

THE JOB GENERATION PROCESS

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Section 1

INTRODUCTION

Our purposes in undertaking this project have been two-fold: (1) to develop an "economic microscope" that would let us reach beneath aggregate statistics to see how the behavior of individual firms causes change and (2) to begin to draw some conclusions about what kinds of economic development policies do or do not make sense in view of what we see.

We have approached this problem by generating a detailed file on each of 5.6 million business establishments over time. Knowing a fair amount about each establishment (and the firm to which it belongs) at each point along the way, we can characterize how the firm changes. By aggregating all establishments within a given location we can describe the aggregate changes that place is experiencing and, most importantly, know exactly how that change took place. In the process we can identify the major generators (and destroyers) of jobs and begin to suggest which kinds of policies will foster a healthy economy and, conversely, which kinds will be either a waste of time and effort or, worse, actually defeating of their intended purpose.

The report begins with a brief summary of how the data were created and used. It then moves into three substantive sections: (1) components of change, (2) job generation, and (3) interregional control. Section 6 suggests some of the implications for development policy that appear to flow from first looks through the microscope. This first volume ends with a section

that suggests the logical next steps.

When we entered this project it quickly became clear that existing methodologies in the social sciences were not well equipped over the longer run to cope with 5.6 million complex records. Worse, they were not designed to capitalize on the degree of resolution that a sample size of 5.6 million observations offers. While tolerating these shortcomings in our initial efforts, we simultaneously initiated a subproject to develop the kinds of techniques we will be needing in the years ahead. Initial versions of some of these techniques are already operational, and are described in a companion volume -- Volume II.

Section 2

USING THE DUN AND BRADSTREET DATA

The Dun and Bradstreet Corporation maintains computerized records on individual firms which it utilizes in its credit rating operations and which it sells to others for the purposes of billing, mailing list preparation, and market research. The file contains a wide variety of information about each firm, including its year started, location, number of employees, sales, net worth, most prominent Standard Industrial Classification (SIC) codes, the identification and location of its parent if it is a branch or subsidiary, and a number of other things addressed more to Dun and Bradstreet's credit rating function.

We have acquired the complete Dun and Bradstreet files for the United States as they stood in December 31, 1969, December 31, 1972, December 31, 1974, and December 31, 1976. The original files were quite voluminous -- about 12 million records contained on over 100 reels of magnetic tape. Considerable effort has gone into reducing these files into a compact set, with all four years merged together to permit analysis of changes in the status of each firm between years.

Each establishment in the file is assigned to a unique identifying number by Dun and Bradstreet (its "DUNS number") which that establishment retains

as long as it is in the file and does not change legal status.¹ If an establishment moves, its number is retained. If it ceases operation, its number is retired and not reissued. We matched the files for the four years on a case-by-case basis. In the 1969-1972 pairing, for example, of the original 5.5 million records, 2.0 million firms had records in both years and were merged together, while 1.5 million had either been deleted from the file or added to it in the 1969-1972 time period.

For those firms that exist in any two years we can define the following processes:

Same area in both years:

No Change	Same employment in both years.
Expansion	An increase in the number of employees.
Contraction	A decrease in the number of employees.

Different areas in Year 1 and Year 2:

Inmigration	The presence in an area in Year 1 of a firm in another area in Year 2.
Outmigration	The absence in the area in Year 1 of a firm in the area in Year 2.

In our tabulations, in- and outmigration supersede other categories (expansion, contraction, and no change) in the assignment of employment change. We thus overstate migration relative to expansion and contraction. As will be seen, this makes little practical difference.

For firms which existed in only one year of a pair, there were three cases:

1. The number changes, for example, if a proprietorship becomes incorporated, or an independent company or subsidiary becomes a branch of another and loses its independent legal status.

Death	The disappearance from the file of a firm with a particular DUNS number.
Birth	The appearance in the Year 2 file of a firm with a new DUNS number, for which the year started was between the two years.
New Listing	The appearance in the Year 2 file of a firm with a new DUNS number, for which the year started was earlier than Year 1.

Quality of the Data

The data on individual establishments are collected by a full-time staff of 1700 reporters assisted by 500 part-time employees. This reporting staff is well trained and is quite experienced because it is on the job continuously -- unlike census-taking efforts in which most employees are mobilized for only a few months during the data-gathering period.

The Dun and Bradstreet Corporation has a strong incentive to ensure that the information contained in its file is accurate -- it can be, and frequently is, sued if the information is wrong. In fact, the D&B file is one of the few social science data sets that has such a strong built-in pressure for accuracy. Even the U.S. Census Bureau, which offers one of the most professionally gathered data sets in the world, has far less leverage over its respondents to provide accurate answers. The law says that each individual must fill out the census form, but it says very little about the accuracy of the data that must be provided. Thus, while the head counts in the census are reasonably accurate, much of the detailed information is

subject to considerable error. Kathryn Nelson compared actual migration rates reported by employers to the Social Security Administration with census estimates, for example, and found that the census estimates were frequently low by a factor of two and one half or three. In other words, two-thirds of the people who migrate never report it to the Census Bureau. We have discovered similar kinds of biases in the reporting of income and educational attainment.

Realizing that errors of that magnitude would increase its legal exposure, the Dun and Bradstreet Corporation has established a rather extensive centralized quality control system to monitor each report filed by one of its reporters prior to entering the report into the data file. Thus, if used properly, the file is potentially one of the most accurate in social science history.

A number of problems arise in using the file, however, that stem from the fact that it was never intended to be a census of the corporate population. Also, despite all the pressures for accuracy, the file is not without error. Difficulties we have encountered thus far generally fall into five categories:

1. Coverage
2. Biases inherent in the reporting system
3. Geocoding below the county level
4. Clerical errors
5. Misrepresentation of information provided to reporters by corporations

1. See Kathryn Nelson, Evaluating Estimates of Work-Force Migration from the Social Security Continuous Work History Sample: A Comparison with the 1970 Census of Population. Oak Ridge National Laboratory, 1978.

In most cases, there are ways to compensate for these difficulties. It is terribly important that users of the data understand both the nature of the problem and the method of compensation if they are to draw valid conclusions from their analysis of the individual records.

Coverage

The raw DMI (Duns Market Indicator) file was never intended as a census. It makes no pretense of covering all businesses. One of the first mistakes a naive user of the file makes is to observe that, in many instances, the coverage is quite good and to assume that an effort at undertaking a complete census was made and failed. What is remarkable is that the sample is as large as it is, not that it is incomplete.

For a variety of historical reasons, D&B concentrated its early efforts in manufacturing. Coverage in the manufacturing sector is thus quite high, and frequently exceeds estimates made by other sources such as County Business Patterns or state departments of employment security.

Recently, an effort has been made to expand coverage in the trade and service sectors. Coverage in these areas has thus improved considerably between 1969, when we began working with the file, and 1976, our most recent year. Table 2-1 presents comparisons of D&B with County Business Patterns by county by major industry group in Connecticut. These comparisons made by the Connecticut Department of Commerce, ¹ reveal a much more balanced file in 1976. Despite this improvement, the file still tends to have lower percentages of service and trade firms than it does of manufacturing. Some of this underreporting can be traced to the important role of nonprofit organizations

1. James Mahoney, Subaggregate Employment Changes in the Connecticut Economy. Connecticut Department of Commerce, 1978.

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Table 2-1

% DIFFERENCE BETWEEN DUN AND BRADSTREET
AND COUNTY BUSINESS PATTERNS
EMPLOYMENT ESTIMATES BY COUNTY

County	<u>1976</u>						
	Total Employment	AgMCon	Mfg.	Util.	Trade	FIR	Service
Fairfield	- 5.0	+ 50.4	+10.3	-22.2	-21.5	-34.9	-13.8
Hartford	-12.7	+ 13.2	-14.6	-35.5	-20.1	+ 9.6	-19.4
Litchfield	- .4	+ 66.2	+12.3	-51.9	- 1.7	-55.7	-25.3
Middlesex	- .6	*	- 3.9	- 6.1	- 9.2	+16.5	- 6.9
New Haven	- 8.7	+ 51.2	+10.6	-50.1	-10.0	-65.6	-10.7
New London	- .7	+116.7	+ 1.4	-11.0	- 6.2	-41.6	- 9.2
Tolland	- 6.4	+ 94.3	- 5.6	-39.5	-10.3	-31.7	-22.3
Windham	- 1.4	*	+11.6	-61.1	- 9.5	-68.0	-20.3
TOTAL	- 7.8	+ 40.9	+ 1.8	-36.3	-18.1	-13.3	-14.7

* Not computed, data not completely reported in County Business Patterns

County	<u>1969</u>						
	Total Employment	AgMCon	Mfg.	Util.	Trade	FIR	Service
Fairfield	-28.7	-13.8	- 2.5	-54.2	-93.8	-71.7	-28.7
Hartford	-38.0	+ 5.6	-29.5	-57.0	-41.1	-23.2	-80.0
Litchfield	-30.1	+17.5	-19.3	-64.6	-26.9	-98.1	-80.0
Middlesex	-32.8	+80.2	-20.8	-65.7	-35.3	-92.3	-75.8
New Haven	-35.7	- 2.6	- 5.2	-54.1	-35.8	-80.3	-82.8
New London	-20.5	+17.7	+ 5.2	-50.8	-27.5	-97.1	-82.2
Tolland	-21.5	+14.7	+ 6.6	+96.0	-33.1	-92.0	-79.2
Windham	-12.1	- 7.0	+14.1	-72.0	-28.7	-97.0	-88.1
TOTAL	-32.7	+ 0.3	-12.1	-54.8	-38.7	-50.6	-73.7

(schools, hospitals, fraternal organizations, etc.) and professional partnerships (doctors, lawyers, architects, engineering consultants, etc.) few of which ever enter the credit market and hence require a credit report. Some of the under coverage, of course, is due to the fact that D&B's efforts at expanding its coverage in these areas is incomplete.

Another concern is size. Some who are unfamiliar with the file tend to assume that it underrepresents smaller firms. This turns out not to be the case. Smaller firms usually pose greater credit risks than larger ones, and they are therefore well represented. Table 2-2 summarizes comparisons of the size distribution of the County Business Patterns and the DMI files. The two files are remarkably similar in their coverage of size.

A final issue is coverage of items reported. Not all data is required for each establishment. Employment estimates, SIC codes, and legal status are present for practically all records. Sales estimates are available for only 80 percent, however, and estimates of net worth were sufficiently infrequent and unreliable that we dropped them from our file.

At the risk of repetition, we will repeat that the DMI file is a sample, not a census, and should not, in general, be used to estimate total levels of employment or anything else in any particular geographic area. If estimates of a total population are desired, some calibration work of the kind performed by the Connecticut group is required.

Inherent Biases

Not only was the DMI file never intended as a census, it was never intended as a basis for studying economic change. As a result, certain reporting conventions, that are perfectly logical from D&B's point of view, cause problems when the file is used by the economic analyst. In addition, the quality

Table 2-2

Comparison of Establishment Size Distribution Between County Business Patterns
and the DMI File

	<u>1969-70</u>		<u>1972-73</u>	
	<u>CBP (Mar., 1970)</u>	<u>DMI (Dec., 1969)</u>	<u>CBP (Mar., 1973)</u>	<u>DMI (Dec., 1972)</u>
0-20	87.4	85.8	86.6	86.4
20-49	7.7	8.5	8.2	8.2
50-99	2.6	2.8	2.7	2.7
100-499	1.9	2.4	2.1	2.2
500+	<u>.3</u>	<u>.5</u>	<u>.3</u>	<u>.4</u>
	100.0	100.0	100.0	100.0

control system tolerates certain kinds of errors that have little influence on credit worthiness but that do influence the analysis of economic change over time.

Probably the most important bias stems from the underreporting of births of new firms during any particular interval. D&B makes no effort to enter each new firm into its file during the year in which it is formed. Firms enter the file as credit information is required of them. While a high percentage of any year's cohort gets into the file in the first few years, there are some firms that take several years, and there are some that never make it. Table 2-3 offers a typical distribution of the age of firms entering the file as new listings during one particular interval

We treat any firm whose year started preceded the beginning of the interval being studied as a new listing rather than a birth, and properly exclude it from our analysis of change during the interval. By so doing, we understate births (and net change) to a considerable degree. We are about to complete a calibration algorithm that will compensate for this problem and other problems about to be described. Without any adjustment, however, estimates of employment change due to births can be off by as much as a factor of two or three.

A second problem relates to the interval between measurements. Infant mortality is very high in the corporate world. A large number of firms, particularly smaller firms, that are formed die in the first year or two. Because we are sampling the file at two (or three) year intervals, by definition we miss all the firms that were born and died during the interval. Thus any measure of change tends to understate births and deaths. Our calibration algorithm will compensate for this problem as well.

