New England Economic Review

July/August

New England Economic Review

July/August

In this issue . . .

Regional Unemployment Rates — Why Are They So Different?

BY LYNN E. BROWNE*

THE high unemployment of the 1970s has been accompanied by marked regional disparities. In 1975 unemployment rates in the nine census regions ranged from 5.2 to 10.2 percent. Such regional differences clearly exacerbate the unemployment problem. If the national unemployment rate is unacceptably high, rates in large parts of the country are higher still. If the national unemployment rate is brought down to the full employment level, whole regions may be left with rates well above it while other areas experience labor shortages.

To some extent the wide variation in regional unemployment rates in the seventies reflects the high overall level of joblessness. However, regional differences are not constant either absolutely or in proportion to the national rate. For example, the Northeast which during the late sixties enjoyed unemployment rates below the national average emerged in the seventies as an area of high unemployment. With the 1970 recession unemployment in the Northeast rose above the national rate and through 1976 the gap steadily widened. What causes such differences in regional unemployment rates and why do they change over time?

This article attempts to answer these questions. Part I looks at the changes in regional unemployment rates since 1960 and compares these rates with regional differences in employment growth. Part II considers the contribution to regional unemployment of labor force growth and composition. Part III develops a model integrating employment and labor force changes and determines, through regression analysis, the roles played by such factors as wage costs, regional sensitivity to national business cycles, and differential rates of capital accumulation.

Part I — The Pattern of Regional Unemployment 1960–1976

Figure 1 shows unemployment rates in the Nation and its four major geographic regions for the years 1960 to 1976.[1] The locations of these regions and their member states are depicted in Figure 2. For all four regions the distinction

---

---

[1] The four major regions are the Northeast, the North Central, the South and the West. The largest, the South, is composed of three divisions — the South Atlantic (SAC), the East South Central (ESC) and the West South Central (WSC). The remaining regions all have two divisions: New England (NE) and the Mid-Atlantic (MAC) in the Northeast, the East North Central (ENC) and West North Central (WNC) in the North Central, and the Mountain (MTN) and Pacific (PAC) in the West. Annual unemployment rates for the four regions and the nine divisions are listed in Appendix A.

5

Figure 1

AVERAGE UNEMPLOYMENT RATES BY REGION
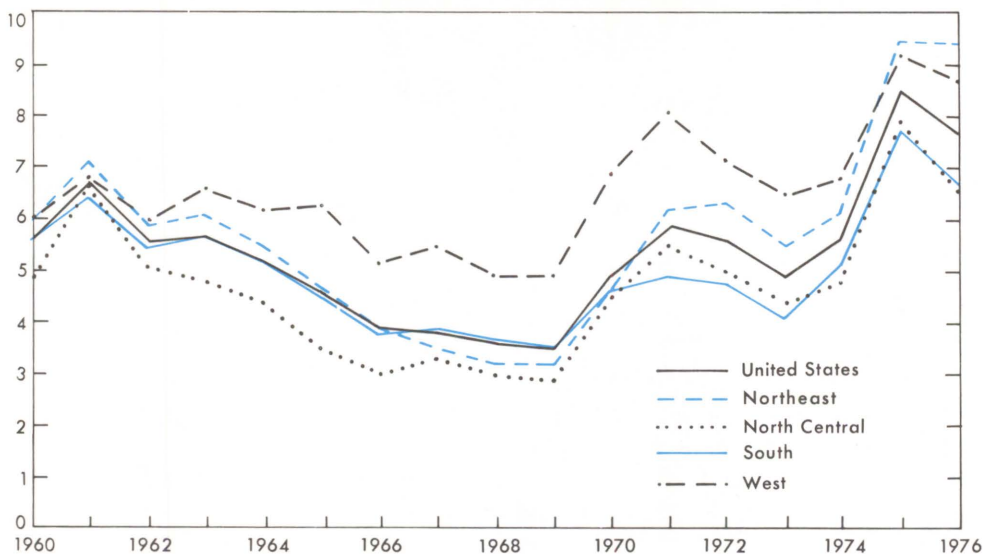
Source: 1960-1972 Monthly Labor Review , March 1974, p. 20.
1973: U.S. Department of Labor, Handbook of Labor Statistics 1975, p. 60.
1974, 1975, 1976: Unpublished information from the Bureau of Labor Statistics.

between the sixties and the seventies is marked. The sixties were characterized by steadily declining unemployment rates. The second half of the decade saw some of the lowest unemployment rates of the entire postwar period. In the seventies, on the other hand, unemployment rates fluctuated sharply around what thus far has been an increasing trend.

Throughout both periods, unemployment in the West was above the national average. Rates in the Pacific states were generally the highest in the country, and until 1972 those in the smaller Mountain division were also usually above average. In contrast, the North Central region consistently experienced low rates of unemployment. This was particularly true of the western section which year after year enjoyed the Nation's lowest unemployment rates. The industrial east division, more sensitive to the

national business cycle, had more volatile and somewhat higher rates.

While relative unemployment rates in the West and North Central regions were fairly stable, substantial shifts occurred between the Northeast and the South. During the sixties unemployment rates in the South closely followed the national average, while those in the Northeast declined relative to the rest of the country. In the late sixties unemployment in the Northeast was significantly below the national average and below much of the South. This situation changed dramatically with the 1970–71 recession. Between 1969 and 1971 the unemployment rate in the Northeast rose 3 percentage points; in the South less than half as much. Since that time the South has had below average unemployment, while the Northeast has consistently exceeded the national rate. New England,

Figure 2

REGIONS AND DIVISIONS OF THE UNITED STATES
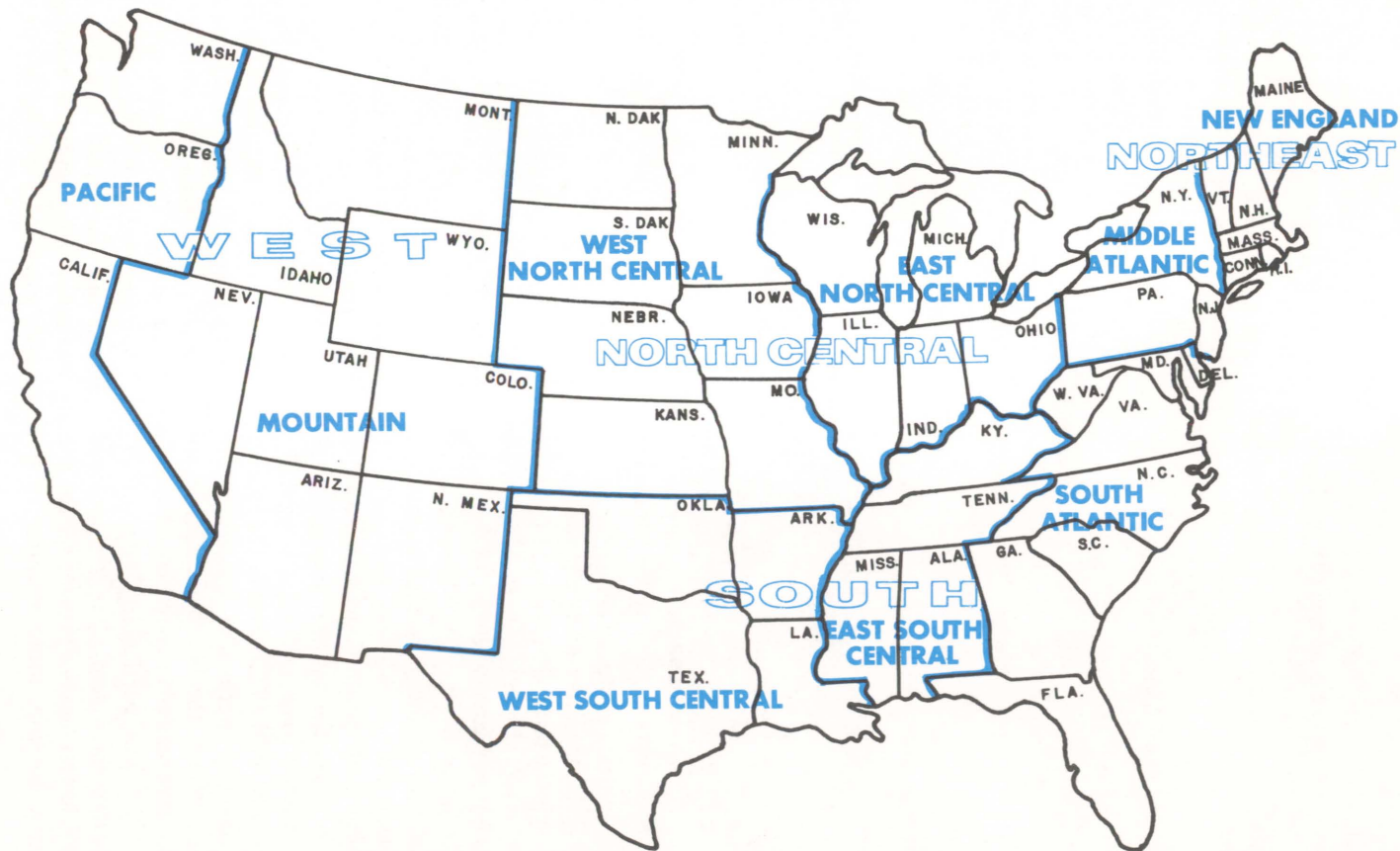
Note: Pacific division includes Alaska and Hawaii.

in particular, did not fully recover from the 1970–71 recession and it was severely affected by the 1975 downturn. In 1975 its unemployment rate of 10.2 percent was the highest in the country.

Unemployment and Employment Growth

An increase in the unemployment rate is usually thought to be associated with a decrease in the level of employment. However, a comparison of unemployment rates and regional changes in employment produces a number of anomalies (Table 1). The West, which had the Nation's highest rates of unemployment during most of the sixties and seventies, also had the greatest employment increases. The North Central region, on the other hand, experienced both low unemployment rates and slow employment growth. This is particularly striking in the West North Central division. During the sixties employment in this area grew substantially more slowly than in the country as a whole, yet it had the lowest unemployment rate in the Nation.

In the remaining regions, the Northeast and the South, the relationships between unemployment and employment growth have been a little more as one would expect, particularly in the seventies. Since 1970 the South has enjoyed rapid growth and low unemployment rates,

TABLE 1

Summary of Regional Unemployment Rates and Employment Growth 1960–76

a)   Average Unemployment Rates

	U.S.	NORTHEAST			NORTH CENTRAL			SOUTH				WEST		
		TOTAL	NE	MAC	TOTAL	ENC	WNC	TOTAL	SAC	ESC	WSC	TOTAL	MTN	PAC
1960–64	5.8	6.1	5.1	6.4	5.2	5.7	3.7	5.7	5.8	5.8	5.5	6.3	5.5	6.6
1965–69	3.9	3.7	3.3	3.9	3.1	3.4	2.6	3.9	3.7	4.2	4.0	5.4	4.8	5.5
1970–74	5.4	5.7	6.2	5.6	4.8	5.2	3.9	4.7	4.5	4.9	4.9	7.1	5.5	7.6
1975	8.5	9.5	10.2	9.3	7.9	8.9	5.2	7.7	8.5	7.9	6.4	9.2	7.5	9.8
1976	7.7	9.4	9.1	9.6	6.6	7.3	5.0	6.7	7.4	6.2	5.8	8.7	7.4	9.1

b) Employment Growth — Percent

	U.S.	TOTAL	NE	MAC	TOTAL	ENC	WNC	TOTAL	SAC	ESC	WSC	TOTAL	MTN	PAC
1960–70	19.5	13.4	18.5	11.8	15.8	17.2	12.5	23.6	28.0	15.2	22.3	29.7	28.6	30.0
1970–74	9.5*	2.9	5.4	2.1	7.8	7.4	8.8	14.0	15.1	13.1	12.7	14.0	23.8	11.0
1974–76	1.6*	-.6	1.8	-1.4	1.0	.2	3.0	2.0	1.5	.1	3.9	5.1	4.4	5.3
1970–76	11.3*	2.3	7.3	.7	8.9	7.6	12.0	16.2	16.9	13.2	17.2	19.8	29.3	16.9

* Employment changes for the U.S. are based on the sum of the regional employment figures.

SOURCES: Part a) 1960-72: *Monthly Labor Review,* March 1974, p. 20. 1973: U.S. Department of Labor, *Handbook of Labor Statistics 1975,* p. 60. 1974, 1975 and 1976: unpublished information from the Bureau of Labor Statistics.

Part b) 1960-70: *1960 Census of Population,* Vol. 1, adjusted to exclude 14 and 15 year olds, and *1970 Census of Population, U.S. Summary, General Social and Economic Characteristics.* 1970-76: U.S. Department of Labor, *Employment and Training Report of the President 1977,* Tables D3 and D4, and unpublished information from the Bureau of Labor Statistics.

while the Northeast has faced above average unemployment and the smallest increase in jobs in the country. Yet even here there is no simple tie between employment growth and unemployment. During the sixties growth in the South far surpassed that in the Northeast, but unemployment rates in the two regions were similar and in the late sixties somewhat lower in the Northeast.

