THE CAPITAL CRUNCH:

Small High-Technology Companies and National Objectives During a Period of Severe Debt and Equity Shortages

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The research forming the basis for this report was conducted pursuant to Grant No. SB-1A-00077-01 from the Small Business Administration. The statements and conclusions contained herein are those of the author and do not necessarily reflect the views of the U.S. Government in general, or of the Small Business Administration.
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Final Report of a Research Project Performed
by Research & Planning, Inc. for the
Small Business Administration

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January, 1983

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Acknowledgements

A number of people were responsible for bringing this project to a successful conclusion. Susan Boone served as the primary research assistant for the section on large company practices. Helpful input on the economic background was provided by William H. Gruber and Eric Plugis. William Rosenfeld was responsible for setting up the data management system. The actual software adaptation was done by Henry Obermayer and Robert Gruber. Data entry and computer analysis were performed by Caroline Wiltshire and Daniel Mezger. All the graphic work for the questionnaire and the figures throughout the report was supervised by Wendy Lull with the skillful assistance of Paul Calhoun. Able typing and production assistance was provided by Diane Collins and Michele David. Finally, a special word of appreciation to Jenifer Lippincott for her help in editing the final report.

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I. INTRODUCTION

The years between 1979 and early 1982 brought unprecedented economic conditions: double digit inflation; interest rates that stayed over 15% for a prolonged period of time; increasing unemployment; and a general decline in the economy. These conditions affected various sectors of the economy in different ways and to varying degrees. The research for this report focused on the impact of these conditions on small technology-based businesses. Small technology-based companies were chosen for careful examination because of the important role they play in job creation and innovation, both crucial ingredients in restoring economic strength and vitality. What effects have the recent difficult economic conditions had on these companies? Have they been able to weather the storm in fairly good shape or have they been held back to the point of stagnation or suffocation?

Studies have shown that from 1969 to 1977 small businesses were responsible for a large percentage of the jobs created in the private sector. Many of those jobs were created by young, innovative companies that expanded rapidly as they brought new technology into the marketplace. This phenomenon is most easily seen in the computer industry, but other technical fields have also contributed to this type of spectacular growth. As older industries like the auto, textile, and steel manufacturing weaken in the face of aggressive world competition, U.S. economic survival becomes dependent on rapid expansion in new, innovative areas.

Frequently, the newest and most exciting developments come into the commercial marketplace via a small company. Major innovations require investing in long term, risky areas where markets may not be clearly defined. Very few large companies are
willing to make such commitments. The difficulties encountered by Chester Carlson in trying to interest companies in the xerography process is a well known example. Hence, a significant proportion of future economic growth is dependent on the viability of the technology-based, small business sector and its ability to continue to introduce new products and processes.

There is great concern among economists and planners that the recent economic climate and monetary conditions may have had a detrimental effect on this sector of the economy so important for the future. If that is the case, ways must be found to alleviate the problems specific to small, high-technology companies. In order to do that, we need to understand which aspects of the recent difficult economic situation have had the greatest negative effects on small companies and to what extent their problems may be independent of the current economic climate.

There are many aspects of technology-based business development which are beyond the immediate influence of policy decisions. However, there is one area in which government policies and regulations can have a profound effect, the availability of capital. A key factor in the ability of any business to survive and grow is its ability to obtain sufficient financial resources to support that growth. The research performed in this project was designed specifically to explore how well small, technology-based businesses have been able to acquire the funding they required and what the consequences were when funding was not obtained. In the process, there was an effort made to identify what changes could be implemented that would improve the ability of small, technology-based firms to obtain necessary capital.
A. Hypotheses

The research structure was based on the following initial set of hypotheses:

1. Capital resources during the last two years (1980-1981) have been insufficient to satisfy the needs of small, high-technology companies.

2. Present available capital resources (in 1982) are insufficient to satisfy the current needs of small, high-technology companies. Especially scarce is seed capital for fledgling companies in high risk, technological businesses.

3. Small companies have been less able to cope with reductions in available investment capital than large ones.

4. High interest rates, inflation and frequent fluctuations in monetary policy produce disproportionate financial hardships for small business.

5. Insufficient funds for small, high-technology companies has had disastrous consequences for development within the sector as well as for national economic recovery.

B. Work Plan

The work plan for this study consisted of several steps:

1. An examination of the economic conditions of the two years prior to the study and their relationship to historical conditions to provide a general economic framework for the rest of the project.
A survey to determine what effects the availability and cost of capital have had on small, high-technology companies.

3. A survey of venture capitalists and other capital providers to determine the extent of capital resources available for various uses.

4. An examination of the means used by large companies to cope with recent monetary conditions.

5. An analysis of results to explore:

(a) the sufficiency of capital resources available to meet current and anticipated capital needs for small, high-technology companies, including an assessment of the extent of any "capital gap";

(b) the relative ability of small and large companies to cope with capital shortages and other recent adverse financial conditions;

(c) the long range likelihood of small, high-technology companies to fund desired activities; and

(d) possible government policy options and their impact on small, high-technology companies.

C. General Conclusions

The research clearly shows that the years 1980 and 1981 have been an exceedingly difficult period for many small businesses. The comments received from the survey of small, technology-based companies indicated that the leading cause of their problems was
high interest rates followed closely by a reduction in sales as the economy declined and demand lessened. Many blamed the generally poor economic climate on the high interest rates. Other problems mentioned specifically, but much less often, were inflation, lack of available capital, government regulations, difficulty in collecting accounts receivables, and uncertainty about both the economy and government policy. One clear indicator of a major area of difficulty was the set of answers to the question "Can your suppliers raise prices faster than you?" Two-thirds of those answering said "generally" or "always". The overall effect of these conditions mentioned most often were reduced profitability and the delay or abandonment of expansion activities.

The survey showed that a large proportion of the small companies having major difficulties acquiring capital did not want a great deal of money. When they failed to raise these funds, they had to give up or delay plans for expansion - exactly what is needed to create jobs. When companies were asked about their plans for the immediate future, they indicated that they wanted relatively small amounts of money in order to keep their operation going, to expand their enterprise, or to introduce new products.

Unfortunately a difficult economy with falling sales and high interest rates tends to make these companies even less attractive to their major source of funds - the commercial bank. Sixty-five percent of the long-term debt of those who borrowed money in the recent past came from commercial lending institutions - primarily banks with a few from finance companies. The lending criteria of these institutions allow banks to help finance a new plant but not the development or introduction of a new product. As soon as any element of risk is introduced, there are substantial problems for the lender and the borrower is often forced to find more appropriate sources.
For the technology-based business, it is particularly difficult to obtain adequate capital for the early stages of start-up and development. The problem is clearly aggravated by the high interest rates and uncertain economic conditions, but is more fundamental in nature. There are simply insufficient incentives to overcome the degree of risk involved in investing in unproven organizations.

1. Verification of Hypotheses

The hypotheses, stated in the study proposal, were generally verified:

Hypothesis 1. Capital resources during the last two years have been insufficient to satisfy the needs of small, high-technology companies.

Twenty of the 103 companies responding to the survey said they had been unable to raise sufficient capital during the last five years. Most had tried and failed more than once to obtain desired capital and had contacted a variety of capital sources. Although the numbers in the sample were small, companies whose principal business activity is R&D had a significantly higher proportion of problems obtaining capital. That was the only category of principle business activity in which the majority of companies had difficulty.

Hypothesis 2. Present available capital resources are insufficient to satisfy the current needs of small, high-technology companies. Especially scarce is seed capital for fledgling companies in high risk, technological businesses.

The problem is not only a lack of capital available for investment, when money supplies are short, but the mismatch
between the criteria used by different sources of financing and the characteristics and needs of small technology-based firms seeking money. For example, venture capital funds have such large amounts of money to manage that most are reluctant to invest less than $500,000 in any single company. But the companies we surveyed generally wanted a much smaller amount of money and few are likely to provide the big pay-back in five to seven years that the venture capitalist is seeking.

Small business is at an inherent disadvantage when trying to raise small amounts of capital from traditional sources. Whether the capital provider is an institutional lender or venture capital firm, evaluating and administering any investment has a significant initial cost. Hence, to give out money in small amounts requires putting a high price on the investment. Many organizations simply refuse to participate when small amounts are involved. The problem is compounded when the business is in a new area where capital providers have little knowledge or understanding of the operational environment and the extent of the risk involved. This is particularly true when trying to obtain bank financing backed by assets other than real estate.

There is a small amount of seed capital available for early stage development and company start-up activities in some parts of the country. Most of it is only accessible to experienced entrepreneurs with a prior record of success. For the inventor/entrepreneur trying to start a company for the first time seed capital is extremely hard to find. The most viable sources are private investors. Unfortunately they are hard to find, and when low risk real estate investments pay 18-20%, it is difficult to convince investors to take a chance on a risky, start-up venture.
There is a great disparity in the capital available from all sources to small, technology-based businesses in different parts of the country. The northeast, especially eastern Massachusetts, and the San Francisco Bay Area have much more knowledgeable and receptive financial communities. Other areas where significant activity is developing include Minneapolis, Atlanta, Washington, D.C., and Denver. There are many areas where the potential for technology-based business development exists but the lack of available capital is a serious detriment to such development. Areas such as Atlanta and Pittsburgh, where the presence of a major technological university and industrial research laboratories is indicative of the existence of technical talent, have recognized the need for a strong financial network to support startup activity. Local organizations in those areas are actively seeking to build that financial structure but in many areas that process has not yet begun.

Hypothesis 3. Small companies have been less able to cope with reductions in available investment capital than large ones.

There are a number of important mechanisms available to large organizations to generate major amounts of capital. The value of a sizeable income from current profitable operations to fund other activities cannot be overstated. Large companies also have many options for raising capital externally through such instruments as bonds, stock, and commercial paper all of which can be issued on very short notice and sold in either foreign or domestic markets.

Hypothesis 4. High interest rates, inflation and frequent fluctuations in monetary policy produce disproportionate financial hardships for small businesses.
Inflation during the two year period prior to this study had a serious impact on small businesses. Many companies were unable to raise prices fast enough to keep pace with the rapidly rising costs of both supplies and salaries for employees. Companies that delayed borrowing when interest rates started to rise often found themselves with no choice but to borrow later at even higher rates. Those rates were generally 4-5 percentage points higher than what large corporations pay. Uncertainty and the resultant inability to plan were cited as major problems by a large number of small companies who have fewer resources and less flexibility in trying to cope with rapid fluctuation.

Hypothesis 5. Insufficient funds for small, high-technology companies has had disastrous consequences for development within the sector as well as for national economic recovery.

The combination of all the various negative factors have left many small companies reeling from the impact and in shaky financial condition. Even those getting by are clearly not able to support the growth they desire.

The companies who failed to raise the capital they needed listed the major consequence as delayed expansion. The next most frequently reported consequences were reduced expenditures for capital equipment, reduced R&D expenditure, and delayed introduction of new products. An indication of possible future consequences showed up when 25% of the companies that returned the survey answered yes to the question "Is your company likely to sell out or disband if conditions do not improve?". The current small business failure rate seems to bear out these dire predictions.
D. Recommendations

The following recommendations were chosen as examples of actions that can help alleviate specific aspects of capital availability problems identified by this study. This is not meant to be an exhaustive list and there are other steps that could be taken that may also be quite beneficial. Many of the recommendations made here have been discussed and endorsed by such groups as the White House Conference on Small Business, the SEC Government-Business Forum on Small Business Capital Formation, and Small Business United.

1. Institutional Lenders

Many banks and other commercial lending institutions have too little understanding of how to evaluate the viability and credit worthiness of small, technology-based businesses. As a result, they are often unwilling to provide even appropriate, asset-based, debt financing for these companies. In addition, the interest rates that must be charged to compensate for the overhead costs so that the bank can make money on a small loan are extremely high.