Table 2-3

Percent of Firms Newly Listed by Dun and Bradstreet Between January 1, 1970
and December 31, 1972, by Year of Formation

<u>Year Formed</u>	<u>Percent of New Listings¹</u>
1-1699	.009
1700-1799	.004
1888-1849	.01
1850-1899	.15
1900-1929	1.0
1930-1939	1.8
1940-1949	6.1
1950-1959	15.3
1960-1964	17.9
1965-1969	57.7

1. Since year started is not reported for branches, new listings of branches are not included in this table.

From D&B's point of view, anytime a firm changes legal status -- because it is bought by new owners, or is merged into another company, or converts from a partnership to a corporation -- it becomes a new firm with a new set of liabilities and credit relationships. Thus its old DUNS number is retired and a new one is issued. From the economic analysts point of view, nothing has happened. It is, in most cases, the same firm with the same employees in the same building doing the same thing. Fortunately, the magnitude of such spurious changes is not great, averaging less than one percent of births and deaths in any year.

Branches are particularly difficult to deal with. Unlike subsidiaries which have lives (and credit relationships) of their own, branches are inherently part of the organization to which they belong. They typically purchase nothing on their own, nor do they borrow funds. Usually they share centralized accounting and personnel services as well. From a credit standpoint, therefore, they do not exist. D&B does not even record the year in which they started, for example, because their age is irrelevant, and, if recorded, would be misleading. They are as old, from a creditor's standpoint, as the corporation to which they belong, since it is the corporation, not the branch, that will be sued in case of difficulties.

Despite this lack of legal incentive to isolate branches, D&B has made a conscientious effort to identify branches in its DMI file since a number of marketing efforts are aimed at branches. Not knowing a branch's age creates great difficulties, however, in estimating employment change due to births of new branches. We have no inherent way of telling a new listing from a birth since we do not know when the branch was actually formed. After considerable investigation into D&B's reporting procedures, we have concluded

that most new listings of branches whose headquarters existed at the beginning of a time interval are in fact births, since the corporation would have little reason to not report an existing branch at one point in time if it chose to report it two years later. We thus treat new listings of branches of existing corporations as births. We also treat new listings of branches of corporations that were themselves born during the interval as births. By treating branches in this way we are slightly overstating branch births.

Another related problem with branches is the simple understatement of their number and the employment contained in them. Some corporations refuse to identify employment in individual branches, insisting instead on presenting only the consolidated total. D&B does not tend to force this issue, since the firm's credit worthiness is not substantially affected by the consolidation. The analyst, however, is left with an underreporting of employment in branches and an improper identification of the location of those branch jobs, since they are assumed to be located at the headquarters in the absence of any better information. This problem is not unique to the DMI file. It plagues data collected by the Census Bureau, the IRS, and the Social Security Administration. An analysis of our file suggests that over half (about 58%) of the headquarters in the file do not identify individual branches. Fortunately, however, these headquarters represent relatively few jobs in the aggregate, and further, based on our analysis of a sample of 1000 such firms, they tend to have a lower than average proportion of their total employment housed in their branches. In 1976, for example, nondisaggregated headquarters employed only 16 percent of all employees in headquarter/branch firms. Their branches account for only 5 percent of

all headquarter/branch employment and about 8 percent of all branch employment. The problem is thus not nearly so serious as the raw number of non-disaggregated firms would suggest, although any subtle analysis of branch behavior should take it into account.

The reporting process tends to understate migrants. In some cases, when an establishment moves from one area to another, its DUNS number is not forwarded by the old D&B office to the new one. After a while the new office, in frustration, issues the arriving establishment a new number so the office can go about its business of filing credit reports on the firm. Thus, from our point of view, the firm appears as a birth in the new area, and, for a while at least, as existing establishment with no change in the old one. In particular, it does not surface as a migrant. Again, it is difficult to know how often this occurs. Fortunately, migration of the sort just described represents a practically trivial percentage of all employment change, and much larger errors would have few practical consequences. There does not appear to be any particular geographic bias to the phenomenon. Nevertheless, it does produce a slight distortion in the analyst's results.

As mentioned above, we are now well along in the construction of an algorithm that will compensate for many of the biases introduced by lags and reporting intervals. The biases appear to be very regular, when controlled for industry and region, and hence can be compensated for accurately. Fortunately, most of the biases about which we know less tend to be relatively minor in their magnitudes in most analytical situations. The analyst must be terribly mindful of them, however, and avoid making subtle distinctions in areas where the affect of a bias could be significant. This is true, of course, for any data set, and is frequently ignored by, say, users of census data drawing inferences about migration. Since the D&B file is a newer data source,

however, those of us using it must pay more attention to its internal structure.

Gecoding

The Dun and Bradstreet corporation appears to do a good job of assigning state and county codes to establishments within the limits of normal clerical error. Below the county, however, several problems should be noted. First, city codes are not always unique. There are six city codes, for example, all of which are attached to firms located in the City of New Haven. Only one of these codes is identified as the City of New Haven. The rest are postal annexes, or well-defined residential sections that, in the minds of some, are separate places. Fortunately, very few firms appear to be located in the places identified by the "hidden" codes. Nevertheless, anyone performing an analysis for a city must scan all codes in the state in which the city is located and ferret out all codes that fall within the city limits.

A second problem is associated with ZIP codes. Addresses in the file do contain ZIP codes, and intracity analysis is possible using them. The problem lies with the Post Office, not D&B. The Post Office maintains ZIP codes for its own administrative convenience, and does not hesitate to change them to suit that convenience. In fact, it makes hundreds of ZIP code boundary changes a month. To the unsuspecting analyst, each boundary change during a measurement interval looks like the movement of a firm during that interval, when, in fact, the only change was a pencil mark on a Post Office map. Also, many firms use the ZIP code of the nearest large post office rather than the code of the place at which their facility is located. Anyone wishing to use ZIP codes for high-resolution analysis must first go through an elaborate editing of addresses changes before any valid results can be obtained.

A way around the ZIP code problem is census tract coding. The census tract boundaries do remain fixed for long periods of time, and there are several

software packages available that will convert addresses to census tract codes. The major difficulty in following this route is the quality of the addresses. About 20 percent of them are not recognizable by the address matching algorithms because they are not legitimate street addresses. They are names of office buildings, or industrial parks, or shopping plazas or street intersections (e.g. South and Main), none of which are precise identifiers of location. Again, a hand editing step is required to achieve accurate representation.

Clerical Errors

No data file is free of clerical errors. The possibilities of misrecording a number are nontrivial; so too are the odds of entering it improperly into the computer. D&B's own quality control procedures spot a large number of these errors and purge them before they ever get into the DMI file.

In addition, we have developed an elaborate software package that capitalizes on the fact that we have similar data for the same establishment over time. We can spot suspicious changes in employment, SIC codes, sales-to-employment ratios, or status, purge highly improbable records, and list for examination and possible correction all records within some preassigned ranges.

We feel that these procedures, coupled with D&B's own efforts, have largely eliminated the obvious errors, and have probably identified most of the subtle ones. Some undoubtedly remain, however, in a file of 5.6 million records and there is little more that can be done about them.

Misrepresentation

Not all corporations have an interest in telling the world about their exact situation. One corporate president anecdotally told this researcher that he had never told D&B the truth. When his firm was very small, he wanted it to look bigger, and, as he began to grow rapidly, he did not want others to

be aware of how fast he was penetrating his marketplace. So he inflated his earlier estimates and deflated his later ones, despite the legal risks involved in not reporting accurately to D&B.

We obviously have no way of knowing the extent of this misrepresentation. It is found in all data gathered about individuals and groups of individuals. As indicated above, some of the detailed items provided by the U.S. Census Bureau are far more matters of fantasy than of fact. Yet general results obtained from census data are quite regular and reveal clear patterns. The same appears to be true of the DMI data. While some items are distorted in some records, the general patterns of change still show through.

The frustrating thing about the D&B data is that there is virtually no practical way to measure the degree of misrepresentation. Special surveys and other forms of validation are subject to the same errors as the initial D&B inquiry. In fact, a corporation is more likely to distort its position to a researcher or government agency, in whose work it has little stake, than it is to mislead D&B who, upon discovering the distortion, could alter the company's credit rating and hence its ability to stay in business.

About the only way to check a D&B record is to visit the premises, review the books (if possible), observe what the company makes, count the number of employees, etc. The author has done this for a very small sample of the file for New Haven and found an extraordinary degree of correspondence between what is in the record and on the ground. The sample was far too small (only 40 or 50 firms) to draw any statistically valid conclusions, however.

The cost of direct, on-site validation is prohibitive for the individual researcher on any large scale. Also, the passage of time makes it virtually impossible to validate records that are more than a few months old. Comparisons with other files or surveys prove nothing, since there is no basis for

assuming greater truthfulness in one source than in another. The only way out of this dilemma is for some consortium to absorb the cost of on-site validation of a carefully drawn national sample of records from a current file. Through this test, and only through this test, will we be able to ascertain the extent of misrepresentation.

In Conclusion

The DMI file is a unique resource. It provides the analyst with a large sample of the corporate population over time, and offers the possibility of identifying individual records for further study.

It is not a simple file to use, however. It was not designed for analytical purposes, and naive attempts to use it analytically produce misleading results. As with any other complex data set, the researcher must understand precisely how it is put together, what its biases are, and how these biases can be compensated, before any valid analysis can be performed. Fortunately, most of the inherent biases in the DMI file are quite regular and can be corrected for, and those that are less regular are relatively small in magnitude. Nevertheless, errors that are small in the aggregate can become very large when detailed comparisons are made. Users of the file must thus be constantly aware of the file's characteristics when using it for analytical purposes.

Section 3

COMPONENTS OF CHANGE

One great advantage of being able to observe individual firm behavior is the ability it offers us to see in detail how change takes place as well, as what the net effect of that change is. As indicated in Section 2, we can define six demographic-sounding processes that, in combination, include all possible ways in which change occurs between two points in time in a place.

The six are:

Birth	Formation of a new establishment
Death	Dissolution of an existing establishment
Expansion	Increase in the number of employees of an existing establishment
Contraction	Decrease in the number of employees of an existing establishment
Inmigration	Movement into the area of an existing firm previously located elsewhere
Outmigration	Movement out of the area of an existing firm previously located there

In the situation where an establishment moves and changes size, it is classified as a migrant rather than expander or contractor. As will become obvious, this arbitrary decision has few practical implications since there are so few migrants.

Collectively, we refer to these six processes as the components of

change of an area. The tabulations of these components presented in this report have not been adjusted for known underreporting of births and other calibratable phenomena described in Section 2. They thus understate both births and aggregate net change. Based on our calibration work to date, however, the adjustment is fairly consistent over space and over time. The results themselves, therefore, are comparable.

Findings

Employment growth is a major focus of this report. Our first step, therefore, was to sort states by their rate of employment change to see which components accounted for most of that change during different phases of the business cycle. Table 3-1 summarizes the results. The most obvious aspect of the table is the virtually negligible role played by migration of establishments from one state to another during all time intervals. Much attention has been given by the local and national presses to migrations when they do occur, and their symbolic effect may well be important. Their direct effect on the job base, however is quite small, especially relative to the other processes at work.

Second, the death and contraction rates vary very little from one place to the next despite the rather large range of net change rates involved. Table 3-2 summarizes losses due to deaths and contractions and gains due to births and expansions from Table 3-1. Practically all the variation in net change is due to variation in the rate of replacement, not the rate of loss. And an awesome rate of loss it is. In order to break even, a state must replace about eight percent of its job base each year, or roughly

Table 3-1

Annual Rate of Employment Change for States
by Growth Rate¹ of State

State Growth Rate	<u>Births</u>	<u>Deaths</u>	<u>1969-72</u> <u>Expan.</u>	<u>Contr.</u>	<u>In.</u>	<u>Out</u>
Fast	7.5	5.6	6.2	2.7	.1	.03
Moderate	6.0	5.2	4.7	2.8	.2	.03
Slow	4.5	4.8	4.0	2.9	.03	.03
Decline	3.9	5.1	3.4	3.2	.2	.1
U.S. Ave.	5.6	5.2	4.7	2.9	.1	.03

	<u>Births</u>	<u>Deaths</u>	<u>1972-74</u> <u>Expan.</u>	<u>Contr.</u>	<u>In</u>	<u>Out</u>
Fast	6.5	4.6	5.8	2.5	.1	.05
Moderate	5.0	4.4	5.0	2.7	.05	.05
Slow	4.3	4.6	4.5	2.9	.2	.1
Decline	-	-	-	-	-	-
U.S. Ave.	5.5	4.5	5.3	2.6	.1	.05

	<u>Births</u>	<u>Deaths</u>	<u>1974-76</u> <u>Expan.</u>	<u>Contr.</u>	<u>In</u>	<u>Out</u>
Fast	9.5	5.7	5.4	3.1	.2	.05
Moderate	6.9	5.3	4.4	3.3	.1	.1
Slow	6.2	6.1	4.4	3.5	.1	.1
Decline	4.5	5.4	3.6	3.8	.2	.1
U.S. Ave.	6.7	5.7	4.4	3.4	.1	.1

1. The four classes of employment change are: Fast (over 4 percent per year), Moderate (2 to 4 percent per year), Slow (0 to 2 percent per year) and decline (less than 0 percent per year). On the average, this breakdown divides states into four roughly equal groups, although the size of the groups in any particular year is sensitive to the business cycle.

