HOW EFFECTIVE ARE STATE VENTURE CAPITAL FUNDS IN LEVERAGING PRIVATE SECTOR FINANCING:

A Case Study of the Massachusetts Community Development Finance Corporation's Venture Fund

by

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Abstract

Since 1978, the Massachusetts Community Development Finance Corporation's (CDFC's) Venture Capital Fund has made more than a hundred (100) debt and equity investments in small businesses throughout the Commonwealth. These investments, ranging from $75,000 to $650,000 and totaling more than $22.5 million by mid-1996, have reportedly leveraged about $72 million in investments from other sources and created/retained more than 3,900 jobs. CDFC has initiated several internal and external reviews. Within the context of this overall evaluation, this study will attempt to answer one particular question: how successful has CDFC been in mobilizing private capital flows to its Venture Fund "clients"? The overall objective of this study is to identify best practices in leveraging.

Thesis Supervisor: Karl Seidman
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Chapter I. Introduction

Section A. Issues Related to Leveraging

In a 1992 evaluation of the quasi-public agencies in Massachusetts, the Advisory Committee on the Coordination of Economic Development Programs in the Commonwealth stated the following:

> The fundemental fact of limited resources suggests that the most effective role to be played by the quasi-public agencies is in influencing and leveraging private sector forces to help shape a strong economic base for the Commonwealth, and in targeting growth to areas in special need of economic development.[1]

Indeed the need to leverage* public funds with private capital is an objective too often cited not only in conjunction with the acitivities of quasi-public agencies (i.e., agencies which are owned and funded by a public entity but operate independently), but, also with most other public sector financing programs. Very few studies, however, including the above mentioned evaluation, provide an analytical framework to assess the success and failure of public agencies in leveraging or generating private investments of the kind purported.

Leveraging public funds with private resources is not an ultimate economic objective like creating/retaining jobs, maximizing value/profit, or improving standard of living of a target region or population. Programs and projects ultimately are judged according to how successful they are in meeting one or more of these objectives. It can be argued, however, that leveraging is a necessary (albeit insufficient) condition to achieve financial and economic objectives of the kind noted. Necessary, in that, given the fiscal constraints the public sector has increasingly faced, without leveraging the impact of public programs will be very limited. Insufficient, in that

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* In fields of corporate and public finance, two most commonly used senses of the word "leverage" are a) the debt to equity ratio of a given company, whereby the higher the debt to equity ratio, the higher the company is leveraged, and vice versa; and b) the ratio of private to public funds a given government finance program generates. Throughout this paper, unless otherwise noted, the second sense of the word will be used.

leveraging by itself does not indicate success in the more primary economic or financial objectives. The "enhanced impact" rationale of leveraging can actually be stated in three different ways:

a) leveraging facilitates correcting "capital market failures" by enhancing the availability of funds to businesses which should be financed but are not; this arises from the recognition that without the eventual participation of the private sector, no geographic region or economic sector can grow in the long-run.

b) leveraging facilitates correcting "capital market failures" through a process of opening up markets and institutional learning; this is very much in line with more recent wisdom in development finance, that the primary objective of public sector financing programs is to expand the "frontier" of financing through innovation and demonstration[2]; and

c) leveraging, if done correctly, can insure that the public sector invests its resources in projects or ventures which have a longer term viabiliy (i.e., by linking its decisions to the decisions of the private sector, it benefits from profit-oriented underwriting criteria of the private sector); this arises from business finance programs' wish to balance the need to have both a developmental impact on target regions, communities, or business sectors and remain financially self-sustaining (a balancing act which does not necessarily always succeed although more recently some programs have succeeded in achieving).

These three rationales operate to varying degrees in all programs which require leveraging. Assessing a program's success or failure in achieving a certain leverage ratio is only one very superficial step in judging to see if these objectives have been met. The first objective would require also establishing that no capital subsitution has taken place. The second objective would further require establishing that some long-term learning has taken place. The third objective would require establishing that the businesses or projects financed can eventually be self-sustaining without the need for more public sector funds. These evaluations will have to be made at different points in the life of a project or a program since some require looking at shorter term performance and others at longer term performance.

This study seeks to make small and incremental progress in attempting this by looking at the performance of the Massachusetts Community Development Finance Corporation's (CDFC's) Venture Fund, one of the quasi-public agency's venture capital funds, in leveraging and generating private investment in its target firms and communities (see Appendix 1 for a complete list of CDFC's programs). The ultimate aim of this study is to shed some light on the process of leveraging and to identify best practices in implementing the leveraging requirements of public sector small business financing programs. The study's scope will be limited by the fact that CDFC's Venture Fund leverages private sector participation through the "direct co-investing" mechanism (see Chapter II below for a taxonomy of leveraging mechanisms). Four sources of information are used: a) available literature on leveraging; b) survey conducted by Seidman (1997) of a sample of businesses funded by CDFC's Venture Fund; c) review of CDFC records on their Venture Fund investments; and d) a case study of one Venture Fund firm which received financing from two public venture capital programs and one private sector venture capitalist. This case study is needed since none of the survey or the file data reveal any process of institution-building or learning that might have taken place. It is fully acknowledge that one case study will not completely reveal these processes. The only hope is that some incremental progress will be made in this regard.

In the next section of this Chapter, I will discuss some of the theoretical underpinnings of public sector small business finance programs. This is needed to better understand the justifications for making leveraging requirements. Chapter II will present an overview of the various leveraging mechanisms and experiences with them. Particular attention will be given to the " direct co-investing" mechanism at the transaction level since it the mechanism utilized by CDFC's Venture Fund. Chapter III will present an analysis of leveraging data obtained from the survey conducted by Seidman (1997). Chapter IV will present the case of Selectech, a Massachusetts-based manufacturing start-up, which managed to obtain financing from a private sector venture capital fund, Claflin Capital Managemet, Inc., as well as CDFC and the Massachusetts Technology Development Corporation (MTDC). This case study is useful in so far as it highlights some major issues which arise from the attempt by a small public sector program to coninvest with private sector venture capitalists. Chapter V will present conclusions of this study.

Section B. The Case for and Against Public Sector Small Business Financing: Implications for Leveraging

The above rationales for requiring private leveraging in public sector finance programs rely heavily on the assumption that there is a failure in the capital markets to provide adequate financing to certain businesses and communities. There is actually considerable debate about the degree to which capital markets fail in channelling funds from investors to borrowers who (economically speaking) deserve financing. Some argue that these markets systematically fail to provide credit to certain types/sectors of businesses or communities, even when it would be economically efficient and advantageous to do so. Others argue that the capital markets actually do a pretty decent job of allocating credit to the most efficient users and that the fact that certain types of businesses or communities do not have access to credit is primarily because they are not its best and the most efficient users.[3]

Some of those who find themselves pointing to the supply side as the problem (barring regulatory effects on supply, to be discussed later), will recommend public intervention in the form of subsidized credit or special finance programs to reach borrowers who can't access credit from traditional private sources. Yet others would point out that the supply side is the problem in so far as the government induces imperfections in the market which instead of helping actually hamper small business access to credit. On the other hand, those who find themselves pointing to demand as the problem, should they advocate for any public intervention, they see it best that these efforts be expended on strengthening demand rather than spending scarce public resources on what they claim to be ineffective and wasteful credit programs. The proponents of this view would argue that access to credit could best be improved by improving the educational level or entrepreneurial and managerial attributes of the potential borrowers. There is, however, a far more complex relationship between supply and demand for credit than these extreme views allow for. To begin to understand this complexity, it would help to sketch how capital markets allocate credit, and what in the these markets is thought to be the cause of a constrained supply of credit to small businesses.

How the Market Allocates Credit

In credit markets there are three main agents: investors, borrowers, and financial intermediaries. The role of governments will be considered later. Investors, who can be individuals, households, firms, or institutions allocate their resources to borrowers, who can also be individuals, households, firms, or institutions. They often allocate these resources on the basis of who can provide the highest profitibility, liquidity, safety, and convenience to the investor. Since borrowers cannot provide all of these at the same time, investors are willing to trade off any one of these qualities for the other. For instance, if an investor is told that the default risk of a certain financial instrument would be higher (i.e., it would be less safe) than a certificate of deposit in a bank, the investor might still be willing to make the investment, provided that s/he is compensated for this higher risk with added returns (profit). Similarly if an investor is told that his/her capital will be illiquid for at least 15 years (i.e., s/he would not be able to receive any of the invested funds for at least 15 years), then given that there are a number of more liquid investment alternatives, the investor might consider the more illiquid one if higher returns are offered. Evaluating the various attributes of financial instruments can become very complex. Hence, investors often rely on intermediaries (e.g., banks, pension funds, venture capitalists, etc.), who have specialized knowledge of different types of investors, borrowers, and financial instruments, to make decisions for them. Although each financial instrument has its own risk/return characteristics, at any given point in time it can be influenced by many factors, including the prevailing economic and regulatory conditions. For instance, if the inflation rate goes up from 3% per year to 12% per year, investors would seek much higher returns on the CD which was yielding, say, 5% per year at the lower inflation rate. Tax regulations can have similar effects on the risk/return expectations of investors and borrowers.

Capital Market Failure Arguments and Rationale for Public Intervention

The above described picture suggests that in a perfectly competitive market, where there is perfect information, no transaction costs, and no barriers to entry of investors and borrowers, small businesses (esp. new ones), which because of weaker collateral capacity, greater revenue

volatility[4], etc., have higher risk associated with them, should have no problem accessing credit, if they are able and willing to pay a higher return to the investor.[5]

The capital markets, however, are imperfect. Several sources of market imperfection are often cited as contributing to a reduced availability of credit to this sector of the economy. The imperfection which works most against small business lending/investing is the high transaction costs associated with this type of investing (Kitchen 1989, Fisher 1988). Other imperfections include information imperfections, arising from the so-called "lemon gap" (Akerlof in Kitchen 1989) and "information asymmerties" (as discussed in Weinberg 1993); and government-induced imperfections, e.g., controlled interest rates and/or increased reserve requirements for higher risk investments, to name a few. I will briefly discuss each and then consider the role of public intervetion.

"Relatively High Transaction Cost" Argument: Transaction costs in small business investing are generally higher both in terms of per dollar invested and total needed to process a larger number of loans. The investment size per transaction is usually smaller, and since on the whole the same fixed costs (viz., underwriting, administring, and monitoring costs) are associated with each investment regardless of the size of the investment, the cost per transaction is higher. Also, if a investor has $4 million to invest, all else equal and risk-pooling/diversification issues aside, the total cost of investing in four $1 million deals rather than forty $100,000 deals will be about 10 times less. This relatively high transaction cost would deter creditors from considering the small business market unless they can pass on the increased cost to the borrower/entrepreneur. Therefore, it is argued that private capital markets would be less inclined to extend credit to small businesses in general.[6]

Imperfect Information Arguments: As cited above, two arguments are generally discussed in relation to market imperfections resulting from imperfect information. The "Information asymmetry" argument states that generally there is very little information available about the entrepreneur, his/her skills, or credit history. Moreover, the product or service for which financing is being sought could be novel and untested. The business owner might have relatively superior information in regard to these items but the lender/investor might not be in a postion to become fully informed. All communication between the insiders of the firm and potential

investors will necessarily be limited and is unlikely that the insiders will be able to convey everything they know about their firm's opportunitites. Hence, there is the potential that the market will fail to provide credit to a good business opportunity (as discussed in Weinberg 1993).

The "lemon gap" argument states that the risk associated with the riskiest of small businesses gets to be generalized to all small businesses. A few bad examples seem to set the stage for all to fail, even those which upon closer examination would not have as high a risk as expected. The difference between the "true risk" and the "perceived risk" caused by the few bad examples is called the "lemon gap" and has the effect of "pricing out" many good small business investment opportunities.

Government-induced Imperfections: Although government induced imperfections could favor small businesses, e.g., by subsidizing credit or extending special tax privilages, there are also government measures which work against small business. Setting interest-rate caps at low levels, for instance, could eliminate lending to some small businesses. If a lender, after assessing the risk of a small business, is willing to extend a short-term loan at, say, an annual interest rate of 15% and the business both can afford it and is willing to accept it, the government would induce a failure in the market if it sets interest rate caps at 13%. Governments can induce imperfections also by prohibiting or limiting financial intermediaries from engaging in certain activities.

The Case for Public Intervention; "correcting market imperfections": Any of the above arguments about the way in which market imperfections come about, can lead to policy recommendations about public intervention. In the case of high transaction-cost, information-asymmetries, or "lemon gap" induced imperfections, some kind of government subsidy would be advocated. In case of correcting some of the government induced imperfection, the recommendations would be to change laws and regulations, e.g. liberalizing interest rates and/or reducing reserve requirements. Correcting market imperfection in any of these ways will have some costs associated with them. In the case of subsidies, the costs will be direct, requiring funds from tax-payers and, in the case of removing regulatory barriers, the costs would take the form of increased business failure rate and bank insolvencies resulting from higher risk lending.

Whether these imperfections should be remedied is a question beyond economics and falls more in the domain of political and social agenda-making. The public will be willing to bear the costs of correcting these imperfections in so far as the objectives to be accomplished are socially desirable. That is, in so far as the public finds small business development a desirable undertaking, it will be willing to allocate resources to it. For the past two to three decades, public sentiment has been, on the whole, in favor of small business development. The major premise underlying this sentiment has been that small businesses are the engine of economic and job growth in the country (Fisher 1988). These days in most political discourse, this premise is taken to be axiomatic, and hence, infrequently questioned. It is beyond the scope of this paper to explore this issue further although I recognize that there is some on-going debate about its validity (Acs 1996 in favor, Harrison 1994 against).