To understand why high unemployment rates can exist in rapidly growing areas and, conversely, why low unemployment rates may occur where the expansion in jobs is very small, one must recognize that the unemployment rate is equal to the difference between the labor force and the number employed, all divided by the labor force. Thus, the unemployment rate reflects not only what is happening to employment, but also changes in the labor force.

Part II — The Labor Force

By definition and for calculation purposes the labor force is the total of all persons employed, or unemployed and seeking work.[2] Conceptually, however, the labor force is not a residual. It is the most fundamental of the three concepts — the labor force, the number employed and the number unemployed — for while the decision to seek work can be influenced at the margin by the probability of employment, the *primary* determinants of the labor force are the population of working age and cultural norms affecting work habits.

Table 2 shows for the four major regions and their divisions, the growth in the population of working age, labor force participation rates, and finally the growth in the labor force itself.

Regional differences in population growth can cause striking differences in the growth of the

labor force and thus the number seeking jobs. For example, in the sixties the national population aged 16 and over increased 17 percent; however, among regions growth ranged from a low of 9 percent in the West North Central division to almost 30 percent in the Pacific. In general, the South and West experienced rapid population growth during both the sixties and seventies, while the northern regions grew comparatively slowly.

This pattern of growth reflects both differences in rates of natural increase and migration. In the late forties and fifties birth rates in the South and the Mountain states of the West were relatively high. Consequently, the proportion of the population under 16 in 1960 and the subsequent increase in the adult population were greater in these regions than in the rest of the country.

These natural differences in rates of population growth were reinforced, particularly in the West and the South Atlantic states, by migration. The West drew migrants from all over the country but especially from the North Central region. The Pacific states also attracted a disproportionate number of immigrants from abroad. Those moving to the South Atlantic, on the other hand, came most frequently from the Northeast. Within the Northeast population shifts from the Mid-Atlantic to New England helped the latter maintain a rate of growth in the sixties only slightly below the national average, while the population of the Mid-Atlantic increased much more slowly.

Also contributing to increases in the labor force in each region were changes in participation rates, the proportion of the working age population seeking work. Nationally the participation rate rose roughly 2 percentage points from 1960 to 1976, with the greatest increase occurring in the seventies. This increase was due entirely to a rising female participation rate; that of males actually declined. All regions saw some

---

[2] U.S. Bureau of Labor Statistics, *BLS Handbook of Methods for Surveys and Studies,* 1976, p. 6.

TABLE 2

Population and Labor Force Growth 1960–70 and 1970–76

	U.S.	NORTHEAST			NORTH CENTRAL			SOUTH				WEST		
		TOTAL	NE	MAC	TOTAL	ENC	WNC	TOTAL	SAC	ESC	WSC	TOTAL	MTN	PAC
A) 1960–1970														
Civilian Population														
16+, % Change 60–70	16.9	11.1	14.7	10.1	12.2	13.5	9.3	20.1	24.4	12.0	19.1	29.3	27.4	29.9
Civilian Labor Force														
Participation Rates														
1960	56.7	57.7	58.5	57.4	57.0	57.5	56.0	55.0	56.4	52.9	54.4	57.7	56.9	58.0
1970	57.6	58.0	60.1	57.4	58.5	58.8	57.5	56.0	57.2	54.0	55.5	58.0	57.3	58.3
Civilian Labor Force														
% Change 60–70	18.6	11.8	17.8	10.0	15.0	16.2	12.3	22.2	26.4	14.2	21.5	30.0	28.3	30.6
B) 1970–1976														
Civilian Population														
18+, % Change 70–76	12.4	6.9	10.3	5.8	8.8	8.4	9.9	17.0	18.9	13.2	16.4	18.4	26.7	15.9
Civilian Labor Force														
Participation Rates														
1970	63.1	61.9	65.6	60.8	64.4	64.4	64.3	62.6	63.3	60.8	62.6	63.5	64.0	63.4
1976	64.3	62.4	66.7	61.1	65.8	65.5	66.4	63.6	64.4	61.7	63.6	65.6	66.8	65.2
Civilian Labor Force														
% Change 70–76	14.5	7.8	12.1	6.3	11.1	10.1	13.4	18.9	20.9	14.8	18.4	22.2	32.2	19.2

NOTE: The labor force participation rates for 1970 are higher in section B than A for the following reasons:
1. because of data limitations the working age population in section B is 18 and over rather than the customary 16 and over.
2. the labor force figures in section B are those developed by state employment agencies under U.S. Department of Labor guidelines. They tend to be higher than those in the *1970 Census of Population.*
SOURCE: 1960–70 — *Census of Population.*
1970–76 — Population: Bureau of the Census through Data Resources, Inc.
Labor Force: *Employment and Training Report of the President,* Table B–3; and unpublished information from the Bureau of Labor Statistics.
U.S. figures are the totals for the region.

increase in participation. During the sixties the greatest increases occurred in the South and in the North Central region. In the seventies there was a sharp jump in participation in the West. The Northeast consistently had very small increases in participation: the larger Mid-Atlantic division showed no change in participation in the sixties and only a very modest increase in the seventies. New England, on the other hand, experienced significant increases in both periods.

These combinations of population growth and changes in participation rates have produced wide variations in regional labor force growth. At the national level the civilian labor force increased roughly 15 percent from 1970 to 1976. Among regions increases ranged from 6 percent in the Mid-Atlantic to 32 percent in the Mountain states. For the South and the West very rapid population growth dominates the labor force picture regardless of changes in participation. In the North Central region, on the other hand, substantial increases in participation have produced labor force increases much closer to the national average than their population gains, while in the Northeast small increases in participation have reinforced the effects of slow population growth.

As with employment there is no straightforward relationship between labor force growth

and the unemployment rate. An increasing number of job seekers does not necessarily mean high rates of unemployment. While the fast-growing West has had relatively high unemployment rates, the fast-growing South has not. Rather, the differences in labor force growth explain how the differences in employment growth and unemployment observed in Table 1 can be compatible.

Labor Force Composition

The labor force affects unemployment not only by definition, representing the number seeking jobs, but also through its composition. The labor force is made up of individuals with diverse skills, backgrounds, and occupations. Within a region a particular set of these individuals may be unusually important and if that group has special unemployment characteristics, national economic trends affecting it will have a disproportionate impact on the unemployment picture for the entire region.

Perhaps the most common way of breaking the labor force into groups is according to sex, race, and age. Such a breakdown reveals that in good times and bad, white males 20 and over have the lowest unemployment rates. As Appendix B demonstrates, higher rates for nonwhites, women, and teenagers are both persistent over time and nationwide. The importance of these three groups — teenagers, women, and nonwhites — to each region is shown in Table 3. The greatest variation is among nonwhites. Nationally, nonwhites accounted for 11 percent of the labor force, but their share ranged from 20 percent in the South Atlantic to 3 percent in New England and the Mountain states. Because of this variation, the nonwhite share of the labor force can have a significant influence on regional unemployment rates, and changes in the employment status of nonwhites can affect the

TABLE 3

The Nonwhite, Female and Teenage Shares of the Labor Force, 1975
(Percent)

	Nonwhites 16+	Women 16+	Teenagers 16–19 yrs. old
United States	11.4	40.0	9.5
Northeast	8.5	40.0	8.9
New England	3.2	41.3	10.3
Mid-Atlantic	10.4	39.6	8.5
North Central	7.6	39.4	10.7
East No. Central	8.9	39.3	10.5
West No. Central	4.4	39.4	11.0
South	17.3	40.4	8.9
South Atlantic	20.4	41.5	8.8
East So. Central	16.4	39.6	8.2
West So. Central	13.0	38.9	9.4
West	10.4	40.2	9.4
Mountain	3.2	39.0	10.6
Pacific	12.6	40.5	9.0

SOURCE: Unpublished tabulations from the *Current Population Survey*, Bureau of Labor Statistics.

relative positions of different regions. In 1975, the national unemployment rate for nonwhites was 13.9 percent and that for whites 7.8 percent. With these rates and assuming other labor force differences are offsetting, the effect of having 20 percent of the labor force nonwhite rather than 3 percent would be an additional percentage point on the regional unemployment rate.[3]

For women the situation is quite different. They make up approximately 40 percent of the labor force; but because their share is fairly similar in all regions the difference between male and female unemployment does not contribute very much to regional differences.

---

[3] The percentage point is calculated as follows:

$$[13.9 (.20) + 7.8 (.80)] - [13.9 (.03) + 7.8 (.97)]$$
$$= 13.9 (.17) - 7.8 (.17) = 1.04.$$

Teenagers accounted for 9.5 percent of the labor force in 1975 with a range from 8.2 percent in the East South Central division to 11 percent in the West North Central states. Because the variation among regions is quite small, one would not expect teenagers to have much effect on regional unemployment differences. However, the unemployment rate for teenagers has been so high — 20 percent in 1975 — that even a spread between shares of only 3 percen-

tage points could mean ½ percentage point to the regional unemployment rate.[4]

Table 4 illustrates the effect of labor force composition on regional unemployment rates

[4] In 1975, the range in teenage unemployment rates was from 12 percent in the West North Central division to 22 percent in the Pacific and South Atlantic. The West North Central was quite unusual. The next lowest rate was 18 percent in the West South Central states. Other divisions with relatively large shares of teenagers in the labor force had unemployment rates of 19 or 20 percent.

TABLE 4

Effect of Labor Force Composition on Unemployment Rates — 1968, 1971, 1974, 1975

	1968		1971		1974		1975	
	Actual	U.S. Labor Force[1]	Actual	U.S. Labor Force[1]	Actual	U.S. Labor Force[1]	Actual	U.S. Labor Force[1]
United States	3.6	3.6	5.9	5.9	5.6	5.6	8.4[2]	8.4
Northeast	3.2	3.3	6.2	6.4	6.1	6.4	9.5	9.7
New England	2.9	3.0	6.9	7.6	6.6	7.0	10.2	10.3
Mid-Atlantic	3.3	3.4	6.0	6.2	6.0	6.2	9.3	9.5
North Central	3.0	3.2	5.5	5.7	4.8	4.9	7.9	8.1
East North Central	3.2	3.3	6.0	6.1	5.2	5.3	8.9	9.0
West North Central	2.4	2.7	4.3	4.6	3.8	4.2	5.2	5.6
South	3.7	3.5	4.9	4.6	5.1	4.8	7.7	7.4
South Atlantic	3.6	3.3	4.5	4.1	5.3	4.9	8.5	7.9
East South Central	4.2	4.0	5.2	5.0	5.1	4.8	7.9	7.7
West South Central	3.7	3.5	5.2	5.1	4.8	4.7	6.4	6.2
West	4.9	5.0	8.1	8.1	6.8	6.8	9.2	9.3
Mountain	4.4	4.5	6.1	6.1	5.4	5.4	7.5	7.9
Pacific	5.1	5.1	8.7	8.7	7.2	7.2	9.8	9.7
Standard Deviation	.73	.68	1.29	1.40	.90	.95	1.37	1.37

[1] The U.S. labor force was considered to consist of six groups: whites and nonwhites — males 20 years of age and over, females 20 years of age and over, and both sexes 16–19 years of age.

[2] The U.S. unemployment rate for 1975 was 8.5 percent; however, the unpublished BLS statistics used to derive this table give a rate of 8.4 percent.

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, *Monthly Labor Review,* January 1970, *Geographic Profile of Employment and Unemployment 1971* and unpublished tabulation from the *Current Population Survey.* Figures for New England, West North Central and Mountain divisions are based on very small samples of nonwhites.

for the years 1968, 1971, 1974, and 1975. The years were chosen to represent contrasting economic conditions and because regional information on labor force groups has been available only since 1968. For each year the regions' actual unemployment rates are shown. Beside these actual rates are rates estimated assuming that each region had the same labor force composition as the Nation. For a particular region, the region's unemployment rate for each labor force group was multiplied by that group's share of the national labor force; these components were then summed to give a regional unemployment rate standardized for labor force composition. Thus, the estimated rate for a region reflects the region's own group unemployment rates but the Nation's labor force composition. If the region's actual rate is above the estimate, it means the make-up of the regional labor force adds to the unemployment rate; if below, the composition tends to reduce unemployment in the region.

Labor force composition makes the greatest difference to unemployment rates in the South Atlantic and West North Central divisions. In the South Atlantic, a high proportion of nonwhites tends to raise the unemployment rate. In the West North Central, a very low proportion of nonwhites holds down the rate. New England and the Mountain states also have few nonwhites but standardizing for labor force composition has a smaller effect there than in the West North Central division where, as Appendix B indicates, the unemployment differential between nonwhite and white unemployment rates is relatively greater.[5] Labor force composition also makes a noticeable difference in both

South Central divisions where a relatively high proportion of nonwhites tends to raise unemployment rates. It has only a minor effect on rates in the Mid-Atlantic, East North Central, and Pacific states where the make-up of the labor force is fairly similar to that of the country as a whole.

The bottom line of Table 4 shows for each year the standard deviations of the regional unemployment rates, both actual and estimated.[6] These measure the dispersion of the rates; the higher the standard deviation the greater the dispersion of regional unemployment rates. In all years, the standard deviations calculated using unemployment rates adjusted for labor force composition are almost the same as those calculated using the actual rates. For 1971 and 1974, the dispersion of the adjusted rates is actually slightly higher since the adjustment lowered the already low rates of the southern regions; that is, for these years regional variations in labor force composition actually reduced unemployment disparities. Thus, although differences in labor force composition do affect regional unemployment rates, in some cases quite significantly, they do not by themselves explain why some regions have higher unemployment rates than others. The low unemployment rates in the West North Central division are due, at least in part, to the small proportion of nonwhites in its labor force, but the low unemployment rates in the South cannot be similarly explained.