Table 3-2

Sum of Major Loss and Gain Components
by Rate of State Employment Change

<u>Period</u>	<u>State Growth Rate</u>	<u>Sum of Annual % Job Losses due to Deaths and Contractions</u>	<u>Sum of Annual % Jobs Replaced by Births and Expansions</u>
1969-72	Fast	8.3	13.7
	Moderate	8.0	10.7
	Slow	7.7	8.5
	Decline	8.3	7.3
	U.S. Ave.	8.1	10.3
1972-74	Fast	7.1	12.3
	Moderate	7.1	10.0
	Slow	7.5	8.8
	Decline	-	-
	U.S. Ave.	7.1	10.8
1974-76	Fast	8.8	14.9
	Moderate	8.6	11.3
	Slow	9.6	10.6
	Decline	9.2	8.1
	U.S. Ave.	9.1	11.1

40 percent of its job base every five year's. It is the extent of replacement that is remarkable, not the fact that a few states occasionally come up short in the process.

We note also that the rates of loss and replacement are somewhat sensitive to the business cycle. The 1969-72 was an average period, by our measures, 1972-74 was expansionary, and 1974-76 was a recession. The loss and gain rates rise and fall as the cycle rises and falls in the expected directions with the exception that the rate of replacement actually increased during the recessionary 1974-76 period. So too did the loss rate, and the net effect was a net decline. Nevertheless replacement through births and expansions continued undaunted through the rather difficult 1974-76 period.

Appendix A presents the detailed state tables by industry upon which Tables 3-1 and 3-2 are based. A perusal of the state tables reveals several phenomena that are lost in the aggregates. First, the 1974-76 slowdown affected some rapidly growing states like Arizona and Alaska a great deal.

More important is the role played by the service sector. Gains in the service sector accounted for much if not all of the growth in rapidly growing areas like Colorado, Arizona, and Florida and were the only thing keeping declining states (like Connecticut, Massachusetts, New York, New Jersey, and Rhode Island) alive, particularly during the downturn in 1974-76.

A careful look at the firm migration figures reveals a great deal of clustering. A substantial amount of all firm migration in the country occurred between New York (mostly New York City) and its surrounding areas and between the District of Columbia and its immediate environs. It would be incorrect to extend the generalization that migration has a negligible effect to these two situations, where, in fact, firms appear to be moving

at a good clip. Most of these moves, however, are relatively short-distance moves. If we draw the boundaries around greater metropolitan areas rather than around states, most of the migration vanishes.

In Conclusion

Our initial look beneath the surface raises far more questions than it answers. Although we know at this point that differential rates of job replacement are the crucial determinant of which places will grow or decline, we have little feeling for who are the major generators of these jobs and hence who we should be directing our economic development strategies toward. The next section begins our exploration of these questions.

Section 4

JOB GENERATION

Having discovered that job losses each year are about the same everywhere, and that most variations in net change are due to differential rates of replacement, most of our attention focused on the two major forms of replacement, births and expansions. We wished to learn what kinds of firms play the critical roles in job generation, and if substantial variations in these roles exist across industries and across regions.

Our first step was simply to ascertain the relative role of different kinds of firms as defined by their status -- independents, headquarters, subsidiaries, and branches. Table 4-1 summarizes our findings. The patterns for births and expansions are noticeably different. A much larger number of births are due to branches than is the case in expansions. Furthermore this trend is increasing. Between 1969 and 1976 the share of births due to branches jumped from about 50 percent to about 75 percent. Most of the shift was away from independents.

Having established branches, however, corporations are less likely to expand them. The majority of expansion growth thus falls to independents. The overall mix of births and expansions in the job generation process is about 50-50. What independents lose in births they make up in expansions and, on balance, account for about half of all jobs generated. The independents share is declining, however. By 1976 it had fallen from half to about 40 percent.

Table 4-1

Status of Firms vs Employment Gains by Region, 1969-72, 1972-74, 1974-76

Births

Percent Employment Gains in firms that are:

	<u>Time Period</u>	<u>Inde- pendent</u>	<u>Head Quarters</u>	<u>Subsi- diary</u>	<u>Branch/ HQ in State</u>	<u>Branch/ HQ out of State</u>
Northeast	1969-72	39.0	6.1	5.2	20.3	29.5
	1972-74	35.6	4.1	3.9	21.4	34.9
	1974-76	23.6	2.0	1.4	31.9	41.1
North Central	1969-72	39.7	6.3	3.5	16.0	34.5
	1972-74	30.3	3.5	2.5	20.4	43.3
	1974-76	19.9	1.4	1.1	33.1	44.5
South	1969-72	37.1	5.5	4.6	12.8	39.9
	1972-74	36.2	3.9	3.0	13.9	43.1
	1974-76	25.2	1.6	1.4	21.1	50.6
West	1969-72	40.3	5.5	4.1	20.8	29.4
	1972-74	44.0	4.0	2.5	21.5	28.0
	1974-76	24.0	1.7	1.1	31.6	41.6

Expansions

Percent Employment Gains in firms that are:

	<u>Time Period</u>	<u>Inde- pendent</u>	<u>Head Quarters</u>	<u>Subsi- diary</u>	<u>Branch/ HQ in State</u>	<u>Branch/ HQ out of State</u>
Northeast	1969-72	63.1	16.5	4.2	4.4	11.7
	1972-74	56.2	20.2	5.8	5.7	12.0
	1974-76	58.2	21.1	6.7	4.2	9.8
North Central	1969-72	58.3	15.2	3.0	8.1	15.4
	1972-74	55.4	20.7	4.6	6.0	13.2
	1974-76	54.5	20.9	5.0	6.3	13.3
South	1969-72	59.2	13.3	4.8	4.2	18.5
	1972-74	56.0	15.9	5.0	3.7	19.3
	1974-76	54.2	17.4	5.7	4.6	18.1
West	1969-72	60.4	15.6	3.1	7.5	13.3
	1972-74	58.2	21.0	3.7	6.0	11.0
	1974-76	56.9	22.2	4.6	5.3	11.0

Appendix B presents the detailed tables by industry and region upon which Table 4-1 is based. Digging beneath the aggregates, we find that the major variation in the pattern is along industry, rather than regional lines. Independents play a more important role in the farming, trade, and service sectors -- the growing sectors in our economy. Branching, on the other hand, tends to dominate job replacement in manufacturing. Furthermore, branches with headquarters in the same state are more important in agriculture and service companies while branches controlled elsewhere dominate manufacturing. This begins to suggest a substantial amount of inter-regional control, particularly in manufacturing -- a subject to which we will turn in the next section.

The major regional difference boils down to the South being different from everyone else. The notion of the south being developed by out-of-state (and, as we shall see later, out-of-region) corporations headquartered elsewhere is certainly supported by the data. About 65 percent of all jobs generated by manufacturing births in the south were in branches controlled by corporations located in a different state. While this percentage is lower for other sectors, the South's dependence on corporations located out-of-state is consistently higher than the corresponding dependence of other regions on such corporations.

Thus, while migration per se (in the physical sense) may be small, the differential location of branches (particularly manufacturing branches) plays a major role in governing where growth takes place. It is capital and management skill, not physical property, that is migrating south, and at a good clip.

In addition to knowing the status of job-generating establishments, we must know what kind of firms they are in terms of size, age and recent history so that we can single them out for policy purposes. Size was the first item to which we turn our attention. Are jobs being generated by large corporations engaged in massive branching operations or are they the consequence of small, entrepreneurially based firms starting up?

We cannot ask the size question of the establishment data provided directly in the D&B files because it is the aggregate firm, not the individual establishment, that is making the decisions, and thus it is firm size, not establishment size, that should govern our analysis. We thus undertook the massive task of assembling all the individual establishments into the "families" (or firms) to which they belong. When this family file was completed, we were then in a position to gauge the economic scale at which job generation takes place.

The aggregate results for the U.S. are presented in Table 4-2. This table summarizes figures by industry by region presented in Appendix C. In this summary table we have netted the major negative components of change (death and contractions) against the positive ones (births and expansions) to obtain a measure of the net contribution to the economy for each region. The figures represent the percentage distribution of total jobs generated in the region. The results tell a clear story. On the average about 60 percent of all jobs in the U.S. are generated by firms with 20 or fewer employees, about 50 percent of all jobs are created by independent, small entrepreneurs. Large firms (those with over 500 employees) generate less than 15 percent of all net new jobs.

There are noticeable regional variations. In the slow-growing North-

Table 4-2

1

Percentage of Total Jobs Generated by Size and Status for Regions and the U.S. between 1960 and 1976

<u>Region</u>	<u>Ownership</u>	<u>0-20</u>	<u>21-50</u>	<u>51-100</u>	<u>101-500</u>	<u>500-1</u>	<u>Total</u>
North East	Indep.	129.1%	-11.2%	-22.3%	-21.1%	24.3%	98.8%
	HQ/Br	36.4	10.5	1.3	- 6.6	-32.8	8.8
	Par/Sub.	11.6	7.2	3.6	- 5.5	-24.4	- 7.6
	Totals	177.1	6.5	-17.4	-33.3	-32.9	100.0
North Central	Indep.	52.8%	4.5%	.3%	- 2.8%	2.9	57.7
	HQ/Br	12.4	5.8	3.8	4.9	13.1	39.9
	Par/Sub.	2.0	1.7	1.2	1.0	- 3.5	2.4
	Totals	67.2	12.0	5.2	3.1	12.4	100.0
South	Indep.	42.7%	5.7%	1.5%	0.0%	.4%	50.1%
	HQ/Br	9.3	4.0	2.9	7.4	16.7	40.3
	Par/Sub.	1.5	1.5	1.1	2.0	3.3	9.6
	Totals	53.5	11.2	5.5	9.4	20.4	100.0
West	Indep.	47.8%	5.9%	2.2%	1.9%	2.9%	60.8%
	HQ/Br	10.0	4.3	3.0	6.2	8.6	32.0
	Par/Sub.	1.7	1.4	1.1	1.8	1.8	7.2
	Totals	59.5	11.6	6.3	9.3	13.3	100.0
U.S.	Indep.	51.8%	4.4%	0.0%	- 1.5%	3.1%	57.8%
	HQ/Br	11.9	4.9	3.1	5.6	10.6	36.1
	Par/Sub.	2.3	1.9	1.3	1.1	- .5	6.1
	Totals	66.0	11.2	4.3	5.2	13.3	100.0

1. Total jobs generated in each region are: Northeast (410,890), North Central (1,674,282), South (2,873,619), and West (1,800,112).

east, small businesses generate all new jobs and make up for the losses caused by differential branching and investment decisions on the part of larger firms. A look at the detailed tables in Appendix C shows a substantial decline in manufacturing jobs in the Northeast offset by gains in the trade and service sectors. This same general pattern is observed in the North Central area, but the offsets are greater. The South, of course, is the beneficiary of the northern decline, gaining substantially in all size classes in manufacturing and in everything else (with a few minor exceptions in farming).

Small firms, despite their difficulties in obtaining capital and their inherently higher death rates are still, on balance, the major generators of new jobs in our economy and, in slower growing areas, the only significant provider. Any economic development policy aimed at stimulating job growth must come to grips with this reality. It is not the relatively few large corporations, about which we hear so much in the press, that are bringing stability to older areas. It is the thousands of anonymous smaller firms that are carrying all the burden in the older sections of our country -- and the lion's share in the growing areas as well.

Not all small firms are equally productive. Initial passes through the data began to suggest a life cycle phenomenon. It was smaller, younger firms that generated jobs. Once they got much over four years in age, their job generation powers declined substantially.