Attacks on the Market Failure Explanations and Some Demand Side Arguments

There are arguments which attempt to demonstrate that there is actually no shortage, or so called "capital gap," in small business finance. Even as far back as early 1980s, when the debate about financing of small business, esp. start-up high growth firms, had reached its political apex, the Interagency Task Force on Small Business concluded that "'... there is limited evidence to suggest that government support is necessary because of a failure of the market to provide financing for small firms on appropriate terms.'" (Fisher 1988) Some proponents of this view would further argue that even if the market fails and there is a "capital gap," government intervention often leads to worse results than otherwise would be obtained. Both of these points were vociferously argued for by David Stockman (1985), the Director of the Office of Budget and Management under the Reagan Administration, in an attempt to terminate all the credit programs of the U.S. Small Business Administration (SBA). Although his arguments are targeted toward SBA programs, some of his points can be generalized to all types of public intervention and, hence, merit consideration in this context. I will then consider some altogether different arguments which attempt to show that at best supply is only part of the problem and that inadequacy of demand is as significant a problem.

"Markets-Are-Doing-Fine; Get-Government-Out" Argument: The first argument addresses more of a macro-economic concern. It suggests that public credit programs do not enlarge the national pool of business credit resources. What they do is reallocate these funds away from more credit-worthy to less credit-worthy businesses, which on the aggregate reduces the overall national economic efficiency, economic growth, and job creation. What they simply do, the argument goes, is substitute political and bureacratic judgements of profitability and risk for market judgements. Stockman states, if we deny that what we are doing is "merely subsituting one loan for the another and changing the risk faced by the lender, that we are not merely substituting one project for another, one job for another, is to imply that the Nation's banks and financial institutions are waterlogged with idle funds which are released for productive investment and job creation only by SBA guarantees."[7] This is certainly absurd since the financial markets are very competitive and on the whole do a very good job of allocating credit to borrowers who can make the most productive use of it.

As evidence for this, he cites that firms financed by the SBA constitute less than 1% of the firms in their respective sectors (ranging from 0.5%-0.8%). All the other 99% or so get financed through traditional private sources.[8] Moreover, Stockman argues, there is no other policy objective served by the SBA financed small businesses -- 60% of the financing went to bars, restaurents, doctors, dentists, lawyers, tennis courts and country clubs which the marketplace offers plentifully without SBA assistance. Even when looking at new start-up, which are thought to have less access to credit than more established small firms, looking at a six year period starting from 1976, using Deptartment of Commerce data, Stockman cites the creation of 300,000 new firms in this period. SBA credit programs financed 0.6% of these new start-ups leading Stockman to say, "What this demonstrates is the marketplace itself and the incentives people have to start-businesses, to become entrepreneurs ... are so compelling, and it happened preponderately without SBA help."

The proponents of this line of reasoning would generalize from the SBA to all public sector programs intended to increase supply of credit to small businesses. All of them put together cannot possibly make a dent in a highly competitive environment of small business creation and development. What all these programs do, however, is have an adverse impact on the economy by unfairly subsidizing weak firms which otherwise would not survive their vigorously

competitive business environment. Thus, in effect, businesses that do not receive these subsidies are placed at a disadvantage when they have to compete in the same markets with the subsidized firms. This is the second argument, which Stockman also uses, against public intervention in providing credit to small businesses (for a more detailed discussion of this point see Rhyne 1988).

Here I would like to note two criticisms of the above arguments. The first concerns the argument that public programs by subsidizing credit, create unfair competition which presumably is deterimental to the overall economy by putting at a disadvantage strong firms which do not get subsidized financing. On this point I would like to suggest that Stockman has presented no evidence to support that the SBA loans really have this determintal effect. For him to be able to demonstrate his point, he would have to show that the geographic distribution of these loans are in regions where sufficient competition exits; that is, the loans are not made to regional pockets of special need. If there is no geographic targeting, then his point stands. However, if there is targeting to regions of special need, then there is no reason to believe that any healthy and vigorously competitive firms are being unfairly hurt by government measures. Moreover, none of his reasoning really supports the claim that the SBA program should be terminated. It would seem to me that it would be more supportive of the claim that these funds should be targeted to higher need regions of the country where there are no competitive markets to begin with and macro-economic ineffiencies can be justified on developmental grounds (a valid trade-off which he himself concedes).

My second criticism is directed toward Stockman's attempt to argue that none of the policy objectives of the SBA were met. As already noted above, he tries to show this by citing the insignificance of the SBA program in small business finance and new small business finance. He attempts to make a similar point about the so called "sun-rise" industries where high growth firms are responsible for major technological innovations and jobs in the future. Again looking at the Department of Commerce data, he cites that in a six year period starting from 1976, 27,000 new firms or establishments in these "sun-rise" industries appeared which generated 1 million new jobs compared the base year of 1976. He attempts to show that the role of the SBA in this was insignificant since the agency's programs extended credit to about 500-600 firms per year amounting to about $120 million.[9] This means that for about $600-700 million the SBA was

responsible for 10-15% of these 27,000 new firms. I cannot understand how he can argue that this is insignificant. It would seem that, the SBA's contribution was actually pretty significant and if anything, it warrants more SBA funding of these programs. In other words, it appears that for the specified period a significant number of firms relied on a government supported program to start operations. Some of these firms turned out to be extremely successful and highly competitive businesses. They make an impressive list: Apple Computers, Federal Express, Cray Research, Intel, and many more. Whether there is sufficient private capital of the kind, usually "patient" capital, to support the growth of these "sun-rise" industries is again very contentious, but some have aruged that there is a particularly acute shortage of seed or start-up financing (Fisher 1988). This shortage is only exacerbated by the facts that private venture capital firms have tended to gravitate toward later stage and larger financing of high-growth firms and that the seed/start-up capital needed for these firms has been increasing over time. In early 1994, the average investment needed by firms at this early stage ranged from $500,000 to $2 million (Fenn, Liang, and Prowse 1995).

"Need Does Not Indicate Demand" Argument: Aside from the above discussed "neo-conservative" arguments against public sector small business finance programs, there are some in the field of development economics who have raised altogether different concerns about an excessive emphasis on supply of credit to small businesses. These concerns have come mostly from community development practitioners and funding agencies, which point out that although many communities, esp. historically disadvantaged communities, have a great need for capital, they don't necessarily have the capacity to put the capital to productive use.[10] To have this capacity, the argument would go, there would need to be a good labor force, good managerial and entrepreneurial capacity, good raw materials, good markets, and so on. (Daniels 1982, Litvak & Daniels 1979). And experience with many small business loans in traditionally disadvantaged communities has been unpromising. One logical extension of these arguments would be that scarce public resources should not be spent on ineffective credit programs. Instead they efforts should concentrate more on educational and training of the target populations.

But experience has also shown that over time demand can be nurtured. And in fact some would argue that capital is the single most important ingredient in unleashing the entrepreneurial and productive capacity of a community. Parzen & Kieschnick (1992) quote Ron Grzwinski of the

Shorebank Corporation, which has become one of model community banks in the country with highly successful housing and small business programs, saying "Had we conducted a market survey in 1973 to get a sense of how many potential entrepreneurs we had in the community to buy, rehab, and then manage apartment buildings as small businesses, the answer would be 'none.' In fact they were all around us."[11] The point to take away from this debate is that the presence of credit can have a catalytic effect, although generally the more successful programs also have a very interventionist capacity-building component to them. Whether this is something the public values and is willing to pay for, is beyond the scope of my discussion here.

One variation of this argument, less directed toward traditioinally disadvanged communities, has been forwarded by Weinberg (1993) and is intended to show that theoretically, "capital maket failure" does not necessarily explain why new small businesses are less likely to receive financing. In what he calls the "life-cycle" theory of credit, he argues that the non-financial features of small start-up firms, viz., that they have higher growth potential than larger firms and that they are more likely to "exit" the market, suggests that at any given moment there is a population of firms at different points in their life cycles. Both financial markets and the entrepreneurs themselves are uncertain about how these firms will perform. Favorable earnings will give a positive signal about their growth potential and unfavorable earnings would give a signal for contraction or exit. Now if the market failes to recongize which opportunity is which, it wouldn't help to subsidize those activities with public programs. This line of reasoning concludes that it might be best to encourage investment in small businesses by a favorable tax treatment for capital gains in small firms.

Section C. Conclusions: What All of the Above Tells Us about Leveraging

The rationales for leveraging have some form of capital market "failure" in their support. What I have tried to show above is that there is on-going debate about the extent to which captial markets fail to provide financing to small businesses. In so far as the market failure explanations hold, leveraging would seem like a requirement which should be included in most programs. As I see it, Stockman's criticisms only succeed in showing that even the largest of the public sector programs are a very small part of what is happening in the market. What I take away from his

arguments is that programs can be inappropriately targeted and poorely implemented. This, however, does not mean that they are not needed or ineffective. Developmental objectives are on par with needs to have economic efficiency. And that constant reviews are needed to assure programs are implemented according to policy objectives and that policy objectives themselves are constantly evaluated in the face of evidence. From the debate on the issue that need for capital does not necessarily represent demand for capital, one can learn that given the right program design demand can be nurtured faster than one expects. Leveraging private sector resources becomes particularly complicated in these instances. On the one hand the private sector cannot be expected to subsidize learning, unless it can extract some longer term gain. On the other hand, if brought into the program at the right time, the impact of public programs can be enhanced substantially.

CHAPTER II. MECHANISMS & EXPERIENCE WITH LEVERAGING

Section A. Introducing A Taxonomy of Leveraging Mechanisms

The policy and theoretical discussions on capital market failures and the role of leveraging to correct these failures have been translated to various mechanisms designed into public sector programs. In general, public sector programs have utilized leveraging on two broad levels: institutional and transaction. On the institutional level public funds have been used to solicit private investment in creating institutions which address the market failures whereas on the transaction level public sector finance programs have sought to increase private sector investment in small businesses by concentrating on individual investments made. Within each of these levels, various mechanisms have been utilized. Below I've identified four mechanisms, two of which are employed at the institutional level while the other two are employed at the transaction level.

A) Leveraging at the Institutional Level

1) guaranteeing securities of a private financial intermediary

2) purchasing securities of a private financial intermediary

B) Leveraging at the Transaction Level

3) direct guarantees of investments made by a private financial intermediary

4) direct co-investing with private firms

Examples of all of these leveraging mechanisms abound. In the following sections I will briefly discuss each and introduce some of the discussions related to them. In reviewing CDFC's leveraging experience, I will be concentrating on the last of these five leveraging mechanisms, viz., direct co-investing with private firms, since this is the only mechanism that CDFC's Venture Fund utilizes in its operations.

Section B. Leveraging at the Insitutional Level

Guaranteeing securities of a private financial intermediary: By far the largest programs utilizing this mechanism are SBA's Small Business Investment Company (SBIC) and Specialized SBIC[12] programs (hereinafter unless otherwise noted, SBIC for both). Under these programs, the SBA licenses and regulates SBICs which, as investment corporations or limited partnerships, make long-term debt, equity, or some form of patient investment in small businesses. There are several ways in which the SBA "leverages" private capital through the SBIC programs: it can a) purchase SBIC "participating securities," b) purchase SBIC debantures, or c) guarantee SBIC debantures. The first will be considered in the next section to illustrate that type of leveraging mechanism. Data on the purchasing or guarantee debantures is not disaggergated, hence, they will be considered together, even though they are fundamentally different mechansims.

The guaranteeing of SBIC debantures constitutes one of the largest components of the SBIC programs. Debantures are unsecured debt instruments (akin to corporate bonds) issued by the SBIC for a 5 or 10 year duration. Under the guarantee scheme, the SBA guarantees the purchase of these debantures by private investors. The SBICs have to make interest payments on the debantures and full repayment of the principal upon the debanture's maturity. Although by law SBICs are eligible to receive $3 from the SBA for each $1 in private capital, the GOA (1997) reports that in 1996, SBICs generated $3.22 dollars in private capital for every Federal dollar spent by the SBA (the $1.4 billion of the SBA funds invested in SBICs generated more than $4.5 billion in private capital).[13] It is not clear how much of this is attributable to the guarantee scheme and how much to debanture purchase scheme.

Certain components of the SBIC debanture program have been crticized. Brewer, Genay, Jackson, and Worthington (1996) suggest that SBA leverage is more burdensome for SBICs oriented toward equity investments since leveraged SBICs need to generate sufficient cash flows to make payments on their SBA debt. Two deliterious effects are ascribed to this finding: a) that many of these highly leveraged SBICs were more likely to be liquidated and b) that SBICs tended to make more debt instead of equity investments in order to meet their cash flow needs (Brewer, et. al. 1996). Perhaps as a result of modifications made to the program, a more recent study indicates that SBICs (not including SSBICs) have substantially increased the amount of

equity investments, esp. from 1993 on. In 1996, they invested more than $1.5 billion more than 93% of which were in equity or debt/equity instruments. This compares with the low of $400 million in 1991 (GAO 1997).

Purchasing securities of a private financial intermediary: Several state and federal venture capital programs utilize this third mechanism. A much touted example is the Ben Franklin Seed Venture Capital Fund in Pennsylvania. This is a private venture capital firm in which the state invested $4.5 million on the condition that the private sector match every public dollar with $3 of its own. By 1988, the Ben Franklin Fund had generated $27 million in private equity, twice its required level (Eisinger 1993). Perhaps in response to some of the criticisms noted above, the SBA has also introduced this type of leveraging mechanism into its SBIC program, viz., its "participating security" option where the agency becomes a limited partner in the SBIC and hence shares in its profits without burdening the cash-flow of the SBIC. (GOA 1997). To the best of my knowledge there is no separate evaluation of the participation secturity program of the SBA.

Section C. Leveraging at the Transaction Level

Direct guarantees of investments: In debt financing, SBA's 7(a) Business Loan Guaranty Program provides an 80% guarantee for each loan made to small firms[14] by a participating private lender. By commiting public funds to cover 80 cents of every dollar that a private lender might lose by lending to small businesses, the program increases availability of capital to small businesses above what SBA could have done either by lending the 80 cents directly or lending it through a financial intermediary. As of June 30, 1995, the program's portfolio had about 140,000 loans with an outstanding balance totalling $23.5 billion.[15] In fiscal year 1995, the SBA approved about 56,000 loans for a total of about $8.3 billion through its 7(a) program. The US General Accounting Office (1996) reported that as of end of June 1995, the 7(a) loans accounted for about 6.7% of the estimated amount of small business loans (loans of $1 million or less) originated by the US commercial banks and insured savings institutions. The estimate of this share would signficantly diminish as one takes into account the fact that small businesses fill their financing needs from many sources other than banks and savings institutions.

