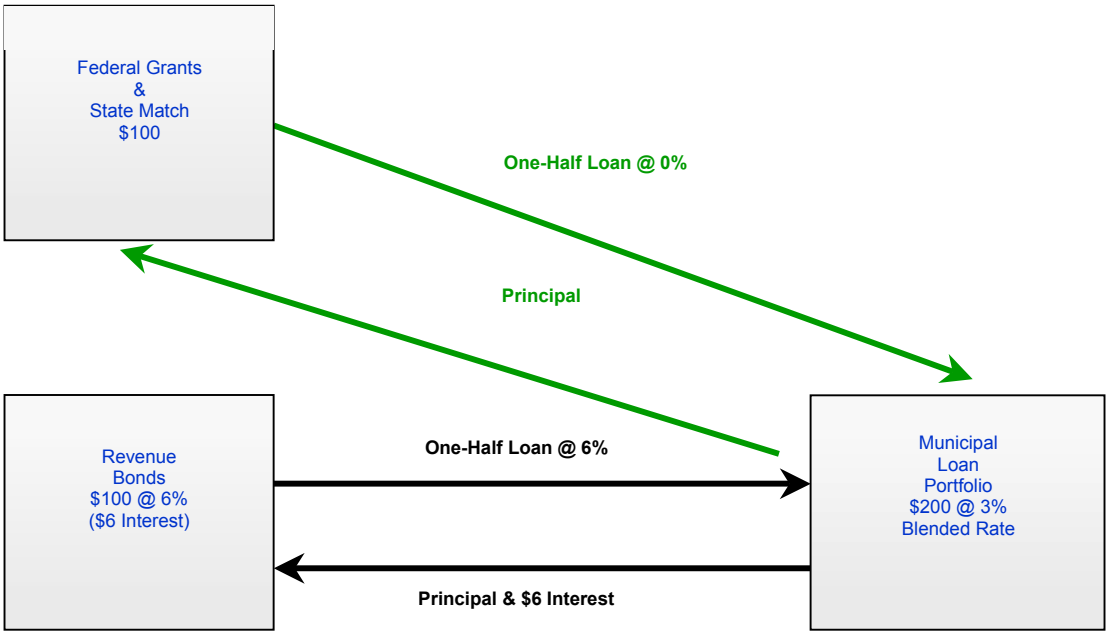


Figure 10

Blended Rate Leveraged Loan Program

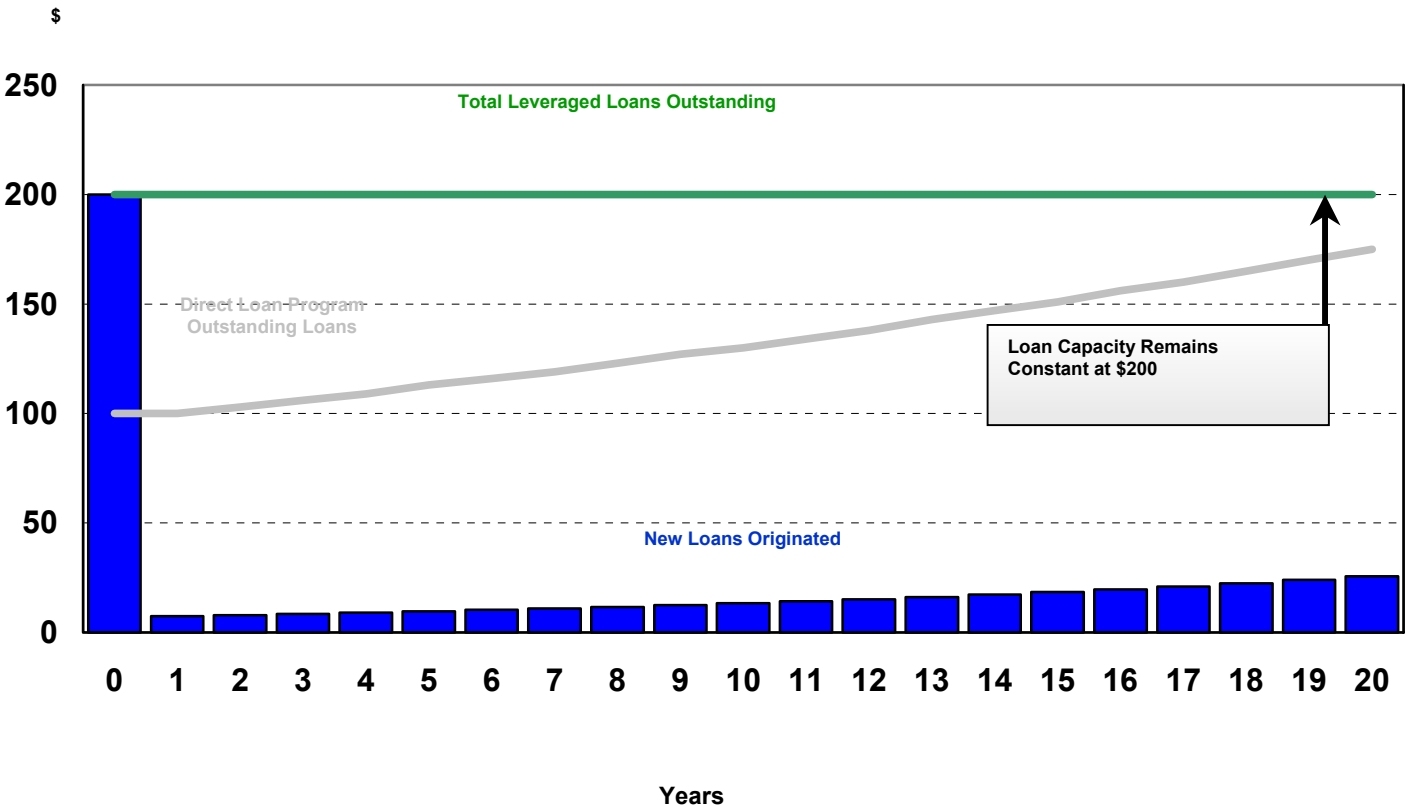
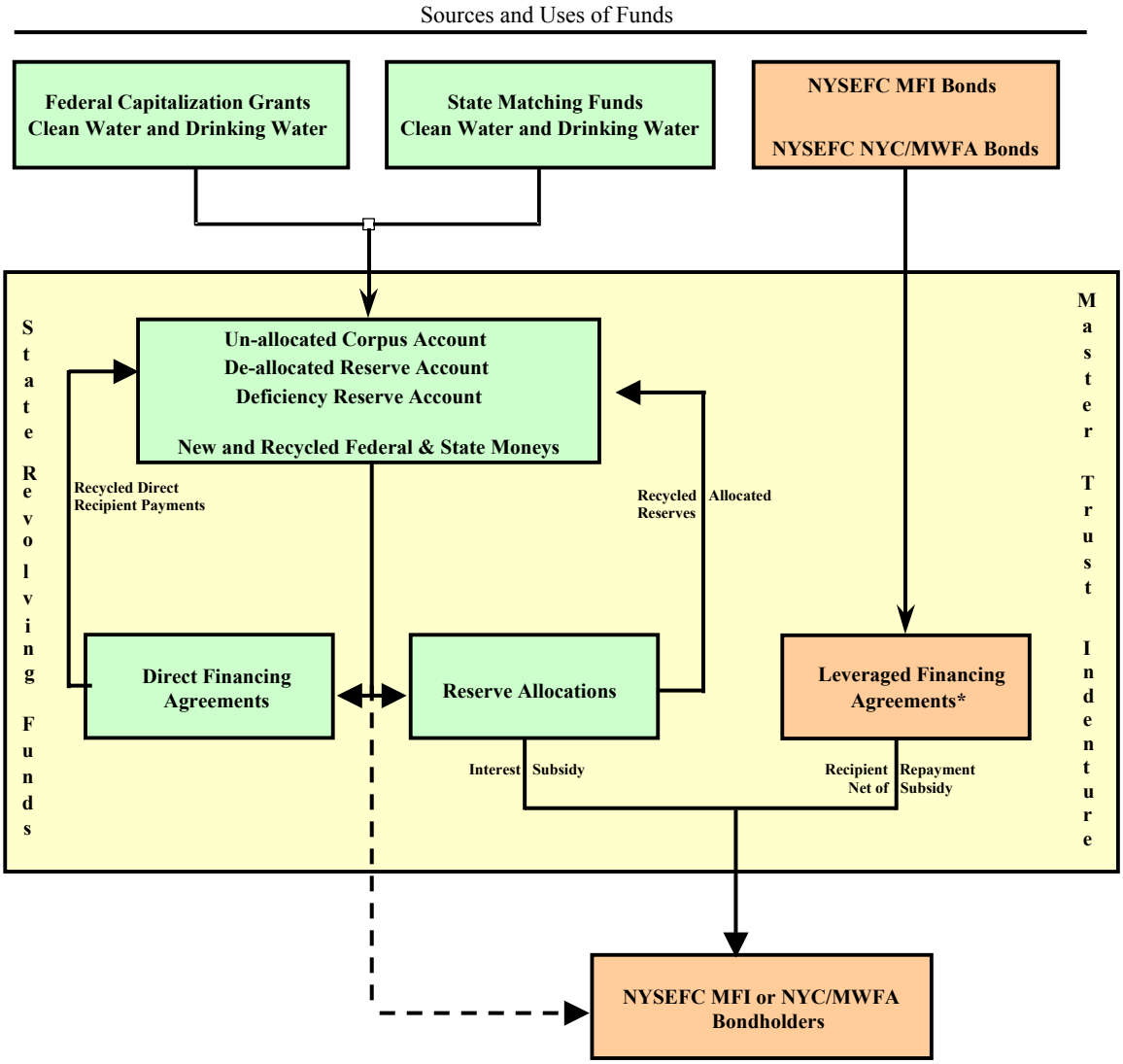


Illustration A

New York State Environmental Facilities Corporation
SRF Funds Flow of Funds



***Recipient Repayments are made up of independent repayments from the MFI and NYC/MWFA.**

- - - - - - Contingent Cash Flows

Illustration B

Florida Water Pollution Control Financing Corporation
SRF Program Flow of Funds