In general, banks should be encouraged to develop small business specialists who understand the needs and the environment of businesses based on the changing technology of today and tomorrow. Some specific areas for possible government action are:

- SBA loan guarantees could be scaled to provide higher percentages of guaranteed funds for technology-based businesses than other businesses.

- Interest subsidies for loans to small technology-based businesses could be provided to reduce the effective
cost of borrowing for the small company (e.g. via an investment tax credit for the lender).

SBA loan guarantees could be provided for other capital pools such as pension funds to provide loans to small businesses.

Interest charged on money lent to SBIC's could be reduced if the SBIC provides equity capital to small technology-based enterprises.

2. Retained Earnings

A common complaint from companies is that they cannot hold on to sufficient capital in good times for later investment in equipment, R&D or expansion. Consideration should be given to:

Modification of the present corporate income tax rates and bracket structure so the highest rate doesn't apply until corporate taxable income reaches $500,000. The lowest bracket should be increased substantially from its $25,000 level without increasing the 15% rate applicable after 1982.

Raise the accumulated earnings tax exemption from its present level of $250,000.

Allow for expensing of R&D equipment.

Exempt the first $25,000 of income from all taxes.

3. Private Investors

Private investors could be a much more important source of capital for small business, especially during the early stages of development when significant risk is involved. The presence of
many secure, attractive investment opportunities and tax shelters for these investors means that major incentives are needed if capital is to flow into the small business sector. In addition, there are inadequate mechanisms for linking investors with qualified investment opportunities. The problem of linking mechanisms is probably best handled at the state or local level. Most private investment is made close to home where there is a sense of personal attachment.

On the other hand, major financial incentives to private investment can be initiated best at the national level via regulation and tax law changes. Examples of incentives that could encourage private investment are:

The establishment of a "Small Business Participating Security", a hybrid form of security that could offer both a fixed rate of interest and a percentage of profit to the investors. Such a security could include such tax features as: capital gains treatment on the investors' profits; deductibility by the small business of both the profits and interest paid out by the business; and, an investment tax credit to the investor for such investment.

Establishment of an investment tax credit, equal to 10% of the funds invested, for investment in a "Qualified Small Business Investment" (QSBI).

The capital gains tax, otherwise payable with respect to any investment liquidations, upon election could be deferred on the portion of the capital funds which are reinvested in a QSBI within a certain period of time, from the date of the transaction producing such capital gain.
After holding an equity or equity-type investment made directly in a small business for more than five years, the seller of such an investment would be entitled to exclude 80% of any gain realized on such investment.

Eliminate the ($50,000/100,000) limitation on loss deductions for §1244 small business stock. The stock limitation for §1244 corporations should be increased from $1 million to $5 million. Corporations and individuals should be allowed to take ordinary loss deductions on all instruments (i.e., debt, preferred stock and guarantees, as well as common stock) used to invest in §1244 corporations.

E. Non-federal Influences

Eastern Massachusetts is a particularly fertile area for the start-up and growth of technology-based businesses. If anything, the recent difficult economic climate and cutbacks by large organizations have accelerated this process. Ideally we would like to identify those elements in the local environment that play a major role in stimulating the high level of entrepreneurial activity here. While this research cannot provide a definitive list, it is possible to indicate some of the factors that experienced people believe are important.

The following are some of the elements cited as relevant to technology-based business development in Eastern Massachusetts in numerous discussions with people concerned with this process:

1. Technological capability - frequently the result of the presence of a major technological university or industrial or government research laboratory.
2. Positive interaction, formal or informal, between a technology-based institution and the technical business community. In the case of a university, a key is the attitude of the faculty toward direct involvement in business.

3. Successful technical entrepreneurs – the role models that say it can be done and encourage others to try.

4. Capital

   a. Individual investors who understand and believe in the opportunity provided by new technology and are willing to wait for many years before any real payoff.

   b. Individuals identifiable to outsiders who act as informal matchmakers between companies that need financing and other private investors.

   c. Banks that understand the small, high-technology business environment sufficiently to be willing to provide debt financing for such things as government accounts receivables or technically sophisticated, expensive inventory.

   d. Venture Capital that provides both major amounts of money and management resources to the potentially high growth companies.

   e. State funding for early stage development and expansion of small technology-based businesses.
5. Assistance

a. Qualified business and professional consultants are readily available: legal, accounting, business planning, marketing, etc.

b. Training in all aspects of running a business is available from a variety of local colleges, business associations, and private consultants.

c. A generally supportive attitude within the small, technology-based business sector enhanced by local organizations that provide opportunities for informal exchanges of experiences, ideas and advice.

6. Skilled labor available for both management and technical functions.

Perhaps the most important of those elements cited are items 1, 3, 4a, 4c, and 5c. Number 2 is extremely important if commercial utilization of technology developed in the technical institution is one of the goals.

Knowledgeable people in other parts of the country were asked about the existence of these various elements in their locality. Frequently, there was a major technological institution present with clear R&D competence. Missing in most locations, however, were sufficient capital resources of all types. There was general agreement that sources of seed capital were totally inadequate and that banks were generally very conservative in their lending practices. Moreover there was little in place to provide informal support and advice to a struggling entrepreneur.
While private investors with sufficient capital may be present in the local community, the process of matching them up with appropriate investment opportunities is totally happenstance and inadequate.

Those who were actually involved in providing funding to companies in the early stages of development stressed the extent of management assistance that was required with the financial help. If any large number of companies are to be nurtured and developed, more trained management resources must be available.

Only in the San Francisco Bay area did the interviews indicate a rate of new company formation comparable to or greater than Eastern Massachusetts. Most of the California companies were spin-offs from existing companies. Adequate venture capital and some reasonable bank financing is available, but seed capital is still a problem. There is also a somewhat more competitive and less supportive high-technology, entrepreneurial community but role models and assistance are abundant.

If a governmental organization such as a business development office is interested in improving the climate for technology-based business growth, they will need to consider ways in which the following functions are effectively performed:

Convince the banking community of the importance of understanding these businesses, help train loan officers, and encourage the establishment of SBIC's that do venture financing.

Evaluate prospective businesses, help worthy ones plan strategy, build an organization and obtain capital, as well as reject those that are not viable.
Make contacts in the national venture capital community to attract money and hopefully eventually get someone to set up a local office.

Become part of the local private investor network so as to be able to secure investment capital for small businesses from these individuals who normally invest in tax shelters and real estate.

Find and identify resources in the local community that can assist technical entrepreneurs. Included may be things like helping the local business school or community college to offer courses relevant to the entrepreneur such as business strategy, financial management, marketing research, etc.
II. ECONOMIC FRAMEWORK

Although adequate capital is essential for the growth and survival of any company, many of the factors which determine the cost and availability of capital for a particular business are not within its control. Thus, the first step in this project was an examination of the economic climate during the two-and-a-half years prior to May 1982 to identify the external factors which may have affected small businesses' ability to raise capital and to provide a framework for a detailed analysis of the impact of recent economic conditions on small business. The following is a summary of this background study.

Providing for the financial well being of small, high-technology firms was unusually difficult during 1979-1981 due to the erratic economic conditions. High interest rates, growth in inflation, and periods of tight money all took their toll, but uncertainty in economic conditions may have been the most difficult factor of all, leaving little margin for error. As an illustration, the wide fluctuations in short-term interest rates and in bond yields are shown in Figures II.1 and II.2.

One positive development in economic conditions, resulting from the decrease in effective tax rates on capital gain contained in the Revenue Act of 1978, was the large increase in the amount of venture capital available for qualified companies. Surveys by the National Venture Capital Association of member firms in 1979, 1980, and 1981 revealed a marked increase in the flow of capital to member firms. The 1981 survey also reported that a much higher proportion of available funds was committed to venture, rather than to non-venture, capital investments. Similarly, a survey of underwriters who specialize in small company issues reported a steady increase in issues by firms with a net worth of ten million dollars or less.
INTEREST RATES AND BOND YIELDS

Source: ECONOMIC INDICATORS 8-82 pub. by Council of Economic Advisers

CORPORATE SECURITY ISSUES
GROSS PROCEEDS
QUARTERLY

Figure: II.2

Source: FEDERAL RESERVE CHART BOOK 8-82
Although increased access to venture and equity capital aids an important sector of the small business community, most small companies cannot, or do not, use venture capital or issue equity. Commercial banks are, by a wide margin, the primary source of capital for small business (see section III.E2 and Appendix B). Hence, the most important aspect of the capital markets for small business is bank policy: the availability and conditions for bank loans.

1979: In early 1979, the gap narrowed between the prime rate and the average rate charged on short-term loans made above prime although the prime rate itself did not fall. This reduced the cost of the loans most often available to small companies. However, during the next two quarters, as inventories built up and borrowing increased, the interest rate on business loans above prime rose sharply. In one unusual development, the commercial paper rate rose above the prime rate briefly in early November. This produced a shifting of many highly credit-worthy borrowers from commercial paper to prime rate loans, thus increasing the competition for bank loans. The Federal Reserve Bank moved to restrain the growth of money and credit; commercial banks tightened up their loan policies; and, toward 1979 year's end, business borrowing fell sharply (Figure II.3).

1980: 1980 was a financial roller coaster; its dominant feature a very stressful second quarter. Business began the year with a spate of heavy borrowing in spite of a rise in the prime rate to over 19%. An anticipated reduction in credit came when the Federal Reserve Bank instituted a multi-faceted special credit restraint program.
NET FUNDS RAISED BY NONFINANCIAL CORPORATIONS

SEASONALLY ADJUSTED ANNUAL RATES, QUARTERLY

BILLIONS OF DOLLARS

LONG-TERM FUNDS

BONDS

MORTGAGES

EQUITY ISSUES

SHORT-TERM FUNDS

BANK LOANS

OPEN MARKET PAPER AND OTHER


Figure: II.3

Source: FEDERAL RESERVE CHART BOOK 8-82
Borrowing then declined abruptly, with the bank loan rate growing a negative -10.7% during the second quarter. Consumer credit plummeted and the total number of mortgages issued dropped dramatically. The real financial action was in a remarkable increase in bonds issued (Figure II.2). In contrast, new stock issues were sharply off. Most small businesses were not directly involved in these markets but the general instability affected the entire business environment. The quarter was disastrous for business, with all major indicators sharply off.

The Federal Reserve Bank changed its over-all policy and phased out the special credit restraint program during May and June, 1980. In response, money and credit grew rapidly, although banks were still reluctant to make long-term loans at fixed rates due to uncertainty about the level of interest rates long-term.

New bond issues dropped by almost a factor of three to a more typical pace. Common stock issues were almost double the number in the previous quarter. Corporate profits, although still down from 1979, began to recover.

Unfortunately, stability did not settle in. Business loan demand grew in spite of a new high in interest rates - the prime reached 20.35 in December. Banks themselves began borrowing heavily and they were very reluctant to make loans at fixed rates. Once more the Federal Reserve stepped in to impose stricter requirements.

Business indicators for all of 1980 clearly reflected the stress of the second quarter. Especially telling was the business failure rate, up more than 50% over the rate in 1979.
1981: The economy was growing rapidly as 1981 began, but activity leveled out during the spring and summer and fell in the final quarter of the year. The early, strong economic growth helped boost corporate internal funds, greatly reducing the need for external financing. But as the economy slowed, corporate profits turned sluggish and businesses were forced to rely more heavily on credit markets. Sizeable unintended inventory accumulation also boosted business financing requirements.

For 1981, short-term interest rates began at record levels (Figure II.1). However, as demands began to subside early in the year both the prime rate and the commercial paper rate declined. Unfortunately for small business, the gap widened between the prime rate and the rate charged for loans over-prime. Small business also encountered increased competition for bank loans in this period as falling profits and unfunded 1980 tax liabilities increased the demand for short-term funds. Increased numbers of mergers in the third quarter also caused a surge in business bank loan demands. The overall decline in interest rates accelerated in October and November.