For some of the fundemental criticisms of this and other SBA programs see David Stockman's arguments in Chapter II, above. The GOA (1996) report, however, indicates success in facilitating larger loans with longer maturities to small businesses than a comparative non-7(a) sample. The 7(a) loans, though, did tend to have higher interest rates. The 7(a) borrowers did tend to be newer businesses with fewer sales and assets. Minority-owned businesses were only slightly more represented in 7(a) loans than the comparitive sample. I had no access to studies which evaluate the 7(a) program in terms of the long term effects on lender behavior, e.g., institutional learning, and attempts to lower the rate of guarantee from its 80%. Lowering such a rate while maintaining the same volume of lending would be considered a success. Despite the absence of such evaluations, guarantee schemes, particularly on the state and local level, have been proliferating (Laughlin & Digirolamo, 1994).

Directly co-investing with the private sector: State and local governments have more often created specialized agencies (public or quasi-public) or relied on the non-profit sector to implement their small business financing programs. Many of these agencies, in turn, are required to leverage their investments with direct co-investments from the private sector. Literature such direct co-investing, however, is very sparce. One major recently completed work (CFED 1996) reviews the available literature on the performance and impact of local revolving loan funds (RLFs). Since one of the main objectives of this paper is to evaluate the performance of CDFC's Venture Fund a survey of the findings of the CFED literature review will be useful in establishing some benchmarks against which CDFC's leveraging performance can be evaluated.

RLFs became a popular financing tool from the late-1970s on and are designed to provide a self-sustaining source of capital for those inadequately served by the private captial markets. This literature review conducted by researchers of the Corporation for Enterprise Development (CFED) is part of a Ford Foundation funded research project called *Counting on Local Capital* which attempts to build an industry-wide database of federally-funded RLFs. The study reviews seven evaluations of RLFs funded by various federal agencies including the US Economic Development Administration and the US Department of Housing and Development (see Appendix 2 for more details on these studies). In the review, the findings of these studies are organized in three broad categories: a) impact measures; b) portfolio characteristics and performance; and c) staffing and administration issues. The three impact measures considered

are: costs-per-job created or retained, leveraging ability, and the extent to which any financial substitution (i.e., subsitution of private capital with public capital) has taken place. Here I will only consider the last two of the impact measures.

Overall the RLFs have achieved average leverage ratios ranging from $2 dollars for each public dollar to about $6.6 for each public dollar (Table 1). Three of the studies reviewed reported an average leverage ratio of about 4-4.6:1. It should be noted that the ratios provided here are averages and that each program evaluated achieved a wide range. In one instance leverage ratios of up to 8:1 were reported. One of the studies found that an overwhelming majority of the leveraging was from private sources -- of their reported $4.6 dollars in leveraging for each RLF dollar invested, $3.8 was attributed to private sources with the remaining $0.80 to public sources.

Several factors seemed to account for variations achieved in leveraging. One simple and yet strong relationship exists between the regulatory guidelines of the funding agency and the leveraging performance of the RLF. By simply requiring higher leveraging as a condition of providing funds to RLFs, better leveraging performance was observed. Another significant factor seemed to be the type or sector of the business being funded. In some cases manufacturing firms leveraged up to $7.6 for each RLF dollar invested where as retail and services leveraged closer to $4 for each public dollar. There was also a positive correlation between both the loan size and the borrower size with the level of leveraging achieved. The larger the loan size, the higher the leveraging ratio. And the larger the firm, the higher the leveraging ratio seemed to be. The characteristics of the borrower were also significant. Men-owned business leveraged more than women-owned businesses and minority-owned businesses leveraged the least (see Table 1 for ratios reported). Finally, the terms and conditions of the RLF investment were significant.[16]

The CFED (1996) literature review also offers some insights about performance on filling capital gaps, i.e., meeting the needs of businesses which need financing but cannot access it through the traditional private sources. To the extent that a public sector finance progam substitutes for private lenders, it has failed filling any capital gaps that justify the program altogether. A few of the studies reviewed by CFED, indicated that overall 20-25% of the borrowers could have received necessary financing without RLF support. This means RLF invesments allowed that 75-80% of all borrowers to access credit they otherwise would not be able to.

Table 1. Benchmarking Leverage Performance and Capital Substitution

Possible Determing Factors	Leveraging	Capital Substitution
Overall	2:1 - 6.6:1	20-25% could have done it without RLFs
Regulatory guidelines of the funding agencies	positive correlation; i.e., the higher the leveraging requirement the higher the leveraging peformance.	see "targeting" row below
Type of RLF intermediary	non-profits and quasi-publics leveraged more than CDC; 4-5:1 vs. 3:1	not available
Business type/sector	manufacturing firms 4.5-7.5: 1 whereas service sector firms 2-4:1	not available
Borrower size	the larger the borrower size the larger the leverage; those w/ more than 100 employees 9.6:1 whereas those w/ 10 employees and less 2.6:1	18% of the smallest borrowers (10 or less employees) would have proceeded w/o RLF funding 13% of largest firms (over 100 employees) would have done so; 29% of firms with 20-49 employees would have proceeded w/o RLF financing
Demographics of the target populations	men-owned firms 3.8:1 women-owned firms 2.1:1 minority-owned firms 1.8:1	not available
Targeting (e.g., to a particular group or region)	not available	RLFs which did not target (to a particular group or region) were more likely to subsitute private capital; they also experienced far greater demand and committed their resources more quickly than targeted RLFs
Geographic location of the target populations	rural borrowers at a disadvantage over urban borrowers; in one study rural 3:1 and urban 4:1. In another study urban 5.2:1 (with private sector 4.3 and public sector 0.9) whereas rural 4.4:1 (3.6 from private and 0.8 from public sources)	21.5% of urban firms would have proceeded w/o RLF financing 14.2% of rural firms would have proceeded w/o RLF financing
Loan size	Loans $25k and under 2.5:1 whereas largest loans 4.2:1	23.6% of borrowers receiving small loans ($25k or less) would have proceeded w/o RLF funding 12% of borrowers receiving loans over $100k would have done so.
Type and terms/conditions of loan	working capital loans leveraged more than fixed asset loans, subordinated loans leveraged more than non-subordinated, and those with deferred features leverage more than variable rate and non-deferred loans.	Financial substitution was highest for firms receiving fixed asset financing.

Source: Compiled by author from CFED (1996)

The reports reviewed identify several factors which contributed to the prevalence of capital substitution (Table 1). Some of the more significant factors reported include the borrower size, targeting policy of the specific RLF program, the geographic target of the client population, loan size, and loan terms and conditions. One study reports that 18% of smaller borrowers (firms with less than 10 employees) would have proceeded without RLF financing. This compares with 13% for the largest borrowers (100 or more employees. Borrowers with 20-49 employees reported the highest rate of financial substitution (29%). Targeting (e.g., to a particular region or population) of the RLF was also crucial. Programs which did not have any targeting objectives tended to substitute more for private lenders. They also experienced a much greater demand and committed their resources more quickly than RLFs which had a more specific targeting criteria. Rural borrowers were less likely than urban borrowers to substitute financing. Also substitution was more prevalent among smaller loans (less than $25,000) than larger loans (over $100,000). Finally, the terms and conditions of the loan were crucial. The incidence of financial substitution was highest for firms which recieved fixed-asset financing.

Section D. Syndication: The Private Sector Equivalent to Leveraging

To conclude our overview of the experience with leveraging at the transaction level, it should be pointed out that there is a "purely" private sector equivalent to the direct co-investing leveraging mechanism. This is the practice of "syndication," which has become increasingly popular among venture capitalist (Kitchen 1989, Lerner 1994). The increased occurance of syndication is partly explained by the fact that the amounts required (even on the start-up level) have increased. There is also a geographic advantage to syndication. Since a venture investment generally requires a very intesive monitoring process, with a representative of the venture capital firm often sitting on the board of companies being financed, a local representation is indispensible (Fenn, et. al. 1995).

It's been argued that yet a third factor affects venture capitalists tendency to syndicate. This is the reaffirmation value that collective decision-making offers. In reviewing the venture capital investments into 271 biotechnology firms, Lerner (1994) concludes that even on the first round of financing, the average number of syndicators is two (Fenn, Liang, Prowse 1995). This number

increases at later stages of financing with each later round increasing its investors by at least two (Lerner 1994). The more established firms in the industry (measured by the size of the fund(s) managed by the firm relative to the size of the industry) are also more likely to syndicate in the first round of financing for a start-up firm. At later stages of financing less established firms join in.

Lerner argues that this provides evidence for the claim that at the start-up level, a venture capital firm would be willing to syndicate in order to benefit from the judgement of another venture capital firm, the professional competency of which it respects. Lerner also cites that common practice among venture capitalists where "upon finding a promising firm, [the venture capitalist] typically do not make a binding commitment to provide financing. Rather, they send the proposal to other investors for their review. Another venture capitalist's willingness to invest in the firm may be an important factor in the lead investor's decision to invest ..." (Lerner 1994).

Section E: Concluding Remarks on Mechanisms & Experience with Leveraging

In the forgoing discussion four mechaisms of leveraging has been identified and experience with each is briefly discussed. The more detailed discussion of direct co-investing and private sector syndication stems from the need to benchmark leveraging and co-investing peformance in order to better understand the accomplishments of CDFC's Venture Fund. Some of the performance standards identified include: overall many similar types of funds have achieved a leveraging ratio of 2:1-6.6:1 with most achieving close to 4:1. At least one of the evaluations cited above indicate that an overwhelmingly large portion of their 4.6:1 leveraging was attributable to private-sector co-investing (in their case more than four fifthes -- about 3.8:1 -- came from the private sector with the remaining coming from public sector co-investors. Several factors accompanied variations in leveraging performance. Among the most prominant ones were the regulatory requirments of the funding agencies, the type or sector of business financed, size of the loan and the borrower, the terms and conditions of the investments, and the characteristics of the target population. Some studies have also identified that 20-25% of the recepients of public investment programs reviewed, received financing when they really could have accessed it from private sources. This helps us benchmark the performance of public sector small business

financin programs in relation to the rate of financial subsitution. Similarly, several factors contributing to the prevalence of financial substitution were identified. Finally, the discussion on syndication has provided insights into the motivations and processes of private sector co-investors. The increased prevalence of syndication at early stage venture capital investments is indicative of the trends in the venture capital industry toward larger initial investments, the need to contain investment monitoring cost, and, in some cases, benefit from the reinforcements provided by mutually supportive decision-making.

economic development needs of a particular neighborhood or community. CDFC was required to invest in ventures which had ownership participation of a CDC. This, technically, meant that the selected local CDC had to have a voting, or at least a veto, power on the board of the businesses CDFC invested in.[19] This was an attempt to institutionalize community control over local businesses. It was an attempt to create locally-owned businesses, commercial/retail property, and housing, which were to have local benefits in economically distressed communities and which through local ownership prevent asset mobility of the kind witnessed in the urban divestments and capital flights of the 1960s and early 70s. As soon as CDFC moved from a legislative idea to its implementation phase, conflicts over the control and ownership role of CDCs errupted between the already appointed Board of Directors and the originators/organizers of CDFC.[20] In essence the Board won and, today, although CDFC still invests through local CDCs into the target businesses, these community organizations simply play a fiduciary role in funnelling CDFC funds and have no say in any of the decision making of the businesses. That is not to say that this represented the failure of the community ownership model. It is also not to say that the local CDC have no benefits to the businesses. As will be discussed later, the Venture Fund firms surveyed by Seidman (1997) suggest that almost all the firms responding to his survey which had a local CDC involved[21] reported that their local CDC provided some form of assistance beyond playing a simple funnelling role. The type of assistance received most frequently was identifying or screening local residents for job openings (45% of respondents having some local CDC involvement) followed by the local CDC introducing the firm to CDFC (30%).

Currently CDFC operates eight different housing and business development funds (Table 1) one of which is the Venture Fund. According to official CDFC documents, since 1978, the Coprporation's Venture Fund has made more than one hundred (100) debt and equity investments in small businesses throughout the Commonwealth. These investments, ranging from $75,000 to $300,000 and totaling more than $22.5 million by mid-1996, have reportedly leveraged about $72 million in investments from other sources and created/retained more than 3,900 jobs. The Venture Fund acts more like a revolving fund in that the proceeds from repayment of loans or equity investments are channeled back into the fund for further investments.

CHAPTER III. THE CDFC VENTURE FUND EXPERIENCE WITH LEVERAGING

Section A. Background on CDFC

The Massachusetts Community Development Finance Corporation was established in 1975 by the Massachusetts legislature as a quasi-public investment company and has been capitalized with $15 million through state general obligation bonds. It did not become operational until 1978 when its first capitalization of $5million occured with the remaining $10 million and then in 1987 for another $5 million. The Commonwealth of Massachusetts remains the sole shareholder of this company with the state Governer appointing its Board of Directors who represent business, labor, and community development, and state and federal governments (see Appendix 3). Appointments for each seat on the Board are made every five years.

When it was created CDFC was one of the most highly innovative institutions in the country.[17] It was the first example of a domestic development bank, an institution very familiar to post-WWII developing countries, but until then altogether non-existant in the US. It was also very novel in that it allowed for equity investments in small businesses by a state funded agency. This was a feature of state investment in economic development that had been absent for more than a century. Since the disasterous investments of public funds in railroad companies during the 1850's and 60's many states had passed consititutional amendments prohibiting equity investments of the sort.[18] Given the political and economic conditions of the 1970s though the resurgence of interest in equity investment of public funds was legally allowed since the state was investing funds in companies which were then in turn making equity investments. Also, the fact that CDFC did not rely on periodic state or federal appropriations and was capitalized through the sale of general obligation bonds was an approach which no state had experimented with. The state used the proceeds of the bond issuance as its equity investment in CDFC. As such, CDFC has zero cost of funds and only the state has the obligation to repay the bonds.