---

[5] A possible explanation for the relatively large disparity in the West North Central division is suggested by the results of Part III. The West North Central has very low unemployment rates partly because of the importance of agriculture to the region. However, nonwhites are very lightly represented among the division's farmers.

[6] To take account of the relative sizes of the regions, the standard deviations in Table 4 were calculated as:

$$SD = \sqrt{\frac{\Sigma \, (r_i - r_n)^2 \, l_i}{\Sigma \, l_i - 1}}$$

where r_i = unemployment rate, region i

l_i = labor force, region i

r_n = national unemployment

Standard deviations calculated without weighting by the labor force show the same pattern.

Part III — Causes of Regional Differences in Unemployment

As the preceding has shown, strong employment growth does not guarantee low unemployment rates, for a rapidly growing labor force may increase the number of job seekers at an even faster rate. Conversely, as the Mid-Atlantic states have found, if the jobs are not there, even very slow growth in the labor force cannot prevent high unemployment. In addition, while regional differences in labor force composition do have marked effects on regional unemployment rates, alone they do not explain the variations among these rates.

This section integrates the effects of both employment opportunities and labor force characteristics on regional unemployment rates, using the model developed in Appendix C. This model expresses regional unemployment rates in terms of the factors affecting the regions' employment and labor force changes. Such a model is a useful device in that it helps to sort out the interactions of a complex set of variables and expresses the relationships among these variables in a form which can be quantified. This quantification of the relationships indicated by the model is accomplished using regression analysis, a statistical technique which determines whether a systematic relationship exists between a variable to be explained — here regional unemployment rates — and various factors thought likely to have a causal influence. The relationships identified by regression analysis are expressed in equation form and tests can be made to establish that these relationships are statistically valid and not likely to be the result of chance similarities among the variables.[7]

---

[7] This particular regression used time series data for the years 1960 to 1975 pooled over the nine census divisions. The time period covered by the regression ends with 1975 because of data limitations.

In general terms, the labor force in a region was seen as dependent on the population of working age in the region, regional earnings rates and cultural factors affecting participation. Employment in a region was assumed to be a function of the region's capital stock, regional labor costs and demand conditions.[8]

The equation that was developed appears in Table 5. The equation shows the factors which were found to account for differences in the proportion of the labor force employed in each region. For each region this employment rate is equal to 1 minus the regional unemployment rate.[9]

The equation tells us that a region's employment rate is determined by the growth trend in the national economy (FYP), the national business cycle (C), the difference between the cyclical sensitivity of the region's and the Nation's industrial structures (C_i), regional wage and salary income per worker (W_i), the stock of capital equipment in the region (K_i), the national ratio of capital equipment to labor

---

[8] The Appendix provides a detailed description of the structural form of the regression and the variables used to represent the explanatory factors.

[9] Let RU_i be the unemployment rate for region i; LF_i the labor force, E_i employment and ER_i the employment rate. Then:

$$RU_i = \frac{LF_i - E_i}{LF_i}$$

$$= 1 - \frac{E_i}{LF_i}$$

$$= 1 - ER_i$$

so that $ER_i = 1 - RU_i$

Thus variables which have a positive influence on the unemployment rate are negatively related to the employment rate. This use of employment rates does not affect the validity of the analysis. The model developed in the Appendix to explain regional unemployment rates included variables which were related both additively and multiplicatively. Consequently, to estimate unemployment directly would have required nonlinear techniques which are not now part of the available package on pooled cross-sections of time series data. The employment rate, on the other hand, can be estimated in linear form.

TABLE 5

Equation Showing Determinants of Regional Employment Rates

Interval: 1960–1975

$$\log ER_i = 7.422 + .169 \log FYP + .782 \log C + .736 \log C_i - .120 \log W_i + .054 \log K_i$$
$$\quad\quad (7.7) \quad\; (8.1) \quad\quad\quad (23.0) \quad\quad\quad (7.4) \quad\quad (-14.6) \quad\quad\quad (7.3)$$

$$\quad - .201 \log K/L - .046 \log P_i - .895 \log p + .005 \log A_i + 1.024 \log LF_i$$
$$\quad\; (-4.2) \quad\quad\quad (-5.7) \quad\quad\quad (-3.3) \quad\quad\quad (5.3) \quad\quad\quad (3.6)$$

$\overline{R^2} = 0.877$

The equation was estimated using data for the years 1960–1975 pooled across the nine Census regions.

Variables:
- ER_i = employment rate for region i, or the proportion of the labor force employed in region i
- FYP = time trend of national personal income
- C = measure of national business cycle fluctuations
- C_i = measure of difference between cyclical sensitivity of Nation's and region i's industrial mixes
- W_i = wage and salary income per worker in region i
- K_i = stock of capital equipment in region i
- K/L = national ratio of capital equipment to labor
- P_i = population 18 and over in region i
- p = national labor force participation rate
- A_i = proportion of employment in agriculture in 1970 in region i
- LF_i = index of the white/nonwhite composition of the labor force in region i in 1968

A more complete description can be found in Appendix C. All income and expenditure figures are in 1972 dollars.

Figures in parentheses are t-statistics. All are significant at 0.01 level.

(K/L), the population 18 and over in the region (P_i), the national participation rate (p), the proportion of agricultural employment in the region in 1970 (A_i) and the composition of the region's labor force (LF_i). For each variable the direction of the relationship to the employment rate produced by statistical estimation is as indicated by the model, and all relationships are statistically meaningful.

The first three variables are demand variables and have a positive influence on employment and thus on the employment rate. Naturally, an expanding national economy increases the demand for the output of all regions. Employment in all regions tends to move up and down with the business cycle and national employment patterns. However, regions differ in their sensitivity to national business cycles because of differences in their industry mixes: the more cyclically sensitive the industries which are predominant in a region, the higher will be that region's employment in boom years and the more precipitous the loss of jobs in periods of recession.

The wage rate and the stock of equipment in a region influence the employment rate through production function relationships. The capital stock has a positive influence on regional employment because the larger the plant and equipment in a region the more workers are needed to run it, and the more capital available per worker the greater the output that worker can produce. Equipment is used as a proxy for the stock of both plant and equipment.[10]

Wage and salary income per worker is used to represent regional wage rates. Wage rates have a negative influence on employment, for the higher the wage rate the greater the cost of hiring additional workers. Wages may also affect the employment rate negatively through their influence on the labor force. In this case, the higher the wage the greater the reward for working and the greater the incentive to enter the labor force.[11]

The other factors behind the regional labor force are the population 18 and over and the national participation rate. A growing population of working age means an increasing number of job seekers and, other things equal, a decrease in the employment rate. The national participation rate is included to capture increases in labor force participation attributable to factors other than wage incentives — for example, cultural changes encouraging more women to work.

The final two variables, the proportion of total employment in agriculture in 1970 and an index of labor force composition, influence the employment rate directly. In farm communities unemployment rates seem likely to be relatively low and employment rates high because so many farm workers are self-employed or are members of family units owning farms. Such a large self-employed component of the labor force should produce a relatively low level of normal turnover. In addition, a person may be able to keep occupied on a farm and be counted as employed even when the return to his labor would not justify a profit-maximizing employer hiring him. He is under-employed rather than unemployed.

Lastly, to capture the influence on regional employment rates of differences in labor force composition, a composite employment rate was created for each region using average U.S. white and nonwhite employment rates and the proportions of whites and nonwhites in the region's labor force at the mid-point of the study period. This composite rate was then expressed as a fraction of the average U.S. white rate. The greater the proportion of whites in a region, the higher — up to a maximum of 1 — will be this fraction, or index of labor force composition. In essence, this index can be considered to adjust an all-white employment rate for each region to reflect the proportion of nonwhites in the region's labor force. A region with a relatively large nonwhite component will have a lower index and thus a lower employment rate than one with a labor force composition closer to the national pattern.[12]

---

[10] The very long life span of buildings makes the calculation of regional stocks of plant very difficult as regional investment figures are not available sufficiently far back. Also, it was thought that inclusion of plant might result in the inclusion of structures which are economically out of date even if physically intact and thus could overstate productive capacity in some of the older industrial areas.

[11] The particular measure of wages used here is probably a better measure of regional differences in the cost of labor rather than in the incentive to look for work, since it does not take account of regional variations in the cost of living. While the cost of living determines the real value of the wages received and thus might be expected to influence the decision to seek work, for the employer it should not be a factor. It was not possible to develop an equation in which the influence of wages as both cost and income could be captured.

[12] A final variable deserves mention even though it does not appear in the equation in Table 5. Unemployment compensation benefits reduce the cost to an individual of being unemployed and thus may increase the duration of unemployment and encourage more casual and seasonal forms of employment. (For example, Martin Feldstein, *Unemployment Compensation: Adverse Incentives and Distributional Anomalies,* Harvard Institute of Economic Research, Discussion Paper Number 317, September 1973.) Consequently regional differences in unemployment benefits relative to income might be expected to affect regional employment rates. To test this, the ratio of wage and salary

What Does This Mean for Regional Employment Rates?

The equation in Table 5 not only identifies those factors which have had a significant effect on regional employment rates, it also enables us to measure their impact on the different regions. All variables were given their values at the mid-point of the time period covered by the regression, 1967, and then the effects of changes in each variable were examined in turn.[13]

Labor Force

A region's labor force, and thereby its employment rate, is largely determined by the region's population of working age and the national participation rate. From 1960 to 1975 the national participation rate rose from 59.4 to 61.2 percent. If other variables had remained at their 1967 levels, this increase in participation would have caused the employment rate in all regions to be 2½ percentage points lower in 1975 than in 1960. Stated alternatively, the increase in

income per worker net of taxes to average unemployment compensation benefits for each region was tried as an explanatory variable with different combinations of the variables in the equation in Table 5. If the labor force composition variable is excluded, income relative to unemployment benefits will have the desired positive sign. As net income rises relative to unemployment benefits, the cost of being unemployed also rises and the employment rate increases. Except for the substitution of the unemployment compensation for the labor force variable, the equations are very similar. However, in most formulations the labor force variable is statistically significant with more consistency and when the two variables are entered together, it remains significant while the income relative to unemployment compensation variable reverses sign. The weak performance of the unemployment compensation variable may reflect the use of region-wide averages of income and benefits to measure the cost of unemployment as perceived by an individual. These regional aggregates may vary even when the individual cost does not; for example, average unemployment benefits will rise if layoffs in relatively high wage industries increase.

[13] A reference year is necessary because, for an equation which has been estimated in logarithmic form, the effect of a change in one variable depends upon the magnitudes of the other variables. Thus, the impacts of all changes in the causal variables are measured as deviations from 1967 employment rates.

participation from 1960 to 1975 tended to raise regional unemployment rates by 2½ percentage points.

While the entire country shared in cultural and other factors influencing participation, population growth in the various regions was markedly different. In general, the working age population grew most rapidly in the West and South, and over the period 1960 to 1975 this faster growth tended to reduce employment rates in these areas by roughly ½ percentage point relative to the Northeast and North Central regions. The slower population growth in the North did not, however, actually produce lower unemployment rates — at least not in the seventies. To understand why, one must consider the factors influencing employment over the same period.

Wage Rates

The wage rate interacts with the capital stock in a region to define the level of employment which employers consider optimal. The wage rate also has an incentive effect on the labor force. It is a very important factor in explaining regional differences in employment. Each 10 percent increase in nonfarm wage and salary income per worker lowers the employment rate and raises the unemployment rate by roughly 1¼ percentage points. Thus, if New England, which in 1967 had the fourth highest income per worker among the divisions, had had an earnings rate 14 percent lower like that of the lowest wage area, the East South Central, its employment rate would have been higher by approximately 1½ percentage points. Alternatively, if it had had an earnings rate 16 percent higher like that of the highest division, the Pacific, New England's employment rate would have been 1½ percentage points lower.

During the period covered by this study earnings rates were lowest in the South and highest in the West. However, wages in the South, by this

measure, also grew more rapidly than in the country as a whole. The contrast between the South Atlantic states and the Pacific is particularly striking. From 1960 to 1975 income per worker rose 21 percent in the South Atlantic but only 7 percent in the Pacific. Thus, it may be that parts of the South will eventually see this aspect of their employment advantage eroded by rising wages, although higher incomes will of course bring other benefits.

Capital Stock

While wages explain much of the variation in regional unemployment rates and, in particular, why unemployment rates in the Pacific have been consistently high, they do not tell much about the relative shifts that have occurred among the regions over time. Differences in capital accumulation, on the other hand, tell quite a lot.