Short-term interest rates, although volatile, had moved down considerably over the course of 1981. In contrast, long-term rates rose substantially over the period, despite declines in the last quarter of the year (Figure II.2). Most business firms restricted their spending on investment goods in 1981. Demand was dampened by the rising corporate bond rates and by substantial excess production capacity. Thus the bulk of business borrowing in 1981 was in short-term markets, as most firms deferred making long-term commitments in an uncertain financial environment.

Economic activity was still contracting in early 1982 with declines in industrial production and employment.
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III. SURVEY TO DETERMINE THE EXPERIENCES AND VIEWS OF SMALL, HIGH-TECHNOLOGY COMPANIES

A major component of this study was a survey to determine the experiences of small, high-technology companies during the 1979-1981 period of high inflation, high interest rates, and uncertain capital markets, and to obtain their views on the effects of these conditions and of government policy on the companies' business. A copy of the survey sent out in April, 1982, is attached as Appendix A.

The survey was designed to ascertain: past capital resources and their uses; past unmet capital needs and their consequences; current capital needs and planned capital use; effect of recent monetary conditions on company capabilities, strategy, and profitability; and, the effect and usefulness of various government policy options and proposals on the small business sector. The sample population was to be chosen from the Indicative Data Base, based on Dun and Bradstreet Information and maintained by the SBA.

A. Methodology for Selecting the Sample Population

The task of the sample selection methodology was to ensure that the survey reached small, high-technology companies representative of this business sector nationwide. The size of the sample specified in the work plan is small (1000 companies). It was important, therefore, that the population from which the sample was drawn maximized the desired characteristics. Three parameters were of primary importance:

- size of establishment
- industry representation
- geographic distribution
**Size of Establishment:**

The Indicative Data Base, maintained by the SBA and based on Dun and Bradstreet information, includes establishments with 500 or fewer employees. We wished to maximize the likelihood of choosing firms from the smaller end of that continuum. Using the reference, *County Business Patterns 1979, United States*, U.S. Department of Commerce, Bureau of the Census, we ranked states according to the number of establishments with fewer than 250 employees. Although the *County Business Patterns* includes data about subsidiaries of large companies, not just independent companies, it seemed a reasonable basis on which to determine the relative density of smaller businesses within states.

**Industry Representation:**

A group of SIC codes likely to include companies with significant high-technology content was chosen. Data from *County Business Patterns* was then used to narrow that list to those SIC codes that also contain a high percentage of small firms. Figure III.A.1 gives the list of SIC codes used to determine the relevant population and the percentage of firms in the SIC Code with fewer than 250 employers, based on *County Business Patterns* data.
<table>
<thead>
<tr>
<th>SIC Code</th>
<th>Industry</th>
<th>% of firms with &lt;250 employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>2819</td>
<td>Industrial inorganic chemicals, nec</td>
<td>79</td>
</tr>
<tr>
<td>2869</td>
<td>Industrial organic chemicals, nec</td>
<td>89</td>
</tr>
<tr>
<td>283</td>
<td>Drugs</td>
<td>88</td>
</tr>
<tr>
<td>2899</td>
<td>Chemical preparations, nec</td>
<td>89</td>
</tr>
<tr>
<td>3573</td>
<td>Electronic computing equipment</td>
<td>80</td>
</tr>
<tr>
<td>366</td>
<td>Communication equipment</td>
<td>84</td>
</tr>
<tr>
<td>367</td>
<td>Electronic components and accessories</td>
<td>90</td>
</tr>
<tr>
<td>381</td>
<td>Engineering &amp; scientific instruments</td>
<td>93</td>
</tr>
<tr>
<td>382</td>
<td>Measuring and controlling devices</td>
<td>92</td>
</tr>
<tr>
<td>481</td>
<td>Telephone communication</td>
<td>94</td>
</tr>
<tr>
<td>737</td>
<td>Computer and data processing services</td>
<td>99</td>
</tr>
<tr>
<td>7391</td>
<td>Research and development laboratories</td>
<td>97</td>
</tr>
<tr>
<td>807</td>
<td>Medical and dental laboratories</td>
<td>99.7</td>
</tr>
</tbody>
</table>

FIGURE III.A.1. SIC Codes Used in Determining Survey Sample and Percentage of Companies with Fewer than 250 Employees in Each Code

**Geographic Distribution:**

Companies can be selected from the data base by state. For the purposes of this study, states were classified by percentage of total establishments having fewer than 250 employees, by level of high-technology activity, and by region. Fifteen representative states were chosen. They are listed in Figure III.A.2. These states include among them 57.8% of the national total of establishments with fewer than 250 employees.

The final selection of companies from within each state was done randomly from the SIC codes. Each state is represented in the sample in the same proportion as the number of establishments under 250 employees in the state to the total number in the states in the sample.
<table>
<thead>
<tr>
<th>States in Sample</th>
<th>Number of Establishments with &lt;250 Employees</th>
<th>Number of Firms in Sample</th>
<th>% of Total Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
<td>507,350</td>
<td>199</td>
<td>19.4</td>
</tr>
<tr>
<td>Colorado</td>
<td>69,225</td>
<td>96</td>
<td>2.6</td>
</tr>
<tr>
<td>Florida</td>
<td>209,012</td>
<td>80</td>
<td>8.0</td>
</tr>
<tr>
<td>Georgia</td>
<td>103,906</td>
<td>40</td>
<td>4.0</td>
</tr>
<tr>
<td>Illinois</td>
<td>216,520</td>
<td>83</td>
<td>8.3</td>
</tr>
<tr>
<td>Maryland</td>
<td>73,811</td>
<td>28</td>
<td>2.8</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>117,041</td>
<td>45</td>
<td>4.5</td>
</tr>
<tr>
<td>Minnesota</td>
<td>85,443</td>
<td>33</td>
<td>3.3</td>
</tr>
<tr>
<td>Montana</td>
<td>20,581</td>
<td>7</td>
<td>0.7</td>
</tr>
<tr>
<td>New Jersey</td>
<td>154,285</td>
<td>59</td>
<td>5.9</td>
</tr>
<tr>
<td>New York</td>
<td>367,642</td>
<td>140</td>
<td>14.0</td>
</tr>
<tr>
<td>North Carolina</td>
<td>111,081</td>
<td>42</td>
<td>4.2</td>
</tr>
<tr>
<td>Ohio</td>
<td>201,238</td>
<td>77</td>
<td>7.7</td>
</tr>
<tr>
<td>Texas</td>
<td>293,501</td>
<td>112</td>
<td>11.2</td>
</tr>
<tr>
<td>Washington</td>
<td>88,735</td>
<td>45</td>
<td>3.4</td>
</tr>
<tr>
<td>Total</td>
<td>2,619,371</td>
<td>1,000</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Figure III.A.2  
States in SBA Survey Sample

SBA provided 2000 names randomly chosen using the criteria outlined above. The survey questionnaire was sent to the odd numbered names unless the establishment size was one employee or the address was in some way incomplete. In those cases the next company listed was chosen.
B. Mailing and Survey Design

A number of methods were used to maximize the level of response and the likelihood of receiving complete and unambiguous information. The mailing included a cover letter explaining the purpose of the survey and the importance of receiving a good response; a survey form (Appendix A); a postage-paid reply envelope for the return of the survey; and, a separate postcard on which to request survey results. The mailing envelope and the cover letter were addressed to the Chief Executive Officer of the company by name. To ensure the confidentiality of the data, neither the survey form, the reply envelope, or the request postcard contained identifying codes.

It was necessary in designing the survey to balance the need for complete information against ease of answering. It was also important to obtain the information in a standard form when at all possible, so that comparisons could be made validly. Therefore, the survey was limited to a four sided form. Most questions were posed in the form of check-offs or boxed tables with answer keys. Care was taken to ask questions which could be answered quickly, without extensive research, and to limit the time required to complete the questionnaire to less than one hour.

Several small business owners pretested the survey to be certain it met our objectives. Their evaluations produced useful changes in the survey instrument.

C. Survey Analysis Procedure

After being coded and entered into a specially designed data format, the survey information was analysed extensively. First, frequency counts were made of all elements of the questionnaire. Second, cross tabulations were run of many combinations of questions and tested for correlation using the chi-squared method. The data was divided into a number of subgroups and
analysed for significant deviation from the total sample. Two subgroups of particular interest were identified and explored in some depth: those who said they were generally unable to raise the anticipated capital that they would need, and those who said their company would be likely to sell out or disband if conditions do not improve.

Of the 1000 surveys mailed out, approximately 100 were returned as undeliverable. 11% of the surveys that were delivered were completed. 101 completed surveys were received in time to be entered into the data base. Three additional replies have been received and their comments considered.

The data proved to be internally consistent with the expected high degree of correlation between the requested data for sales volume and age; total long-term debt and age; major field of business and degree of technical training of employees; sales in 1981 and sales in 1976; and, employees in 1981 and employees in 1976. Additionally, the answers to the question 'Can your suppliers raise prices faster than you?' correlate with both the percentage of sales in long-term contracts at fixed prices and the answer to the question 'How quickly can you pass increased costs on to your customers?'.

D. Characteristics of Responding Companies

The purpose of the survey was to explore the impact of the recent period of high interest rates and inflation on small technology based businesses and to assess the availability of capital to meet their needs. Although the sample is small, examining relevant statistics indicates that we received responses from the types of companies that we wished to reach and that the distribution measured by a number of characteristics was reasonable.
The companies that returned questionnaires cover the age spectrum fairly evenly except that very few are less than two years old (Figure III.D.1). This is probably a reflection of the time it takes for a business to become sufficiently visible to be included in the Indicative Data Base. It also means that the survey mainly reached operating companies and does not reflect the situation of the early stage, start-up company.

![Bar chart showing age distribution of companies](image)

Figure: III.D.1 Age of Company

The geographic representation is broad and entirely consistent with the original sample choice (Figure III.D.2). Not surprisingly, almost 80% of principal business locations are in urban or suburban areas (Figure III.D.3). Only eight companies had any overseas facilities.
Figure: III.D.2 Location of Main Office

Figure: III.D.3 Principal Business Location
Almost half of the companies list production as their principal business activity with the rest distributed fairly evenly among the alternatives (Figure III.D.4). The majority of companies were in the electronics and computer field which probably reflects the enormous activity and opportunity in that technical area (Figure III.D.5).

More than 90% of the companies were corporations or subchapter S corporations and, as a group, they are quite small but clearly growing. 66 of the companies had 20 or fewer employees in 1981 (Figure III.D.6).

![Figure: III.D.4 Principal Business Activity of Responding Companies]
Figure: III.D.5  Primary Field of Technology of Responding Companies

Figure: III.D.6  Number of Employees – 1981
To make answering easier for the respondents, the questionnaire only requested an indication of the size range for sales volume and employment for 1976 and 1981. A very rough measure of growth is possible by using the midpoint of each size range. Such a calculation indicates an increase of 82% in total annual sales from $131 million in 1976 to $239 million in 1981 and a five year increase of 55% in total employment from 2186 to 3390. Because of the magnitude of inflation in the recent past, the employment increase is probably a better measure of actual growth. While it is not a spectacular figure, steady, continual growth indicates that this sector is an important source of economic strength even in difficult times.

The survey did reach the technology-based business community that was its target. This can be seen by looking at the percent of current employees with training in technical fields beyond high school (Figure III.D.7) and the percent of internal expenditures that go to R&D (Figure III.D.8). 52% of the companies responding indicated that 1981 R&D expenditures represent a higher percent than in 1980.