Another frequently cited characteristic unique to CDFC is that it is mandated by law to fund businesses and projects through community development corporations (CDCs). CDCs are non-profit grass-roots organizations which have as their primary mission meeting the housing and

Venture Fund's mandate remains financing businesses in targeted low-income communities throughout the state. It does, however, seek to be self-financing. Hence, attention is given to funding projects that meet certain minimun investment and businesses criteria. CDFC staff attempt to balance the Venture Fund portfolio with a mix of investments which provide for both job retention opportunities as well as creation of new growth companies. For job retention financing opportunities the expected returns range from 10 to15% whereas for new high-growth firms returns the expectations are for returns in the range of 35-50%. The companies funded span a wide variety of industries including high technology, manufacturing, and services. Some of the characteristics CDFC seeks in firms it invests in are:

- minimum annual sales of $1 million;
- potential sales growth of 33% annully;
- serve market segments of $100 million or greater;
- serve markets that are undergoing changes that provide an opportunity for the company;
- have management experienced in the industry or the market and at least 10 years of general business experience; and
- have a business strategy with an achievable sales, marketing and financing plan;

Section B. CDFC Venture Fund Investments and Leveraging

Leveraging Objectives and Evaluation Criteria

In the introduction to this paper, three objectives for leveraging were identified. They were:

a) leveraging facilitates correcting "capital market failures" by enhancing the availability of funds to businesses which should be financed but are not;

b) leveraging facilitates correcting "capital market failures" through a process of opening-up or creating markets and institutional learning;

c) leveraging, if done correctly, can insure that the public sector invests its resources in projects or ventures which have a longer term viabiliy (i.e., by linking its decisions to the decisions of the private sector, it benefits from profit-oriented underwriting criteria of the private sector);

What constitutes evidence for success in meeting each objective? Below are suggested three sets of measures and conditions which would indicate success in meeting leveraging objectives.

For objective (a) both of the following have to be met:

(i) the leveraging ratios are equal or greater than benchmarks identified in Chapter II.

(ii) the rate of capital substitution are equal or less than those achieved in benchmarks identified in Chapter II.

For objective (b) either one will have to be met:

(i) target communities and businesses have increased access to credit over time.

(ii) the private sector lenders would consider extending credit to communities/ businesses which before CDFC investment would not have

For objective (c) the following has to be met:

(i) projects with leveraging had a better survival rate than non-leveraged businesses; this would require establishing a correlation between the level of leveraging and survival rate after CDFC investments were repaid.

Sources of Information and their limitations

In this chapter evidence from the survey conducted by Seidman (1997) will be used to assess the degree to which CDFC's Venture Fund investment succeeded in meeting these leveraging objectives. Due to the limitations of a survey instrument to provide full evidence for assessing success in meeting all of these objectives, the next chapter will provide a case study on one CDFC investment which leveraged both private and public financing. Although one case study is by no means sufficient to provide substantial insight, this particular case provides an interesting opportunity to study the only equity-only investment CDFC has done for at least the past 10 years (the period covered by the Seidman survey). It is, also, the only co-investment with a private venture capital firm CDFC has done since its incpetion in 1978. Neither of these sources, however, will provide a complete information for fully assessing the success of these objectives. I will attempt to point out further areas of research that might shed light on the question at hand.

The survey conducted by Seidman (1997) is major source available for assessing the overall leveraging performance of CDFC's Venture Fund. There are both advantages and and disadvantages to this source. Two main disadvantages of this survey results are:

a) It's main disadvantage is that it is based on mailed questionnaires and hence relies heavily on the memory of the respondents. This could be problematic since in some cases respondents are asked to remember details of transactions which took place up to 10 years ago. One possibilty was to look at CDFC Venture Fund files. A review of the files, however, revealed that in some cases there was incomplete information and hence that source could not be reliable.

b) I am taking their response to the question "How much financing has your firm obtained as a direct result of CDFC investments?" as a good proxy for the level of direct co-investment. Even if assuming repondents had sufficiently good memory when they reported the amounts, a response to this question might yield a more conservative result than the acutal amount of co-investing that occured. This is because respondents might have felt that the investments of some of the co-investors, even though they occured at the same time as the CDFC investment, were not a direct result of CDFC participation. A review of CDFC files, however, had they been complete, in most likelihood would have shown a greater amount of co-investing.

The advantage of the Seidman survey, however, is that it provides some evidence on the longer-term financing capabilities of Venture Fund firms. That is, by anserwing the question "How much financing has your firm raised since CDFC invested in your company?" we have some evidence of the viability of the business in the long term. This is information that CDFC files would not and do not contain.

The results are based on responses of 20 Venture Fund financed firms. This is half of all the firms financed by CDFC between June 1986 and July 1996. The Venture Fund's portfolio of 40 firms in this period consists of 26 firms which are still operational, 10 firms which have gone out of business, and 2 uncertain cases[22]. The Seidman survey is overwhelmingly represented by

firms which are still in operation (viz., 19 firms of the 20 respondents).[23] The total Venture Fund investment in the surveyed firms amount to about $5.96 million with investments averaging about $300,000. The range of investments was from $75,000 to $650,000. Ninty-percent (90%) of the survey respondends were firms which received CDFC financing in 1990 and after and 65% received CDFC in 1993 and after.

Leveraging Performance

Overall, CDFC Venture Fund firms were able to raise about $40.7 million from various sources. They attributed $5.6 million of this to CDFC's $5.95 million investment. These co-investments ranged from $20,000 from finance company sources to $10 million from banks. The upper limit of co-investments deemed to be a direct result of Venture Fund investments, however, was $1 million. Again, banks were the financing source to provide the largest amount. They were also the most frequent source of financing and co-investing and provided the most per transaction. Table 2, below, summarizes this information in terms of leverage ratios.

Table 2. Overall Leveraging Ratios of Venture Fund Investments by Source of Finaning, 1986-96

Source of Financing	Total Amount of Additional Financing per CDFC dollar since First CDFC Investment	Total Amount of Additional Financing per CDFC dollar co-invested with CDFC
Public/quasi public	0.43	0.31
Venture Capital	0.08	0.08
Bank	3.37	0.42
Finance/Leasing Co	0.38	0.07
Individual investors	2.01	0.00
Private corporations	0.48	0.00
Public Stock Offering	0.00	0.00
Retained Earnings	0.03	0.00
Other	0.05	0.05
Overall Leverage Ratio	**6.84**	**0.94**
Total of Other Sources	$40,707,000 (35)*	$5,570,000 (14)*
CDFC Investment	$5,952,000 (20)**	$5,952,000 (20)**

(*) The numbers in these parenthesis represent the number of other financing sources.
(**) The numbers in these parentheses represent the number of firms responding to the survey.
Source: Author's analysis of results from Seidman Suvey (1997).

A few salient results can be culled from this table. Overall, CDFC was able to attract direct co-investment of about one dollar for each of its own dollars. If one removes the public and quasi-

publics' 31 cents to CDFC's dollar, the private sector seems to have leveraged only 63 cents for each CDFC dollar invested. Banks are the most dominant CDFC co-investors (with the 43 cents to one CDFC dollar). Public and Quasi-public sources are the second most dominant source of co-investing. Banks come to play a much larger role over time in financing these businesses growing from 43 cents to CDFC dollar to $3.37 to each CDFC dollar. Another major source of financing seems to have been individual investors although none of their investments were attributed to the Venture Fund.

One result, however, is somewhat questionable. None of the firms responding reported any substantial use of retained earnings and personal savings as a source of financing growth of their firms. There is some evidence to sugget that overwhelmingly the most important financing source for the growth of new firms are the use of the founders' personal savings and cash flow/retained earnings of the company (BankBoston 1997). It is not clear if this is a reflection of the type of investigation used (i.e., mailed surveys) and the fact that the questionnaire did not provide a "personal savings" option (although there was an "other" category) or there is incidence of capital substitution (for more on this, see section below).

These aggregate figures hide some important nuances. It will be useful to examine the Venture Fund's leveraging accomplishments by contolling for various characteristics of the portfolio companies and the investments. In what follows, four characteristics will be considered. The choice of these four were partly dictated by the availablitiy of data as well as the usefulness of the lessons they can provide for Venture Fund's future investment activities. The characteristics that will be considered include: business sector of the company invested in, size of the company, size of the investment, intent of the investmnet (viz., to provide financing for growth or retention of a company).

Leveraging Performance by Business Sector

The manufacting sector dominated Venture Fund investments both in terms of number as well as amount of investments (Table 2). Investments in the manufacting sector included companies which produced water purifcation systems, plastics, radiators, capital equipment for micro-electronic and die-making industries, automated landing gear systems for semi-trailers, and so on. These firms on the average employ about 20 people with the number ranging from 4 to 55

employees[24]. The services sector is the second largest. They include a commercial printer, outpatient mental health services, distributor of electronic parts, excavation contractor, wholesale florist supplier, oil supplier, grocery stores, temp placement agency, and so on. On the average in 1996 each firm employed about 64 people, although this larger size is attributable to one firm with an unusually large workforce (250 employees). The fact that service sector is under-repsresented in the Seidman survey is reflective of the fact that it has had the highest failure rate (38% of the 16 at the time of the survey had gone out of businesses whereas only 17% of the manufactuing and high tech firms had done so)[25]. The third largest, is the high-tech sector. The firms financed by the venture fund included those producing systems integrators for robots, high performance digital simulation software for electronic designers, designer/manufacturer/ marketer of short-haul microwave transmission products, and so on. The average number of employees in high tech firms were 70 with the number ranging from 35 to 150.

Table 3. CDFC Investments per Sector, 1986-1996

Business Sector	Total Venture Fund Portfolio			Respondents to the Seidman Survey		
	Total CDFC Investment	Average CDFC Investment	No. of CDFC Investment	Total CDFC Investment	Average CDFC Investment	No. of CDFC Investment
High Tech	$1,500,000	$250,000	6	$1,081,000	$318,667	4
Manu	$4,680,000	$260,000	18	$3,205,000	$320,500	10
Service	$4,187,429	$261,714	16	$1,666,000	$277,667	6

Sources: Author's analysis using CDFC files and Seidman Survey of Venture Fund Investments, 1997.

When controlling for business sector, a different leveraging picture emerges for Venture Fund investments. For the financing raised since Venture Fund investment, high tech firms have been able to generate about $21.4 for each CDFC dollar with manufacturing firms raising a far lower $4.4 for each dollar investment by CDFC (Table 4). The service sector firms have been the poorest performers with raising only $2.1 for each CDFC dollar. Banks which are the most traditional source of service sector financing were also highly limited in their contribution. Given the developmental mandate of CDFC, this perhaps presents an opportunity for Venture Fund staff to more actively seek financing for service sector firms in which they engage themselves. The spectacular performance of high-tech firms in raising additional financing since Venture Fund investments should be interpreted more carefully. Of the $11 million raised from

individual investors, $9.5 million is attributable to one of the four firms in the sample population. Banks on the other hand were participants with an average of $1.925 million (raning from $200,000 to $5 million) in all four firms. Too much leveraging, however, raises the questions that if these firms were so successful in raising funds, what was the role of CDFC in such deals?

Table 4. Financing Since Venture Fund Investment per Business Sector, 1986-1996

Source of Co-Financing	High Technology		Manufacturing		Services		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$1,175,000	2	$1,325,000	2	$350,000	2	$2,850,000
Total	$23,182,000	12	$14,075,000	15	$ 3,450,000	8	$40,707,000
Total CDFC	$1,081,000	4	$3,205,000	10	$1,666,000	6	$5,952,000
Leverage ratio	21.44		4.39		2.07		6.84

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

Some evidence to answer at least the first of these questions is containted in Table 5, below. High tech firms in the Seidman survey attributed only $2.24 in investments from all sources as a direct result of Venture Fund investments. In the case of high-tech firms, if the public and quasi-public sources of co-investing is deducted, these firms have been able to attract only $1.62 per Venture Fund dollar invested exclusively from banks. In other words, collectively, all public sources were able to leverage, about $1 in private investment for each public dollar (i.e., a total of $1.75 million in private investments was generated by $1.76 million public dollars).

Table 5. Financing as a Direct Result of Venture Fund Investment per Business Sector, 1986-96

	High Technology		Manufacturing		Services		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$675,000	2	$1,325,000	2	$150,000	1	$2,150,000
	$2,425,000	5	$2,145,000	5	1,000,000	4	$5,570,000
	$1,081,000	4	$3,205,000	10	$1,666,000	6	$5,952,000
	2.24		0.67		0.60		0.94

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

There is one noteworthy fact about these high-tech investments that is not revealed in these aggregate figures. Of the total of $1.75 million invested by banks $1.5 million is from two deals which were made in the mid-80s and which used no other public source of financing for the

$450,000 Venture Fund investment. They were also firms which were on the whole older than the two other firms in this sample which were established in the early 90s and financed by CDFC in '93. So the fact that earlier firms achieved a leveraging of 3.33:1 seems to be reflective of the fact that they were more mature firms and that the later ones were more high growth firms which could not access capital in the private market, and that public sector assistance provided an opportunity for these firms to grow. The overwhelming majority of growth in financing received is attributable to these late two firms.

For manufacturing firms, although they attract large amount of capital after CDFC financing, the initial leveraging performance is extremely poor. With the substantial participation of public and quasi-public financing sources, a leveraging of 0.67 per Venture Fund dollar was achieved. Without the public sources this figure fall to 0.25 cents to the dollar which actually means that the manufacturing companies performed worse than service sector companies in securing private sector co-investments (the service sector attracted 51 cents in private capital for each CDFC dollar).

Leveraging Performance by Business Size

Another characteristic of the firms in the Venture Fund portfolio that seems to have had an effect on the leveraging achieved was the size of the business, where size is determined by the average of the 1996 revenues and the revenue of the firm when it first received Venture Fund financing. Firms with more than $5 million in average revenues have performed 3 times as better in attracting private capital than those with less than $1 million in average revenue (Table 6). Again banks remain the major source of co-financing (regardless of firm size).