Over the period covered by this study the rate of capital formation was lowest in the Mid-Atlantic states, with New England and the East North Central division also experiencing relatively modest increases. The capital stock grew most rapidly in the South and West and the West North Central states. The positive effect of strong capital growth in the South and West more than offset the large population increases in both these regions; however, there was an important difference between the two. In the Pacific, the larger of the two western divisions, the combination of the positive effect of rapid capital accumulation and the negative influence of rapid population growth was almost the same as the combined effect of slow capital accumulation and slow population growth in New England, the Mid-Atlantic and the East North Central states. In the South, on the other hand, capital accumulation was much faster relative to population growth. As a result the combination of the two effects over the period 1960 to 1975 added between 1 and 2 percentage points more

to employment rates in the South than in the Northeast or the East North Central and Pacific states. Thus, differences in rates of capital formation appear to be one of the keys to the improvement in the South's unemployment rates relative to those in the Northeast. The other factor contributing to this shift in positions was the difference in the cyclical nature of the industry mixes in the two areas.

Business Cycle Effects

All regions are affected by the national business cycle. However, because of differences in industry mix, some regions are more vulnerable than others to these cyclical swings. Over the time period covered by the regression the most cyclically sensitive regions were the East North Central states and New England. Both have high proportions of employment in manufacturing. Within manufacturing the East North Central specializes in the more volatile durable goods sector while New England is very active in defense-related industries, which experienced a boom and bust phenomenon in the late sixties and early seventies. At the other end of the spectrum are the Mountain and West South Central states with very little manufacturing involvement and relatively little cyclical sensitivity.

Because of their industry mixes the Pacific states and most of the northern regions benefited more from the prosperity of the late sixties than did the South. For example, New England's employment rate in 1967 was ½ percentage point higher than it would have been had its industry mix been like the Nation's. The South Atlantic division, on the other hand, had an employment rate ½ percentage point lower than if its mix had been closer to the national pattern. In the seventies — particularly the early seventies — there was a reversal and the South's industry mix caused it to fare relatively better than the Northeast and the East North Central states.

Thus, in 1971 if New England had the same industry mix as the South Atlantic states, its employment rate would have been about ½ percentage point higher. This shift in position caused by industry mix exaggerated the effects of the 1970 recession in New England while it dampened them in the South Atlantic.[14] Similarly, because of industry mix the 1975 recession also had very different impacts on the regions. The East North Central was the most negatively affected by a wide margin. New England followed. At the other end of the spectrum, industry mix eliminated a third of the cyclical effects in the Mountain states.

Agriculture and Labor Force Composition

The last factors found to cause regional differences in employment rates were the proportion of employment in agriculture and the relative shares of whites and nonwhites in the labor force. Agriculture is more important in the South and West than in the Northeast or the East North Central states. This tends to raise employment rates in the first areas relative to the last. On the other hand, the Southern divisions have the highest proportions of nonwhites and this tends to lower employment rates relative to the rest of the country.

Regional Implications — A Summary

For each region one or two of the variables discussed above stand out as being of particular importance in distinguishing that region's employment rates from those of the rest of the

---

[14] From 1969 to 1971 the difference in industry mix reduced New England's employment rate by .7 percentage points more than the pure cyclical change. In the South Atlantic mix offset the cyclical reduction by a slightly smaller amount.

The cyclical fluctuations are based on deviations from a time trend of an index with national industry growth rates weighted by regional industry shares. The index explicitly excludes any effects of having an industry mix which over the long run is "fast" or "slow growing."

country. In the West, high wages and rapid population growth are the keys to the region's persistently low employment rates. Throughout most of the study period, nonfarm income per worker was higher in the Pacific states than in the Nation as a whole by a wide margin; and while the differential narrowed significantly over the period, in 1975 the Pacific still had the highest wage rates of any region. The other distinctive characteristic of the West has been its exceptionally rapid population growth. Capital accumulation has also been rapid, in the Mountain states sufficiently so that the combined effects of capital and population growth have improved the division's employment rate position relative to most other regions. In the larger Pacific division, however, capital formation has offset the population increase to a much lesser extent, with the result that the net impact of the two variables is very similar to that in the Northeast where capital accumulation has proceeded at a much slower pace than in the rest of the country.

This slow growth in capital in the Northeast is a major reason for the deterioration in that region's employment rates in the seventies. Although population growth has been slow, compared with other regions capital formation has been slower still. In New England this depressing influence was reinforced by the sluggish national performance of those industries which dominate the division's industry mix; in the Mid-Atlantic comparatively large wage increases augmented the effects of lagging capital accumulation.

While the Northeast has suffered from inadequate investment, the South has benefited from a very substantial expansion of its stock of capital. Although population growth has also been rapid, the increase in capital has been great enough to raise employment rates relative to those elsewhere. This has been particularly true of the East and West South Central divisions. In

addition, the South's major industries, which did not fully share in the prosperity of the late sixties, have fared relatively well in the seventies. The South's low wage rates tend to raise regional employment rates, but the high proportion of nonwhites in the labor force has the opposite effect.

Finally, throughout the period considered, the North Central region has enjoyed high employment rates. These high rates are an average of an East North Central rate which is usually quite close to the national figure and a very high West North Central rate. In the former the most important factor affecting employment rates is the business cycle. While these rates on average are similar to those for the country as a whole, they are much more volatile. The division's concentration in cyclically sensitive durable goods industries causes the East North Central's employment rate to fall below the national rate during recessions and to rise above it in times of prosperity. In the West North Central division a high proportion of agricultural employment, a small nonwhite component in the labor force, low wages, slow population growth and fairly substantial capital investment have all reinforced one another to produce the highest employment and lowest unemployment rates in the country.

Conclusions

To understand regional differences in unemployment rates one must look at the factors influencing both labor force and employment growth. Very rapid employment growth can be consistent with high unemployment if the labor force is growing even more rapidly. Employment opportunities must keep pace with the number of people seeking jobs.

The factors which seem to have been important contributors to regional differences in unemployment since 1960 are regional wage rates, agricultural involvement, labor force composition, the rate of capital accumulation, and differences in regional sensitivity to the national business cycle. The last two appear to have been central to the relative improvement in the South's position in the seventies and to the deteriorating performance of the Northeast.

For the policy-maker concerned about regional differences in unemployment two prescriptions for action stand out. The first is the encouragement of investment in those areas where unemployment rates are high and capital accumulation has lagged. The capital stock in a region has a positive influence on the regional employment rate through its effect on desired employment levels. Thus, by stimulating investment where capital formation has lagged relative to population and labor force growth, one should be able to reduce unemployment rates in these areas. There are a variety of approaches that could be taken to encourage investment. At the state and local levels consideration should be given to regulatory and tax policies affecting industry. A discussion of national incentives for producing such stimulus appears in "Tax Incentives: Their Impact on Investment Decisions and Their Cost to the Treasury" in the January/February issue of the *New England Economic Review*. Prime candidates for assistance would be the Mid-Atlantic, New England and the East North Central states, all of which have experienced relatively meager growth in their stocks of capital. The Pacific states might also require some investment stimulus: although capital formation has been rapid, the very large increases in the number of new job seekers have kept unemployment rates high.

Secondly, maintaining a steady rate of economic growth is not only a desirable macroeconomic objective, but also one which will reduce regional differences in unemployment. In the short run, one or two years, the national

business cycle is by far the most important determinant of changes in regional unemployment rates. All regions feel its influence. However, the industrial mixes of the regions differ in their sensitivity to the business cycle so that in each recession the dispersion of regional unemployment rates increases. Established industrial areas like the East North Central region and New England are particularly vulnerable to economic downturns. A smoother, more stable path of economic growth not only will serve the national interest, but will also enable all regions to share more equally in this prosperity.

APPENDIX A
Regional Unemployment Rates: Annual Averages 1960–76
(Percent)

	U.S.	Northeast			North Central			South				West		
		Total	NE	MAC	Total	ENC	WNC	Total	SAC	ESC	WSC	Total	MTN	PAC
1960	5.6	6.0	4.9	6.3	4.9	5.5	3.3	5.6	6.1	5.5	5.2	6.0	5.6	6.1
1961	6.7	7.1	5.9	7.4	6.6	7.4	4.5	6.4	6.7	6.4	6.0	6.8	5.5	7.3
1962	5.6	5.9	4.4	6.4	5.1	5.7	3.6	5.5	5.6	5.7	5.3	6.0	5.0	6.3
1963	5.7	6.1	5.4	6.3	4.8	5.3	3.7	5.7	5.7	5.8	5.8	6.6	5.9	6.9
1964	5.2	5.5	5.0	5.6	4.4	4.7	3.6	5.2	5.1	5.7	5.2	6.2	5.7	6.3
1965	4.6	4.7	4.3	4.9	3.5	3.8	3.0	4.5	4.2	4.8	4.7	6.3	5.8	6.4
1966	3.9	3.9	3.3	4.2	3.0	3.2	2.6	3.8	3.6	3.9	4.1	5.2	4.8	5.3
1967	3.8	3.5	2.9	3.7	3.3	3.5	2.6	3.9	3.8	4.2	3.7	5.5	4.9	5.7
1968	3.6	3.2	2.9	3.3	3.0	3.2	2.4	3.7	3.6	4.2	3.7	4.9	4.4	5.1
1969	3.5	3.2	3.0	3.2	2.9	3.2	2.4	3.6	3.4	3.7	3.7	4.9	4.2	5.1
1970	4.9	4.6	4.8	4.5	4.5	4.9	3.4	4.6	4.1	5.2	5.2	6.9	5.7	7.2
1971	5.9	6.2	6.9	6.0	5.5	6.0	4.3	4.9	4.5	5.2	5.2	8.1	6.1	8.7
1972	5.6	6.3	6.9	6.1	5.0	5.5	3.9	4.8	4.6	4.7	5.1	7.1	5.3	7.7
1973	4.9	5.5	5.5	5.3	4.4	4.5	3.9	4.1	4.0	4.2	4.3	6.5	5.2	7.0
1974	5.6	6.1	6.6	6.0	4.8	5.2	3.8	5.1	5.3	5.1	4.8	6.8	5.4	7.2
1975	8.5	9.5	10.2	9.3	7.9	8.9	5.2	7.7	8.5	7.9	6.4	9.2	7.5	9.8
1976	7.7	9.4	9.1	9.6	6.6	7.3	5.0	6.7	7.4	6.2	5.8	8.7	7.4	9.1

SOURCES: 1960–1972: *Monthly Labor Review,* March 1974, p. 20. 1973: *Handbook of Labor Statistics,* 1975, p. 60. 1974–1976: Unpublished information from the *Current Population Survey,* Bureau of Labor Statistics.

APPENDIX B1

Difference between Unemployment Rates of Adult White Males and Three Other Labor Force Groups by Region

	Northeast			North Central			South				West		
	Total	NE	MAC	Total	ENC	WNC	Total	SAC	ESC	WSC	Total	MTN	PAC
1974													
White Female 20+													
– White Male 20+	1.6	2.1	1.4	1.3	1.3	1.2	1.9	1.5	2.6	1.8	1.6	1.3	1.6
% Difference	38	45	35	46	42	55	73	52	104	75	33	35	31
Nonwhite Male 20+													
– White Male 20+	4.2	5.6	4.2	5.2	4.8	6.4	2.7	2.8	1.7	2.8	3.1	3.4	2.7
% Difference	100	119	105	186	155	291	104	97	68	117	65	92	52
White Teenager													
– White Male 20+	11.3	9.2	12.2	9.5	9.2	7.8	10.1	10.2	10.1	9.7	11.8	10.3	12.4
% Difference	269	196	305	339	297	355	388	352	404	404	246	278	238
1975													
White Female 20+													
– White Male 20+	.7	.4	.8	1.2	1.1	1.2	1.9	1.3	2.2	2.2	1.6	2.4	1.4
% Difference	9	5	11	21	17	34	40	23	43	61	23	48	18
Nonwhite Male 20+													
– White Male 20+	5.0	.4	5.9	8.9	8.5	7.6	5.6	5.4	5.2	5.3	4.3	6.3	3.7
% Difference	64	5	80	157	131	217	117	96	102	147	61	126	49
White Teenager													
– White Male 20+	11.8	11.1	12.0	10.6	11.9	7.7	12.0	12.3	12.2	11.3	13.6	13.9	13.7
% Difference	151	126	162	189	183	220	250	220	239	314	194	278	180

NOTE: For all regions adult white males have the lowest unemployment rates. In recessions the percentage differentials between white men and other labor force groups tend to narrow: this narrowing is least pronounced for nonwhite men and the absolute differential between white and nonwhite men usually widens substantially.

SOURCE: BLS unpublished tabulations from the *Current Population Survey*. Figures for New England, the West North Central and Mountain divisions are based upon very small nonwhite samples.

APPENDIX C
Derivation of Equation Used to Estimate Regional Unemployment

The unemployment rate = the number unemployed divided by the labor force, the number of persons working or seeking work. For a region

$$RU_i = U_i/LF_i \tag{1}$$

where

RU_i = the unemployment rate in region i

U_i = the number unemployed in region i

LF_i = the labor force in region i

However, the number unemployed equals the labor force minus the number employed, so that the unemployment rate for a region can also be written as

$$RU_i = (LF_i - E_i)/LF_i \tag{2}$$

where E_i is employment in region i.

By expressing unemployment in terms of the labor force and the number employed, we see that the unemployment rate in a region reflects the demand for and supply of labor in that reegion. There are, of course, many imperfections in labor markets. The time required for job search sets a minimum or frictional level of unemployment which is relatively insensitive to increases in the demand for labor. There is structural unemployment: job vacancies and high unemployment can occur simultaneously if those seeking employment lack the skills to fill the jobs available. Individuals may prolong their search for employment and refuse the jobs which are offered because unemployment benefits have reduced the cost of being without work. Nevertheless, as its cyclical nature demonstrates, a very important element of unemployment is the residual difference between the supply of labor as represented by the labor force and the demand for labor, indicated by the level of employment.