% of Companies

Figure: III.D.7  Employees with Technical Training Beyond High School
Eighty percent of the companies surveyed indicated they were profitable in 1981 with forty percent reporting profits of 10% or more. However, twenty-four percent of the companies surveyed indicated a loss or a profit of less than 2%.

Twenty-five percent of the companies export more than 5% of their products, but only six percent export more than 20% of sales. This may indicate underutilization of export market opportunities.
E. Survey Results

The survey separated short-term debt from long-term debt (one year or more) and explored debt financing and equity financing separately. Since the survey was sent out in April, 1982, recent experiences refer primarily to the period of 1981 and the first quarter of 1982. A copy of the survey is attached as Appendix A.

1. Short-term Debt

Companies were asked about their experiences obtaining short-term debt (initial term of less than one year) during the year prior to the April 1982 survey.

Although most firms have been able to get the short-term money they need, one company in five reported major difficulty obtaining short-term funds. Two in five of those firms who said they are likely to sell out or disband had difficulty. One respondent may have spoken for many, when he noted: 'one was able to get money provided one was willing to accept high interest rates.'

A majority of firms borrowed in small amounts, with more than half of the respondents borrowing less than $25,000 at a time (Figure III.EI.1). Slightly more than half the companies borrowed for six months or less, although very few (5%) regularly used very short-term loans of thirty days or less (Figure III.EI.2).
Figure: III.E1.1 Amount of Typical Short-Term Borrowing by Responding Companies

Figure: III.E1.2 Usual Borrowing Time
Interest rates were high. Three-fourths of the reporting firms paid between 17% and 21%. When those rates were related to prime, most were at prime plus two or prime plus one. One firm reported prime plus 61 One respondent noted 'Took 1/4 to 1/5 of loan to service the debt interest.' These results are consistent with the results of a later survey conducted by the Smaller Business Association of New England (see Appendix B). Their survey found 69.5% of the firms surveyed paid prime plus one, with over one-fourth of all respondents paying prime plus two percent interest.

Firms which could not get short-term money used a variety of methods to take up the slack. Delayed expansion and decreased owner's compensation were the options mentioned most often. Some companies also delayed payments and accelerated billing. Some decreased inventory and work schedules. Most tried a combination of approaches.

2. Long-term Debt

Respondents were asked to report their company's total long-term debt and to characterize the four most recent acquisitions of long-term debt since 1974. One-half of the companies reported long-term debt, with a total of 111 individual loans reported by 51 different companies. 21 companies reported one loan; 10 reported two loans; 10 reported three loans; and 10 reported four loans.

Generally, the amount of debt for each firm is small, and not surprisingly the amount correlates with age of the companies. Of the firms surveyed, 80% reported total long-term debt of less than $500,000 (Figure III.E2.1). The amount borrowed at any one time is correspondingly small: 72 amounts were below $100,000, with 29 of those below $10,000.
The reported incidence of long-term borrowing increased through the years (Figure III.E2.2). Some increase may be attributable to more recent events being easier to recall. However, the increase from 18 incidents of borrowing in 1980 to 28 in 1981 was unusually large and most likely reflects the general economic conditions and increased inability of small companies to generate sufficient funds internally.

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Loans Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1976</td>
<td>11</td>
</tr>
<tr>
<td>1977</td>
<td>12</td>
</tr>
<tr>
<td>1978</td>
<td>12</td>
</tr>
<tr>
<td>1979</td>
<td>15</td>
</tr>
<tr>
<td>1980</td>
<td>18</td>
</tr>
<tr>
<td>1981</td>
<td>28</td>
</tr>
</tbody>
</table>
Commercial lending institutions were by a wide margin the most used source of long-term capital, (Figure III.E2.3). They were followed at a distance by personal funds and private investors. There were only two reports of bond issues and no SBIC involvement. Both of the companies reporting bond issues were mature (over 25 years old), midwestern, suburban, production corporations with sales over five million dollars.

<table>
<thead>
<tr>
<th>Source</th>
<th>No. of Loans</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal funds</td>
<td>13</td>
</tr>
<tr>
<td>Private investor</td>
<td>12</td>
</tr>
<tr>
<td>Venture firm</td>
<td>5</td>
</tr>
<tr>
<td>Commercial Bank</td>
<td>53</td>
</tr>
<tr>
<td>Finance company</td>
<td>7</td>
</tr>
<tr>
<td>Government direct loan</td>
<td>1</td>
</tr>
<tr>
<td>Government guaranteed loan</td>
<td>8</td>
</tr>
<tr>
<td>SBIC</td>
<td>0</td>
</tr>
<tr>
<td>Bonds</td>
<td>2</td>
</tr>
<tr>
<td>Pensions and endowments</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure III.E2.3 Sources of Long-Term Capital

Responses to the questionnaire of the Subcommittee on Access to Equity Capital and Business Opportunities of the Committee on Small Business, United States House of Representatives, conducted in April and July 1980, reinforce small businesses' reliance on banks for funding. Answers to the question "Where did you get your most recent business loan?" were 80% from commercial banks with an additional 9% from other types of banks (weighted responses, duplicate answers allowed).

Most long-term borrowing was for terms of less than six years. The most recent loans showed a greater concentration in shorter maturity loans with most interest rates fixed rather than variable.
The most frequently cited requirements for loans were 1) company assets as collateral and 2) personal signatures or personal collateral. A fee or compensating balance was rarely required. Bankers interviewed for the project point out that this reflects the reality that small businesses rarely have the steady cash flow necessary to maintain a compensating balance of any significant size. The requirement for personal signature or collateral also reflects the banks' interest in insuring that the owner shares the risk.

96 out of 111 companies listed the intended uses of the reported loans. The primary use most often cited was **plant and equipment expansion** (27), followed closely by **funding for the current level of activity** (24). Company acquisition (8), plant and equipment replacement (9), and expansion of employment or business activity (8) were next in reported uses.

3. Equity

Companies were asked to list their sale of equity since 1975. Only thirteen firms reported equity sales, three of those selling two issues. The amounts were small. Twelve issues raised $250,000 or less; two, from $501,000 to one million; and, one, between $1 and $2 million. Expansion of employment or activity is listed as the primary use more often than any other response but the information is too sketchy to justify any conclusions. Founders were listed as the source of funds in the majority of cases. Only one issue was public. Public equity issues clearly have not been a major source of funds for the firms in this sample.

4. Cost of Money

When asked whether the **cost of money** had significantly affected their business decisions in the two and one-half years prior to the survey, almost two-thirds of the respondents agreed
that it had. The percent who answered yes increased to eighty-six percent among the companies who say they will sell or disband if conditions don't improve and to ninety-five percent among companies who said they were unable to raise the capital they needed.

Comments on this issue most often mentioned the necessity of limiting operation expansion. One commented: "I have a huge backlog and would like to add people and invest more heavily in tooling but cannot." Others noted, "Would have developed some long range products, we are unable to fund now." "Delivery delays due to cash flow limitations, elimination of 'low margin' jobs." "The cost of money has become a significant part of the cost of manufactured goods."

More than a third of the total sample must borrow regularly to maintain their business. However, more than half of those who have difficulty getting long- and short-term money must borrow regularly, compounding their problems.

Especially crucial for a small businesses with little internally generated funding is the adequate and timely cash flow that is necessary to assure lenders that it can service its debts. One respondent remarked that 'the fundamental problem encountered is (very) delayed payment by large companies on invoices over $1000. Government utilities (TVA, BPA) have also been very slow.'

Many companies reported difficulty with an inflation-produced squeeze as costs rise faster than income. Most companies must wait more than six months to pass on increased costs to their customers, with fifteen percent requiring more than a year (Figure III.E4.1). Almost two-thirds of the companies said suppliers can raise prices faster than they can (Figure III.E4.2), with one in five having more than half their sales in long-term fixed price contracts (Figure III.E4.3). However, one-
quarter of the firms who will sell out or disband and one-third of the firms who have difficulty getting capital have more than half their sales in such contracts.

% of Companies

Figure: III.E4.1 Time Period Required to Pass Cost Increases to Customers

% of Companies

Figure: III.E4.2 Can Your Suppliers Raise Prices Faster Than You?
The Committee on Small Business questionnaire previously cited in Section E.2, produced similar findings. In answering the question "What do you believe will be the most pressing problems for your business in the near term?" 52% said "cannot pass through added costs to customers and still remain competitive," and 26% said "customers are slow to pay." (Inability to get bank financing: 28%; inadequate demand for products: 13% and, other: 10%.)

5. Availability of Money

Twenty firms said they had been unable to raise sufficient capital during the last five years. Seventeen of these reported their experiences in depth. Five had tried once and failed; six suffered two failures; and six had had three failures. Most tried several sources, typically approaching some combination of personal investor, venture capital source, bank, or finance
company. They were not seeking loans significantly larger than loans secured by the companies reporting successes.

Approximately two-thirds of the companies who said they had been unable to get capital also reported they would sell out or disband if conditions did not improve. Many of these firms also have to borrow regularly and reported difficulty raising short-term money.

More than 50% of the companies unable to get capital are six to ten years old, whereas only 30% of the total sample is in this age category. Such companies were slightly more likely than the total sample to be located in urban centers. 32% percent of the group unable to get capital listed R&D as their principal business activity compared with 9% in the total sample.

**During the past five years have you generally been able to obtain the capital you anticipated you would need?**

<table>
<thead>
<tr>
<th>Production</th>
<th>R&amp;D</th>
<th>Consulting</th>
<th>Sales</th>
<th>Other</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES</td>
<td>34</td>
<td>3</td>
<td>7</td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td>NO</td>
<td>8</td>
<td>6</td>
<td>3</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>42</td>
<td>9</td>
<td>10</td>
<td>14</td>
<td>14</td>
</tr>
</tbody>
</table>

**FIGURE III.E5.1** Ability To Raise Capital By Business Activity

**Delayed expansion** was the major consequence when companies failed to raise capital. The next most frequently reported consequences were reduced expenditures for capital equipment, reduced R&D expenditures, and delayed introduction of new products. Some companies reported a major disruption in their
business: one company delayed delivery of contracts in hand, one sold a product line, and one closed an overseas facility.

When asked if on any of these occasions money was available but the conditions were unacceptable, half said yes. One respondent commented, "Capital was available but the interest rates and duration of the loans were out of line with good business sense."

Expansion seems the factor most dependent on capital availability, followed by the development and introduction of new products. Expansion is listed as first in future plans for capital and is also first to go when capital is not available. (Figure III.E5.2)

<table>
<thead>
<tr>
<th>Planned Uses for Future Capital</th>
<th>Consequences of Inadequate Capital in the Past</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. operating expansion</td>
<td>1. delayed expansion</td>
</tr>
<tr>
<td>2. introduce new products</td>
<td>2. reduced expenditures for capital equipment</td>
</tr>
<tr>
<td>3. current activity</td>
<td>3. reduced R&amp;D</td>
</tr>
<tr>
<td>4. plant and equipment expansion</td>
<td>4. delayed introduction of new products</td>
</tr>
</tbody>
</table>

(listed in decreasing order of importance)

Figure III.E5.2 Activities Dependent on Capital Availability
6. Future Capital Plans

Companies were asked to indicate the additional capital they would need during 1982-83 by amount, use, and level of priority. Most plans were for less than $200,000, to be used primarily for operating expansion or to introduce new products. Financing current activity was listed next most often. When listed, support for current activity was usually given top priority. R&D and plant and equipment expansion were next in frequency (Figure III.E6.1).