Table 6. Financing Since Venture Fund Investment by Size of Business*, 1986-1996

Source of Co-Financing	Less than 1 million		1 million - 5 million		more than 5 million		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$1,325,000	2	$550,000	1	$975,000	3	$2,850,000
Total	$13,225,000		$ 7,757,000		$19,725,000		$40,707,000
Total CDFC	$2,605,000		$2,056,000		$1,291,000		$5,952,000
Leverage ratio	5.08		3.77		15.28		

(*) Business size is defined as revenue the year CDFC provided first financing plus sales 1996 revenue divided by 2.
Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

When examining these results for co-financing as a direct result of Venture Fund investments, there seems to a slight advantage to firms with larger than 1 million in average annual revenues (Table 7). Firms with larger than 1 million in revenues have generated an approximate leverage ratio of 1:1 whereas those with less than $1million in revenues have leveraged 85 cents for each CDFC dollar. When the very large public/quasi public co-financing is removed from the calculation, the private sector leveraging amounts to 32 cents per CDFC dollar.

Table 7. Financing as a Direct Result of Venture Fund Investment by Size of Business*, 1986-1996

Source of Co-Financing	Less than 1 million		1 million - 5 million		more than 5 million		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$1,325,000	2	$550,000	1	$275,000	2	$2,150,000
Total	$2,145,000		$2,150,000		$1,275,000		$5,570,000
Total CDFC	$2,605,000		$2,056,000		$1,291,000		
Leverage ratio	0.82		1.05		0.99		

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

This strong private sector participation would seem to be a function of the age of the companies. The average age of Seidman firms will less than $1 million in revenues is 4 years.[26] The average ages are 14 years[27] and 23 years for the $1-5 million and $5-10 million categories, respectively. Information from Tables 6 and 7 combined seem to indicate that Venture fund (along with the other public sources) are successful in targeting small firms at their earlier stages when they most need capital and have the least opportunity to obtain it from private sources. Table 7 also indicates that the Venture Fund has been more willing to enter deals with larger and older firms which presumably than its public/quasi public co-investors.

Leveraging Performance by Investment Size

Smaller Venture Fund investments succeeded in leveraging a far greater amount of financing than larger investments (Table 8).

Table 8. Financing Since Venture Fund Investment by Size of Investment*, 1986-1996

Source of Co-Financing	Less than 200k Amount	200-299k Amount	300-399k Amount	more than 500k Amount
Public/quasi	$925,000	$150,000	$ -	$1,775,000
Total	$17,445,000	$12,810,000	$3,530,000	$6,922,000
Total CDFC	$380,000 (4)	$1,200,000 (5)	$2,166,000 (7)	$2,206,000 (4)
Leverage ratio	45.91	10.68	1.63	3.14

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997
(*) No investments were made in the $400-499k range, hence no column for that range is included here.

This is also true when co-financing as a direct result of Venture Fund investments is considered (Table 9). Thre seems to be very little relationship between the amount of investment and the use the borrowing firm makes of these investments.

Table 9. Financing as a Direct Result of Venture Fund Investment by Size of Investment*, 1986-1996

Source of Co-Financing	Less than 200k Amount	200-299k Amount	300-399k Amount	500k and more Amount
Public/quasi	$ 425,000	$ 150,000	$ -	$ 1,575,000
Total	$1,375,000	$800,000	$1,300,000	$2,095,000
Total CDFC	$380,000 (4)	$1,200,000 (5)	$2,166,000 (7)	$2,206,000 (4)
Leverage ratio	3.62	0.67	0.60	0.95

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997
(*) No investments were made in the $400-499k range, hence no column for that range is included here.

The basic question that the investment size data raises is what the role of the smaller Venture investments were since they were able to generate substantial private investment. The $380,000 (an average of $95,000 per investment) made in this category solicited lending by three major banks, Fleet, Bank of Boston, and BayBank each participating with an average of $317,000. Most of the advances made in soliciting private sector financing in the smallest investment category is due to one firm which grew from $8.2 million in revenue in 1993 to $15.7 million in 1996 and was able to increase its BayBank lending from $250,000 to $5 million. This firm has also been able to solicit financing from very established suppliers e.g., Hewlitt Packard. Although this firm is the kind of success one want to see more often, one wonders if they ever really needed Venture Fund finaning and that there was any capital market failure that CDFC tried to correct. There would be great advantage to a transaction like this if these major private

sector financial intermediaries came to have a better working relationship with CDFC staff and hence in the longer term led to institutional linkages which led to greater leveraging over time. There is insufficient evidence from available data to make any assessment in this regard.

Leveraging Performance by Type of Investment (Growth vs. Retention)

Analysis of the leveraging performance based on the type of investment, viz., whether the investment was in a growth firm or whether it was an investment in retention of employment in a target community, yields that growth firms have leveraged more funds than retention firms. Venture Fund, has also invested more, both in number of transactions and amount, in growth firms. (Table 10).

Table 10. Financing Since Venture Fund Investment by Type of Investment, 1986-1996

Source of Co-Financing	Growth Investments	Retention Investments
Public/quasi	$ 2,550,000	$ 300,000
Total	$26,587,000	$14,120,000
Total CDFC	$3,756,000 (11)	$2,196,000 (9)
Leverage ratio	7.08	6.43

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

The same pattern prevails when looking at co-investing as a direct result of CDFC financing (Table 11). When public and quasi-public sources are removed (which are about 6 times larger in growth firms than retention firms), the result is that growth firms leveraged 0.49 private dollars for each Venture Fund dollar invested whereas retention firms leveraged 0.73.

Table 11. Financing as a Direct Result of Venture Fund Investment by Type of Investment, 1986-1996

Source of Co-Financing	Growth Amount	Retention Amount
Public/quasi	$ 1,850,000	$ 300,000
Total	$ 3,670,000	$ 1,900,000
Total CDFC	$3,756,000 (11)	$2,196,000 (9)
Leverage ratio	0.98	0.87

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

One surprising finding was that retention firms did better in leveraging than growth firms in attracting private capital. This is surprising since, even though retention firms are older, they face financial hardships which would make them unattractive to private sector investors. Despite this relative advantage, however, retention firms still performe substantially lower than the overall benchmarks.

Rates of Capital Substitution

The survey results indicate that Venture Fund investments have not substituted for private financing. Only 11% of the respondents claimed that they would have proceeded with their project from internal or external private sources. Of the 18 respondents who sought financing from private sources, a third were denied financing altogether and about half were offered financing for amounts less than needed. Only three respondents claimed that they were offered financing at terms and conditions unacceptable to them. These findings suggest that Venture Fund investments did not signficantly substitute for private sector capital. Compared to benchmarks discussed in Chapter II, the Venture Fund has performed far better. The benchmarks indicate that overall 20-25% of the firms receiving financing from public sector small business financing programs could have received it from other sources. The Venture Fund was able to achieve a captial substitution rate of 11%.

Section C: Conclusions on Meeting Some Leveraging Objectives

Overall, the survey results indicate that since CDFC financing Venture Fund firms have generated $6.84 from other sources. It is not possible to judge the adequacy of this performance since there are no control groups. A much lower leveraging ratio, 94 cents to each Venture Fund dollar, was achieved when firms were asked to report investments they thought were made directly as a result of CDFC investments. The private sector accounted for two-thirds of this co-investing with 64 cents to each Venture Fund dollar. This performance is substantially below benchmarks set by the CFED (1996) study discussed in Chapter II. In that study most funds were able to achieve a leveraging ratio of $2-$6.6 per public dollar invested.

More dissagregated analysis of the Seidman survey results, however, show that certain categories investments did better in leveraging private sector funds that others. The characteristics that seemed to yield the greatest leveraging were high tech firms (vs. manufacturing and service) and small investments (less than $200,000). Investments in high-tech firms leveraged $1.62 from private sources (exclusively all banks). Smaller sized investments leveraged $2.5 from private sources (again exclusively banks). Analysis of the business sector data also indicate that firms at earlier stages of their development and firms in the manufacturing sector attract less private financing when they were first financed by CDFC but since then they have attracted substantial private capital.

Despite the poor leveraging performance, the Venture Fund investments have done little to substitute for private capital. With a capital substitution rate of 11%, the Venture Fund falls far below the standards set by other programs.

These findings jointly suggest that Venture Fund investments have not been able to meet the first objective of leveraging. There is insufficient data to assess Venture Fund's performance in meeting the thrid leveraging objective. The case study in the next chapter should shed some light on the second objective.

CHAPTER IV. CASE STUDY ON CO-INVESTING: SelecTech, Inc.

How SelecTech Got Started

In the winter of 1993 Tom Ricciardelli found himself out of a job as the Manager of the R&D Division of a Cambridge biomedical waste recycling start-up. The company had gone out of business. Tom didn't waste much time since he was convinced that there was market niche for the recycled products that his former employer was producing. His former employer's bankruptcy didn't make him hesitate since he knew that their failure was mostly due to poor financial management and that for him their rapid growth and very successful IPO was more indicative of the potential of that market. He had also learned that recycling plastics, particularly those used for bio-medical purposes, can be very costly. So if a new company was going to expand into general plastics recycling, it would have to find ways of doing it cheaper. Relying on his own savings and his wife's support, he spent the next two months searching all over for available technologies in plastics recycling. For this he also solicited the help of a friend, Tom Tomaszek, who having worked in the recycling industry since 1973, had considerable knowledge about that industry throughout the world.

In two months they were able to locate a firm abroad which was producing plastics molding machines capable of radically reducing plastics recycling costs. As Tom recalls, "We pretty much stumbled into this company." The injection modeling equipment which this German company had designed and produced eliminated the need to remove any residue or foreign matter from plastics before use which in effect removed the single most significant factor in making recycled plastic molding costlier than virgin plastic. Their estimates and future experience was to show that this proprietary technology and the way they integrated the production process could give them a 40% cost advantage over producers using virgin plastic.

He knew from this point on he could not proceed alone. He needed financing and marketing experience to put together a business plan. He quickly registered a company, SelecTech, Inc., and invited two of his friends to join him in putting together a plan. One of them, Michael King, had been a marketing director and a colleague at the last company Tom had worked. Prior to that, for

five years Michael had served as the Deputy Director of Solid Waste at the Massachusetts Department of Environmental Protection. The other friend, Charles Dwyer, had ten years experience in commercial banking and most recently held the position of Vice President in charge of Asset-Based Lending at Fleet Bank of Massachusetts. Tom himself has impressive credentials. He has received an MS in Chemical Engineering and an MBA from MIT. Before being employed at the last company he worked at, the bio-medical waste recycling company in Cambridge, he had several years of experience in environmental consulting and had worked in the polyurethane division of a multi-billion dollar company in Pennsylvania. This team, all of whom were also to become owner/managers of SelecTech, spent the next four to five months preparing a business plan. Tom recalls, "We didn't leave a stone unturned. In putting together our plan, we thought about every aspect and every possible outcome of our business idea." By July 1994, they had drafted a proposal which all three felt confident about. With this in hand, they started looking for money to finance their plan.

The Search for Capital

What they were proposing to do was extremely capital intensive and the traditional sources of start-up financing, viz., family, friends, relatives, and "angels" could not reasonably be considered. Instead they did what many in the business of financing start-ups consider to be the least effective. They got a copy of a guide to venture capitalists active in the region and went through the list one by one, contacting any firm that seemed to them to have some chance of financing their idea. In the venture capital world, the odds against getting financing for a business idea through this route are great. As one venture capitalist put it, "When I get a business proposal mailed to me like this, I look at it immediately, but what I try to do is to find reasons not to finance it; whereas when I am asked by a colleague or a professional acquaintance to look at a business plan, I try very hard to find reasons to finance the proposal." This is an attitude that is all too prevalent among venture capitalists. And indeed when the SelecTech team had its first meeting with Lloyd Dahmen of the Boston-based Claflin Capital Management in January of 1995 (six months after they'd started their search), it was through the professional contacts of Charles Dwyer, their own CFO. Claflin was also the right firm to meet with since they are one of the few remaining venture capital firms in the New England area that provide

seed and start-up financing in the $500,000-$1 million increments. With the ever increasing dominance of institutional investors (particularly pension funds) as a source of venture capital funds, the industry has been gravitating toward larger and later-stage deals.

By the time they met with Claflin, they had also been conducting discussions with the Massachusetts Community Development Finance Corporation (CDFC) about the possibility of receiving financing from them as well. The amount they needed was too large for only one investor. They were introduced to CDFC by a local community development corporation (CDC), Nuestra Communidad at Roxbury which they had contacted in their preemptive attempt to talk to anyone and everyone who would lend them an ear. CDFC was not the first and would not be last public agency they were to meet. They had also submitted an application to the Land Bank from which they never heard back. At CDFC they met with Charles Broming, the Investment Officer of the Venture Fund, and received a far more serious reception. CDFC operates eight different investment funds which are designed to promote housing and business development in distressed communities throughout Massachusetts (see Appendix 1 for a list of all CDFC programs). The Venture Fund concentrates exclusively on providing equity and long-term debt financing to small businesses. As Broming recalls, the first meeting between SelecTech and CDFC went "reasonably well. They had some strengths and some weaknesses. Tom seemed like a strong candidate. Chuck was a banker who seemed like he wanted to recycle his life. Mike was a lawyer and it wasn't very clear to me that he could play the marketing role that was being given to him. But the idea seemed pretty interesting." The initial meetings, however, were enough to make Tom and his partners feel comfortable that CDFC had a clear interest in considering financing them, although no one knew what investment amounts would be.

In fact no one knew exactly how much each party would be investing in SelecTech when all co-investors met in late January of 1995. By this time, almost six months after SelecTech had started looking for financing, yet a third potential partner, another quasi-public, the Massachusetts Technology Development Corporation (MTDC), had expressed interest. This meeting was a first for CDFC in that it had never co-invested with private venture capitalists, although it had a long track-record of co-investing with other private financiers and public-sector partners in similar projects. MTDC on the other hand had co-invested a great number of times with private venture capitalists -- six or seven of their investments had been with Claflin alone.