To assess the magnitude of this phenomenon, we sorted establishments by age. Table 4-3 summarizes the results. Younger establishments clearly generate the great majority of jobs, particularly in the growing service sector. Job generation falls off sharply after four years of age, and

Table 4-3

Percent Distribution of New Jobs Created in Each Region Between 1974 and 1976
by Age of Establishment

<u>Industry</u>	<u>Region</u>	<u>0-4</u>	<u>5-8</u>	<u>9-12</u>	<u>13+</u>	<u>Total</u>
Manufacturing	Northeast	67.3%	13.9%	9.3%	9.6%	100%
	North Central	75.4	9.9	8.6	6.1	100
	South	74.1	15.1	6.2	5.9	100
	West	71.0	13.1	8.9	7.0	100
Trade	Northeast	78.2%	9.4%	6.2%	6.1%	100%
	North Central	81.5	8.5	5.4	4.7	100
	South	82.2	8.4	5.1	4.5	100
	West	81.8	8.7	5.1	4.6	100
Service	Northeast	79.4%	8.5%	7.4%	4.7%	100%
	North Central	84.7	7.0	4.6	3.8	100
	South	84.8	7.3	4.3	3.6	100
	West	87.3	5.9	3.4	3.4	100
Total	Northeast	75.5	10.4	7.5	6.6	100%
	North Central	80.8	8.4	6.0	4.8	100
	South	80.4	9.9	5.1	4.6	100
	West	80.9	8.8	5.5	4.8	100

declines steadily thereafter. Our economy thus counts on younger as well as smaller businesses to provide most of its replenishment jobs.

Another way of looking at this same process is to examine the odds that individual firms, starting from known conditions, will generate jobs. We have done this in several ways. First, we examined the odds of a firm expanding, contracting, or dying based on its size, age, industry, and region. For greater precision, we then measured the degree of expansion and contraction in each category. Finally, we created a measure of the establishment's history and used that history to predict "future" (known) change.

Turning first to the odds of simply expanding, contracting, or dying, Table 4-4 shows that, on the average, the odds of expanding drop with increasing size. But the main difference is between contraction and death. The bigger the firm, the more likely it is to contract and the less likely to die. There is a particularly sharp break at a size of 20 employees. Beyond 20 the odds of dying drop a good deal and the odds of contracting go way up. This is about what one would expect. An establishment with more than 20 employees will opt for layoffs rather than going out of business -- given the choice. Firms with fewer than 20 employees have much less cushion and, faced with difficulties, are more likely to fold.

If we limit our attention to firms that survive (see Table 4-5), the tendency for smaller firms to expand and for larger ones to contract becomes even more obvious. Small firms are almost four times more likely to expand than contract, while larger firms are 50 percent more likely to shrink than to grow.

Interestingly, there is little shift in the pattern of expansions and contractions with age. The only significant effect is in the manufacturing

Table 4-4

Components of Change by Age and Size for Establishments in the U.S. 1969-1976

<u>Size</u>	<u>Age</u>	<u>EXPAND</u>	<u>SHRINK</u>	<u>DIE</u>	<u>TOTAL</u>
0-20	0-4	27.6	7.6	64.8	503406
	5-9	32.7	10.4	56.9	372997
	10+	33.4	12.5	54.1	882762
	TOTALS	31.6	10.7	57.8	1759065
21-50	0-4	25.2	24.4	50.4	20867
	5-9	29.9	32.1	38.0	18950
	10+	31.8	39.0	29.2	63415
	TOTALS	30.1	34.8	35.1	103232
51-100	0-4	23.4	29.1	47.4	5486
	5-9	26.9	35.1	37.9	5111
	10+	28.7	43.6	27.7	20819
	TOTALS	27.5	39.7	32.8	31416
101-500	0-4	21.7	31.9	46.3	3369
	5-9	24.5	37.9	37.6	2595
	10+	28.7	45.6	25.7	13191
	TOTALS	26.9	42.2	30.9	19155
500+	0-4	23.9	39.6	36.6	331
	5-9	21.0	38.7	40.3	181
	10+	35.1	46.7	18.2	1631
	TOTALS	32.2	44.9	22.9	2143
TOTAL	0-4	27.4	8.6	63.9	533459
	5-9	32.4	12.0	55.6	399734
	10+	33.1	15.4	51.5	981818
	TOTALS	31.4	12.8	55.8	1915011

Table 4-5

Experience of Surviving Establishments
in the United States, 1969-1976

<u>Size</u>	<u>Age</u>	<u>% Expanding</u>	<u>% Contracting</u>
0-20	0-4	78%	22%
	5-9	76	24
	10+	73	27
	Total	75	25
21-50	0-4	51	49
	5-9	48	52
	10+	45	55
	Total	46	54
51-100	0-4	45	55
	5-9	43	57
	10+	40	60
	Total	41	59
101-500	0-4	40	60
	5-9	39	61
	10+	39	61
	Total	39	61
500+	0-4	38	62
	5-9	35	65
	10+	43	57
	Total	42	58
Total	0-4	76	24
	5-9	73	27
	10+	68	32
	Total	71	29

and other industrial sectors (see Appendix D, which presents detailed tabulations by industry and region). In these sectors, increasing age (after controlling for size) leads to an increased probability of contracting and decreased odds of dying. In other words, manufacturing firms, unlike most others, appear to learn from experience how to stay alive. Their age has very little effect on their odds of expanding, however. For all other firms, experience is worth very little in terms of influencing future growth or decline. There is little regional variation in this pattern, nor is there much variation across sectors in the economy other than the one just mentioned.

Knowing the odds of growing or declining tells us little about the magnitude of the change taking place. To gain a feeling for magnitude, we divided gains and losses into several categories (see Table 4-6). Most noticeable in the results is the degree of volatility. Changes are as likely to be large as small. There is little tendency for establishments to cluster around a mean change of zero. As before, increasing size means greater odds of contraction and lower odds of death, with a big discontinuity at size 20. Smaller firms (size 0-20) demonstrate a significantly higher chance of experiencing a big percentage gain, due in part to the small base from which that gain is computed. Looking at the detailed tables behind Table 4-6 (see Appendix E) we find relatively small variations in this pattern across regions and industries. Once again, manufacturing is slightly different, with increasing age leading to lower odds of a big gain. Otherwise, age has little effect, and most regions are experiencing the same phenomenon.

The volatility of establishments raised our interest in their history

Table 4-6

Percentage Change for Establishments by Age and Size for the U.S. 1969-76

			Percent Employment Change						
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
0-4	0-20	62.7	2.8	2.9	1.6	10.1	2.9	4.4	12.5
	21-50	46.4	8.9	6.3	7.3	14.7	5.2	5.1	6.2
	51-100	44.3	10.7	7.2	9.3	13.8	6.0	4.1	4.6
	101-500	43.6	10.6	9.2	10.2	13.5	5.0	4.7	3.2
	501+	33.3	11.8	12.4	11.8	18.5	6.1	4.4	1.7
	TOTALS	61.7	3.2	3.1	2.0	10.4	3.0	4.4	12.1
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
5-9	0-20	53.7	3.8	3.8	2.3	13.8	3.8	5.5	13.4
	21-50	34.4	11.1	8.2	9.6	18.3	6.0	6.1	6
	51-100	34.7	12.5	9.4	10.3	16.6	6.1	5.5	4
	101-500	34.8	13.0	9.3	12.8	16.2	6.0	4.6	3.4
	501+	37.2	14.3	10.7	10.7	14.8	8.2	1.0	3.1
	TOTALS	52.4	4.3	4.1	2.8	14.1	3.9	5.5	12.9
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
10+	0-20	50.2	4.2	4.4	3.0	16.2	4.3	5.7	12.0
	21-50	25.5	11.1	10.2	12.7	23.1	6.9	5.7	4.7
	51-100	24.7	13.2	11.5	14.1	21.0	6.4	5.2	3.8
	101-500	23.1	13.9	11.9	15.2	21.5	6.3	5.0	3.1
	501+	15.9	13.3	10.8	16.6	27.2	7.1	5.7	3.5
	TOTALS	47.5	5.1	5.1	4.1	16.3	4.5	5.7	11.2
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
Total	0-20	54.4	3.8	3.8	2.4	14.0	3.8	5.3	12.5
	21-50	31.2	10.7	9.0	11.1	20.6	6.4	5.6	5.3
	51-100	29.6	12.7	10.5	12.7	19.1	6.3	5.1	4
	101-500	28.1	13.2	11.1	14.0	19.4	6.1	4.9	3
	501+	20.2	13.1	11.1	15.4	24.9	7.0	5.1	3.2
	TOTALS	52.4	4.4	4.3	3.2	14.5	4.0	5.3	11.8

and the role that history plays in anticipating what will happen next. We have measurements over four points in time for most establishments, permitting us to measure changes over three intervals. We treated the first two intervals as history, using them to "predict" the 1974-76 experience. We chose two measures of history: the degree of cyclical behavior and the overall net change during both historical periods. All establishments were grouped into seven categories:

<u>Group</u>	<u>Types and Number of Changes</u>	<u>Magnitude of 1969-74 Change</u>
1	2 Expansions	Big +
2	2 Expansions	Small +
3	1 Expan./1 Contr.	Big +
4	1 Expan./1 Contr.	Small Change
5	1 Expan./1 Contr.	Big -
6	2 Contractions	Small -
7	2 Contractions	Big -

where a big change is a change greater than 50% and a small change is one less than 50% over this five year interval. Table 4-7 summarizes the results, which we found very surprising at first, and have now come to understand better. The only "expected" result is that establishments with a history of two expansions are the least likely to die. Beyond that, however, the pattern challenged our conventional wisdom. The establishments most likely to expand, for example, are the ones with the biggest losses in the previous 5 years. Evidently, if a firm survives 5 years of losses it learns a lot and, having survived, it is a prime candidate for growth.

Likewise, the establishments with the greatest odds of experiencing a big loss are the ones that have just grown the most. Having expanded they are apparently more prone to be overextended and hence to contract.

Table 4-7

Influence of Previous History on Immediate Future of Establishments in the
U.S. 1969-1976

Change: 1974-76							
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
0-20	2 Expansions	Big +	11.2	68.1	16.4	4.3	8239
	2 Expansions	Small +	10.2	77.7	9.3	2.8	6902
	1 Expan/1 Contract.	Big +	9.4	63.8	10.5	16.3	321777
	1 Expan/1 Contract.	Small Chg.	9.6	56.9	6.8	26.7	73193
	1 Expan/1 Contract.	Big -	17.8	55.8	3.3	23.1	3834
	2 Contractions	Small -	13.5	68.3	10.3	7.9	9820
	2 Contractions	Big -	23.1	58.8	5.9	12.2	835
	TOTAL		10.0	59.7	8.4	21.8	1199538
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TC</u>
21-50	2 Expansions	Big +	10.6	68.6	16.7	4.1	5722
	2 Expansions	Small +	7.6	80.1	9.5	2.8	3073
	1 Expan/1 Contract.	Big +	9.3	64.6	18.8	7.3	866
	1 Expan/1 Contract.	Small Chg.	8.4	68.3	11.7	11.7	7251
	1 Expan/1 Contract.	Big -	18.3	56.2	8.7	16.8	8350
	2 Contractions	Small -	8.6	70.6	13.4	7.4	318
	2 Contractions	Big -	20.0	57.2	9.8	13.0	293
	TOTAL		9.7	67.1	12.2	11.0	10444
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
51-100	2 Expansions	Big +	9.3	68.6	18.0	4.0	1691
	2 Expansions	Small +	7.3	81.4	9.2	2.1	1186
	1 Expan/1 Contract.	Big +	8.1	63.5	20.0	8.5	2378
	1 Expan/1 Contract.	Small Chg.	7.9	67.8	12.7	11.5	23651
	1 Expan/1 Contract.	Big -	18.1	56.4	10.0	15.5	309
	2 Contractions	Small -	7.8	72.0	13.0	7.2	140
	2 Contractions	Big -	19.1	54.3	12.1	14.5	1123
	TOTAL		9.2	66.7	13.1	10.0	34529

Table 4-7 (con't)

Change: 1974-76							
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
101-500	2 Expansions	Big +	8.6	70.4	16.9	4.1	1029
	2 Expansions	Small +	6.0	79.1	11.4	3.4	1059
	1 Expan/1 Contract.	Big +	6.6	68.6	17.1	7.6	1491
	1 Expan/1 Contract.	Small Chg.	6.9	68.3	12.2	12.6	19046
	1 Expan/1 Contract.	Big -	16.4	58.6	9.8	15.2	2097
	2 Contractions	Small -	6.9	72.0	15.3	5.9	1173
	2 Contractions	Big -	21.1	51.8	14.5	12.6	902
	TOTAL		8.2	67.7	12.6	11.6	26797
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
501+	2 Expansions	Big +	5.7	74.5	18.9	0.9	106
	2 Expansions	Small +	6.0	79.1	10.9	4.0	201
	1 Expan/1 Contract.	Big +	6.5	74.0	14.0	5.5	200
	1 Expan/1 Contract.	Small Chg.	6.1	72.5	11.0	10.4	3708
	1 Expan/1 Contract.	Big -	12.8	65.6	12.4	9.2	282
	2 Contractions	Small -	3.7	74.4	15.3	6.6	242
	2 Contractions	Big -	14.4	60.6	14.4	10.6	160
	TOTAL		6.6	72.2	11.7	9.5	4899
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
Total	2 Expansions	Big +	11.1	68.1	16.5	4.3	90944
	2 Expansions	Small +	8.9	78.8	9.5	2.8	12421
	1 Expan/1 Contract.	Big +	9.4	63.8	10.8	16.0	334508
	1 Expan/1 Contract.	Small Chg.	9.4	58.5	7.6	24.6	950859
	1 Expan/1 Contract.	Big -	17.8	56.1	4.9	21.2	52173
	2 Contractions	Small -	11.4	69.4	11.6	7.6	15829
	2 Contractions	Big -	21.9	57.6	8.0	12.6	13473
	TOTAL		9.9	60.6	8.9	20.5	1370207

The cherished dream of stability over time offers little real security. In fact, the establishments with the greatest odds of dying are the ones that have been the most stable.