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Amount in Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>up to .2</td>
</tr>
<tr>
<td>Operating funds:</td>
<td></td>
</tr>
<tr>
<td>current activity</td>
<td>27</td>
</tr>
<tr>
<td>expansion</td>
<td>32</td>
</tr>
<tr>
<td>introduce new product(s)</td>
<td>32</td>
</tr>
<tr>
<td>Plant &amp; equipment:</td>
<td></td>
</tr>
<tr>
<td>replacement</td>
<td>22</td>
</tr>
<tr>
<td>expansion</td>
<td>23</td>
</tr>
<tr>
<td>Inventory</td>
<td>17</td>
</tr>
<tr>
<td>Real Estate</td>
<td>9</td>
</tr>
<tr>
<td>Company acquisition</td>
<td>10</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>21</td>
</tr>
<tr>
<td>Debt repayment</td>
<td>17</td>
</tr>
<tr>
<td>Other (please specify):</td>
<td>5</td>
</tr>
</tbody>
</table>

Number of Positive Responses

Figure: III.E6.1 Future Capital Plans
7. Companies Likely to Sell Out or Disband

28 of the 101 responding companies said yes when asked whether they would sell out or disband if conditions don't improve. Not surprisingly, many in this group sounded very discouraged. One stated, "No matter how well we do in terms of performance, the economy quickly negates our efforts. The return for the risk isn't worth it." These companies were less likely than the total sample to find long-term or short-term capital available. This subgroup, as is the case with the overlapping group unable to raise capital, was concentrated in the six to ten year old age range (43%). They tended to be slightly smaller than the total sample, although there was growth reflected between 1976 and 1981.

8. Government Policy Impact

At the time of the survey, the Economic Recovery Tax Act of 1981 (ERTA) had been in effect for 9 months. Respondents were asked about the effect on their own companies of some of the changes in tax law. By far the most helpful feature was the Accelerated Cost Recovery System. 72% of all companies in the survey indicated it would be very helpful or helpful. 48% indicated benefit from the research and experimentation tax credit and 44% could see benefit from the reduction in capital gains tax rates. About 1/3 of the companies thought the Special Rules for Leases were beneficial, and just under a quarter of the companies expected the incentive stock options to be helpful. In addition to changes brought about by ERTA, opinions were solicited on a few other possible changes. One of them, government payment of interest when it is late in paying its bills, was enacted into law after the survey was completed. The results of the survey can be seen in Figure III.E8.1.
<table>
<thead>
<tr>
<th>Policy</th>
<th>very helpful</th>
<th>helpful</th>
<th>no effect</th>
<th>harmful</th>
<th>don't know</th>
<th>no answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in capital gains tax rates...</td>
<td>26</td>
<td>18</td>
<td>39</td>
<td>0</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Incentive stock options....</td>
<td>8</td>
<td>15</td>
<td>53</td>
<td>1</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>Accelerated Cost Recovery System (depreciation)</td>
<td>32</td>
<td>40</td>
<td>12</td>
<td>2</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Special Rules for Leases (tax benefits pass through to lessor).......</td>
<td>18</td>
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<td>45</td>
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<td>Research and Experimentation Credit....</td>
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<td>25</td>
<td>0</td>
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<td>Subchapter S Corporations increase in number of shareholders..........</td>
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<td>11</td>
<td>48</td>
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<td>Government pays interest on late payments...............................</td>
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<td>8</td>
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<td>Immediate expensing for R &amp; D equipment.................................</td>
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<td>21</td>
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<td>First $25,000 exempt from corporate income tax............................</td>
<td>58</td>
<td>23</td>
<td>6</td>
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Figure III. E8.1
Impact of Recent Changes or Proposed Changes in Federal Policy on Company Operations
Very recently a new tax act, the Tax Equity and Fiscal Responsibility Act of 1982, was passed which modified some features of ERTA. Since it came after the survey was taken, there was no way to assess its impact. However, among other provisions, it did change the leasing provisions and the depreciation schedules for the Accelerated Cost Recovery System. It also changed rules related to pension plans.

Whether the changes are significantly useful or detrimental, they clearly are a problem for the small businessman. It is expensive and time consuming to adjust to major changes in tax structure. In a small business, the implications of these changes must be understood by the chief executive who must factor them into future plans. He or she must call in the company accountant to be sure any necessary adjustments are made in accounting procedures. As one respondent put it, "It looks like tax changes put in to effect in 1981 will be repealed or changed and with government audits and changes it is not worth the return for small business."

In addition to the cost of coping with the tax changes companies complained that they, "can't plan long range because of changes in interest and government tax policy" and another was concerned about, "weak, vacillating and unstable government policies".

Since most of the companies facing difficulty need relatively small amounts of money, one of the best ways to improve their situation is to find ways for them to generate and retain sufficient resources internally. This is one of the reasons the Accelerated Cost Recovery System was helpful and the 1982 Tax Act will probably have a negative impact in this area. Tax policy that lightens the tax burden for companies with minimal taxable income can be the easiest way to improve their situations. Exempting the first $25,000 from corporate income taxes and spreading the tax brackets so the maximum level of
taxation does not take effect until income reaches for example, $250,000 and expensing R&D equipment could have an immediate, positive impact on the ability to retain earnings for future growth.

In addition to tax policy other areas of government involvement mentioned specifically were late payment by the government precipitating cash flow problems; the last minute funding of follow-on contracts at the end of the government's fiscal year in September leaving companies "at risk" because of late contractual authority to proceed; and, excessive and unfair government regulation. One company mentioned specifically increased regulations in the biomedical area due to the FDA citing particularly the Good Manufacturing Practices regulations. Another impact of government policy on small business had to do with different standards for different types of practitioners.

"Excessive governmental regulation was a primary cause of my business failure. I am an American Board Certified pathologist and career laboratorian. We, as pathologists, must meet such exacting and costly standards that a new business such as mine failed. Physicians, who are not laboratorians, may operate without these economic strictures. They - paradoxically - have no controls to maintain and no scientific standards to meet.

One might call this bureaucratic "overkill". Who will "hold the line" on price increases when well motivated cost conscious professional laboratorians are driven from the marketplace?"
IV. LARGE COMPANY COPING MECHANISMS

Generating capital in periods of high interest rates and uncertain monetary conditions is a challenge, but not necessarily a hindrance, for large companies. The number of funding sources available to a company is of paramount importance when credit is tight and conventional capital providers have largely withdrawn from the market. Larger firms have available, in their overall financing strategies, a number of useful options, that are seldom available to small companies.

A. Data Collection

The analysis began with a random review of the annual reports of approximately seventy-five Fortune 500 companies in various industries. This review was followed by a closer look at the annual reports and accompanying required reports for the Security and Exchange Commission (Form 10-k) of twenty such companies which had significant technology-based sales for the period 1979 to 1981 (Figure IV.1). Finally, several financial executives of the large companies were interviewed to see if their personal experience was consistent with our findings.

| AT&T Co.          | Motorola, Inc.          |
| Control Data      | NCR                      |
| Data General      | Pfizer, Inc.            |
| Digital Equipment Corp. | Raytheon Co.          |
| Economics Lab. Inc. | SCM Corp.               |
| E.I. duPont de Nemours & Co. | Singer Co.       |
| General Signal Corp. | Teledyne, Inc.        |
| GK Technologies, Inc. | United Technologies Corp. |
| H.J. Heinz Co.    | United Telecommunications, Inc. |
| Memorex           | Xerox Corp.             |

Figure IV.1 Company Annual Reports Reviewed
It became evident early in the project that variations in methods of accounting and of reporting financial and business activities make it very difficult to obtain comparable information about different firms using public reports. Breakdowns of the means of internal financing are not always provided nor are they consistent. One might guess that retained earnings and depreciation account for a substantial portion of the figure, but piecing together available information is a tenuous procedure. It is also difficult to assess the benefit of foreign sources of credit in part because foreign sources and costs of short-term funds are not always distinguished from their domestic counterparts.

B. Overseas Activity

Overseas sales accounted for over 1/3 of the total sales of most of the companies reviewed. Doing business internationally is beneficial from several points of view. As money market and economic conditions vary between countries, a firm's exposure to the uncertainties of any one country's or region's economy may be considerably reduced by geographic diversification. As Figure IV.2 indicates, interest rate differentials between countries allow an international firm to take advantage of cheaper borrowing rates in the world market. At year-end 1980, for example, a borrower of short-term funds would have paid approximately 9 1/2% to a Japanese lender, 14 1/2% to a British lender and at least 19% to a lender from the United States (Figure IV.2). Currency exchange rates and relative risks are supposed to even out the actual returns thereby making money markets perfect and not giving any particular location an advantage. However, those who are able to anticipate the likelihood of fluctuations can probably do better in one country than another for the short-term. Since large companies have financial managers whose job involves a close monitoring of international monetary activities, they are able to take advantage of such situations.
Figure: IV.2
Foreign tax incentives also give multinationals a decided advantage over smaller domestic firms. Pfizer states in its 1979 annual report, "The overwhelming proportion of the company's cash, short-term investments and long-term marketable securities is generated by operations in Puerto Rico and Ireland--established in the early seventies in response to tax incentives provided by those governments to spur economic development." Pfizer's cash and investments amounted to $676 million in 1979. The United States statutory tax rate in 1979 was 46%; Pfizer's consolidated effective tax rate was 33%.

C. Availability and Benefits of Internally Generated Funds

The majority of the firms reviewed met a large portion of their capital needs for the past three to five years through internal means. Profitable operations related to one aspect of corporate business can provide internal capital for use in new high growth areas of corporate activity that need capital investment. These financial resources can be invested before any taxes must be paid and without the costs associated with debt financing. A detailed discussion of these advantages can be found in Henderson on Corporate Strategy. 2

D. High Growth Company Needs

Fast growing companies are generally forced to seek funds externally as capital investment increases at a greater rate than profits. In these cases, a firm's earnings history and public credibility bear significant weight. As Digital Equipment Corporation explains in its 1981 annual report, "The company's rapid growth has historically caused it to use external financing to supplement internally generated funds, and to refrain from paying dividends". 3 During the fiscal 1979-81 period, Digital's external financing consisted primarily of the issuance of $400 million of convertible subordinated debentures in 1980 and $241 million in proceeds from the sale of common stock in 1981. The
$400 million in debentures was converted into common stock in 1981. Operating revenues grew from $1,804 billion in 1979 to $3,198 billion in 1981. All earnings were retained for use in the business. Smaller high-growth companies do not find capital so readily available.

E. Borrowing Mechanisms Utilized by Large Corporations

Large companies have both the technical sophistication and earnings history to avail themselves of funds in a variety of forms. The following are some of the primary borrowing mechanisms rarely available to small companies, used by the large corporations studied.

Bankers' acceptances are drafts drawn by the seller upon the bank of the buyer. Prearranged with the bank, it is high quality paper that may be discounted by the original seller at a low rate to obtain immediate payment for goods sold. Generally they are only used in connection with foreign trade.

Commercial paper refers to negotiable instruments sold through brokers that arise out of commercial transactions. They have short-term maturity (3-6 months), are self-liquidating and non-speculative in origin and purpose. Commercial paper borrowing is for the purpose of buying or carrying stocks of merchandise to be quickly resold. However, it cannot generally be sold without solid name recognition and credit strength.

Euro-dollars are dollar deposit claims upon American banks, deposited (transferred) in banks located outside the United States, including foreign branches of U.S. banks, so that the funds do not physically leave U.S. banks. These dollar deposit claims in turn may be redeposited in other foreign banks, lent to business enterprises, invested, or retained to
improve reserves or over-all liquidity.

Sinking-fund debentures provide for the orderly, full or partial retirement of bonds by their maturity date by regular payments deposited in a special fund applied to the gradual redemption of the bonds. Use of this type of debenture requires an adequate cash flow to set money aside on a regular basis.