The interest in this project by these investors, particularly Claflin and MTDC, was somewhat unexpected since it was a proposal for a business in manufacturing and it was a business related to the environment. Financing of environment-related businesses reached its climax in the late 1980s and early 90s but because of the failure of many environmental venture capital funds, it had rapidly fallen out of favor. Moreover, venture capitalists seeking firms with high growth potential, have concentrated on high-tech, telecom, and bio-tech firms as investment opportunities. CDFC's investment in a firm like SelecTech would be less surprising since it is less swayed by trends in the venture capital world and more concerned about promoting businesses that create jobs, particularly jobs in the manufacturing sector.

Despite these factors working against a firm like SelecTech in getting financed by venture capitalists, the simplicity of their business idea was irresistible. As Tom Ricciardelli put it, "We were trying to start a business which would be using a proven technology -- there was 15 years of experience with this technology in Europe -- and we would be competing on cost -- cost no one could possibly beat. And the whole technology was very easy to explain." The technology that SelecTech was offering would eliminate some of the most costly steps in plastics recycling. Manufacturers who have to use recycled plastics typically buy plastics that is pre-processed to remove contamination. Pre-processing of these plastics includes expensive sorting, washing, drying, and pelletizing, all of which end up making the cost of recycled plastic higher than virgin plastic. SelecTech's technology, however, enables them to use recycled plastic without removing the contaminates and eliminates the pelletizing process replacing it with plastic flakes. Also, by pre-processing the plastics in-house, SelecTech is able to save on intermediate handling, shipping, and brokerage costs.

Due Diligence and Negotiations

The proven technology and the cost advantages, notwithstanding, the investors needed to address several concerns before committing themselves to any financing. All of them being experienced in start-up financing, shared many of the same concerns. To name a few, they wanted to know if:

- the technology was as developed as SelecTech promised;
- management was capable of controlling the production process and the growth of the firm;
- the marketing strategy was reasonable and management was capable of implementing it;
- no competing technologies could be developed to undermine SelecTech's cost advantage;
- the company would not exhaust resources before reaching critical mass;
- there was a clear growth potential in the market; and
- there was a plausible exit strategy for them from this investment.

In addition to these concerns, CDFC needed to show that a) there was a substantial number of jobs to be created from this investment, b) the firm would locate in one of the CDFC target communities, and c) a local community development corporation (CDC) was sponsoring the firm. CDFC is mandated by law to make investments through CDCs which channel CDFC funds in return for some management fee. Eventually all the investors (CDFC, MTDC, and Claflin) would need to come to an agreement on the valuation of this company and the amount each investor would commit to this investment. Their findings on these questions are summarized in Table 12, below. There were some uncertainties, however, that could not possibly be resolved at such an early stage -- uncertainties which justify the 40%-50% internal rate of return (IRR) that the investors, including the quasi-publics, seek in an investment like this.

Some basic agreements were reached early on between SelecTech and the three investors. Not all of the originally requested amount could be provided at one time. It was agreed that the best way to approach this, particularly from the investors' perspective, was to divide the funding into several phases (see Table 13). The first phase would finance the purchase, set-up, and operation of one injection molding machine. This would enable SelecTech to demonstrate that the technology worked and that there was demand for the types of products they would be producing. The later stages of financing would be made over a several years and would increase the number of molding machines to five which as the company projected would generate revenues of up to $10 million per year. The revenue generation capacity of each machine was about $1-$2 million per year depending on the types of products produced. All of the investors agreed on this multi-staged financing plan. Going into this deal, it was clear to everyone that CDFC would become less capable of making equity-only investments in the later stages and that they would have

utilize some mix of debt and equity. This limitation arises from two facts: a) that CDFC has limited funds to invest and b) that having almost no new opportunities to raise additional funds, it is more reluctant to expose the fund to high risk investments which forgo the income stream provided by debt investments. In the case of financing SelecTech, openly discussing these limitations has been instrumental in preventing serious tensions between three investors, particularly as the investors are moving to their third round of financing.

Table 12. Major Issues Raised during the Due Diligence Process for Financing SelecTech

Some Risks Factors	Some Relevant Mitigating Factors
the technology is not as developed as SelecTech promised	There is 15 years of experience w/ this tech.; the phased approach to financing will allow for the technology to be proved.
management is not capable of managing the production process and the growth of the firm	Management has experience in plastics recycling and has a firm grasp of their business strong, background checks are excellent
the marketing strategy is unrealistic and management is not capable of implementing it	The market for Phase I products in the Northeast is $250 million and SelecTech market share for these products would be less than 1%. SelecTech intends to pursue gov. contracts & form alliances with other product manufacturers.
competing technologies could be developed to undermine SelecTech's cost advantage	The window of opportunity appears to be 18 months, esp. if new technology is to be developed.
the company exhausts resources before reaching critical mass	The investor team has sufficient reserves and additional financing sources have been identified
there was a clear growth potential in the market	The recycled plastics industry has been growing strongly. Industry sources report 13.1% annual growth through 1998 in the sales of post-consumer recycled plastics. This compares w/ growth in resin sales of 8%.
there was a plausible exit strategy for them from this investment	most likely investors would recover the preferred stock part of investment in 3 years; for the remainder and IPO or a merger in 5-7 years are most likely, if SelecTech succeeds.

For the first round of financing, before the investment of the three venture partners, SelecTech was valued at $1.5 million. Each investor contributed $250,000 in exchange for common and preferred stocks of the Company (10% and 90%, respectively). With this initial investment of $750,000, the company was valued at $2.25 million which allowed each investor to have 11.11% ownership in the company. Each of the three SelecTech partners maintained 22.2% ownership which meant that collectively they had majority ownership. In the negotiation process there was

some consideration given to the type of ownership instruments to be utilized. Claflin and CDFC, particularly, were arguing that they wished their preferred stocks to be convertible. That is, if the company revenue/cash flow fell below a pre-set benchmark, the holder of the preferred stocks would have the option of turning them into debt instruments. SelecTech, however, was not comfortable with this provision. They believed that the dividend structure of the preferred stocks, which were set up to encourage management to repurchase these stocks without limiting returns to investors, was sufficient protection for their investors.

CDFC was the first investor to express interest and the last to have an approved commitment, spanning some 12 months. MTDC went through this process in three months, and Claflin in four months. It is very easy to attribute this longer period to CDFC's bureaucratic inefficiency. This would, however, greatly over-simplify the situation. First, in the six months between the first CDFC meeting and the first Claflin meeting (SelecTech met with CDFC in July 1994 and with Claflin in January 1995), SelecTech had progressed substantially in identifying a location, had initiated contacts for a medium-term loan for $275,000 from Massachusetts Community Capital Fund (MCCF), had furthered discussions with the manufacturer of the injection molding machines, had initiated the patent process, and had identified some suppliers of used plastics. All of these steps are very time consuming and progress in each can substantially add value to the proposal, making it more plausible to finance. The process of identifying a location best illustrates this point.

As Tom recalls, "We wanted to stay close to Boston. So we started drawing our circles. Real estate and electricity in Boston was very expensive, so we moved out. Waltham ... there wasn't much real estate available there. Next we looked at Brockton. The problem there was that they wouldn't give out any new water connections. You would have to dig your own well if you wanted water. That obviously was out of the question. Then we started looking at Taunton, one of CDFC's target communities. We met with the Director of the Economic Development Council, Dick Shafer, who gave us excellent guidance and support in identifying realtors. He was also instrumental in getting the MCCF loan process going." The MCCF is funded by the US Department of Housing and Urban Development (HUD) and provides grant money to cities to meet some of their community capital improvement needs. Many big cities in the state receive

Table 13. Investment Sources, Uses, and Characteristics of SelecTech, Inc.

Investment Amount	Investment Instrument & Company Value	Uses of Investment
Phase I		
No additional direct investments from owners/managers of SelecTech $750,000 in equity (Claflin, CDFC, MTDC in equal shares) $275,000 in debt (MCCF[1]) *Total Invested:* $1,025,000	Each of the three owners/managers at SelecTech retain 22.22% ownership Each of the three investors receives 11.11% in common and preferred stocks medium term note, 5-7 years Company Value before: $1,500,000 Company Value after: $2,250,000	$630,000 to purchase and install one injection molding machine $375,000 for working capital *Total Used:* $1,025,000
Phase II		
No additional direct investments from owners/managers of SelecTech $750,000 equity (Claflin, CDFC, MTDC in equal shares) $150,000 debt (MBDC[1]) *Total Invested:* $900,000	Each of the three owners/managers at SelecTech retain 18.33% ownership Each of the three investors receives 15% in common and preferred stocks medium term note, 5-7 years Company Value before: $3,250,000 Company Value after: $4,000,000	$120,000 Plant Development $485,000 Equipment (one injection molding machine) $55,000 Engineering, Testing, misc. $267,000 working capital *Total used:* $900,000
Phase III (currently being negotiated)		
$400,000 equity (Claflin, MTDC) $100,000 debt w/ warrants (CDFC) * Equipment manufacturer has expressed interest in providing discounts on equipment in exchange for SelecTech stocks * personal investor, possibly the owner of the industrial complex they currently occupy * possible large loan from a commercial bank provided MDFA[1] guarantees are available	No agreement yet. Company value being negotiated. But unlikely to be increased beyond what investors put in.	Expected to be used for more equipment purchase and enhanced marketing effort.

(1) MCCF is the Massachusetts Community Capital Fund. MBDC is the Massachusetts Business Development Corporation and manages the Mass Recycling Loan Fund which was used in this financing. MDFA is the Massachusetts Development Finance Agency. *Source:* CDFC Board Proposals and interview with SelecTech management on May 12, 1997.

these grants directly from HUD and allocate them to public works projects. Smaller cities in Massachusetts, however, have access to these grants through MCCF and have used them to attract businesses as well as undertake public works projects. The Taunton Economic Development Council and the City of Taunton itself were very eager to attract investments to revitalize the Weir district of the city, an old economically-depressed industrial neighborhood where SelecTech was to settle.

Aside from CDFCs process, another source of delay and increased costs was the legal process. Each party in this transaction had their own legal representation. This amounted to 5 sets of lawyers (CDFC's, Claflin's, MTDC's, MCCF's, and SelecTech's) looking at the same documents and recommending modifications. This amounted to substantially more costs making less funds available to the start-up company. Some CDFC clients have in the past complained about the high transaction costs, particularly given the small amount of financing received. In this case this was simply magnified several fold because of the great number of investors involved. While acknowledging the problem, the investors believe that this was not something they could have prevented in the case of SelecTech, esp. on the first round. As Broming, explains "Not having worked with some of the co-investors before, you cannot really share legal advice. Each party needs to have their own, otherwise you start becoming a lawyer yourself, which you should not be." As relationships developed over this investment in SelecTech, the three co-investors did come to share legal advise on the subsequent rounds of financing. Reaching cost-saving agreements like this, however, cannot always be achieved. In this case such an agreement is a testament to the solid working relationship that the three co-investors have forged between themselves.

Making the First Commitment

CDFC's and MTDC's final commitments could be made once the Board of Directors of each agency approved the investments. Claflin would make a final commitment after Lloyd Dahmen would present a case for this investment to the General Partners of the his firm. The General Partners of a venture capital firm are highly experienced in financing start-up businesses and have a financial stake in the deals they make. They receive compensation from both managing

the Funds they put together (from their Limited Partners) and the eventual returns of each investment. In the case of MTDC, the Board consists of highly experienced professionals from the business and particularly the venture capital community. None of these Board members, however, receive compensation for their participation. The CDFC Board members -- all political appointees -- participate in the same manner as those of MTDC, but are more broadly representative of many interests, including labor, community development, business, and state government (see Appendix 4 for a list of the Board members for each organization and a profile of Claflin partners). The Board meetings of both agencies take place on regular basis, every month. The General Partners at Claflin can set up a meeting whenever the need arises.

With the due diligence process completed and the details of the investment negotiated, Claflin approved this investment in May 9, 1995. As Tom recalls, "This was a very informal meeting. All the General Partners were there. They asked a few questions, but on the whole they were supportive of the investment." Surprisingly enough this is not what they were about to face in the board meeting of MTDC. There was also great concern that the CDFC Board will be disinclined to make an equity type investment being proposed. The problem appeared to be particularly acute for CDFC since over the history of the venture fund, only one other equity investment had been made at an early start-up phase of a firm. As explained above, they've been more prone to extending long-term debt financing.

In those meetings, the proposals were subjected to a far more rigorous questioning. Questions raised by Board members who had not been privy to the discussions and information gathering during the due diligence process over the past 5-10 months. Almost all of them were considering the proposal for the first time and most of them had only a week to review the investment recommendation made by staff. Although a simple majority was needed to approve the investment, a few vocal opponents could, if not scuttle, certainly slow the final approval considerably. A decision to postpone voting on the investment pending further findings could mean at least a month of delay in making the final commitment.

CDFC's approval went unusually smooth. Broming attributes this partly to the fact that one of the Board members, Henry Longmire of MCCF, was very familiar with this SelecTech since his organization had also done substantial due diligence work for the loan they were considering.

The most vocal opposition came from two MTDC Board members who eventually voted against making this investment and have done so for each round of the investment. They've opposed the project on the basis that the technology is not developed in Massachusetts and hence financing it falls outside of the scope of their organization.

Both Boards, however, eventually approved the investments. MTDC's Board considered the proposal in its June 15, 1995 meeting. CDFC's Board considered it in its June 1 meeting. No substantial changes were made to the staff recommendations and the investment was made as negotiated between staff, Claflin and SelecTech.

Making the Second Round and Pondering the Third

Less than a year after the first round of financing, in May of 1996, the investors began considering the second round financing. This round was to finance the purchase of more equipment. Although, common wisdom in the venture capital industry suggests that once a venture capitalist commits to a multi-staged investment, generally the second round is pretty certain, SelecTech faced some very challenging questions. They had not met their sales targets, a fact which placed SelecTech at a great negotiating disadvantage, particularly on the value the investors will want to place on the company. As Claflin's Dahmen recalls, "We had to bring these guys into our office and ask them very tough questions. They had not been able to meet their sales targets. And no matter what technological miracles you can work to save on costs, if you can't sell your goods, you haven't made it. And without high sales, you can't put a high value on the company." No doubt, the fact that the first machine arrived four months later than projected contributed substantially to the lower than expected revenues. This delay resulted from a change of order which SelecTech had to make to allow for larger plates to be used on the machines. These larger plates were to accommodate the needs of a potential customer.