Thus, it is analytically meaningful to look for the causes of regional differences in unemployment in factors influencing regional labor force growth and employment changes.

Labor Force

The labor force is the supply of workers available for employment. The number of persons potentially in the labor force is determined by the population of working age. Participation in the labor force will reflect the return to work and cultural factors influencing work habits. Thus,

$$LF_i = f(P_i, w_i, C) \tag{3}$$

where

P_i = the working age population in region i

w_i = the real wage in region i

C represents cultural influences on labor force participation

The particular expression for the labor force used in the regression equation was of the form

$$LF_i = A w_i^{\alpha_1} C^{\alpha_2} P_i^{\alpha_3} \tag{4}$$

where $A, \alpha_1, \alpha_2, \alpha_3$ are parameters.

Employment

For a firm the profit-maximizing level of employment is that at which the marginal revenue product equals the wage rate — or at which the revenue contribution of the last worker equals the cost to the firm of hiring him. If profits,

$$\pi = pO - WE - rK \tag{5}$$

and

$$O = b E^{\beta_1} K^{\beta_2} \tag{6}$$

where

π = profits
p = the price of the product
O = output
W = compensation per worker
E = the number of workers employed
r = the cost of capital (broadly defined to include taxes and other costs)
K = the stock of capital
and b, β_1, β_2 are production function parameters
$(\beta_1 + \beta_2 \leq 1)$

then the profit-maximizing level of employment is that at which

$$\frac{\partial \pi}{\partial E} = \left(\frac{\partial p}{\partial O} O + p\right) \frac{\partial O}{\partial E} - W = 0 \tag{7}$$

and

$$\left(\frac{\partial p}{\partial O} O + p\right) b\beta_1 E^{\beta_1-1} K^{\beta_2} = W \tag{8}$$

23

Rearranging equation (8)

$$E = [(\frac{\partial p}{\partial O} O + p) \frac{b\beta_1 K^{\beta_2}}{W}]^{\frac{1}{1-\beta_1}} \quad (9)$$

The term $(\frac{\partial p}{\partial O} O + p)$ is the marginal revenue from selling an additional unit of output. For a single firm this will be determined by industry demand and supply conditions. Thus, in this simple model a firm's demand for labor reflects its capital stock, the prevailing wage rate and the demand for its product.

Extending this to a region, one finds that employment in the region depends on the stock of capital in the region, regional wage rates and demand conditions. In equation form

$$Ei = \frac{SM^{\gamma_1} K^{\gamma_2}}{W_i^{\gamma_3}} \quad (10)$$

where M represents the determinants of marginal revenue and S, γ_1, γ_2, γ_3 are parameters.

Unemployment Rates

Combining equations (4) and (10), one can express the unemployment rate in a region as:

$$RU_i = \frac{Aw_i^{\alpha_1} C^{\alpha_2} P_i^{\alpha_3} - \dfrac{SM^{\gamma_1} K_i^{\gamma_2}}{W_i^{\gamma_3}}}{Aw_i^{\alpha_1} C^{\alpha_2} P_i^{\alpha_3}} \quad (11)$$

This is the basic model used to determine the causes of regional differences in unemployment rates. However, a number of modifications were made before the equation was actually estimated:

1. Equation (11) is nonlinear and very difficult to estimate. However the equation can be written as:

$$RU_i = 1 - \frac{\dfrac{SM^{\gamma_1} K_i^{\gamma_2}}{W_i^{\gamma_3}}}{Aw_i^{\alpha_1} C^{\alpha_2} P_i^{\alpha_3}}$$
$$= 1 - ER_i$$

where ER_i is the proportion of the labor force employed or the employment rate.

$$ER_i = \frac{\dfrac{SM^{\gamma_1} K_i^{\gamma_2}}{W_i^{\gamma_3}}}{Aw_i^{\alpha_1} C^{\alpha_2} P_i^{\alpha_3}}$$

can be expressed in linear form and therefore it, rather than the unemployment rate, was estimated. Since $ER_i = 1-RU_i$ variables which have a positive influence on the employment rate must have a negative impact on the unemployment rate.

2. The inclusion of wage rates as explanatory variables could result in biased estimates of the equation coefficients because a region's wages may themselves be influenced by local labor market conditions and by regional unemployment rates in particular. This influence seems likely to be small in the short run since wage expectations will be affected by nationwide wage settlements and past experience. However, to reduce the possibility of bias the wage variables were replaced by estimates of those elements of regional wage rates determined by factors other than current regional unemployment rates. These estimates of w_i and W_i were the fitted values obtained by regressing the unadjusted w_i and W_i on the Consumer Price Index.

   The two wage variables represent two somewhat different concepts of wages: w_i is the return to an individual from working; W_i is the cost to a firm of hiring an additional worker. Both are in constant (1972) dollars. They differ because of variations in the cost of living among regions. For the individual, the financial reward from working depends upon what he can buy with his earnings; so the w_i is adjusted to reflect regional differences in the cost of living as well as changes over time. W_i, on the other hand, is deflated by national unit labor costs, with no account taken of regional cost-of-living differentials. (As a practical matter, the two wage variables are sufficiently similar that they cannot both appear in the same equation.)

3. Demand conditions (M) were expressed by three separate variables, the first representing the long-term growth trend in the economy (FYP), the second representing the national business cycle (C) and the third the differential sensitivity to the business cycle of the regions' industry mixes (C_i). (There may also be a purely local component of demand beyond that implied by the differential cyclical sensitivity of the region. Most of the influence of such a local element can be represented by population and wage rates; and to the extent that it is an important factor the negative effects of these two variables as estimated by the regressions will be reduced. In fact the negative influence of population is substantially less than one would get from an expansion of the labor force with no change in jobs, supporting the existence of such a local demand component.)

4. The national labor force participation rate (p) was used as a proxy for the cultural factors affecting participation (C).

5. Several variables were added to take account of imperfections in the regional labor market. Unlike all the preceding, which were thought to influence the employment rate through labor force and employment, these variables were assumed to affect the rate directly. These variables were as follows:

   1. A_i — a measure of each region's concentration in agriculture. Because there is a large self-employed component in agriculture, it was assumed that normal turnover would be low and that employment rates in agricultural regions would be relatively high.
   2. LF_i — an estimate of the effect on employment rates of regional differences in the proportions of whites and nonwhites in the labor force. As Part

II pointed out, nonwhites have historically had higher unemployment rates than whites. Thus the higher the proportion of nonwhites in the labor force, the lower would be the employment rate.

3. LT — an estimate of the effect on employment rates of the increasing proportion of women and teenagers in the national labor force.

4. R_i — the ratio of average wages to unemployment compensation benefits in each region. Because of the availability of unemployment benefits some people may prolong their search for work or refuse job offers. Thus actual employment might be less than that represented by the demand for labor. Presumably this effect would be greater the lower wages are relative to benefits.

Variables LT and R_i did not perform well when included in different versions of the employment rate equation and consequently do not appear in the final form of Table 5.

The equation was estimated in logarithmic form using data for the years 1960 to 1975 pooled over the nine census regions. The package used to estimate the equation was Data Resources Inc. *Program for Analysis of Pooled Cross Sections of Time Series Data* (PATSY), June 1975.

Descriptions and Sources of Variables Used in Equation Estimating Regional Employment Ratios

1. Employment rate (ER_i)

Employment rates were calculated by subtracting regional unemployment rates (expressed as percentages) from 100. The unemployment rates are from the Current Population Surveys.

SOURCE: Christopher Gellner, "Regional Differences in Employment and Unemployment 1957–72," *Monthly Labor Review*, March 1974; U.S. Department of Labor, *Handbook of Labor Statistics 1975 — Reference Edition*, p.60; and unpublished tabulations from the Bureau of Labor Statistics.

2. Working age population (P_i)

The population 18 and over was used. Persons 16 and 17 years of age are usually considered part of the working age population, but on an annual basis regional population data do not allow a break at 16.

SOURCE: Bureau of the Census through Data Resources Inc.

3. Proportion of total employment in agricultural (A_i)

SOURCE: *1970 Census of Population, Volume 1 Characteristics of the Population, Part 1 U.S. Summary*, T.169.

4. Wages/Income per worker (W_i)

Total nonfarm wage and salary income for each region was divided by nonagricultural employment in the region.

As discussed previously regional wages may themselves be influenced by unemployment rates. To eliminate this source of bias, each region's wage and salary incomes per worker were regressed on the Consumer Price Index; the fitted values for per worker income, deflated by nonfarm unit labor costs, were then used in the employment rate equations.

SOURCE: Nonfarm wage and salary income: *Survey of Current Business*, August various years.

Nonagricultural employment: U.S. Department of Labor, *Employment and Earnings States and Areas 1939–1975*

Unit labor costs and Consumer Price Index: U.S. Department of Labor, *Employment and Training Report of the President 1977*, pp.281 and 287.

5. Total stock of capital equipment (K_i)

The stock of manufacturing equipment in each region was calculated using investment figures from the *Census* and *Survey of Manufactures*. The procedure used was a simplified version of that for gross capital stock described in the Bureau of Economic Analysis' *Fixed Nonresidential Business and Residential Capital in the United States 1925–1975*. The investment figures were deflated by the GNP deflator for producers' durable equipment before being combined to form capital stock estimates.

The regional equipment stocks were then adjusted to eliminate the effects of differences in capital labor ratios attributable to each. This was done by dividing each region's stock by the region's capital (equipment) intensity relative to the Nation in 1967 — a year of low unemployment and high capacity utilization. Thus standardized, these stocks of manufacturing equipment were blown up to represent total equipment by dividing each region's stock by the proportion of total employment in manufacturing in the region in 1970, according to the BEA *Regional Employment by Industry 1940–1970*.

A more complete description of these calculations is available on request to the author.

6. Regional labor force composition index (LF_i)

For a given region this index had the form

$$1_{wi} + \frac{ER_B}{ER_W}\, 1_{Bi}$$

where

1_{wi} = the proportion of whites in the region's labor force in 1968

1_{Bi} = the proportion of nonwhites in the region's labor force in 1968

$\dfrac{ER_B}{ER_W}$ = the median ratio of the employment rate of nonwhites to the employment rate of whites for the Nation over the study period. The actual value was .95.

If there are no nonwhites in a region, the index will equal 1. As the proportion of nonwhites in the labor force increases the index falls — to a minimum of .95 for a region with a totally nonwhite labor force.

SOURCE: Regional labor force composition: *Handbook of Labor Statistics 1976*, p. 54. Employment rates: *Employment and Training Report of the President 1977*, p. 146.

25

7, 8. Impact of the national business cycle and regional differences in cyclical sensitivity, (C) and ($\hat{C}_1$)

All regions are affected by the national business cycle; however, because of differences in industry mix, employment in some regions fluctuates much more than in others. To determine the cyclical effects of industry mix on regional employment rates, an index was created for each region showing how total employment in the region would have changed if, given the region's industrial structure in 1967, employment in each industry had increased or decreased at the same rate as for that industry nationally. More specifically national employment figures for each industry, expressed as percentages of their 1967 levels, were combined to form regional indexes. For each region the national industry figures were weighted according to the industry's share of that region's employment in 1967. Thus differences in the regional indexes over time are due to differences in regional industrial mix.

This procedure is essentially that used in shift-share analysis; however, the base year was the mid-point of the study period and not the initial year. The purpose of the index, however, was not to see how industrial mix influences long-run growth; the author does not believe that it does. (Lynn E. Browne, "The Impact of Industry Mix on New England's Economic Growth since 1950," *New England Economic Indicators*, January 1977.) The purpose was to see how mix may cause cyclical fluctuations. These fluctuations were estimated as deviations from a time trend.

The nine regional indexes plus an index for the country as a whole were regressed on time. The deviations of the national index from the time trend were used to measure the basic impact of the business cycle. Because the logarithmic form of the employment rate equation cannot accept negative values for any variable, the ratio of the national index to the time trend was used to measure national business cycle impacts (C). It has a value greater than 1 in boom years and less than 1 when growth is below trend.

To measure the differential sensitivity of regional industry mix, the regional fluctuations were expressed relative to those for the country as a whole. The regional deviations from trend were added to the national fitted values and the total was divided by the national index. For a particular year, if industry mix causes employment in the region to rise relative to its trend more than in the Nation as a whole, the variable has a value greater than 1.

The industry breakdown used in creating the regional indexes included all two-digit (SIC) manufacturing industries, with transportation equipment further broken down, construction and other nonmanufacturing. These components together form nonagricultural payroll employment. To more closely approximate total employment, employment in agriculture was spliced on to the series.

SOURCE: National employment: *Employment and Training Report of the President 1977*, T. A-1, C-5 and C-6.

Regional employment shares: *Employment and Earnings States and Areas* 1939–1975 supplemented with *County Business Patterns* 1967.

9. Growth trend in the national economy (FYP)

Total personal income in 1972 dollars for the United States was regressed on time and the resulting fitted values were used to represent the national growth trend.

SOURCE: *Survey of Current Business*, August 1976.