There is little variation in this pattern across industries and regions (see Appendix F for detailed tabulations by industry and region). Death rates are a little lower in manufacturing, with corresponding higher contraction rates, as expected. Otherwise, the tendencies just described appear to be the result of management psyche and not of location or industry.

The hint of a volatile world gained from the distribution of gains and losses takes on an even clearer meaning as we examine corporate histories. The dynamic, growing firm is the one that is frequently taking gambles, that is as likely as not to suffer severe downturns, and that is tough or wise enough to survive them. Having grown, it is just as likely to decline again in the future. In short, it is a banker's nightmare. On the other hand, the banker's dream -- a stable firm that minds its business and repays its loans -- in fact is offering a false sense of security, and is more likely than most to go out of business leaving the bank holding the bag.

In Conclusion

We can begin to form a profile of the job generating firm. It is small. It tends to be independent. It is volatile. This profile does not vary much across industries and regions. It poses a vary challenging problem to those concerned about economic development.

Before addressing the policy issues associated with development, however, we must explore one final piece of the puzzle: who controls the jobs in any

particular place. Is it mostly local folks or is it distant corporate managers whose concern for local affairs is minimal? That is the question addressed in the next section.

Section 5

INTERREGIONAL CONTROL

Our discovery that much of the growth in various regions in the United States was controlled by firms headquartered out-of-state raises a broader question: is this cross-state control mainly within regions (a North Carolina branch with a headquarters in Atlanta) or does the control extend far greater distances across regional boundaries. The opportunities for such distant control certainly exist with the advent of modern travel and telecommunications technology. We wished to learn whether or not corporations were capitalizing upon these opportunities and, if so, how.

We separated subsidiaries from branches in our analysis. Based on the evidence presented in Section 4, we were not surprised to find subsidiaries playing a minor role. Branches on the other hand, accounted for roughly 40 percent of all job replacement by the mid-1970's, and an even greater share in manufacturing. The locus of control of branches is thus a non-trivial issue.

Tables 5-1 and 5-2 summarize the results. In a nutshell, the lines of control do indeed stretch well beyond state boundaries. For branches, we have gone one step farther and computed the percent of net job growth in each region controlled by each other region (see Table 5-3). As can be seen, the degree and nature of control varies by industry. In manufacturing, the Northeast and North Central sections dominate branching in their own

Table 5-1

Net Employment Change Due to Differential Treatment of Branches by Headquarters¹

<u>Controlling Branches in:</u>					
<u>Industry</u>	<u>Location of Headquarters</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Manu- facturing	N. East	96.9	131.0	176.1	52.7
	N. Central	62.0	256.0	236.0	71.7
	South	12.8	18.3	89.6	22.1
	West	11.5	32.0	72.9	38.1
	<u>Location of Headquarters</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Other Industry	N. East	59.7	31.9	50.5	20.9
	N. Central	19.3	79.6	39.5	25.2
	South	6.7	15.1	94.0	4.6
	West	6.3	12.1	35.8	57.1
	<u>Location of Headquarters</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Trade	N. East	110.0	56.3	74.4	27.2
	N. Central	42.8	208.1	122.4	56.1
	South	8.8	24.1	131.5	11.9
	West	8.9	17.7	22.9	79.4
	<u>Location of Headquarters</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Service	N. East	86.1	30.7	45.0	27.2
	N. Central	14.0	71.6	23.7	13.0
	South	70.2	110.2	269.6	91.1
	West	7.3	7.7	19.6	62.2

1. Employment figures are in thousands of jobs and have not been corrected for underreporting of births and deaths. Correcting for underreporting should raise all the net figures proportionately without changing their relative magnitudes very much.

Table 5-2

Net Employment Change Due to Differential Treatment of Subsidiaries by Parents¹Controlling Subsidiaries in:

<u>Industry</u>	<u>Location of Parents</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Manu- facturing	N. East	-13.5	12.4	6.8	.6
	N. Central	-11.8	.8	8.0	5.7
	South	- .8	2.0	- 2.7	1.8
	West	- 9.8	- 6.9	2.7	18.9

	<u>Location of Parents</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Other Industry	N. East	-11.6	.8	-15.3	2.6
	N. Central	- 1.0	- 3.9	1.4	- .3
	South	- 2.2	- 1.4	51.4	0.0
	West	.1	.5	- 1.2	2.4

	<u>Location of Parents</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Trade	N. East	- 8.4	.9	8.1	.5
	N. Central	- .5	4.1	.3	1.5
	South	.5	.2	8.3	0.0
	West	- 1.7	- .9	- 2.2	- 1.7

	<u>Location of Parents</u>	<u>N. East</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Service	N. East	3.4	6.4	2.8	2.4
	N. Central	2.4	7.6	5.1	.8
	South	- 1.1	2.1	12.1	.1
	West	- .8	2.5	5.1	3.9

1. Employment figures are in thousands of jobs and have not been corrected for underreporting of births and deaths. Correcting for underreporting should raise all the net figures proportionately without changing their relative magnitudes very much.

Table 5-3

Percent Distribution of Net Employment Change due to Differential Treatment
of Branches by Headquarters

<u>Industry</u>	<u>Location of Headquarters</u>	<u>Controlling Branches in:</u>			
		<u>N. East.</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Manu- facturing	N. East	53%	30%	31%	29%
	N. Central	34	59	41	39
	South	7	4	16	12
	West	<u>6</u>	<u>7</u>	<u>13</u>	<u>21</u>
		100%	100%	100%	100%
Other	N. East	65%	23%	23%	19%
	N. Central	21	57	18	23
	South	7	11	43	4
	West	<u>7</u>	<u>9</u>	<u>16</u>	<u>53</u>
		100%	100%	100%	100%
Trade	N. East	65%	18%	21%	16%
	N. Central	25	68	35	32
	South	5	8	37	7
	West	<u>5</u>	<u>6</u>	<u>7</u>	<u>45</u>
		100%	100%	100%	100%
Service	N. East	48%	14%	13%	14%
	N. Central	8	33	7	7
	South	40	50	75	47
	West	<u>4</u>	<u>3</u>	<u>5</u>	<u>32</u>
		100%	100%	100%	100%

areas as well as the South and West. A similar, but less pronounced pattern is observed for Other Industry and Trade.

In the rapidly growing service sector, however, the pattern is practically reversed. Southerners are aggressively forming service corporations in the South and branching elsewhere. Southerners control practically as much branch job growth in the Northeast as Northerners do, far more in the North Central area than Midwesterners do, and more in the West than Westerners do while dominating their own large and growing marketplace in the South. As the service sector grows still further, the balance of control between North and South will equalize, but only by sustaining substantial differences in the pattern of control across industrial groupings in the economy.

On a more general level, the degree of interregional control is quite large. Corporations do not hesitate at all to open and control branches in all parts of the country. In any particular sector of its economy, a region is as likely as not to control less than half of the branch-related jobs in that sector. From the standpoint of the local economic development expert trying to stimulate job development, it suggests that there are high rewards for traveling about the nation trying to persuade firms to open branches. From a federal standpoint, however, it may be difficult to stimulate employment growth in one particular area by trying to effect its local economy when such a large percent of all jobs created in that economy are generated and controlled through decisions made by executives thousands of miles away.

Section 6

POLICY IMPLICATIONS

It is no wonder that efforts to stem the tide of job decline have been so frustrating -- and largely unsuccessful. The firms that such efforts must reach are the most difficult to identify and the most difficult to work with. They are small. They tend to be independent. They are volatile. The very spirit that gives them their vitality and job generating powers is the same spirit that makes them unpromising partners for the development administrator.

The easier strategy of working with larger, "known" corporations whose behavior is better understood will not be, and has not been, very productive. Few of the net new jobs generated in our economy are generated by this group. Furthermore, the larger corporations, using their financial strength, are the first to redistribute their operations out of declining areas into growing ones. They do not hesitate to locate branches in greener pastures, placing an even greater burden on the smaller firms in struggling areas like the Northeast.

There is no clear way out of this quandary -- only general guidelines, and most of them are of a negative, "do not" nature. Do not, for example, expend resources attempting to stem physical migration -- in the textile industry sense -- because it is relatively insignificant and counterbalancing. Do not count on, or address major resources toward, larger corporations,

whose powers of net job generation are small and whose tendencies to shift location quickly are well demonstrated. Do not try to influence the rate of job loss, since it is practically the same in all states, and worry instead about how to encourage job replacement.

Advice on how to encourage job replacement is more difficult to give. We know that smaller, volatile firms are the major replacers of lost jobs, but we have no experience in identifying and assisting them in large numbers. Because they are small, we must reach many of them to have a measurable effect. Because they are volatile, we must monitor each individual firm's performance carefully if we are to gain maximum benefit from our invested dollars (on the high side) and avoid scandal (on the low side).

From this researcher's viewpoint it seems like a very difficult problem to solve administratively. A massive bureaucracy would be required to monitor individual small businesses on the scale required to change the direction of an area's economy. New England alone houses about 193,000 businesses with 20 or fewer employees, not to mention those in the 20 to 500 range (another 27,000). And New England represents a relatively small percent of the national total. It seems almost certain that our approach must be indirect, not direct, relying on existing networks of institutions rather than building large new ones.

It is not clear what to offer job-replacing firms. Some have argued persuasively that small businesses need, use well, and cannot easily get, capital. Beyond that, however, the answers are less clear. Most studies of location find that local corporate tax differences are a relatively

unimportant reason for choosing a location. Our own work on factor costs¹ suggests that, in many important instances, factor cost differences are small and/or are disappearing and that, even when they are large, they do not have a dominant effect. The most rapidly growing places in the United States in the 1970's tend to have higher than average factor costs.

2

Our own survey work, and that of others, suggests that, for many businesses, the quality of the life experienced by the managers of companies is very important. They want to avoid personal (as distinct from corporate) income taxes, crime, congestion, and the hassle of government regulation and want to find places which they find physically attractive with good schools and housing and recreational activities. We plan to delve much more deeply into this phenomenon in the months ahead. Suffice it to say here that strategies of economic development may have to address the quality of the physical environment of a place and the attitudes of its local government at least as much as the immediate economic problems and needs of its corporate inhabitants if it is to be successful.

The puzzle is a complicated one. We cannot afford to spend large sums on incentives that generate a relatively small number of jobs. But nor can we afford to ignore the effect that corporate decisions are having on millions of individuals and households. We must learn to shoot with a rifle rather than a shotgun if we are to be effective and noninflationary. Rifle shooting requires a kind of knowledge that we simply have not had, and must obtain if we are going to do it at all well.

1. See Birch, Regional Differences in Factor Costs: Labor, Land, Capital and Transportation. MIT Program on Neighborhood and Regional Change, 1978.

2. See a recent analysis of 3,000 central city businesses by Matz entitled Central City Businesses -- Plans and Problems (Joint Economic Committee, 1979).

Section 7

NEXT STEPS

Knowing what we now do about the job generation process, it appears that the logical next step is to discover why new firms, particularly smaller, more volatile ones, choose to locate where they do and how existing firms choose where to make expansion decisions. Also, it is important to verify that loss rates are as constant when disaggregated by industry and type of place as they are in the aggregate by state. The two most general questions, then, are:

1. What attracts new, mostly smaller firms to some places much more than others, and what causes differential expansion decisions to follow similar patterns?
2. Are losses really the same everywhere when disaggregated by industry and type of place?