When, however, the first injection molding machine finally arrived and was installed, at its peak only a fraction of its revenue potential was reached -- a fact that needed to be explained before investors could invest more funds into the company. Going into this deal, all the investors knew that sales and marketing were the weakest parts of SelecTech management but this weakness was

not seen as a deal breaker. As Broming explains, "In the first round, we decided that either the company will come around and quickly learn to improve sales or they'll find alternative solutions, e.g., hire salespeople." When time came for the second round, SelecTech had not come around on improving its sales, although it had sufficiently demonstrated that the technology could produce the quality needed to compete with other recycled plastic products.

Improving sales at the stage of development that SelecTech stood was not an easy problem to resolve. Before taking orders and making delivery commitments the company needed to show that the technology worked. It would, however, be an unavoidable part of the negotiations for the second round. The second round of financing was again for the same amount -- each $250,000. The investors, however, disagreed on how much value has been added to the company since their last investment. Broming argued that it would be best to move conservatively and add only $500,000 to the value of the company since their last investment. He believed that this lower than expected valuation would pressure management to take sales efforts more seriously. Dahmen and MTDC's Robert Creeden, on the other hand, thought that the company's added value should be placed at $1 million. They argued that a more generous valuation would encourage management to work harder at improving sales with the expectation that at the third round the company would be valued even more. After a week or two of discussion, by the rule of simple majority, they decided to opt for the $1 million increase which placed the value of the company at $4 million after the second round investment. Each investor now held 15% ownership of the company, again with a mix of common and preferred stocks. This time the share of each type of these instruments would become 25% and 75%.

Sales revenue has once again become a significant issue now that the third round of financing is being negotiated. And though the second round gets committed almost all the time, the third and the fourth get a far closer scrutiny. As Dahmen say "While the second round is almost always certain, the third round needs discipline, self-discipline on the part of the investor." Sales have been improving in 1997 despite the fact that there was a technical problem with one of the machines. The second machine, operated fine for a short while until a problem tracing back to one of its parts manufacturer in Europe stalled its operation for two months. This was an unforeseen problem which has since been fixed and all parties, including the manufacturer of the injection molding equipment, have been very cooperative in resolving. In the first two months of

1997, SelecTech had already achieved $115,000 and the first quarter revenues were expected to be $185,000. This again, is far from the expected $100,000 per month per machine.

With these sales figures, the investors have also become quite aggressive in their negotiations. No more increases in the company value beyond the amount to be invested are being considered. That is, on this third round, after another year of operation, the investors have decided to take as the base value of the company, the $4 million that was ascribed to it a year ago. It will increase only by the amount that will be invested. Claflin and MTDC are expected to invest an additional $200,000 each in return for common and preferred stocks. CDFC is considering investing another $100,000 in debt with warrants. Broming says, "This is it for us. Claflin and MTDC might consider investing more later on, but CDFC is at its limit." When asked if CDFC's "weaker" participation in the third round has caused tensions among the co-investors, Dahmen replies, "Not at all. As long as everyone is clear about their intentions and limitations from the beginning, there will be no cause for tensions." When asked if he will co-invest with CDFC again, Dahmen replies, "Yes. Absolutely! But not in every deal. CDFC's needs are such that they clearly prefer financing with instruments that generate cash flow more immediately."

Overall, the difficulties SelecTech faces are by no means unique. As Dahmen points out, "Even firms with the most spectacular success stories have some dark periods in their history." This does not suggest, however, that issues will work themselves out over time. To everyone's benefit, throughout all of this, the three investors have been on the whole of like mind, raising the same concerns and coming to agreements. SelecTech management has taken on the challenge, taking concrete and positive steps to solicit orders to reach their 1997 and 1998 targets. Beginning from May of this year they were projecting sales of $100,000 per month and expected to reach full capacity on the two machines by July. Tom believes that by December of 1997, they will receive and make operational two more injection molding machines to be purchased using the proceeds of the third round of financing currently being negotiated. Dahmen is hoping the equipment will arrive in September instead. Sales revenues for `98 are expected to reach $2.7 million.

SelecTech has pursued creative ways of financing their growth. There are discussion underway with the manufacturer of the injection molding equipment, for the possibility of receiving

substantial discounts on the equipment in exchange for SelecTech shares. The owner of the warehouse they are currently occupying is also considering making personal investments in the company. One local commercial bank is considering a large loan. For this, however, they would need guarantees since SelecTech is not at break-even point yet. MDFA has a loan guarantee facility which it is considering to offer to SelecTech. Also, as Tom says "The venture capital world is very small and reputations spread very fast. We are becoming known and with improved performance we would be at a great advantage to access more funds to finance our growth. Major growth will not come by remaining in the Northeast region. We want to go national and even international. We are becoming very good in using the technology and have an excellent working relationship with our suppliers. We also see an untapped market for what we have to offer."

Comments and Conclusions on Investment in SelecTech

Although the work of the first SelecTech investors is far from over, and SelecTech itself has a long road to travel to match Tom's vision, a few conclusion and lessons about CDFC's co-investing with private venture captalists and investing in start-ups emerge this case.

1. CDFC's interest in financing SelecTech was instrumental in bringing in other public sector financing sources. In meeting the locational requirements of CDFC, SelecTech came in contact with a great number of sources of financing and public assistance that it would have less of a chance of accessing.

2. CDFC investment staff did not actively solicit private sector co-investing. It was mostly through the efforts of SelecTech team of entrepreneurs that all the co-investors in this deal came together. It is not clear if it would be always beneficial if CDFC played a facilitation and brokerage role esp. in introducing deals to other potential partners. The entrepreneurs ability to locate and bring together potential investors is itself a test of the entrepreneurs resourcefulness.

3. This case does not strongly demonstrate that the CDFC approval process is slow and inefficient. Staff, however, express great frustration over the detailed level of decision making that the Board engages itself leaving staff with very little discretion over investment decisions and requiring a cumbersom reporting process. This level of involvement has both its merit and demerits. On the positive side, investments benefit from a much closer scrutiny of detached observers. Since staff allotted a great amount of time preparing a case for an investment, they can be seen as having some sort of a vested interest in having their recommendations approved. On the other hand, Board's inability to understand a deal in the level of detail that staff come to know a proposal, can lead to decisions against funding good proposals. A move on the part of the Board to make broader policy and strategy decisions and allow management some discretionary over investments, particularly at later stages, can greatly enhance the efficieny of the organization.

4. Co-investors must be proactive in reducing transaction costs. In the case of SelecTech, although it was not necessarily possible to reduce legal expenses at the first round of investment, upon the urging of SelecTech management, the investors did obtain the one legal council on the subsequent rounds of financing.

5. It is not entirely clear to the author as to why the investors have been so lax on letting SelecTech "slip by" with lower than expected sales. Part of the reason might be their recognition that the company needs to achieve operational efficieny prior to committing to large orders. Another part might be their understanding that, as unpleasent as it is, they can always replace management to improve company performance and that at this stage of the investment, a weaker performance gives them a stronger negotiating position.

6. The case also demonstrates that public sector venture capital investments can be as concerned about viability of the business they invest in as the private sector investor. The notion that the public sector programs subsidize weak businesses and are less concerned with cost controls and stronger management of the firms they invest in do not hold true in the case of SelecTech.

7. Finally, the SelecTech experience is a test of CDFC's ability to become a true venture capital fund, concentrating on equity investments at very early stages of a company's development. With annual investments of $1-2 million in 3 or 4 businesses, it's been behaving more like a seed venture capital fund. And with the trends in the venture capital financing toward larger and later stage transactions, there is a niche market for CDFC's resources. However, with limitations on its fund-raising capacity and relatively cumbersom decision-making process, it is hard to see how it can co-invest with the private sector on equal footing. The case, however, also demonstrates that discussion of each co-investor's limitations early on can substantially reduce the chance of debilitating tensions between these partners.

CHAPTER V. CONCLUSIONS AND RECOMMENDATIONS

Embedded in the forgoing analyses and case study are some lessons which inform both the theory and the practice of small business finance.

Lessons for Theory

As discussed in Chapter I, capital market imperfections in providing credit to small businesses are often used as justification for initiating public sector programs. The above discussion, however, gives reason to believe that public sector programs can themselves be plagued by the kinds of problems that give rise to these imperfections and, hence, by implication exacerbate the conditions they have set out to correct. Two instances -- one having to do with transaction costs and the other with information asymmetries -- illustrate this point.

In the case of market failure stemming from high transaction costs associated with small business lending, the case study of SelecTech offered the example where large legal expenses which plague many of these transactions. It also shows ways in which the parties involved developed to reduce these costs when sufficient comfort and trust was developed between the co-investors. Another, more hidden, source of increased transaction cost is the routine reporting requirements placed on public sector investment officers. Without a doubt transparency and accountability are paramount objectives in public sector programs. This, however, does not imply that public-sector programs must be plagued by reporting requirements. The CDFC investment officer, for instance, reported spending up to a week each month on Board related matters.

In the case of market failure stemming from information asymmetries, great deal of the information gap is bridged during the due dilligence process. The Board of Director approval process, however, tends to negate the enhanced knowledge of the investment officers by subjecting their recommendations and analyses to a brief and precursory review process. Two to three months of due dilligence is given a few hours consideration at the end of which decisions are made. This process is to a great extent unavoidable. Even the most efficiency and profit conscious organizations might employ a decision making process of this kind. In many

organzations, however, greater discretion is given at the management level. Some form of greater decision making authority at lower levels might reduce these problems.

Lessons for Practice

Networking and Marketing -- Many CDCs have been a source of information on investment opportutnities for the Venture Fund. The case of SelecTech, however, illustrates that the co-investment was done more as an effort of the entrepreneur than as a result driven by CDFC policy. This particularly true of the private sector investments. Greater networking with the private sector investors might enable CDFC to leverage a greater amount of its funds with the private dollars. CDFC can use it success in selecting promising firms as a marketing strategy for this. Throught the marketing effort, however, the limitations of CDFC must be openly addressed. The Venture Fund has and at least in the near future will be making three to four investments per year. There is a danger in marketing this program too aggressively and raising too many unrealistic expectations about the number and amounts of investments the Venture Fund can undertake. This is not to say that there is no advocacy role to be played by the Venture Fund.

Leveraging Targets -- The case of SelecTech also illustrates that it takes a quasi community to start a business. So far more than three fourths of all the funding received by SelecTech has been from public sources. It is not clear whether this was unavoidable. Perhaps greater pressure on the entrepreneurs to solicit private investment would have yielded better results. One way to institute this might be to place a more realistic leveraging goals than CDFC currently requires. A reasonable strategy might be to set some initial leveraging ratio with periodic increases. For instance, the Venture Fund can start with a 1:1 for the first year, 1.5:1 for the second year, 2:1 for the third year, etc. Survey results also indicate that variations in required leverage ratios might be justified. For instance, sectoral targets, e.g., different targets for manufacturing, services, and high tech can yield better results.

Board Approval Process -- As noted above there are many ineffiencies and problems in the Board Approval Process. The nature of CDFC and its investments make necessitate some of these inefficiencies. However, there is considerable room for improving this process. This study

does not have enough information to provide a well informed recommendation on this matter. Some areas which merit further consideration are granting greater discretion to the ivestment officers and changing the orientation of the Board to be concerned with Broader policy and strategy issues.

Appendix 1. CDFC PROGRAMS

A. The CDFC Funds (i.e., funds capitalized and managed by CDFC)

1. The Venture Fund
2. The Real Estate Fund
3. The CDC Working Capital Fund

B. The Partnership Funds (i.e., funds for which CDFC is responsible for jointly with other non-profit or govt'l agency)

4. CDFC Minority and Women Contractor Bond Program
5. Collateral and Technical Assistance Loan Program (CATA)
6. Commonwealth Enterprise Fund (CEF)

C. The Managed Funds (i.e., funds which CDFC is in charge of managing but not capitalizing)

7. The Urban Initiative (UIF)
8. Contractor Working Capital Loan Program (CWCL)

Appendix 2. COMPLETE TABLES ON LEVERAGING PERFORMANCE

Table 1. Financing Raised by Venture Fund Firms by Source, 1986-1996

Source of Co-Financing	Raised Since First CDFC Investment			Raised as a Direct Result of CDFC Investment		
	Total (Frequency)	Average	Range	Total (Frequency)	Average	Range
Public/quasi	$2,850,000 (6)	$475,000	152k-1,025k	$2,150,000 (4)	$430,000	152k-1,025k
Venture Capital	$500,000 (1)	$500,000	500k	$500,000 (1)	$500,000	500k
Bank	$20,050,000 (10)	$2,005,000	200k-10,000k	$2,500,000 (6)	$416,667	200k-1,000k
Finance/Leasing Co	$2,290,000 (8)	$286,250	20k-500k	$420,000 (2)	$210,000	20k-400k
Individual investors	$11,987,000 (7)	$1,712,429	30k-9,500k	$ - (0)	$ -	$ -
Private corporations	$2,830,000 (2)	$1,415,000	1,000k-1,830k	$ - (0)	$ -	$ -
Public Stock Offering	$ - (0)	$ -	$ -	$ - (0)	$ -	$ -
Retained Earnings	$200,000 (1)	$200,000	200k	$ - (0)	$ -	$ -
Other	$ - (0)	$ -	300k	$ - (0)	$ -	300k
Total	**$40,707,000 (35)**	**$1,163,057**		**$5,570,000 (14)**	**$397,857**	

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

(*) Numbers in parenthesis next to the totals represent the number of respondents who identified themselves as using that particular source of financing.