10. National capital labor ratio (K/L)

The national stock of equipment, calculated as described in 5 above, was divided by the fitted values of a time trend of total U.S. employment.

SOURCE: *Employment and Training Report of the President 1977*, T. A-1.

11. National participation rate (p)

SOURCE: *Employment and Training Report of the President 1977*, T. A-5.

The Maturing of the NOW Account in New England

By Ralph C. Kimball *

Introduction

IT would be premature to claim that the development of the NOW account is completed in New England. But the rate of development has slowed perceptibly, and it may be possible to discern some of the more permanent impacts of the NOW experiment upon the banking structure of New England. This article examines NOW-related developments during 1977, with emphasis on such characteristics as the number and type of new entrants, shifts in market share, and trends in pricing.[1]

Number of Institutions Offering NOW Accounts

One sign of approaching maturity in the NOW experiment is the decrease in the number and size of institutions offering NOW accounts for the first time. Overall the number of institutions offering NOW accounts increased by 72

[1] For a review of NOW-related developments during 1974-76, see Ralph C. Kimball, "Recent Developments in the NOW Account Experiment in New England," *New England Economic Review*, November/December, 1976, pp. 3-19.

during 1977, reaching a total of 721 by December 1977. In contrast, 219 institutions introduced NOW accounts in all New England in 1976, and 135 institutions introduced NOW accounts in Massachusetts and New Hampshire in 1975 when NOW accounts were restricted to these two states alone. Most of the institutions offering NOWs for the first time in 1977 were small, with only 18 of 72 institutions introducing NOWs in 1977 having assets of more than $50 million at the beginning of that year.

Although institutions everywhere in New England have had NOW powers for at least two years and institutions in Massachusetts and New Hampshire have had NOW powers for over four years, a substantial number of institutions, even in Massachusetts and New Hampshire, still do not offer NOW accounts. In Massachusetts and New Hampshire 17 percent of the institutions did not offer NOW accounts as of December 1977, and in the other four New England states 35 percent of the institutions did not offer NOWs as of the same date. Just as most of the new entrants over the past year have been small institutions, most of the remaining holdout institutions are also small. In Massachusetts 72 of 75 institutions not offering NOWs have assets of $50 million or less, while in New Hampshire

all 28 holdouts are under $50 million in assets. In all New England 83 percent of the holdout institutions have assets under $50 million.[2]

One exception to the generally small number of new entrants was Maine, where 23 additional institutions introduced NOWs in 1977. The relatively greater number of new entrants in Maine may not reflect fundamental differences between Maine and the rest of New England, but only a slower adjustment process. As Table 1 shows, the proportion of institutions offering NOWs in Connecticut at the end of 1976 was about one-third higher than in Maine. The effect of the new entrants in Maine has been to raise the proportion of institutions offering NOWs in that state to a level slightly exceeding that existing in Connecticut by the end of 1977.

The slower spread of NOW accounts in Maine may be due to two factors. First, Maine is a predominantly rural state, and the greater distances and lower population densities in rural areas may mean that institutions are not under as intense competitive pressure as institutions in urban areas. In this regard it should be noted that New Hampshire has a smaller proportion of institutions offering NOWs than Massachusetts, and that Vermont has the smallest proportion of any of the six New England states.

A second factor influencing the slow spread of NOW accounts in Maine is the size composition of the financial institutions in that state. In general, small institutions have been more reluctant to introduce NOW accounts than have large ones.[3] As Table 1 shows, at the end of 1976 a higher proportion of large institutions offered NOWs in Maine than in Connecticut, but these were more than offset by the lower proportion of smaller Maine institutions offering NOWs, and

---

[2] If the six large Rhode Island savings banks which offer NOWs through commercial bank subsidiaries are excluded, the ratio of small holdouts increases to 86 percent.

[3] See Donald Basch, "The Diffusion of NOW Accounts in Massachusetts," *New England Economic Review,* November/December 1976, pp. 20-30.

TABLE 1

Proportion of Institutions Offering NOW Accounts in Maine and Connecticut, by Size Class (Percent)

	Asset Size		
	Under $50 Million	Over $50 Million	All
December 1976			
Connecticut	49%	78%	62%
Maine	36	81	46
December 1977			
Connecticut	57	78	68
Maine	62	89	70

SOURCE: Federal Reserve Bank of Boston.

by the fact that in Maine these smaller institutions comprised a significantly greater proportion of the total number of financial institutions. As of December 1976, 79 percent of all Maine institutions had assets of $50 million or less, and of these small institutions only 36 percent offered NOW accounts, while in Connecticut only 46 percent of the institutions had assets of $50 million or less as of the same date, and 49 percent of these offered NOWs.

As of December 1976, only 27 percent of the financial institutions in Vermont offered NOW accounts, the lowest percentage of any of the six New England states. During 1977 an additional ten institutions introduced NOW accounts, raising the proportion of institutions offering NOWs in Vermont to 50 percent, still the lowest of the six New England states, but almost double that of a year earlier. One impetus to the substantial number of new entrants in Vermont was the penetration of the important Burlington market in northern Vermont by a commercial bank which had already been offering NOWs in southern Vermont, indicating that local market conditions may also affect the new entrant rate.

TABLE 2

NOW Account Data for Massachusetts and New Hampshire, 1974–1977

Massachusetts	12/74	12/76	12/77	Average Percent 1975–76	Annual Growth 1977	New Hampshire	12/74	12/76	12/77	Average Percent 1975–76	Annual Growth 1977
Number of Institutions Offering NOWs						**Number of Institutions Offering NOWs**					
CBs	51	110	118	43	7	CBs	12	50	55	104	10
MSBs	131	157	158	9	*	MSBs	20	25	26	12	4
S&Ls	70	116	129	29	11	S&Ls	11	13	12	9	−8
All	252	383	405	23	6	All	43	88	93	43	6
NOW Accounts (thousands)						**Now Accounts (thousands)**					
CBs	46	376	483	187	20	CBs	5	59	80	244	36
MSBs	206	552	696	64	26	MSBs	19	57	78	73	37
S&Ls	37	164	207	110	26	S&Ls	4	17	22	106	29
All	289	1,091	1,386	94	27	All	28	133	180	118	35
NOW Balances ($ millions)						**NOW Balances ($ millions)**					
CBs	$57	$807	$1,100	276	36	CBs	$8	$118	$176	278	49
MSBs	200	497	644	58	30	MSBs	14	51	75	93	49
S&Ls	30	135	185	113	37	S&Ls	4	15	23	97	53
All	287	1,440	1,928	124	34	All	26	184	275	167	49
NOW Accounts per Institution						**NOW Accounts per Institution**					
CBs	895	3,414	4,093	95	20	CBs	450	1,176	1,455	187	36
MSBs	1,570	3,514	4,407	50	25	MSBs	960	2,290	2,998	64	36
S&Ls	532	1,411	1,605	63	14	S&Ls	360	1,313	1,848	110	30
All	1,145	2,848	3,423	58	20	All	664	1,513	1,937	116	35
Average Balance per Account						**Average Balance per Account**					
CBs	$1,248	$2,149	$2,277	31	6	CBs	$1,531	$2,006	$2,197	14	10
MSBs	973	901	925	−4	3	MSBs	707	887	968	12	9
S&Ls	799	826	893	2	8	S&Ls	989	893	1,054	−15	18
All	994	1,320	1,391	15	5	All	985	1,382	1,524	18	10

SOURCE: Federal Reserve Bank of Boston   * Less than 1 percent.   NOTE: Data for S&Ls include cooperative banks.

NOW Balances and Market Shares

Variations in aggregate NOW balances and institutional market shares result from an interaction between factors such as the rate of entry by institutions offering NOWs for the first time, the rate of growth of new NOW accounts at institutions already offering NOWs, and fluctuations in the average balance of existing NOW accounts. Before 1977 much of the variation in aggregate growth rates and institutional market shares can be traced to variations in entry rates by institutions. The relatively small size and number of new entrants in 1977 in states other than Vermont and Maine meant that this factor was of much less importance in 1977 than previously. In some states the lack of new entrants resulted in a period of relative stability in market shares, while in others the shifts that occurred were caused by other factors.

In Massachusetts and New Hampshire, mutual savings banks had NOW powers for a substantial period of time before such powers were extended to other depository institutions at the beginning of 1974.[4] As a result of this head start, by the end of 1974, 151 savings banks in the two states were offering NOWs, compared to only 63 commercial banks and 81 savings and loan associations and cooperative banks. However, as shown in Table 2, in 1975 and 1976 the increase in the number of commercial banks, savings and loans, and cooperative banks offering NOWs greatly exceeded that of the savings banks, with an additional 97 commercial banks and 71 savings and loans and cooperative banks introducing NOWs, compared to only 31 additional savings banks.

The recent decrease in the number of new entrants has resulted in a slowing in the growth rate of NOW aggregates in 1977. During 1977

NOW balances increased by 34 percent in Massachusetts and 49 percent in New Hampshire, compared with an annual average rate of 124 percent in Massachusetts and 167 percent in New Hampshire in 1975-76. The rate of increase of new accounts also declined, from an average annual rate of 94 percent in Massachusetts and 118 percent in New Hampshire during 1975-76, to a relatively sedate 27 percent in Massachusetts and 35 percent in New Hampshire in 1977. The relatively small number of new entrants has also resulted in much less dispersion of growth rates among different types of institutions, and a greater degree of stability in deposit shares in 1977, as shown in Table 3.[5]

In Connecticut many institutions of all types introduced NOW accounts as soon as they were permitted to do so in March 1976, so that by the end of that year 55 percent of the commercial banks, 64 percent of the savings and loans, and 71 percent of the savings banks were already offering NOW accounts. As a result of this rapid spread of NOWs, the number and impact of new entrants in 1977 was limited. Instead most of the

[5] The limited impact of new entrants in 1977 was also due to the small size of most new entrants.

TABLE 3

NOW Account Market Shares in Massachusetts and New Hampshire, (percent)

	Accounts			Balances		
	12/74	12/76	12/77	12/74	12/76	12/77
Massachusetts						
CBs	15.8	34.4	34.8	19.9	56.1	57.0
MSBs	71.3	50.6	50.2	69.7	34.5	33.4
S&Ls*	12.9	15.0	14.9	10.4	9.4	9.6
New Hampshire						
CBs	18.9	44.2	44.2	32.1	64.1	64.0
MSBs	67.2	43.0	43.3	52.7	27.6	27.5
S&Ls*	13.9	12.8	12.5	15.2	8.3	8.5

SOURCE: Federal Reserve Bank of Boston.
* Includes cooperative banks.

[4] For a history of the early NOW experiment, see Katharine Gibson, "The Early History and Initial Impact of NOW Accounts," *New England Economic Review,* Jan./Feb. 1975, pp. 17-26.

TABLE 4

NOW Account Data for Connecticut and Maine, 1976–1977

	Connecticut			Maine		
	12/76	12/77	Percent Change	12/76	12/77	Percent Change
No. of Institutions Offering NOWs						
CBs	38	43	13	23	31	35
MSBs	47	46	–2	17	23	35
S&Ls	23	28	22	10	14	40
All	108	117	8	50	68	36
NOW Accounts (000)						
CBs	25	42	68	14	32	129
MSBs	20	37	85	5	12	140
S&Ls	26	57	119	5	13	160
All	71	136	92	24	57	138
NOW Balances ($ millions)						
CBs	140	264	89	57	138	142
MSBs	21	43	104	11	25	127
S&Ls	25	56	124	6	14	133
All	186	363	95	74	177	138
NOW Accounts per Inst.						
CBs	647	979	51	603	1,043	73
MSBs	429	806	88	280	527	88
S&Ls	1,134	2,052	81	552	928	68
All	656	1,167	78	483	845	75
Average Bal. per Acct.						
CBs	$5,709	$6,259	10	$4,130	$4,264	3
MSBs	1,023	1,158	13	2,298	2,059	–10
S&Ls	945	976	3	1,025	1,052	3
All	2,621	2,653	1	3,059	3,072	*
Market Share Accounts (percent)						
CBs	34.7	30.8	–3.9	57.4	56.3	–1.1
MSBs	28.5	27.1	–1.4	19.7	21.1	+1.4
S&Ls	36.8	42.0	+5.2	22.8	22.6	–0.2
Market Share Balances (percent)						
CBs	75.6	72.7	–2.9	77.5	78.1	+0.6
MSBs	11.1	11.8	+0.7	14.8	14.1	–0.7
S&Ls	13.3	15.5	+2.2	7.7	7.7	0.0

SOURCE: Federal Reserve Bank of Boston.
Percentages may not add to 100 due to rounding.
* Less than 1 percent.

growth in NOW balances in the past year has come about through new accounts opened at institutions already offering NOWs. However, as can be seen in Table 4, the rate of increase in the average number of NOW accounts per institution varied among the different types of institutions, with commercial banks experiencing a substantially slower growth rate in new accounts than the thrift institutions. The average number of NOW accounts per commercial bank increased by about 51 percent in 1977, compared with about 88 percent for savings banks, and 81 percent for savings and loan associations. As a result of these differences in the rates of acquisition of new accounts, the commercial bank market share of accounts fell by almost 4 percentage points in 1977, from 34.7 percent to 30.8 percent, while the commercial bank market share of NOW balances fell by almost 3 percentage points, from 75.6 percent to 72.7 percent.