There are several ways to address these questions. Historically two main avenues of inquiry have been followed. Some have conducted surveys and detailed case studies to delve as deeply as possible into management motivations. Others, for lack of better data, have tried to relate aggregate figures on net change by industry to characteristics of places. We would like to bridge these two traditions by analyzing the behavior of individual firms over time, but on a massive enough scale that we can relate our findings to the characteristics of places in which these firms are choosing to locate. We can now do this because we have, in addition to our data on firms, an extensive data set that contains several thousand measures of each county

over time, detailed records on 2.0 million individuals (by county subgroup), and files on 1.5 million members of the workforce.

Based on the literature we have reviewed thus far, there appear to be different schools of thought on why firms locate where they do. The traditional economic approach places great emphasis on the firm's need to minimize factor costs subject to rather severe transportation and communications constraints. Recent survey work, on the other hand, finds businesspeople increasingly sensitive to quality of life considerations as factor cost differences become less sharp and as transportation and communications restrictions are reduced through the Interstate System and modern telecommunications. From her recent survey of 3,000 firms, for example, Debbie Matz, an economist at the Joint Economic Committee, concluded:

To recap, the greatest difference between cities perceived to have the most favorable business climate and the least favorable business climate are in quality of life characteristics and not business related factors...

Thus, the business climate is perceived as the sum total of environmental factors which directly affect the firm's owners, employees, their families as well as the operation of the business itself.

Our own preliminary work on factor cost differences suggest a mixed bag as well. In some cases, factor cost differences explain a great deal of the growth pattern. In others, cost differences seem to have little effect. We discovered a number of rapidly growing places whose factor costs are significantly higher than average and an even larger number of places whose costs are quite low but whose economies are declining.

More explicitly, then, our next step is to relate the behavior of different kinds of firms to a variety of circumstances to see if, through disaggregation we can unravel this puzzle. We will separate our determinants into

the following three measurable groups:

1. Cost Factors
 - a. Land
 - b. Labor (cost by occupation)
 - c. Capital
 - d. Transportation
 - e. Capital
 - f. Energy
2. Market Factors
 - a. Population Growth
 - b. Employment Growth
 - c. Accessibility to customers and suppliers
 - d. Major Government Facilities
3. Quality of Life Factors
 - a. Physical Environment (climate, density, recreational facilities)
 - b. Local government attitudes toward business (as measured by unemployment compensation statutes, personal income taxes, local regulations, land development incentives, etc.)
 - c. Schools
 - d. Safety (if we can find a way to measure it)

We will also relate our findings to certain basic problems that economic development policies usually address:

1. Unemployment
2. Occupational skills
3. Groups not directly affected by economic policy -- particularly the elderly who are not mobile.
4. Income and earnings

We will, of course, perform these analyses for different industries and different size and age groups to search for variations across industries and along corporate life cycles.

We know from our own experience and that of others¹ that SIC codes do not provide a very useful way of grouping firms if an effort is being made to predict how firms behave spatially. Much preferable are groupings that reflect the nature of inputs and markets, not products. We will use our data on individual firms to derive a classification scheme that is more sensitive to the factors causing differential economic growth.

From a policy standpoint, answers to the questions we have posed should be of direct relevance. While we may not be able to completely answer the Secretary's question posed to us last February (How can we capitalize on what we know about Houston to help revitalize New Haven?), we should be able to move several steps in that direction. We will learn which combinations of factors affect different kinds of firms at different points in their life cycles. Rather than writing off whole cities, or attempting to revitalize them through general (probably inflationary) economic stimulation, we will attempt to rifle-shoot -- suggesting which kinds of firms offer little prospect of generating jobs in cities (or rural areas) of a certain class, and which kinds of improvements have a reasonable chance of attracting firms based on the specific needs and desires of those firms. New Haven, for example, may not be able to compete effectively for the same kinds of firms that seek out Houston, but, by capitalizing on its strengths (proximity to large markets, major university, located at the intersection of two Interstate highways, skilled labor force, etc.) it may be well suited to certain specific kinds of firms if it would be willing to improve the quality of its environment along dimensions that those firms tend to view as important.

1. See, for example Bergsman, Greenston, and Healy, "A Classification of Economic Activities Based on Location Patterns;" Journal of Urban Economics, 1975.

THE JOB GENERATION PROCESS

by

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THE JOB GENERATION PROCESS

SUMMARY

As our economy becomes more complicated, and as we strive to guide that economy in directions that will make it most productive for those who depend upon it for their livelihood, we must understand its inner workings better. In particular, we must understand how the activities of individual firms combine to create aggregate changes. For it is individual firms, not some abstraction called "the economy," that generate jobs, export products, utilize natural resources, and through their location decisions, determine settlement patterns in this country.

We have known very little about how the parts of the economy fit together to create a whole. Our focus has been either on the whole, and aggregate measures of it (like the GNP and its components), or on the individual firm as the unit of analysis, without reference to how firms combine to create the whole. Input/output analysis is one of the major exceptions to this generalization, striving as it does to relate transactions between businesses to the overall levels of activity in the economy. Welcome as this innovation has been, it suffers (through no fault of its own) from out-of-date data, and it does not trace its analysis back to the individual firm -- only to fairly large aggregations of firms trading with each other

as blocs.

Our inability to understand the gap between micro and macro is now seriously hampering our efforts to develop economic policies that will generate jobs for the people and places that need them without causing inflation. We know very little about who generates jobs, where they generate them, who controls those jobs, and who is thus most likely to respond to economic development incentives. In the absence of such knowledge, our approach has usually been to stimulate whole economies with such shotgun-like policies as tax incentives and easy access to money and public works programs. This can be a very expensive and inflationary strategy if, in fact, most of the recipients do not use the incentives to increase employment and/or productivity. What we need, and have lacked, is the ability to target our incentives to those who can make good use of them without wasting taxpayers monies on those who cannot.

The project summarized in this brief paper represents an effort to bridge the gap from micro to macro, and having bridged the gap, to begin to understand the job generation process. We have approached this problem by creating a data file on each of 5.6 million business establishments. Collectively they encompass about 82 percent of all private sector employment. For each establishment, we know, for four different points in time (1969, 1972, 1974 and 1976) the establishment's size, age, 4-digit SIC code, corporate affiliation, location, and sales. By comparing these items over time for the same establishment, we are able to define and measure the processes by which change takes place (new formations, expansions, contractions, dissolutions, and movements) for each establishment. By aggregating establishments in any given place, we can, for the first time, describe in considerable

detail how economic change occurs in that place. Thus, in a sense, we have developed an "economic microscope" that permits the policy maker to look beneath the surface, to see what is going on at the "atomic level," and presumably to develop more rifle-like policies that will be in harmony with the observed inner workings.

Our first steps, summarized in this initial report, were aimed simply at understanding the structure of the job generation process. We were interested in answering obvious initial questions. Who generates jobs, and who destroys them? Do the rates of gain and loss vary from place to place or over time? Who controls the process; is it mostly local or does it reach across areas and regions? How do the answers to these questions vary by industry? How can you separate those firms that will create jobs in the future from those who will not based on their past history? These are the questions we began asking, and these are the questions for which initial answers are presented in this report.

We have organized our endeavor into three broad categories: (1) components of change, (2) job generation and (3) interregional control. This brief summary will highlight the major findings and will present summary support for these findings when possible. Detailed analysis and tables are contained in the full report.

Components of Change

The first thing we did when we had merged all the establishment records together was simply to examine the relative magnitude of the six basic ways in which employment change can take place:

1. Births
2. Deaths
3. Expansions
4. Contractions
5. In-moves
6. Out-moves

We did this by state and for a set of 315 areas in the United States that are essentially the metropolitan and rural parts of BEA areas. We also did it for several time intervals to see if we could observe any variations caused by the business cycle (see Table 1). From these detailed tables we observe:

1. Virtually no firms migrate from one area to another in the sense of hiring a moving van and relocating their operations. The oft-cited move of textiles and shoes from New England to the South represented a rare fluke in the 1950's, not an example of a significant process today.
2. The rate of job loss due to the other two processes causing loss (deaths plus contractions) is about the same everywhere and is quite high -- 8% per year. Northern cities are not losing jobs faster than southern ones, nor are cities losing jobs particularly faster than suburbs. It appears to be management skill rather than location that determines job loss. This shows up quite clearly in Table 1, where states are grouped according to their rate of growth. Most of the variation in net change is due to variation in the rate of job generation (births and expansions), not to variation in the rate of loss.
3. The components of change do seem sensitive to the business cycle over time. For most states, births and expansions were fewer and deaths and contractions were more numerous during the economic downturn in the mid 1970's than during the more prosperous period preceding the downturn.

The findings suggest that it makes little sense to attempt to influence firms to move (in the physical sense), nor is there much opportunity, short of influencing the business cycle, to influence the rate at which firms contract or go out of business. Practically all the leverage lies in affecting where new firms locate and where existing firms choose to expand. It thus becomes quite important to know what kinds of firms generate jobs.

Table 1

Annual Rate of Employment Change for States
by Growth Rate¹ of State

State Growth Rate	<u>Births</u>	<u>Deaths</u>	<u>1969-72</u> <u>Expan.</u>	<u>Contr.</u>	<u>In.</u>	<u>Out</u>
Fast	7.5	5.6	6.2	2.7	.1	.03
Moderate	6.0	5.2	4.7	2.8	.2	.03
Slow	4.5	4.8	4.0	2.9	.03	.03
Decline	3.9	5.1	3.4	3.2	.2	.1
U.S. Ave.	5.6	5.2	4.7	2.9	.1	.03
	<u>Births</u>	<u>Deaths</u>	<u>1972-74</u> <u>Expan.</u>	<u>Contr.</u>	<u>In</u>	<u>Out</u>
Fast	6.5	4.6	5.8	2.5	.1	.05
Moderate	5.0	4.4	5.0	2.7	.05	.05
Slow	4.3	4.6	4.5	2.9	.2	.1
Decline	-	-	-	-	-	-
U.S. Ave.	5.5	4.5	5.3	2.6	.1	.05
	<u>Births</u>	<u>Deaths</u>	<u>1974-76</u> <u>Expan.</u>	<u>Contr.</u>	<u>In</u>	<u>Out</u>
Fast	9.5	5.7	5.4	3.1	.2	.05
Moderate	6.9	5.3	4.4	3.3	.1	.1
Slow	6.2	6.1	4.4	3.5	.1	.1
Decline	4.5	5.4	3.6	3.8	.2	.1
U.S. Ave.	6.7	5.7	4.4	3.4	.1	.1

1. The four classes of employment change are: Fast (over 4 percent per year), Moderate (2 to 4 percent per year), Slow (0 to 2 percent per year) and decline (less than 0 percent per year). On the average, this breakdown divides states into four roughly equal groups, although the size of the groups in any particular year is sensitive to the business cycle.

Job Generation

We have approached job generation from several different points of view, but the main focus in each instance has been to identify those firms that historically have contributed the most to replacing the 8% per year losses caused by death and contraction, so that such firms can be singled out for policy purposes.

Table 2 shows the relative contribution of different types of firms (as defined by their status) to the generation of jobs either by forming new establishments or by expanding.

1. Roughly 50% of the replacement is due to births and 50% is due to expansions.
2. About 40% of the birth-generated jobs and 60% of the expansions are produced by independent, free-standing entrepreneurs. In combination, then, about half of the total jobs generated are generated by independents, half by multi-part corporations.
3. Branching is quite important, both in absolute magnitude and in its differential effect on where growth takes place. The south attracts many more branches than the north. Thus it is differential branching, not physical migration, that causes many of the regional differences in job growth. Also, branching seems to be growing in importance over time.
4. Branching is more important in manufacturing than in other sectors of the economy.

We are still left with the question: What kind of establishments and firms are generating jobs within these broad status categories? Is it large small firms that are taking up the slack, and in what industries?