F. Effect of Monetary Conditions on Decision Making

The principal conclusion of this analysis is that the availability and cost of funds during stressful economic periods do not significantly influence the decisions of most larger firms about whether to proceed with proposed capital plans. A delay in capital plans is more often the result of the total economic environment or poor sales revenues than high interest rates or constricted capital markets. One executive said his company has a five year program and does not change operating plans in response to current financial conditions. On the other hand, the choice of financing methods must remain flexible to respond to specific conditions; it is difficult to plan even one year ahead.

Another executive agreed that once a project is started it continues. If the economic and profit pictures are poor the company may delay starting a new project, but high interest rates by themselves would not cause major change in the company's objectives. All sources indicate that larger, established companies are able to select from a variety of capital-generating mechanisms, appropriate simultaneously to the particular economic climate at the time of need and to the specific financial situation of the company. Recent high interest rates have led many companies to postpone long-term borrowing and retain a much larger proportion of debt in short-term instruments than is preferrable. Thus credit worthy organizations have siphoned
money generally available to smaller companies and tightened the credit picture for them. At the same time the large companies are ready to shift to long-term debt as soon as interest rates moderate, or into equity issues if the stock market improves.

G. Conclusions

Generally, the results of this examination of large company options and practices reaffirmed the findings of previous researchers such as Kuh and Meyer. The companies reviewed were able to assemble optimal financing packages from among several alternative funding sources. Access to multiple capital markets enhances the choices which can be made. Operating revenues can generally provide a substantial portion of funding requirements. Periods of high interest rates tend to disrupt, but not necessarily to cancel, larger companies' financing plans as a variety of funding sources are readily available for use as conditions change.

NOTES

V. CAPITAL AVAILABILITY AND THE SEED CAPITAL GAP

A. Interview Process

As part of the research for this project on capital availability for small, high-technology companies, a large number of capital resource providers throughout the country were interviewed by telephone.

Most of the people interviewed were associated with private venture capital firms, but a few were private investors or from banks, Small Business Investment Corporations, or public funding agencies. They were primarily in major metropolitan regions where there are indications of high-technology business activity including Boston, San Francisco Bay Area, Denver, New York, Atlanta, Washington, D.C., Seattle, and Minneapolis. The starting point was generally a senior member of a venture capital firm known for doing high-technology financing. The people contacted were either personal acquaintances or were recommended by people previously interviewed. Due to the industry's preference for co-venturing with other firms, there is a great deal of regular communication and interaction within the venture capital community. One active investor was frequently able to suggest several people to talk with in different parts of the country. In a few places, it was possible to identify someone who acts as a catalyst for private investment activity.

Those contacted were asked about the size, criteria and number of their own investments. They were also asked who, if anyone, in their locality funds early stage situations, to what extent private investors are active in supporting these companies, and to what extent banks are willing to provide financing for assets such as inventory and accounts receivable. They were also asked about the amount of technology-based
business development or the potential for such development in their locality. The results of this process showed broad, unanimity of opinion among the people interviewed in describing the financial support available to the small, high-technology company sector of the economy.

B. Sources of Capital

The primary sources of capital with which companies can operate and grow are private individuals, commercial lending institutions, venture capital, and public offerings of either debt or equity. The availability of financing from these various sources fluctuates with interest rates, tax rates, government policy and regulations, public confidence in the economy, etc.

The small companies survey showed that companies rarely utilize either venture capital or public equity offerings to obtain financing. However, they are an extremely important and suitable source of capital for companies with strong potential for very high growth.

Although individual private investment as well as the public new issues markets have been adversely affected by high interest rates and poor economic conditions in recent years, there has been an enormous influx of funds into venture capital firms. Public stock offerings may take on increased importance if simplified regulations for small offerings now available at the federal level become more widely available due to the enactment of parallel state regulations.

1. Special Needs of Small, Technology-based Companies

The purpose of this particular study was to explore the extent to which small, technology-based companies have been able to meet their needs for capital. Many of these companies have
special needs and problems since they combine enormous growth potential with great risk of failure. What has been documented is a clear gap in capital available for the very early stages of corporate development before there are significant sales. To understand why such a gap occurs it is necessary to examine both the characteristics of these companies and the criteria used by capital providers.

At a certain point, a young company has usually exhausted its own financial resources, but it is not sufficiently developed to merit a major influx of capital. Frequently, the need is for $50,000 to $200,000 to keep the company running, to do some R&D, to build a prototype or prove feasibility, and to establish credibility. The company will then be in a position to get into the market directly or to attract the major financing of at least $500,000 needed for the next step.

2. Commercial Lending Institutions

Commercial lending institutions are traditionally suppliers of debt capital, provided on the strength of capital assets. Before making a loan, a bank must be reasonably confident that the company can service its debt, and that it will be able to pay off the principal eventually. If the company has not been in business long, has not generated significant sales, and owns no major pieces of equipment or real estate, it does not have any collateral for a loan or a revenue stream to pay back the obligation. Hence, commercial lending institutions which deal only in debt financing are not appropriate sources of capital for companies during this period.

As the company progresses, it starts to generate some sales revenues but not enough to finance the growth of its operation. Then, the commercial lending institutions play a significant role. Most small companies that need outside money as they
develop get it from some commercial institution. In our survey, 65% of long-term loans came from such sources. While generally conservative, banking institutions varied significantly in their willingness to back technology-based business. Bank size was a factor as well as geographic location. The degree to which lines of credit based on accounts receivable and inventory are available, and the conditions placed on these loans are much more favorable to the company in Massachusetts, for example, than in Florida or Arizona.

Larger banks in a few of the major metropolitan centers are now hiring technology specialists who can evaluate the viability of these companies more effectively. More banks are seeing small business accounts as an important segment of their customer base and are aggressively seeking such accounts. They also recognize that by being involved early in a company's development they will be more likely to have the business of the emerging large corporations of the future. This type of activity, particularly visible in Massachusetts and California, is starting in a number of places. But there is a long way to go. In some cases a major bank from the east or west coast will establish a small office with a technology specialist in another urban center where there is significant high technology activity but adequate bank credit is not available. This occurs even in New York City where many banks are so large that companies with ten million dollars in sales are handled by a branch office without a specialist in technology-based business.

Although this study did not spend a great deal of time exploring the structure of the banking industry, it is clear that the current situation in different parts of the country is at least partially an outgrowth of state law as well as local activity. In Chicago, for example, all bank facilities have to be under one roof and there are no branch offices. When banks get large, the tendency is to have specialists and to look for
outside opportunities in specific areas. At the other extreme is Bank of America in California, which has over 1000 branches all over the state. In that case, the high concentration of technical activity in certain parts of the state means some of the branches have technology specialists. But there are still enough opportunities in the area that State Street Bank of Boston, for example, has a full-time technology specialist in California.

The situation is bleak in areas of the country where there is insufficient technical activity to justify a technology specialist on a regular basis. Unless a large amount of money is involved with the possibility of significant return to the bank, it is not worthwhile to bother with the loan. One incident was related involving a high-technology company of significant size ($10 million in sales) that had several years of profitable operation. It could not obtain the $1 million line of credit it needed from any bank in its general region. The best it could do was $.5 million requiring personal signatures from the principals. When contact was made with a major technology-oriented banker from outside the region, the full financing desired was obtained with no personal guarantees.

Hence for the small company not in one of the major technology centers, bank financing beyond that needed for some capital equipment or a building may be very difficult to obtain. The extent to which accounts receivable and inventory are considered acceptable collateral varies a great deal. Too few bankers are comfortable with establishing the worth of such things for technology-based companies and most simply play safe and refuse to provide credit. Several companies mentioned the unwillingness of banks to extend credit based on government accounts receivables.
3. Venture Capital

a. Sources

There has been an enormous influx of capital into venture capital funds in recent years. According to Venture Capital Journal, $705 million of new capital commitments were made in the first half of 1982. For the first half of 1981, this figure was $420 million and in 1980 for the entire year the figure was $661 million. Stanley E. Pratt, editor and publisher of this journal, estimates the total pool of capital committed to venture investment as of July 1, 1982 has grown to at least $6.7 billion.

Some of this money comes from private investors, including those who have received a significant payback from a previous venture. They often reinvest part of those funds in new companies via a pooled capital organization hoping to help additional small businesses come out winners. They also may invest some of their time in evaluating the fund's investment opportunities and in helping the management of portfolio companies to get the company moving. Such help can be of great assistance to a fledgling company.

Many large corporations have recently entered the picture. They set up venture capital funds as a way of supporting new enterprise development in areas where the company has an interest. Large corporations frequently invest in situations where they hope eventually to acquire the whole company. Many innovations require the resources of a large company to gain full acceptance in the marketplace. This is sometimes due to large initial capital expenses for production equipment or advertising. In other cases, it is the access to distribution channels that is necessary. Many entrepreneurs really only enjoy the early stages of development and are delighted to team up with a compatible large business partner who can manage the later stage growth.
The last and perhaps most significant newly accessed source of capital is pension funds. There has been an easing of the interpretation of the "prudent man rule" for pension fund management. The rule no longer must be applied to each individual investment but can be applied to the portfolio as a whole. Although only a small percentage of pension funds can be spent on riskier investments, the total magnitude of pension funds is so large that even a very small percentage is significant in dollar terms.

b. Types of Investment

There is a widespread belief that this enormous influx of resources into venture capital funds has solved the problem of funding small companies. Unfortunately this large capital pool has not necessarily made it easier for start-up, technology-based enterprises to get financing. Consider the case of a venture capitalist who has put together a $40 million fund to be liquidated in 7 years (a typical timeframe). With recent interest rates as high as 18% available, the fund is looking for an annual return on investment of 35% or higher. This means very high growth potential in a relatively short period of time. Generally the company is already operating, has completed initial development, and is producing significant sales in a market that is growing rapidly. A strong management team is in place and the financial needs are significant. With a fund of $40 million to be put to work quickly, and significant time and expense involved in analysing each potential deal, few venture sources will consider deals of less than $1/2 million and most prefer a larger investment.

Venture capitalists who become involved in riskier, high-technology companies strongly prefer to spread the risk and co-invest with one or two other capital sources. They will co-invest in various parts of the country, but usually insist that
one of the investors takes a lead position. This means he is located near the company, has a representative on the board of directors, and can monitor activities closely if needed. Hence a company located outside the geographic regions where at least one well established, high-technology venture capitalist has investments is rarely funded by venture capital. Since there are a relatively small number of such trusted venture investors, the majority of locations are outside their sphere of new deals.

The high rate of return needed today means that venture capitalists are insisting on a larger piece of the equity for their investment than they would have required two or three years ago. For many entrepreneurs this price is too steep and they have preferred stagnation to growth at any price. The weakening equity markets, especially the new issues market, has added another layer of problems. It is much more difficult to take a company public today than it was only a short time ago. Venture capitalists must spend a great deal of their management resources on helping their portfolio companies get through this recessionary period with a reasonable business history in the hope that the economy and the new issues markets will improve considerably and they can recoup their investment. Until current venture capital portfolios, which are very full and frequently contain some troubled companies, are lightened by either acquisitions or public issues, there is simply no room for investing in new deals.

c. Management Resources

The establishment of a large number of new funds in a very short period of time also brings with it some problems in finding sufficient management for the funds. There has been concern expressed by entrepreneurs about the quality of assistance that will be provided to them by venture investors with inadequate background in managing technology-based business. Venture
capitalists insist on a significant piece of the equity for their financial involvement. One of the strongest arguments for the entrepreneur going along with this arrangement is the extent of sophisticated managerial assistance and access to additional financial resources he or she expects to get from the venture capital investor. The reasoning is that this assistance can greatly enhance the likelihood of success and a smaller piece of a big pie is better than a large piece of a tiny pie. If the entrepreneur has no confidence in the managerial strength of the venture capital provider, there is little incentive to take that road.