Maine was one of the two states with a substantial number of new entrants of all types, with the number of commercial banks and savings banks offering NOWs each increasing by 35 percent during 1977, while the number of savings and loans offering NOWs increased by 40 percent in the same period of time. As a result of the greater number of new entrants, aggregate NOW balances and accounts increased more rapidly in Maine than in Connecticut. While the rate of growth in new accounts per institution was very similar in the two states, with an increase of 75 percent in Maine and 78 percent in Connecticut, the total number of NOW accounts and NOW balances increased by 138 percent in Maine, compared to 92 and 95 percent respectively in Connecticut.

Like Maine, Vermont had a substantial number of new entrants in 1977, with the number of institutions offering NOWs almost doubling. This high entry rate has resulted in rapid NOW growth, with aggregate NOW balances increasing by 184 percent and the number of NOW accounts by 186 percent during 1977. Of the ten new entrants, eight were commercial banks, and by the end of 1977, 19 of the 22 institutions offering NOWs were commercial banks. However, while the commercial bank entry rate was much higher, the thrift institutions experienced a more rapid rate of increase in new accounts and a substantial increase in average account balance. Thus, the average number of NOW accounts per commercial bank increased by only 43 percent in 1977, compared to 94 percent at thrift institutions. Moreover, while the average balance in NOW accounts at commercial banks still substantially exceeds that of the thrift institutions, the average balance at thrifts increased by 44 percent in 1977, compared to a decline of about 10 percent at commercial banks. The effect of this increased market penetration by the thrift institutions was to offset the higher entry rates on the part of the commercial banks. As a result, commercial bank market share of NOW accounts and balances declined slightly.

The measures most often used to gauge the progress of the NOW experiment are blurred in Rhode Island by the unique banking structure of that state.[6] Of 12 thrift institutions, eight own subsidiary commercial banks, and another commercial bank is owned by a loan and investment company similar to a Morris Plan bank. There are only seven commercial banks in Rhode Island which are not affiliated with thrift institutions; there are nine commercial bank-thrift institution affiliations, including all six of the mutual savings banks, and four savings and loan associations not affiliated with commercial banks. In most cases the links between the thrift institutions and their affiliated commercial banks are so close as to constitute combined

---

[6] For a discussion of the banking structure of Rhode Island, see Katharine Gibson "Thrifts Expand into Commercial Banking," in *Changing Commercial Bank Structure in New England,* Research Report #59, Federal Reserve Bank of Boston, 1975, pp. 129-52.

operations, with the affiliated institutions sharing management, offices, and personnel, carrying similar names and advertising jointly.

Because of the importance of the thrift institution-commercial bank affiliations, Table 5 shows data for Rhode Island thrift institutions and their affiliated commercial banks, and for the nonaffiliated commercial banks. From Table 5, it is clear that the progress of the NOW experiment in Rhode Island is the slowest of any of the six New England states. Only one additional institution introduced NOWs in Rhode Island during 1977. The number of NOW accounts at Rhode Island financial institutions increased by only 36 percent in 1977, compared to 92 percent in Connecticut, and 138 percent in Maine, and barely exceeding the 27 percent increase in Massachusetts and the 35 percent increase in New Hampshire. NOW balances showed a similar slow rate of growth increasing by only 25 percent in Rhode Island, compared to a 46 percent increase for all of New England. As a result of this slow progress, there were only approximately 11 NOW accounts per 100 households in Rhode Island as of January 1978, the lowest penetration rate of any state in New England.

The slow progress of the Rhode Island NOW experience may result from the extremely conservative pricing policies adopted by both the unaffiliated commercial banks and the thrift institutions and their commercial bank subsidiaries. As discussed below in more detail, approximately 99 percent of all NOW accounts in Rhode Island are subject to minimum balance requirements, and the weighted average minimum balance requirement for all institutions as of December 1977 was $736, the highest of any of the six New England states. For comparison, in all New England only about 46 percent of all NOW accounts are subject to such requirements, and the weighted average minimum balance as of the same date was $453.

TABLE 5

NOW Account Data for Rhode Island, 1976–77

	12/76	12/77	Percent Increase
Number of Institutions Offering NOWs			
Unaff. CBs	7	7	0
Thrifts & Aff. CBs	8	9	13
All	15	16	7
NOW Accounts			
Unaff. CBs	19,746	25,210	28
Thrifts & Aff. CBs	4,242	7,525	77
All	23,988	32,735	36
NOW Balances ($ thousands)			
Unaff. CBs	$107,619	$131,694	22
Thrifts & Aff. CBs	18,261	25,159	38
All	125,880	156,823	25
NOW Accounts per Institution			
Unaff. CBs	2,821	3,601	27
Thrifts & Aff. CBs	530	836	58
All	1,599	2,046	28
Average Balance per Account			
Unaff. CBs	$5,450	$5,223	−4
Thrifts & Aff. CBs	4,304	3,433	−20
All	5,248	4,791	−9
Market Share, Accounts			
Unaff. CBs	82.3%	77.0%	−5.3
Thrifts & Aff. CBs	17.7	23.0	+5.3
Market Share, Balances (Percent)			
Unaff. CBs	85.5	84.0	−1.5
Thrifts & Aff. CBs	14.5	16.0	+1.5

SOURCE: Federal Reserve Bank of Boston.

Within Rhode Island there has been a substantial shift in market shares during the past year. The nonaffiliated commercial bank market share of accounts declined by more than 5 percentage points during 1977, from 82.3 percent to 77.0 percent. Although the thrift institutions and their affiliates increased their market share of accounts by a substantial margin, their gain in market share of balances was much less,

only 1.5 percentage points, due to a simultaneous sharp decline in the average balance per account at the thrift institutions and their affiliates.

Pricing

The trend towards more conservative pricing of NOW accounts at both commercial banks and thrift institutions continued during 1977. In Massachusetts and New Hampshire there was a significant reduction in the number of institutions offering no-service charge, no minimum balance NOW accounts, while in the other four states the proportion of institutions offering free NOWs fell as new entrants imposed service charges or required minimum balances. Moreover, in all states there was a clear trend among institutions toward increased minimum requirements.

In Massachusetts and New Hampshire the number of institutions offering free NOWs fell by 28, or 11 percent, during 1977, compared with a decline of 14 institutions during 1976, and an increase of 91 during 1975. As a result of this absolute decline, and the fact that recent entrants have adopted conservative pricing schemes, the proportion of institutions offering NOW accounts on a free basis had fallen below one-half in Massachusetts and one-third in New Hampshire by the end of 1977. Unlike 1976, the thrift institutions led the move away from free NOWs during 1977. In 1977, 24 of 28 institutions dropping free NOWs in Massachusetts and New Hampshire were thrift institutions, while 10 of the 15 institutions which dropped free NOWs in 1976 were commercial banks.

In Connecticut and Maine, the number of institutions offering free NOWs showed almost no change, declining by one institution during 1977. However, as in Massachusetts and New Hampshire, recent new entrants in Maine and Connecticut have chosen to impose service charges or require minimum balances, with the result that the proportion of institutions offering free NOWs has fallen. Thus at the end of 1977, only about 25 percent of institutions offering NOW accounts in Connecticut offered them free, and only about 10 percent of Maine institutions offering NOWs did so on a free basis. None of the institutions offering NOWs in Rhode Island or Vermont did so on a free basis.

Of the institutions which do not offer NOW accounts on a free basis, almost 84 percent require a minimum balance for remission of service charges, while an additional 13 percent impose a charge per draft but require no minimum balance, and the remainder use various schemes such as a flat charge per month. Table 5 shows data by state and type of institution as to the number of institutions requiring minimum balances on NOWs, the proportion of accounts and balances subject to minimum balance requirements, and the weighted average minimum balance requirement as of December 1977. For purposes of comparison, Table 6 also contains data for December 1976 as to the proportion of accounts subject to minimum balance requirements and the weighted average minimum balance requirement. Examination of Table 6 shows that with some exceptions, the proportion of accounts subject to minimum balance requirements increased substantially during 1977. For New England as a whole the proportion of accounts subject to minimum balance requirements increased from 35 percent at the end of 1976 to 46 percent at the end of 1977.

There was also a strong trend toward increased minimum balance requirements during 1977. While the experience of individual states varied, the weighted average minimum balance requirement for all New England increased by about one-third during that year.

Table 6 also shows that the use of minimum balance requirements differs among institutions.

TABLE 6

Minimum Balance Pricing Schemes on NOW Accounts in New England, 1976–77
(End of Period)

	No. of Inst. Requiring Min. Bal. 1977	Percent of Accounts Subject to Minimum Balance Requirements		Average Minimum Balance Requirement		Percent of Balances Subject to Balance Requirement 1977
		1976	1977	1976	1977	1977
Connecticut						
CBs	38	87	85	$646	$753	97
MSBs	23	56	50	295	275	61
S&Ls	10	13	27	158	335	28
All	71	51	51	490	533	82
Maine						
CBs	26	92	96	332	368	98
MSBs	21	76	96	325	292	98
S&Ls	9	18	33	217	160	45
All	56	77	82	326	330	94
Massachusetts						
CBs	87	62	72	303	457	84
MSBs	44	17	28	377	503	30
S&Ls *	31	11	28	182	237	32
All	162	32	43	317	451	61
New Hampshire						
CBs	46	65	67	331	376	83
MSBs	6	10	11	126	356	16
S&Ls *	2	5	14	460	267	14
All	54	34	37	307	368	59
Rhode Island						
CBs	7	100	100	500	766	100
Thrifts **	8	90	97	500	624	97
All	15	98	99	500	736	99
Vermont						
CBs	17	61	81	317	301	89
MSBs	3	100	100	500	500	100
S&Ls	1	100	100	100	219	100
All	21	67	84	324	318	90
New England						
CBs	221	66	74	342	476	87
MSBs	104	19	29	358	473	36
S&Ls	54	11	27	188	252	30
All	379	35	46	338	453	68

SOURCE: Federal Reserve Bank of Boston.
* Includes cooperative banks.
** Includes commercial banks which are subsidiaries of thrift institutions.

In general, commercial banks impose minimum balance requirements more frequently than do thrift institutions, and require higher minimum balances. Approximately 87 percent of all NOW balances and 74 percent of all NOW accounts at commercial banks are subject to minimum balance requirements, compared to 36 percent of all NOW balances and 29 percent of all NOW accounts at savings banks, and 30 percent of all NOW balances and 27 percent of all NOW accounts at savings and loans. Although minimum balance requirements are both less prevalent and less stringent among the thrift institutions, the increase in the use of such requirements during 1977 was greatest at the thrifts. The proportion of accounts subject to minimum balance requirements increased by 16 percentage points at savings and loan associations and by 10 percentage points at savings banks, compared to 8 percentage points at commercial banks.

One reason for the popularity of the minimum balance requirement is that such a scheme allows the institution to reduce the number of unprofitable accounts while remaining perfectly competitive for profitable accounts with institutions offering free NOWs. While explicit charges allocate operating costs between high-activity and low-activity accounts, nevertheless such charges place an institution at a competitive disadvantage relative to other institutions offering free or minimum balance NOWs. The minimum balance requirement allows the institution to discriminate between high balance and low balance accounts, and thus between high revenue and low revenue accounts, while offering the maximum rate of return to those accounts with balances normally exceeding the required minimum.

Since the minimum balance requirement acts as a screening device among high and low balance accounts, it is not surprising that institutions imposing minimum balance requirements have substantially higher average balances per account than do institutions which offer NOWs on some other basis, as shown in Table 7. However, the effectiveness of minimum balance requirements in increasing average balances appears to vary among institutions. Among commercial banks, those institutions which require minimum balances have, as a general rule, average balances which are about double those of commercial banks which do not impose such requirements. Among savings banks the pattern is less clear, with savings banks which

TABLE 7

Average NOW Balances at Institutions with and without Minimum Balance Requirements December 1977

	Average Balance per NOW Account	
	Institutions Requiring Minimum Balance for Remission of Service Charges	Institutions Not Requiring Minimum Balances
Massachusetts		
CBs	$2,650	$1,310
MSBs	997	897
S&Ls*	1,009	847
All	1,956	958
Connecticut		
CBs	7,165	1,196
MSBs	1,410	908
S&Ls	1,010	963
All	4,271	970
Maine		
CBs	4,343	2,259
MSBs	2,104	1,090
S&Ls	1,424	866
All	3,523	1,041
New Hampshire		
CBs	2,699	1,155
MSBs	1,372	917
S&Ls*	996	1,064
All	2,441	996

SOURCE: Federal Reserve Bank of Boston.
* Includes cooperative banks.

impose minimum balances in Maine, Connecticut, and New Hampshire having substantially higher average balances than those which do not, while average balances at savings banks in Massachusetts do not differ appreciably among institutions which require minimum balances and those which do not. Among savings and loan associations only in Maine do those associations which impose minimum balance requirements have substantially higher average balances.

The greater success of commercial banks in the use of minimum balance requirements may reflect differences in timing and the fact that thrift institutions are in a position of having to attract high balance accounts from commercial banks which already hold them. Commercial banks, such as those in Connecticut, which offer NOWs early but impose a stiff minimum balance requirement, may be very successful in retaining high balance accounts and discouraging those with low balances. A thrift institution which delays introduction of minimum balances in order to build market share may find that implementation of such requirements may cause holders of low balance accounts simply to increase their balances by the amount of the requirement, and that many account holders may do this by transferring funds from savings deposits at the same institution.