Before answering that question, we had to take a complicated and time-consuming step. The data we start with is recorded for each establishment -- separate facility, be it a branch store or plant, a subsidiary, a part or an independent. Yet it is firms, not establishments, that

Table 2

Status of Firms vs Employment Gains by Region, 1969-72, 1972-74, 1974-76

Births
Percent Employment Gains in firms that are:

	<u>Time Period</u>	<u>Inde- pendent</u>	<u>Head Quarters</u>	<u>Subsi- diary</u>	<u>Branch/ HQ in State</u>	<u>Branch/ HQ out of State</u>
Northeast	1969-72	39.0	6.1	5.2	20.3	29.5
	1972-74	35.6	4.1	3.9	21.4	34.9
	1974-76	23.6	2.0	1.4	31.9	41.1
North Central	1969-72	39.7	6.3	3.5	16.0	34.5
	1972-74	30.3	3.5	2.5	20.4	43.3
	1974-76	19.9	1.4	1.1	33.1	44.5
South	1969-72	37.1	5.5	4.6	12.8	39.9
	1972-74	36.2	3.9	3.0	13.9	43.1
	1974-76	25.2	1.6	1.4	21.1	50.6
West	1969-72	40.3	5.5	4.1	20.8	29.4
	1972-74	44.0	4.0	2.5	21.5	28.0
	1974-76	24.0	1.7	1.1	31.6	41.6

Expansions
Percent Employment Gains in firms that are:

	<u>Time Period</u>	<u>Inde- pendent</u>	<u>Head Quarters</u>	<u>Subsi- diary</u>	<u>Branch/ HQ in State</u>	<u>Branch/ HQ out of State</u>
Northeast	1969-72	63.1	16.5	4.2	4.4	11.7
	1972-74	56.2	20.2	5.8	5.7	12.0
	1974-76	58.2	21.1	6.7	4.2	9.8
North Central	1969-72	58.3	15.2	3.0	8.1	15.4
	1972-74	55.4	20.7	4.6	6.0	13.2
	1974-76	54.5	20.9	5.0	6.3	13.3
South	1969-72	59.2	13.3	4.8	4.2	18.5
	1972-74	56.0	15.9	5.0	3.7	19.3
	1974-76	54.2	17.4	5.7	4.6	18.1
West	1969-72	60.4	15.6	3.1	7.5	13.3
	1972-74	58.2	21.0	3.7	6.0	11.0
	1974-76	56.9	22.2	4.6	5.3	11.0

are making job expansion decisions. So, before we can identify the economic scale at which jobs are being generated, we must first bundle all the members of each corporate family into a single entity called the Firm, and then do our analyses for firms.

When we completed the bundling process, we began to ask questions about firm size. We know that the rate of loss is more or less constant for all kinds of firms within places. So we broke out each of the six components of change by size of firm and netted the losses against the gains to see which firms were net job generators. Table 3 presents the results for the United States as a whole. They are rather striking:

1. Small firms (those with 20 or fewer employees) generated 66% of all new jobs generated in the U.S.
2. Small, independent firms generated 52% of the total.
3. Middle sized and large firms, on balance, provided relatively few new jobs.
4. There was considerable regional variation in this pattern. Small business generated all net new jobs in the Northeast, an average percentage in the Midwest, and around 54 and 60 percent in the South and West respectively.

It appears that it is the smaller corporations, despite their higher failure rates, that are aggressively seeking out most new opportunities, while the larger ones are primarily redistributing their operations.

This very strong, basic finding raises questions about a life cycle phenomenon. Could it be that most firms start small, that some grow, and that once a corporation has stabilized at some level, it becomes mature and contributes very little to job generation? We began to search for such life cycle phenomena.

A first step was to return to individual establishments and determine which age categories accounted for most of the births and expansions. Table 4

Table 3

1
Percentage of Total Jobs Generated by Size and Status for Regions and the
U.S. between 1969 and 1976

<u>Region</u>	<u>Ownership</u>	<u>0-20</u>	<u>21-50</u>	<u>51-100</u>	<u>101-500</u>	<u>500+</u>	<u>Total</u>
North East	Indep.	129.1%	-11.2%	-22.3%	-21.1%	24.3%	98.8%
	HQ/Br	36.4	10.5	1.3	- 6.6	-32.8	8.8
	Par/Sub.	11.6	7.2	3.6	- 5.5	-24.4	- 7.6
	Totals	177.1	6.5	-17.4	-33.3	-32.9	100.0
North Central	Indep.	52.8%	4.5%	.3%	- 2.8%	2.9	57.7
	HQ/Br	12.4	5.8	3.8	4.9	13.1	39.9
	Par/Sub.	2.0	1.7	1.2	1.0	- 3.5	2.4
	Totals	67.2	12.0	5.2	3.1	12.4	100.0
South	Indep.	42.7%	5.7%	1.5%	0.0%	.4%	50.1%
	HQ/Br	9.3	4.0	2.9	7.4	16.7	40.3
	Par/Sub.	1.5	1.5	1.1	2.0	3.3	9.6
	Totals	53.5	11.2	5.5	9.4	20.4	100.0
West	Indep.	47.8%	5.9%	2.2%	1.9%	2.9%	60.8%
	HQ/Br	10.0	4.3	3.0	6.2	8.6	32.0
	Par/Sub.	1.7	1.4	1.1	1.8	1.8	7.2
	Totals	59.5	11.6	6.3	9.3	13.3	100.0
U.S.	Indep.	51.8%	4.4%	0.0%	- 1.5%	3.1%	57.8%
	HQ/Br	11.9	4.9	3.1	5.6	10.6	36.1
	Par/Sub.	2.3	1.9	1.3	1.1	- .5	6.1
	Totals	66.0	11.2	4.3	5.2	13.3	100.0

1. Total jobs generated in each region are: Northeast (410,890), North Central (1,674,282), South (2,873,619), and West (1,800,112).

Table 4

Percent Distribution of New Jobs Created in Each Region Between 1974 and 1976
by Age of Establishment

<u>Industry</u>	<u>Region</u>	<u>0-4</u>	<u>5-8</u>	<u>9-12</u>	<u>13+</u>	<u>Total</u>
Manufacturing	Northeast	67.3%	13.9%	9.3%	9.6%	100%
	North Central	75.4	9.9	8.6	6.1	100
	South	74.1	15.1	6.2	5.9	100
	West	71.0	13.1	8.9	7.0	100
Trade	Northeast	78.2%	9.4%	6.2%	6.1%	100%
	North Central	81.5	8.5	5.4	4.7	100
	South	82.2	8.4	5.1	4.5	100
	West	81.8	8.7	5.1	4.6	100
Service	Northeast	79.4%	8.5%	7.4%	4.7%	100%
	North Central	84.7	7.0	4.6	3.8	100
	South	84.8	7.3	4.3	3.6	100
	West	87.3	5.9	3.4	3.4	100
Total	Northeast	75.5	10.4	7.5	6.6	100%
	North Central	80.8	8.4	6.0	4.8	100
	South	80.4	9.9	5.1	4.6	100
	West	80.9	8.8	5.5	4.8	100

summarizes the results:

1. Young firms play a crucial role, generating about 80% of all replacement jobs.
2. This pattern holds across all sectors of the economy and across all regions.

Having discovered that age as well as size made a big difference, we began to analyze along both dimensions separately in most of our work. A first step was to return to the components of change and ask: For those establishments existing in 1969, what had happened to them by 1976, and how did it happen. The results, presented for the U.S. in Table 5, are consistent with our aggregate findings, and add some new dimensions as well.

1. The odds of an establishment dying over this 7-year period are quite high (as we already know from Tables 1 and 2 for a shorter interval).
2. The odds of dying vs contracting are quite sensitive to size -- with a sharp break around 20 employees. Those establishments below 20 are more likely to die than contract. Those above 20 lay off part of their workforce before going out of business.
3. Of those who survive, small firms are four times more likely to expand than contract, and larger firms are 50 percent more likely to shrink than to grow.

The odds of an establishment dying, growing, or declining give little feeling for the magnitude of the resulting employment changes. Table 6 gives us a feeling for the distribution of employment generation by age and size. Now we can see the relative magnitude of the changes as well as their direction. As can be seen:

1. The corporate population is quite volatile. Conditional on surviving, establishments are almost as likely to experience big changes as small ones -- particularly small establishments. While there is some clustering around the mean, it is not nearly so great as we had anticipated.

Table 5

Components of Change by Age and Size for Establishments in the U.S. 1969-1976

<u>Size</u>	<u>Age</u>	<u>EXPAND</u>	<u>CONTRACT</u>	<u>DIE</u>	<u>TOTAL</u>
0-20	0-4	27.6	7.6	64.8	503406
	5-9	32.7	10.4	56.9	372897
	10+	33.4	12.5	54.1	882762
	TOTALS	31.6	10.7	57.8	1759065
21-50	0-4	25.2	24.4	50.4	20867
	5-9	29.9	32.1	38.0	18950
	10+	31.8	39.0	29.2	63415
	TOTALS	30.1	34.8	35.1	103232
51-100	0-4	23.4	29.1	47.4	5486
	5-9	26.9	35.1	37.9	5111
	10+	28.7	43.6	27.7	20819
	TOTALS	27.5	39.7	32.8	31416
101-500	0-4	21.7	31.9	46.3	3369
	5-9	24.5	37.9	37.6	2595
	10+	28.7	45.6	25.7	13191
	TOTALS	26.9	42.2	30.9	19155
500+	0-4	23.9	39.6	36.6	331
	5-9	21.0	38.7	40.3	181
	10+	35.1	46.7	18.2	1631
	TOTALS	32.2	44.9	22.9	2143
TOTAL	0-4	27.4	8.6	63.9	533459
	5-9	32.4	12.0	55.6	399734
	10+	33.1	15.4	51.5	981818
	TOTALS	31.4	12.8	55.8	1915011

Table 6

Percentage Change for Establishments by Age and Size for the U.S. 1969-76

			<u>Percent Employment Change</u>						
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
0-4	0-20	62.7	2.8	2.9	1.6	10.1	2.9	4.4	12.5
	21-50	46.4	8.9	6.3	7.3	14.7	5.2	5.1	6.2
	51-100	44.3	10.7	7.2	9.3	13.8	6.0	4.1	4.6
	101-500	43.6	10.6	9.2	10.2	13.5	5.0	4.7	3.2
	501+	33.3	11.8	12.4	11.8	18.5	6.1	4.4	1.7
	TOTALS	61.7	3.2	3.1	2.0	10.4	3.0	4.4	12.1
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
5-9	0-20	53.7	3.8	3.8	2.3	13.8	3.8	5.5	13.4
	21-50	34.4	11.1	8.2	9.6	18.3	6.0	6.1	6.2
	51-100	34.7	12.5	9.4	10.3	16.6	6.1	5.5	4.
	101-500	34.8	13.0	9.3	12.8	16.2	6.0	4.6	3..
	501+	37.2	14.3	10.7	10.7	14.8	8.2	1.0	3.1
	TOTALS	52.4	4.3	4.1	2.8	14.1	3.9	5.5	12.9
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
10+	0-20	50.2	4.2	4.4	3.0	16.2	4.3	5.7	12.0
	21-50	25.5	11.1	10.2	12.7	23.1	6.9	5.7	4.7
	51-100	24.7	13.2	11.5	14.1	21.0	6.4	5.2	3.8
	101-500	23.1	13.9	11.9	15.2	21.5	6.3	5.0	3.1
	501+	15.9	13.3	10.8	16.6	27.2	7.1	5.7	3.5
	TOTALS	47.5	5.1	5.1	4.1	16.8	4.5	5.7	11.2
Age	Size	Death	-50 to -99	-25 to -49	-1 to -24	0 to 24	25 to 49	50 to 99	100+
Total	0-20	54.4	3.8	3.8	2.4	14.0	3.8	5.3	12.5
	21-50	31.2	10.7	9.0	11.1	20.6	6.4	5.6	5.3
	51-100	29.6	12.7	10.5	12.7	19.1	6.3	5.1	4.1
	101-500	28.1	13.2	11.1	14.0	19.4	6.1	4.9	
	501+	20.2	13.1	11.1	15.4	24.9	7.0	5.1	5
	TOTALS	52.4	4.4	4.3	3.2	14.5	4.0	5.3	11.8

2. This phenomenon is not very sensitive to age. Maturity does not guarantee stability in the harsh corporate world. Each year is a new year, and the fact that an establishment has survived for 10 years seems to have little effect on what will happen to it in the 11th year other than increasing its odds of being there.