In addition, if a number of venture funds make large numbers of poor investments and their records for return on investment are low or negative, the credibility of the industry and its access to future capital for investments could be jeopardized. That would be extremely unfortunate since venture capital provides an important resource for later stages of company growth.

There are, indeed, some venture capitalists who fund start-up companies, that is, companies that have an idea, a couple of people, and a very sketchy business plan. There must be the potential for very high growth in a relatively short period of time. Generally, the venture capitalist is backing a market opportunity and the people. He is looking for situations where at least some of the people involved have a track record from a previous enterprise as well as strong technical skills.

Unfortunately the number of such venture capitalists is very small and the number of ventures they can fund is extremely limited. The primary constraint is the amount of management resources needed to get a fledgling company off and running. Each venture manager can handle only five or six companies at a time. Several venture capitalists that sometimes fund these very
small ventures indicated that in addition to the technologist there also needs to be an entrepreneur and that the two roles are different. This is why they look for a management team.

The venture provider expects to have to put in $300,000 to $500,000 before the company is sufficiently viable to start generating significant income and be sufficiently attractive to raise the additional capital that will be needed to sustain high growth. The initial investment may be made in stages with various milestones to be met at each stage before additional funds are invested.

The venture capitalist will maintain very close ties with the company during this period. As a result, the investments are always very close to home and the fields of technology may be strictly limited by the investor's expertise. Several said specifically they wouldn't invest further than two hours from their office.

d. SBIC's

This discussion of capital resources would be incomplete without mentioning the Small Business Investment Corporations (SBIC), a form of venture capital. These privately owned and operated organizations are licensed by the Federal government. In exchange for agreeing to finance only qualified small businesses, they are able to borrow $4 from the SBA for every $1 of private capital they can invest. This provides for leveraging private capital with public funds in such a way as to have any losses come out of the private investment funds before any losses are incurred on the government loans. Many of the SBICs do some early stage financing and provide a range of management resources to assist the entrepreneur. The smaller funds may also be willing to do smaller deals.
The real difficulty for the SBICs has been the recent high interest rates. SBICs must pay interest on their SBA loans. Hence, they must invest in ways that generate sufficient income to pay operating costs and service their own debt. As a result, most of the money given out by SBICs tends to be debt rather than equity with some type of conversion option so they can get a reasonable return if the company is successful. Unfortunately, recent high interest rates have forced SBICs to pay up to 15% for the money that they borrow. In turn, they were loaning money in late 1981 and early 1982 at interest rates of 15-20%, not a very attractive resource.

e. The Capital Gap

This brings us to the plight of the struggling, start-up technology-based enterprise led by an unproven entrepreneur, that needs $50,000-200,000. Until recently the only source likely to provide the seed capital needed is the private investor. We have already seen that in this early, high risk stage neither lending institutions nor most venture capitalists are likely resources. One difficulty with tapping into the private investor as a resource is a lack of effective mechanisms for bringing appropriate parties together in situations where there is some confidence on the part of the investor that there is a reasonable likelihood of success. The other difficulty relates to the investor's options. An investor can get a high return from a much safer investment, such as real estate, because of current high interest rates. The recent uncertainty and fluctuation in economic indicators have left many investors unwilling to make any long term financial commitments and a great deal of personal assets are currently in liquid investments.

(1) Individual Private Investors

We know that there are wealthy individuals who could invest $25,000-$50,000 or more in a somewhat risky situation in the
hopes of a large windfall. High tax rates help put a reasonable cap on the maximum loss exposure and the recent lowering of the capital gains tax has increased the incentive for this type of investment. One way of establishing the existence of this group of investors is to look at the large number of real estate partnerships, oil and gas leases, and other tax-sheltered deals that have been coming out with great frequency. Another way is to look at the 1981 study of "Informal Risk Capital in New England" by William Wetzel and Craig Seymour of the University of New Hampshire. They not only identified possible investors in New England but explored some of their criteria for investing.

There are two areas that need attention if a major influx of private funds is to take place. One is a need for more incentives to encourage private investors to put at least some of their disposable income into these needy companies. Second is the need for better mechanisms for connecting investors and investment opportunities. Of additional help would be ways for small investors to pool resources and spread their personal risk among a number of companies. It also would help if a large number of relatively small individual investments could be made in a company with minimal regulation requirements.

(2) Small Business Innovation Development Act

There is now one additional source of seed capital for R&D that will grow to a substantial total dollar value in the next few years. On July 22, 1982, The Small Business Innovation Development Act was signed into law. It is specifically intended to provide funding for small businesses to explore and develop new technical ideas with potential commercial applications. It attempts to overcome a major deficiency of the government, the lack of knowledge of market forces, by building in a role for private sector evaluation and financing. There are sufficient restrictions based on government agency orientation and expertise as well as the types of activity that can be funded, to limit the
companies that can take advantage of this opportunity. For example, it is not useful to most service-oriented businesses which are an increasingly important part of our economy. Nevertheless, the extent to which this program is successful at providing seed capital for early stages of company development will be of great interest as it may provide one way of closing some of the seed capital gap.
VI. CONCLUSION

The survey of primarily profitable, small, technology-based businesses showed that many of these companies have experienced great difficulty obtaining sufficient capital at a reasonable cost. This difficulty is attributed largely to high interest rates, declining sales, and inflation. Even when capital is available, small firms normally pay four to five percent higher interest rates than larger companies. Their responses to this problem most often have been to put off such things as expansion and new product development. However, the economy, if it is to recover from the recession and become vital and strong again, needs a continual infusion of innovative, technology-based products and services which are marketable both in the U. S. and abroad. Small, technology-based companies, major suppliers of innovative products and services, cannot contribute to this needed process without sufficient financial resources.

Another major problem is the barrier faced by small, technology-based businesses in trying to obtain capital needed for the early stages of start-up and growth. The current economic climate and especially the high interest rates have seriously aggravated the basic problem, but they are not the root cause.

Two important sources of capital are not available to the extent they could be. One is debt financing from commercial lending institutions for appropriate asset-based financing because such institutions do not understand and cannot comfortably evaluate the small, technology-based company. The other is investment from private investors because there are insufficient financial incentives to overcome the great risk involved, and ineffective mechanisms to link private investors with appropriate investment opportunities.
A healthier, entrepreneurial, technology-based, small business sector will require a coordinated effort that involves federal government tax policy changes, a more understanding, knowledgeable, and involved banking community and the support and encouragement of local and regional organizations throughout the country.
Appendix A
SURVEY ON THE AVAILABILITY AND COST OF CAPITAL

Please check the appropriate box. Referring to a recent financial statement may help in answering some questions; do not hesitate to omit an answer that requires unavailable or relatively inaccessible information. Even incomplete questionnaires will help. If you wish to expand any answer, please use additional sheets.

I. Company background:

1. Age of company:
   [ ] up to 2 years   [ ] 2-5 years   [ ] 6-10 years   [ ] 11-25 years   [ ] 25 + years

2. Location of main office:
   [ ] NE   [ ] MidAtlantic   [ ] SE   [ ] Midwest   [ ] SW   [ ] NW   [ ] CA

3. Principal business location is:
   [ ] rural   [ ] small town (to 25,000)   [ ] suburban   [ ] urban

4. Do you have any overseas facilities?
   [ ] yes   [ ] no

5. What is your principal business activity?
   [ ] Production   [ ] R & D   [ ] Consulting or Management Services   [ ] Sales and Service
   [ ] Other (specify)

6. Primary field of technology:
   [ ] Chemistry   [ ] Medical & Biological   [ ] Electronics & Computers   [ ] Physics
   [ ] Engineering & Design   [ ] Other (specify)

7. How is your business organized?
   [ ] Proprietorship   [ ] Partnership   [ ] Corporation   [ ] Subchapter S Corporation

Business size:

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<tr>
<th>Fiscal year ending in</th>
<th>Sales Volume in millions ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-5</td>
</tr>
<tr>
<td>1981</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fiscal year ending in</th>
<th>Number of employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-10</td>
</tr>
<tr>
<td>1981</td>
<td></td>
</tr>
<tr>
<td>1976</td>
<td></td>
</tr>
</tbody>
</table>

12. Percentage of current employees with training in technical fields, beyond high school:
   [ ] 0%   [ ] 1-5%   [ ] 6-10%   [ ] 11-20%   [ ] 21-50%   [ ] 50 +%

13. Internal R & D expenditures as a percentage of total expenditures for the fiscal year ending in 1981:
   [ ] 0%   [ ] up to 2%   [ ] 2-5%   [ ] 6-10%   [ ] 11-20%   [ ] more than 20%

14. Is this percentage greater than in 1980?
   [ ] yes   [ ] no

15. Before tax profit or (loss) as a percentage of sales in 1981: %

16. Exports as a % of sales for 1981:
   [ ] 0%   [ ] up to 2%   [ ] 2-5%   [ ] 6-10%   [ ] 11-20%   [ ] 21-50%   [ ] over 50%

17. Is this percentage greater than in 1980?
   [ ] yes   [ ] no

II. Financing History

A. Short-term Debt (Initial term of less than one year): Please answer the following questions about short-term debt you have incurred during the past year.

18. In general, have you been able to get short-term money when you need it?
   [ ] yes   [ ] no

19. If no, how have you adjusted your business strategy i.e., decreased inventory, accelerated billing, delayed payment, decreased work schedules, decreased distributed profits, delayed expansion plans, decreased owner compensation?

20. How much money do you usually borrow at one time in a short term loan (in thousands of dollars)?
   [ ] less than 10   [ ] 10-25   [ ] 26-50   [ ] 51-100   [ ] 101-500   [ ] over 500

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21. What is the average interest rate you have paid this year? %

22. If the rate is related to "prime rate" state how it is defined:

23. What is the usual length of time for which you borrow?

- up to 30 days
- 31 to 90 days
- 91 to 180 days
- 180 + days

B. Long-term Debt (for one year or more):

24. What is your current total long-term debt? $

Please fill out the following table to reflect long-term debt incurred since 1975. Indicate approximate date of the four most recent loans. Use the keys where indicated.

<table>
<thead>
<tr>
<th>Loan 1</th>
<th>Loan 2</th>
<th>Loan 3</th>
<th>Loan 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>19___</td>
<td>19___</td>
<td>19___</td>
<td>19___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date Borrowed: quarter (1, 2, 3, 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>year.</td>
</tr>
<tr>
<td>Source (Key 1)</td>
</tr>
<tr>
<td>Amount in thousands.</td>
</tr>
<tr>
<td>Duration of loan in years</td>
</tr>
<tr>
<td>Interest Rate: variable (v) or fixed (f).</td>
</tr>
<tr>
<td>rate level</td>
</tr>
<tr>
<td>Additional Terms, if any:</td>
</tr>
<tr>
<td>Fee Required (y or n).</td>
</tr>
<tr>
<td>Company Assets as Collateral.</td>
</tr>
<tr>
<td>Compensating Balance.</td>
</tr>
<tr>
<td>Personal Collateral/Signature.</td>
</tr>
<tr>
<td>Primary use (Key 3).</td>
</tr>
</tbody>
</table>

C. Equity:

Please fill out the following table to reflect the most recent outside equity sales, if any, since 1975:

<table>
<thead>
<tr>
<th>Sale 1</th>
<th>Sale 2</th>
<th>Sale 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>19___</td>
<td>19___</td>
<td>19___</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of sale: quarter (1, 2, 3, 4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>year.</td>
</tr>
<tr>
<td>Source (Key 2)</td>
</tr>
<tr>
<td>Amount raised (in thousands)</td>
</tr>
<tr>
<td>Cost of sale</td>
</tr>
<tr>
<td>Percentage of total equity sold.</td>
</tr>
<tr>
<td>Primary use (Key 3).</td>
</tr>
</tbody>
</table>

87. During the last two years, was it necessary for control of the company to change hands in order to raise essential funds?  
- yes  - no  If yes, please explain:

88. What is your current ratio of debt to equity? %

89. What was the debt-equity ratio in 1976 (if number is readily available)? %

D. The cost of money has recently been much higher than usual.

90. Has the cost of money significantly affected your business decisions in the last two and a half years?  
- yes  - no  How?