Table 4. Financing Since Venture Fund Investment per Business Sector, 1986-1996

Source of Co-Financing	High Technology		Manufacturing		Services		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$1,175,000	2	$1,325,000	2	$350,000	2	$2,850,000
Venture Capital	$ -		$500,000	1	$ -		$500,000
Bank	$7,700,000	4	$10,650,000	3	$1,700,000	3	$20,050,000
Finance/Leasing Co	$550,000	2	$340,000	3	$1,400,000	3	$2,290,000
Individual investors	$10,927,000	2	$1,060,000	5	$ -		$11,987,000
Private corporations	$2,830,000	2	$ -		$ -		$2,830,000
Public Stock Offering	$ -		$ -		$ -		$ -
Retained Earnings	$ -		$200,000	1	$ -		$200,000
Other	$ -		$ -	0	$ -		$ -
Total	$23,182,000	12	$14,075,000	15	$ 3,450,000	8	$40,707,000
Total CDFC	$1,081,000	4	$3,205,000	10	$1,666,000	6	$5,952,000
Leverage ratio	21.44		4.39		2.07		6.84

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

Table 5. Financing as a Direct Result of Venture Fund Investment per Business Sector, 1986-1996

	High Technology		Manufacturing		Services		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$675,000	2	$1,325,000	2	$150,000	1	$2,150,000
Venture Capital	$ -		$500,000	1	$ -		$500,000
Bank	$1,750,000	3	$300,000	1	$450,000	2	$2,500,000
Finance/Leasing Co	$ -		$20,000	1	$400,000	1	$420,000
Individual investors	$ -		$ -		$ -		$ -
Private corporations	$ -		$ -		$ -		$ -
Public Stock Offering	$ -		$ -		$ -		$ -
Retained Earnings	$ -		$ -		$ -		$ -
Other	$ -		$ -		$ -		$ -
	$2,425,000	5	$2,145,000	5	1,000,000	4	$5,570,000
	$1,081,000	4	$3,205,000	10	$1,666,000	6	$5,952,000
	2.24		0.67		0.60		0.94

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

Table 6. Financing Since Venture Fund Investment by Size of Business*, 1986-1996

Source of Co-Financing	Less than 1 million		1 million - 5 million		more than 5 million		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$1,325,000	2	$550,000	1	$975,000	3	$2,850,000
Venture Capital	$500,000	1	$ -		$ -		$500,000
Bank	$10,300,000	2	$2,750,000	4	$7,000,000	4	$20,050,000
Finance/Leasing Co	$40,000	2	$1,000,000	3	$1,250,000	3	$2,290,000
Individual investors	$1,060,000	5	$1,427,000	1	$9,500,000	1	$11,987,000
Private corporations	$ -	0	$1,830,000	1	$1,000,000	1	$2,830,000
Public Stock Offering	$ -		$ -		$ -		$ -
Retained Earnings	$ -		$200,000		$ -		$200,000
Other	$ -		$ -		$ -		$ -
Total	$13,225,000		$ 7,757,000		$19,725,000		$40,707,000
Total CDFC	$2,605,000		$2,056,000		$1,291,000		
Leverage ratio	5.08		3.77		15.28		

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

(*) Business size is defined as first year sales revenue plus sales revenue in 1996 divided by 2.

Table 7. Financing as a Direct Result of Venture Fund Investment by Size of Business*, 1986-1996

Source of Co-Financing	Less than 1 million		1 million - 5 million		more than 5 million		Total
	Amount	Count	Amount	Count	Amount	Count	
Public/quasi	$1,325,000	2	$550,000	1	$275,000	2	$2,150,000
Venture Capital	$500,000	1	$ -	0	$ -	0	$500,000
Bank	$300,000	1	$1,200,000	2	$1,000,000	3	$2,500,000
Finance/Leasing Co	$20,000	1	$400,000	1	$ -	0	$420,000
Individual investors	$ -		$ -		$ -		$ -
Private corporations	$ -		$ -		$ -		$ -
Public Stock Offering	$ -		$ -		$ -		$ -
Retained Earnings	$ -		$ -		$ -		$ -
Other	$ -		$ -		$ -		$ -
Total	$2,145,000		$2,150,000		$1,275,000		$5,570,000
Total CDFC	$2,605,000		$2,056,000		$1,291,000		
Leverage ratio	0.82		1.05		0.99		

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

Table 8. Financing Since Venture Fund Investment by Size of Investment*, 1986-1996

Source of Co-Financing	Less than 200k Amount	200-299k Amount	300-399k Amount	more than 500k Amount
Public/quasi	$925,000	$150,000	$ -	$1,775,000
Venture Capital	$ -	$ -	$ -	$500,000
Bank	$5,700,000	$11,000,000	$2,650,000	$700,000
Finance/Leasing Co	$250,000	$920,000	$600,000	$520,000
Individual investors	$9,570,000	$740,000	$80,000	$1,597,000
Private corporations	$1,000,000	$ -	$ -	$1,830,000
Public Stock Offering	$ -	$ -	$ -	$ -
Retained Earnings	$ -	$ -	$200,000	$ -
Other	$ -	$ -	$ -	$ -
Total	$17,445,000	$12,810,000	$3,530,000	$6,922,000
Total CDFC	$380,000 (4)	$1,200,000 (5)	$2,166,000 (7)	$2,206,000 (4)
Leverage ratio	45.91	10.68	1.63	3.14

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

(*) No investments were made in the $400-499k range, hence no column for that range is included here.

Table 9. Financing as a Direct Result of Venture Fund Investment by Size of Investment*, 1986-1996

Source of Co-Financing	Less than 200k Amount	200-299k Amount	300-399k Amount	500k and more Amount
Public/quasi	$ 425,000	$ 150,000	$ -	$ 1,575,000
Venture Capital	$ -	$ -	$ -	$ 500,000
Bank	$ 950,000	$ 250,000	$1,300,000	$ -
Finance/Leasing Co	$ -	$ 400,000	$ -	$ 20,000
Individual investors	$ -	$ -	$ -	$ -
Private corporations	$ -	$ -	$ -	$ -
Public Stock Offering	$ -	$ -	$ -	$ -
Retained Earnings	$ -	$ -	$ -	$ -
Other	$ -	$ -	$ -	$ -
Total	$1,375,000	$800,000	$1,300,000	$2,095,000
Total CDFC	$380,000 (4)	$1,200,000 (5)	$2,166,000 (7)	$2,206,000 (4)
Leverage ratio	3.62	0.67	0.60	0.95

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

(*) No investments were made in the $400-499k range, hence no column for that range is included here.

Table 10. Financing Since Venture Fund Investment by Type of Investment, 1986-1996

Source of Co-Financing	Growth Investments	Retention Investments
Public/quasi	$ 2,550,000	$ 300,000
Venture Capital	$ 500,000	$ -
Bank	$ 7,500,000	$ 12,550,000
Finance/Leasing Co	$ 1,290,000	$ 1,000,000
Individual investors	$ 11,917,000	$ 70,000
Private corporations	$ 2,830,000	$ -
Public Stock Offering	$ -	$ -
Retained Earnings	$ -	$ 200,000
Other	$ -	$ -
Total	$26,587,000	$14,120,000
Total CDFC	$3,756,000 (11)	$2,196,000 (9)
Leverage ratio	7.08	6.43

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

Table 11. Financing as a Direct Result of Venture Fund Investment by Type of Investment, 1986-1996

Source of Co-Financing	Growth Amount	Retention Amount
Public/quasi	$ 1,850,000	$ 300,000
Venture Capital	$ 500,000	$ -
Bank	$ 1,300,000	$ 1,200,000
Finance/Leasing Co	$ 20,000	$ 400,000
Individual investors	$ -	$ -
Private corporations	$ -	$ -
Public Stock Offering	$ -	$ -
Retained Earnings	$ -	$ -
Other	$ -	$ -
Total	$ 3,670,000	$ 1,900,000
Total CDFC	$3,756,000 (11)	$2,196,000 (9)
Leverage ratio	0.98	0.87

Source: Author's analysis of Seidman survey of Venture Fund investments, 1997

Appendix 3. CDFC BOARD of DIRECTORS

John E. Marston, Chairman
Vice President, Corporate Banking, Citizens Bank of Massachusetts

Michael F. Glavin, Vice Chairman
Manager of CRA Programs, Vice President of Govt. Affairs and Community Investment, Bank of Boston

Secretary Charles D. Baker
Executive Office for Administration & Finance
Represented by **Pablo J. Calderon**, Executive Director, Minority Business Enterprise

Director Jane W. Gumble
Department of Housing and Community Development
Represented by **Marc A. Slotnick**, Deputy Director for Policy
Alternate: **Henry Longmire**, Program Manger, Massachusetts Community Capital Fund

Director David A. Tibbetts
Department of Economic Development
Represented by **Rachel V. Kemp**, Director of Business Services, Massachusetts Office of Business Development

Caroline J. Chang
Regional Manager, U.S. Department of Health & Human Services,
Office of Civil Rights -- Region I

Nelson Merced, Exec. Director, Inquilinos Boricuas en Accion

Christopher Sikes, Director, Western Massachusetts Enterprise Fund

George Woods, International Association of Machinists & Aerospace Workers

Appendix 4. PROFILES OF CLAFLIN GENERAL PARTNERS

Thomas Claflin II -- Tom Claflin has been in the venture capital industry since 1967 when he started working for T.A. Associates in Boston. In 1973 he joined Paine, Webber, Jackson, Curtis Inc. where he acted as a general partner in its venture capital partnership and as a vice president of Paine Webber. In 1978 he formed Claflin Capital Management and its initial partnership, Claflin Capital. He is a 1967 graduate of Harvard Business School.

Lloyd C. Dahmen -- Lloyd Dahmen joined Claflin Capital Management in 1979. Prior to joining Claflin, he had work at Scudder, Stevens, and Clark as well as Franklin Managment as portfolio manager and director of research. He is a 1965 graduate of Harvard Business School.

Joseph Stavenhagen -- Joe Stavenhagen joined Claflin Capital Management in 1982. He was previously executive vice president of Shear Development Corporation, a provider of software systems for bank trust departments. Prior to that he held general and financial management positions in several technology based companies in the Boston area. He is a 1954 graduate of Harvard Business School.

John O. Flender -- John Flender join the firm in 1986. From 1979 on, he was with Transatlantic Capital Corporation, a Boston based SBIC, as its treasurer and, more recently, its president. He has also served in general management capacity at the MIT Development Foundation, Inc. He is a 1954 MIT graduate.

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ENDNOTES

[1] The Advisory Committee on the Coordination of Economic Development Programs in the Commonwealth, Final Report, June 24, 1992, Chaired by Stephen Tocco (Secretary of Economic Affairs, State of Massachusetts).
[2] This is part of an argument made by J. D. von Pischke (1991) as discussed in E. Rhyne (1994).
[3] Throughout this paper I will be using the efficiency model of capital allocation which is the predominant model used in theoretical discourse on small business finance.
[4] Small businesses, particlarly new start-ups, are characterized by their weak ability to cover operating expenses. They are in general perceived to be much more vulnerable to fluctuating economic conditions than larger firms, hence, have a higher risk for investors.
[5] Some have aruged that even under the conditions of prefect competition, the availibility of credit to small businesses is not guaranteed (Kitchen 1989). The level of perceived risk by investors might be too high which when reflected in the higher price of the investment for the borrowing small business, would only increase the failure risk of the small business.
[6] This increased cost, of course, need not be prohibitive. It is also not something that is insurmountable (as will be discussed later technological change can significantly alter the situation as it currently does with the rapid introduction of credit scoring techniques that many banks are adopting).
[7] p. 214, Feb. 28, 1985 Statement of Hon. David A. Stockman, Dirctor, OMB, to the US Senate, Small Business Committee.
[8] p. 217, Stockman, Statement to Small Business Committee, US Senate.
[9] p. 218, Stockman, Statement to Small Business Committee, US Senate.
[10] As cited by Parzen & Kieschnick (1992) Credit Where It's Due: Development Banking for Communities. Temple University Press: Philadelphia. Such point was made by a Ford Foundation representative.
[11] p. 71, Parzen & Kieschnick, Credit Where It's Due
[12] SSBICs are mandated to fund businesses owned by socially or economically disadvantaged individuals. It is a very small and highly mismanaged component of the SBA's investment program. In the 1996 Small Business Improvements Act mandated that effective Oct. 1, 1996 no new SSBIC may be established.
[13] US Government Accounting Office, "Update of Information on SBA's Small Business Investment Company Programs" (February 1997), Appendix I, p. 11.
[14] Unless otherwise noted the SBA definition of "small business" will be used. That is, firms with assets less than $25 million.
[15] US Government Accouting Office, "Small Business: A Comparison of SBA's 7(a) Loans and Borrowers with Other Loans and Borrowers" (September 1996).
[16] Other signficant factors which are not mentioned in the CFED literature review but could conceivably accompany varying leverage ratios are: stage of development of business being financed, the reputation of the RLF, management capacity, RLF's underwriting criteria, and attitudes of the local private-sector financial intermediaries toward cooperation with the public sector.
[17] Carl Sussman, Open for Business: The Massachusetts Community Development Corporation as a Vehicle for Economic Development Through Public Equity Investment. pp. 3-4
[18] Peter S. Fisher, "State Venture Capital Funds as an Economic Development Strategy," p. 166.
[19] Sussman, Open for Business, p. xxx.
[20] For a detailed account of this conflict see Sussman (1981), pp. 5-7.
[21] This amounts to 16 firms out of the total of 20 which responded.
[22] For these uncertain cases, no files exist on these firms and the investment officer during whose time these investments were made has passed away
[23] The questionnaire for the firm no longer operational was completed by the local CDC.
[24] The statistics on the number of employees are from the Seidman survey, which can be used as a fair approximation of the acutual numbers.
[25] Based on information from Venture Fund files.

[26] This is the average for the firms in this revenue category that are still operational. It also excludes one outlier, viz., a 22 year old firm which has show a substantial improvement of 102% in revenues since first CDFC financing in 1995.

[27] Excluding one outlier of 134 years.