The fact that age has little effect on next year's expectations does not mean that the recent experience of the establishment should have no effect. If we wish to identify firms that promise to generate jobs in the future, one potentially interesting clue is likely to be the experience of the firm's establishments in the recent past. With three different time intervals in the files, it is possible to trace the history of each individual establishment. The first two intervals (1969-72 and 1972-74) were treated as history, and we assessed what effect this five-year history had on the ability of the establishment to survive and/or thrive in the rather difficult period 1974-76. In particular, we defined seven possible historical trajectories through 1974:

<u>Trajectory</u>	<u>Types and Number of Changes</u>	<u>Magnitude of Change 69-74</u>
1	2 Expansions	Big +
2	2 Expansions	Small +
3	1 Expan/1 Contract.	Big +
4	1 Expan/1 Contract.	Small Change
5	1 Expan/1 Contract.	Big -
6	2 Contractions	Small -
7	2 Contractions	Big -

where a big change is greater than 50% and a small change is less than 50% over this five year interval. Table 7 reveals the behavior of each establishment that survived the 1969-74 period during 1974-76. Some of the results

Table 7

Influence of Previous History on Immediate Future of Establishments in the
U.S. 1969-1976

Change: 1974-76							
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
0-20	2 Expansions	Big +	11.2	68.1	16.4	4.3	82396
	2 Expansions	Small +	10.2	77.7	9.3	2.8	6902
	1 Expan/1 Contract.	Big +	9.4	63.8	10.5	16.3	321777
	1 Expan/1 Contract.	Small Chg.	9.6	56.9	6.8	26.7	731939
	1 Expan/1 Contract.	Big -	17.8	55.8	3.3	23.1	38349
	2 Contractions	Small -	13.5	68.3	10.3	7.9	9820
	2 Contractions	Big -	23.1	58.8	5.9	12.2	8355
	TOTAL		10.0	59.7	8.4	21.8	1199538
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
21-50	2 Expansions	Big +	10.6	68.6	16.7	4.1	5721
	2 Expansions	Small +	7.6	80.1	9.5	2.8	3073
	1 Expan/1 Contract.	Big +	9.3	64.6	18.8	7.3	8664
	1 Expan/1 Contract.	Small Chg.	8.4	68.3	11.7	11.7	72515
	1 Expan/1 Contract.	Big -	18.3	56.2	8.7	16.8	8350
	2 Contractions	Small -	8.6	70.6	13.4	7.4	3187
	2 Contractions	Big -	20.0	57.2	9.8	13.0	2933
	TOTAL		9.7	67.1	12.2	11.0	104444
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
51-100	2 Expansions	Big +	9.3	68.6	18.0	4.0	1691
	2 Expansions	Small +	7.3	81.4	9.2	2.1	1186
	1 Expan/1 Contract.	Big +	8.1	63.5	20.0	8.5	2376
	1 Expan/1 Contract.	Small Chg.	7.9	67.8	12.7	11.5	23651
	1 Expan/1 Contract.	Big -	18.1	56.4	10.0	15.5	3095
	2 Contractions	Small -	7.8	72.0	13.0	7.2	1407
	2 Contractions	Big -	19.1	54.3	12.1	14.5	1123
	TOTAL		9.2	66.7	13.1	10.0	34526

Table 7 (con't)

Change: 1974-76							
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
101-500	2 Expansions	Big +	8.6	70.4	16.9	4.1	1029
	2 Expansions	Small +	6.0	79.1	11.4	3.4	1059
	1 Expan/1 Contract.	Big +	6.6	68.6	17.1	7.6	1491
	1 Expan/1 Contract.	Small Chg.	6.9	68.3	12.2	12.6	19046
	1 Expan/1 Contract.	Big -	16.4	58.6	9.8	15.2	2097
	2 Contractions	Small -	6.9	72.0	15.3	5.9	1173
	2 Contractions	Big -	21.1	51.8	14.5	12.6	902
	TOTAL		8.2	67.7	12.6	11.6	26797
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
501+	2 Expansions	Big +	5.7	74.5	18.9	0.9	106
	2 Expansions	Small +	6.0	79.1	10.9	4.0	201
	1 Expan/1 Contract.	Big +	6.5	74.0	14.0	5.5	200
	1 Expan/1 Contract.	Small Chg.	6.1	72.5	11.0	10.4	3708
	1 Expan/1 Contract.	Big -	12.8	65.6	12.4	9.2	282
	2 Contractions	Small -	3.7	74.4	15.3	6.6	242
	2 Contractions	Big -	14.4	60.6	14.4	10.6	160
	TOTAL		6.6	72.2	11.7	9.5	4899
<u>Size</u>	<u>Number and Type of Changes 1969-74</u>	<u>Mag. of Change 1969-74</u>	<u>BIG+</u>	<u>NEUTRAL</u>	<u>BIG-</u>	<u>DEATH</u>	<u>TOTAL</u>
Total	2 Expansions	Big +	11.1	68.1	16.5	4.3	90944
	2 Expansions	Small +	8.9	78.8	9.5	2.8	12421
	1 Expan/1 Contract.	Big +	9.4	63.8	10.8	16.0	334508
	1 Expan/1 Contract.	Small Chg.	9.4	58.5	7.6	24.6	850859
	1 Expan/1 Contract.	Big -	17.8	56.1	4.9	21.2	52173
	2 Contractions	Small -	11.4	69.4	11.6	7.6	15829
	2 Contractions	Big -	21.9	57.6	8.0	12.6	13473
	TOTAL		9.9	60.6	8.9	20.5	1370207

are what we expected, some are very surprising (but consistent):

1. Two periods of expansion substantially lower the odds of death in the third period, and tend to raise the odds of a substantial gain in the third period.
2. On the other hand, a big gain in the past tends also to lead to a higher than average expectation of a big loss. Volatility cuts both ways; what has gone up has a higher than average tendency to go down in the next period.
3. The biggest gainers of all, curiously but very consistently, are establishments that declined the most during the recent past, but survived. These establishments have a higher than average expectation of dying, but, if they make it, they are the ones most likely to generate a large number of new jobs in the future. On balance, they are in fact two or three times more likely to be large job generators.
4. Firms that didn't do much of anything in the past (one up, one down, not much change) -- the so-called stable firms -- are among the most likely to die and the least likely to expand. There is not much to be said for stability.
5. There is little variation in these tendencies across regions and industries.

A pattern begins to emerge in all of this. The job generating firm tends to be small. It tends to be dynamic (or unstable, depending on your viewpoint) -- the kind of firm that banks feel very uncomfortable about. It tends to be young. In short, the firms that can and do generate the most jobs are the ones that are the most difficult to reach through conventional policy initiatives.

Interregional Control

There is a nagging question that persists throughout the debate over growth in different parts of the country: To what extent is apparent growth in one part of the country (like the South) really being controlled by firms

headquartered elsewhere (like in the North)? As corporate families were bundled together, we were careful to keep track of the location of the parent or headquarters of each branch or subsidiary. We are thus now able to address this question. As we observed earlier, branching is the main form of corporate expansion. Table 8 shows the extent of the interregional control of branches. As can be seen:

1. There is a great deal of interregional control. While the majority of jobs generated in branches and subsidiaries in a region tend to be under the control of headquarters and parents in the same region, this is not always the case, and in many instances, the majority is a bare majority.
2. In manufacturing, the great majority of jobs generated in the South are controlled in the Northeast and North Central parts of the country.
3. Relatively few corporations anywhere are opening or expanding facilities in the Northeast. The North Central section is slightly better off.
4. Even in the trade sector, almost two thirds of the Southern growth is controlled by northern corporations.
5. Only in the service industries does each region tend to dominate its own territory, with the interesting anomaly that, in this newest and most rapidly expanding sector of the economy, southern corporations are dominating northern and western establishments. In branches, for example, southern headquarters generated almost as many service jobs in the Northeast as northern firms did, substantially more jobs in the midwest than midwesterners did, and substantially more jobs in the West than westerners did.

We thus see a strange mix of old and the new. While northerners continue to dominate the declining manufacturing sector as it relocates (through differential investment) in the south, entrepreneurial southerners are latching on to the growing service sector and are aggressively dominating the generation of jobs in this sector throughout the country. In the process, they are effectively precluding entry by northerners in the South by dominating the growing southern market.

Table 8

Percent Distribution of Net Employment Change due to Differential Treatment
of Branches by Headquarters

<u>Industry</u>	<u>Location of Headquarters</u>	<u>Controlling Branches in:</u>			
		<u>N. East.</u>	<u>N. Central</u>	<u>South</u>	<u>West</u>
Manu- facturing	N. East	53%	30%	31%	29%
	N. Central	34	59	41	39
	South	7	4	16	12
	West	<u>6</u>	<u>7</u>	<u>13</u>	<u>21</u>
		100%	100%	100%	100%
Other	N. East	65%	23%	23%	19%
	N. Central	21	57	18	23
	South	7	11	43	4
	West	<u>7</u>	<u>9</u>	<u>16</u>	<u>53</u>
		100%	100%	100%	100%
Trade	N. East	65%	18%	21%	16%
	N. Central	25	68	35	32
	South	5	8	37	7
	West	<u>5</u>	<u>6</u>	<u>7</u>	<u>45</u>
		100%	100%	100%	100%
Service	N. East	48%	14%	13%	14%
	N. Central	8	33	7	7
	South	40	50	75	47
	West	<u>4</u>	<u>3</u>	<u>5</u>	<u>32</u>
		100%	100%	100%	100%

On a more general level, there is a tremendous amount of interregional influence and control. Corporations do not hesitate at all to open and expand operations elsewhere in the country as it suits their needs. We cannot at all assume that each region holds its destiny in its own hands. In fact, a much safer assumption is that half (or more) of the jobs generated by multi-establishment corporations in a region are controlled outside of that region.

In Conclusion

It is no wonder that efforts to stem the tide of job decline have been so frustrating -- and largely unsuccessful. The firms that such efforts must reach are the most difficult to identify and the most difficult to work with. They are small. They tend to be independent. They are volatile. The very spirit that gives them their vitality and job generating powers is the same spirit that makes them unpromising partners for the development administrator.

The easier strategy of working with larger, "known" corporations whose behavior is better understood will not be, and has not been, very productive. Few of the net new jobs generated in our economy are generated by this group. Furthermore, the larger corporations, using their financial strength, are the first to redistribute their operations out of declining areas into growing ones. They do not hesitate to locate branches in greener pastures, placing an even greater burden on the smaller firms in struggling areas like the Northeast.

There is no clear way out of this quandary -- there are only general guidelines -- and most of them are of a negative, "do not" nature. Do not, for example,

expend resources attempting to stem physical migration -- in the textile industry sense -- because it is relatively insignificant and counterbalancing. Do not count on, or address major resources toward, larger corporations, whose powers of net generation are small and whose tendencies to shift location quickly are well demonstrated. Do not try to influence the rate of job loss, since it is practically the same in all states, and worry instead about how to encourage job replacement.

Advice on how to encourage job replacement is more difficult to give. We know that smaller, volatile firms are the major replacers of lost jobs, but we have no experience in identifying and assisting them in large numbers. Because they are small, we must reach many of them to have a measurable effect. Because they are volatile, we must monitor each individual firm's performance carefully if we are to gain maximum benefit from our invested dollars (on the high side) and avoid scandal (on the low side).

From this research's viewpoint it seems like a very difficult problem to solve administratively. A massive bureaucracy would be required to monitor individual small businesses on the scale required to change the direction of an area's economy. New England alone houses about 193,000 businesses with 20 or fewer employees, not to mention those in the 20 to 500 range (another 27,000). And New England represents a relatively small percent of the national total. It seems almost certain that our approach must be indirect, not direct, relying on existing networks of institutions rather than building large new ones.

It is not clear what to offer job-replacing firms. Some have argued persuasively that small businesses need, use well, and cannot easily get, capital. Beyond that, however, the answers are less clear. Most studies of location find that local corporate tax differences are a relatively unimportant

reason for choosing a location. Our own work on factor costs¹ suggests that, in many important instances, factor costs differences are small and/or are disappearing and that, even when they are large, they do not have a dominant effect. The most rapidly growing places in the United States in the 1970's tend to have higher than average factor costs.

Our own survey work, and that of others,² suggests that, for many businesses, the quality of life experienced by the managers of companies is very important. They want to avoid personal (as distinct from corporate) income taxes, crime, congestion, and the hassle of government regulation and want to find places which they find physically attractive with good schools and housing and recreational activities. We plan to delve much more deeply into this phenomenon in the months ahead. Suffice it to say here that strategies of economic development may have to address the quality of the physical environment of a place and the attitudes of its local government at least as much as the immediate economic problems and needs of its corporate inhabitants if they are to be successful.

The puzzle is a complicated one. We cannot afford to spend large sums on incentives that generate a relatively small number of jobs. But nor can we afford to ignore the effect that corporate decisions are having on millions of individuals and households. We must learn to shoot with a rifle rather than a shotgun if we are to be effective and noninflationary. Rifle-shooting requires a kind of knowledge that we simply have not had, and must obtain if we are going to do it at all well.

1. See Birch, Regional Differences in Factor Costs: Labor, Land, Capital and Transportation. MIT Program on Neighborhood and Regional Change, 1978.

2. See a recent analysis of 3,000 central city businesses by Matz entitled Central City Businesses -- Plans and Problems (Joint Economic Committee, 1979).

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