91. Do you have to borrow money regularly in order to maintain your business?  
- yes  - no

92. How quickly can you pass increased costs on to your customers? Within:

- a month  - 3 months  - 6 months  - a year  - more than a year

93. Can your suppliers raise prices faster than you?

- no  - occasionally  - generally  - always

94. What percentage of your sales are in long-term contracts at prices fixed for more than six months?

- 0%  - 1-10%  - 11-25%  - 26-50%  - 50 +%
95. Have recent high inflation rates affected your business significantly? □ yes □ no
   If yes, explain: ________________________________________________________________

E. Availability: We want to know whether you have been able to obtain the capital you wanted during the last five years and what adjustments you made if you did not. It may be difficult for you to reconstruct the requested information completely but we would appreciate your best recollection for the period 1976-1981 with particular emphasis on 1979, 1980, and 1981.

96. During the past five years have you generally been able to raise the capital you anticipated you would need?
   □ yes (please skip to Part III) □ no (please continue)

   Please answer the following questions about the last three occasions when you talked to at least one source of capital but were not able to raise all you wanted.

   Approximate date: quarter (1, 2, 3, 4) year

<table>
<thead>
<tr>
<th>Year</th>
<th>Year</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>19___</td>
<td>19___</td>
<td>19___</td>
</tr>
</tbody>
</table>

   How much did you want to raise?  
   What % did you raise?  
   What sources did you try? (Key 1, 2)  
   What were the consequences of the shortfall for your business?
   1. reduced employment  
   2. delayed expansion  
   3. reduced R & D expenditures  
   4. reduced expenditures for capital equipment  
   5. delayed introduction of new products  
   6.  
   7.  
   8.  

97. On any of these occasions, was money available but the conditions were unacceptable to you? □ yes □ no
   If yes, please explain: ____________________________________________________________

III. Current and Future Capital Plans

   Please answer the following section based on your current plans. Fill in the table indicating the additional capital you anticipate you will need during 1982-1983 for the listed activities. Assign a priority to each use: 1 — top; 2 — medium; 3 — low. Assume you will be able to raise all you want.

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Amount in millions</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>up to .2</td>
<td>.2-.5</td>
</tr>
<tr>
<td>Operating funds:</td>
<td>1, 2, or 3</td>
<td></td>
</tr>
<tr>
<td>113. current activity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>115. expansion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>117. introduce new product(s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant &amp; equipment:</td>
<td>1, 2, or 3</td>
<td></td>
</tr>
<tr>
<td>119. replacement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>121. expansion</td>
<td></td>
<td></td>
</tr>
<tr>
<td>123. Inventory</td>
<td></td>
<td></td>
</tr>
<tr>
<td>125. Real Estate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>127. Company acquisition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>129. R &amp; D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>131. Debt repayment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>133. Other (please specify)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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135. Except to raise the minimum amount of money necessary to stay in business, is there a limit to the interest rate you will pay? □ yes □ no. If yes, what is it? __________% 

136. If you raise all the capital you want over the next year, what percentage of the additional capital would you prefer in debt? __________% 

IV. Government Policy:
If you have already examined the impact of recent changes in federal law on your company’s operations, please rate them on the following scale:

<table>
<thead>
<tr>
<th>Policy</th>
<th>very helpful</th>
<th>helpful</th>
<th>no effect</th>
<th>harmful</th>
<th>don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction in capital gains tax rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive stock options</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accelerated Cost Recovery System (depreciation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special Rules for Leases (tax benefits pass through to lessor)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation credit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Research and Experimentation Credit</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subchapter S Corporations increase in number of shareholders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (describe)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Other changes which were discussed were not adopted. Please rate the following suggestions:

<table>
<thead>
<tr>
<th>Policy</th>
<th>very helpful</th>
<th>helpful</th>
<th>no effect</th>
<th>harmful</th>
<th>don’t know</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government pays interest on late payments</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Immediate expensing for R &amp; D equipment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First $25,000 exempt from corporate income tax</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

148. At what level should the maximum corporate income tax rate apply (in thousands $?), in your opinion? □ 100 (current) □ 250 □ 350 □ 500 □ other __________

149. Are there other changes in federal tax law or policy you support to improve your company’s access to needed capital? □ no □ yes (describe)

150. Are there any changes you would support in state tax law or policy? □ no □ yes (describe, specify state)

V. Final Comments (Use additional sheet of paper, if necessary)

151. During the past two years, business has operated under unusually erratic economic conditions. What has been the most troubling problem for your business?

152. Is your company likely to sell out or disband if conditions don’t improve? □ yes □ no

153. Any additional comments about the past and future impacts of economic conditions on your business and your response to them?

154. Position of person completing the questionnaire:

155. Optional:

Name __________________________

Company __________________________
NEW ENGLAND
SMALL BUSINESS SURVEY

A Smaller Business Association of
New England/Touche Ross & Co.
Business Survey

The continuing stability of the American economy is critically
dependent on preserving real opportunity for small business.
Economic recovery will create an atmosphere in which small
business can retain its share in the country's economic and
employment growth. But in the face of recession, how is the small
business community responding?

To learn how the New England small business owners are dealing
with the recession, the Smaller Business Association of New
England (SBANE) and Touche Ross & Co. studied the responses
of presidents and top level managers of 680 of SBANE's 2,400
membership.

This survey represents SBANE's (with the assistance of the Private
Companies Advisory Services Group of Touche Ross & Co.) con-
tinuing service to its membership. Respondents represent manu-
facturing, service, distribution, construction, real estate, and other
industries in the New England area.

Touche Ross & Co.  SBANE
1. What technique(s) have you used to combat the financial burdens of the recession and high interest rates?
   - Stretch accounts payable: 30.8%
   - Creative tax planning (including LIFO): 9.7%
   - Sale and lease back: 2.4%
   - Borrow — fixed asset based collateral: 9.6%
   - Borrow — current asset based collateral: 12.7%
   - Borrow — off-book based collateral: 5.8%
   - Reduction in capital expenditure programs: 26.0%
   - Divestiture: 3.0%

2. Do you plan to curtail capital expenditures during the next two years?
   - Yes: 49.6%
   - No: 50.4%
   If so, by what percentage from prior two years?
     - 10 percent or less: 16.6%
     - 20 percent: 28.3%
     - 30 percent: 19.4%
     - 40 percent: 6.5%
     - 50 percent or more: 29.2%

3. Do you expect real earnings (net of inflation) to be off during the next two years?
   - Yes: 52.5%
   - No: 47.5%
   If so, down by what maximum percentage?
     - Increase less than inflation: 20.9%
     - Decrease by 10 percent: 25.9%
     - Decrease by 20 percent: 27.4%
     - Decrease by 30 percent: 11.6%
     - Decrease by more than 30 percent: 14.2%

4. Do you plan to add employees in the foreseeable future?
   - Yes: 50.6%
   - No: 49.4%
   If yes, how many?
     - 1-3: 56.6%
     - 3-6: 21.3%
     - 6-10: 10.0%
     - Greater than 10: 12.1%

5. What interest rate does your bank charge you for a short-term loan?
   - At prime: 17.1%
   - 1/2 percent over prime: 13.4%
   - 1 percent over prime: 24.6%
   - 1 1/2 percent over prime: 18.6%
   - 2 percent over prime: 18.0%
   - Over 2 percent over prime: 8.3%

6. How long do you think the current recession will last after the second quarter of 1982?
   - 6 months or less: 48.8%
   - 12 months: 38.4%
   - 18 months: 7.4%
   - 24 months or more: 5.6%
7. In your opinion, do you see an increase in the number of New England small business failures during the next year?  
   Yes 88.7%  
   No 11.3%  

   If yes, how much of an increase?  
   A. Moderate  
   B. Substantial  
   A. 68.2%  
   B. 31.8%  

8. How do you think the number of New England small business failures will compare to small business failures nationwide during the next two years?  
   A. More than nationwide  
   B. Same as nationwide  
   C. Less than nationwide  
   A. 9.5%  
   B. 31.2%  
   C. 59.3%  

9. In what order would you rank the top three New England industries in which you see the most business failures happening?  
   A. Construction  
   B. Manufacturing  
   C. Wholesale  
   D. Retail  
   E. Finance  
   F. Entertainment  
   G. Health Care  
   H. Agriculture  
   I. Insurance  
   J. Real Estate  
   K. Service  
   L. High Technology  
   M. Other  
   A. 26.3%  
   B. 17.8%  
   C. 5.4%  
   D. 6.3%  
   E. 9.2%  
   F. 5.0%  
   G. 3.3%  
   H. 4.4%  
   I. 1.0%  
   J. 0.1%  
   K. 3.2%  
   L. 2.9%  
   M. 0.0%  

10. Perhaps the main reason for business failure is difficulty in obtaining capital. What two principal means are you employing to maintain essential financial liquidity?  
   A. Short-term bank loan  
   B. Long-term bank loan  
   C. Own capital  
   D. Private placement  
   E. Go public  
   F. Merger  
   G. Reinvesting earnings  
   H. Other  
   A. 32.4%  
   B. 11.9%  
   C. 23.4%  
   D. 3.6%  
   E. 3.3%  
   F. 7.1%  
   G. 24.8%  
   H. 2.9%  

11. Have you used industrial revenue bond financing (IRBs)?  
   Yes 11.0%  
   No 89.0%  

   If yes, would expansion of facilities and related employment have been accomplished without the IRB alternative?  
   Yes 28.2%  
   No 71.8%  

12. Aside from raising capital, what other way do you plan to grow?  
   A. Merge with another company  
   B. Acquire another company  
   C. Introduce new products or services  
   D. Other  
   A. 6.0%  
   B. 17.0%  
   C. 67.6%  
   D. 9.4%
13. Has the President's economic program started working for your company?

<table>
<thead>
<tr>
<th>Yes</th>
<th>19.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>81.0%</td>
</tr>
</tbody>
</table>

14. From whose perspective is this questionnaire being completed?

| A. President | 62.1% |
| B. Financial Officer | 17.3 |
| C. Chief Executive Officer | 11.1 |
| D. Operations Officer | 4.8 |
| E. Other | 4.7 |

15. What is the approximate size of your company? Sales of:

| A. $0-100 thousand | 6.5% |
| B. $100-500 thousand | 14.8 |
| C. $500 thousand-$1 million | 14.7 |
| D. $1-5 million | 36.9 |
| E. $5-10 million | 15.1 |
| F. $10-15 million | 4.1 |
| G. Over $15 million | 7.9 |

16. Where is your company located?

| A. Greater Boston/within 128 | 39.3% |
| B. Other Massachusetts | 33.0 |
| C. New Hampshire | 8.2 |
| D. Rhode Island | 11.2 |
| E. Vermont | 6.0 |
| F. Maine | 3.8 |
| G. Connecticut | 3.9 |

17. Is area

| A. Urban | 40.8% |
| B. Rural | 9.8 |
| C. Suburban? | 49.4 |

18. What type of company is it?

| A. Construction | 5.2% |
| B. Manufacturing | 33.3 |
| C. Wholesale | 12.4 |
| D. Retail | 4.9 |
| E. Finance | 2.5 |
| F. Entertainment | .5 |
| G. Health Care | 1.3 |
| H. Agriculture | .4 |
| I. Insurance | 1.6 |
| J. Real Estate | 2.2 |
| K. Service | 24.1 |
| L. High Technology | 7.3 |
| M. Other | 4.3 |