In any event, while average balances at institutions requiring minimum balances differ substantially, those at institutions which do not impose such requirements are remarkably similar. In all four states, thrift institutions which do not require minimum balances have average balances of approximately $1,000, while in three of the four states, commercial banks not imposing requirements have average balances of $1,100 to $1,300.

While a minimum balance requirement may reduce the number of unprofitable accounts, it can have adverse effects on earnings if it leads to the severance of a customer relationship which is profitable overall. Moreover, changing circumstances may cause a low balance, presently unprofitable account to become profitable in the future. Thus, considerations of the total customer relationship, present and future, have led many banks to continue to offer NOW accounts on a below-cost basis. In addition, some institutions with only a few NOW accounts may have been able to process such accounts without additions to staff or equipment, and may consider the marginal cost of such funds to be only the interest cost.

Some institutions have attempted to follow a middle course between high required minimum balances and free NOWs by implementing a graduated or multiple minimum balance requirement. In most cases this multiple minimum balance requirement imposes two separate minimum balances which must both be met if the depositor is to receive both interest and remission of service charges. Thus, for example, an institution may require a minimum balance of $500 if the customer is to receive both interest and remission of service charges. However, if the minimum balance should fall below $500 but remain above $100, the customer will either lose the accrued interest or have service charges imposed, but not both. If the minimum balance should fall below $100 the customer will forfeit accrued interest and have service charges imposed. Thus, for those customers whose minimum balance is below $100, the bank is essentially offering the equivalent of a special checking account. For those customers with minimum balances of $500 or more, the bank is offering a no-service-charge NOW account. The intermediate case where the minimum balance falls between $100 and $500 is more complicated and will depend upon the exact type of scheme imposed. If no interest is paid but service charges are waived, the customer receives the equivalent of a no-service-charge checking account. The most compli-

cated case occurs when interest is paid but service charges are imposed. Here the customer may be receiving either the equivalent of a NOW account subject to service charges, a no-service-charge checking account, or a checking account subject to a service charge depending upon whether the interest payments exceed, are equal to, or less than the service charges imposed. As shown in Table 8, as of December 1977, 31 institutions were imposing graduated balance requirements on NOW accounts, with 17 of these institutions located in New Hampshire.

Besides allowing the bank to discriminate more closely among customers, the graduated balance scheme offers other advantages. Such a plan may allow a bank to simplify its operations by offering only one type of account rather than multiple special checking, personal checking, and NOW accounts. Federal Reserve member banks may also benefit since such a scheme allows the bank to offer the equivalent of a special checking or personal checking account yet avoid the higher reserve requirements imposed on demand deposits.

Effect on Cost of Checking Accounts

Bankers opposed to the spread of NOW accounts beyond New England have argued that the introduction of NOWs will result in an increase in service charges or required compensating balances on non-interest-paying checking accounts. By providing services such as check processing and account maintenance to the checking customer at below cost or without charge, bankers have avoided the legal prohibition against the payment of interest on demand deposits. However, with payment of interest in kind, depositors receive payment in proportion to the services they consume, while the pecuniary interest foregone is in proportion to balances held. Thus, depositors with large balances and low activity subsidize those

TABLE 8

Multiple Minimum Balance Requirements on NOW Accounts in New England, December 1977

	Number of Institutions	Average Minimum Balance to Earn Interest	Average Minimum Balance for Remission of Service Charges
Massachusetts	6	$135	$340
New Hampshire	17	455	106
Vermont	2	493	321
Connecticut	5	489	956
Rhode Island	1	400	100
Maine	0	N.A.	N.A.

SOURCE: Federal Reserve Bank of Boston.

depositors with low balances and the same or greater activity. If depositors with large balances should convert to NOW accounts, banks may find the revenue on their remaining checking balances to be insufficient to offset the services consumed by these customers. Thus, banks may increase service charges or required compensating balances on small checking accounts even if the bank is breaking even on the NOW accounts themselves.

The Connecticut experience offers an opportunity to evaluate the impact of NOW accounts on the pricing of personal checking services. In March 1975, one year before the introduction of NOW accounts, and again in January 1978, the Federal Reserve Bank of Boston surveyed all Connecticut commercial banks with respect to pricing schemes applied to personal checking accounts.[7] Comparison of these survey results, summarized in Table 9, should reveal any change in pricing schedules occurring between the two dates.

---

[7] The results of the original survey are reported in George H. Gonyer and Steven J. Weiss, "The Competitive Effects of Demand Deposit Powers for Thrift Institutions in Connecticut," *Journal of Bank Research,* Summer, 1976, pp. 104-112.

As shown in Table 9, a total of 22 banks implemented more stringent requirements by imposing or increasing required minimum balances on checking or savings accounts, or implementing service charges. Six banks showed a clear decrease by removing or reducing such requirements. Eight banks reduced or removed required balances against checking deposits while imposing or increasing required balances against savings deposits. Because such a change may represent either an increase or decrease in the stringency of the requirement depending upon individual circumstances, these banks are treated as a separate category in Table 9. Finally, 34 banks showed no change in their pricing between the two dates.

The above data would indicate a clear movement toward increased requirements on checking accounts at commercial banks. The data may also indicate the importance of local market structure, since 13 of the 22 banks showing a clear increase in requirements are located

TABLE 9
Changes in Terms Applied to Personal Checking Accounts at Commercial Banks in Connecticut, March 1975 to January 1978
(Number of Institutions)

	Hartford	New Haven	Bridgeport	Stamford-Norwalk	New London	Waterbury	Rural	Total
Increased required minimum balance on checking account	8	0	0	1	0	1	0	10
Increased required minimum balance on savings account	2	1	0	0	0	0	0	3
Increased required minimum balance on checking & savings accounts	2	1	2	1	1	0	0	7
Implemented service charge	1	0	0	0	0	0	1	2
Total increase	13	2	2	2	1	1	1	22
Decreased required minimum balance on checking account	2	0	0	0	0	0	1	3
Decreased required minimum balance on savings account	1	1	0	0	0	0	0	2
Decreased required minimum balance on checking & savings accounts	1	0	0	0	0	0	0	1
Total decrease	4	1	0	0	0	0	1	6
Substituted required minimum balance on savings for required minimum balance on checking	0	4	0	4	0	0	0	8
No change	7	4	9	4	1	2	7	34
Total	24	11	11	10	2	3	9	70

SOURCE: Federal Reserve Bank of Boston.

in the Hartford banking market, one of the most concentrated in Connecticut. However, a trend towards increased requirements at commercial banks does not necessarily indicate that small checking depositors are worse off. State-chartered thrift institutions in Connecticut were allowed to offer personal checking accounts as of January 1976, and by December 1977 the 53 thrift institutions offering checking had attracted 240,000 accounts.[8] Of the 53, 36 offered either free checking or free checking to customers holding savings accounts, with no required minimum balances on either account. As shown in Table 10, the effect of the new entrants has been to increase the number of institutions offering free checking in Connecticut from 39 in March 1975 to 62 in January 1978. Thus, the competitive impact of demand deposit powers for Connecticut thrift institutions may have offset the upward movement in requirements at commercial banks.

Demographic Penetration

Yet another measure of the progress of the NOW experiment in New England is the degree of demographic penetration. Because nonprofit institutions and depositors located outside New England hold some NOW accounts, and because some households hold more than one account, the ratio of NOW accounts to the number of households provides a good but not completely accurate estimate of the acceptance of NOW accounts in New England. Table 11 shows the number of NOW accounts per 100 households for December 1976 and January 1978. In Massachusetts and New Hampshire approxi-

---

[8] The number of thrift institution checking accounts as of December 1977 was equal to about 18 percent of the 1.3 million private demand deposit accounts in Connecticut with balances of $40,000 or less as of June 1975, the latest date for which detailed data are available. The average balance in thrift institution checking accounts was $342 in December 1977.

TABLE 10

Number of Institutions Offering Free Checking Accounts in Connecticut, March 1975 and January 1978

Market	March 1975 CBs	January 1978 CBs	Thrifts	Total
Hartford	16	7	16	23
New Haven	2	2	2	4
Bridgeport	9	7	4	11
New London	2	1	4	5
Waterbury	3	3	4	7
Stamford-Norwalk	3	2	2	4
Rural	4	4	4	8
Total	39	26	36	62

SOURCE: Federal Reserve Bank of Boston

TABLE 11

Penetration of NOW Accounts in New England

	NOW Accounts per One Hundred Households	
	December 1976	January 1978
Connecticut	5.6	19.1
Maine	4.8	17.7
Massachusetts	53.3	73.0
New Hampshire	47.1	69.5
Rhode Island	7.0	10.6
Vermont	3.1	11.4
New England	31.2	45.9

SOURCE: Federal Reserve Bank of Boston.

mately seven out of ten households had NOW accounts as of January 1978, while in Connecticut and Maine the proportion holding NOWs is roughly two out of ten, and one out of ten in Rhode Island and Vermont.

While the rate of growth of NOW accounts and balances was much greater in the four new states than in Massachusetts and New Hampshire, the absolute increase in penetration was much greater in the latter two states. Thus, approximately 20 percent of all households in Massachusetts and New Hampshire opened a

NOW account in the 13 months ending January 1978, compared to only about 13 percent of the households in Connecticut and Maine, and even less in Rhode Island and Vermont.

Conclusion

The decline in the number of new entrants and the small size of most of the remaining holdout institutions indicate that in the future NOW growth will be much less affected by new entrants than in the past. In the early years growth rates of aggregates and shifts in market shares were determined to a great extent by the number and types of institutions which chose to introduce NOWs in a given period. The small size of the remaining holdout institutions and the existing widespread availability of NOWs at alternative institutions indicate that even if these holdout institutions should choose to offer NOWs, they would have a relatively minor effect on aggregate growth rates and market shares.

As the impact of new entrants has lessened, other influences have become relatively more important. One of these influences is that of local market structure. For example, free NOW accounts are still available in the very competitive Boston market, but are increasingly hard to find elsewhere. Rhode Island has the most highly concentrated banking structure of any of the six New England states, and the very conservative pricing policies applied to NOWs in that state may be a reflection of that fact. Finally, the surge of new entrants in Vermont during 1977 appears due, at least in part, to the penetration of the Burlington market by a new competitor.

Perhaps a more important influence than local market structure is the impact of pricing policies. In Rhode Island the very conservative pricing policies of both thrift institutions and commercial banks have substantially slowed the penetration of NOW accounts. In Connecticut the significantly more stringent pricing policies existing at commercial banks have resulted in a substantial shift in market share to the thrift institutions during 1977.

While the required minimum balance is becoming increasingly dominant as the most widespread pricing policy, the efficacy of such schemes in increasing balances appears to vary among different types of institutions. The required minimum balance is particularly effective in allowing those commercial banks which introduced NOWs at an early date to retain high balance accounts and discourage those with low balance ones, but is much less effective when implemented by either a commercial bank or thrift institution after a delay or after offering NOWs on a free basis.

One justification for the regional limitation of NOW accounts was that the New England experience would provide information as to the likely course of events if NOWs or some other form of interest paying transaction account were to be introduced on a nationwide basis. Somewhat ironically, one of the lessons of the New England experience is that local conditions will affect the outcome, so that extrapolation of the New England experience to other regions is necessarily speculative. Nevertheless, there is a single common denominator to much of the New England experience which may be of use in forecasting events elsewhere.

In each of the New England states, the pace and style of the NOW experiment has been influenced by the existence, or lack of it, of thrift institution competition. In Massachusetts and New Hampshire aggressive promotion of NOW accounts by thrift institutions in 1973-75 greatly affected the speed at which NOWs spread among commercial banks, and the terms on which NOWs were offered. In Connecticut and Maine thrift institution promotion of NOWs was moderated by the acquisition of checking powers by state-chartered thrift institutions, but

41

many commercial banks introduced NOWs at an early date in reaction to the potential threat of thrift competition for NOW deposits. In Vermont and Rhode Island, where thrift institutions are much weaker than in the other four New England states, the lack of strong thrift institution competition resulted in a substantially slower pace of NOW penetration. Thus if NOWs or some other form of interest paying transaction account are permitted on a nation-wide basis, one might expect that the rate at which commercial banks offer such accounts, and the terms on which the accounts are offered, will be influenced by the decision to extend or withhold similar powers from thrift institutions. Other factors which may be of importance will be the amount and degree of aggressiveness of local thrift institution competition, and whether the thrift institutions also possess checking powers.

Locational Decisions of Foreign Direct Investors in the United States

By Jane Sneddon Little*

Since 1973 foreign direct investment in the United States has spurted and with it has surged curiosity about this development. One aspect of foreign direct investment which has attracted attention is its location within the United States. Until recently, a paucity of data on this phenomenon has led to some misconceptions about these locational decisions. It is frequently assumed, for instance, that foreign investors favor the Sunbelt to the exclusion of other areas. A recent article in *The Economist* pointed out, for example, that one-third of all announced investments in manufacturing between 1968 and 1975 was made in the South and added that the heavily unionized states of the Mideast (New York, Pennsylvania, and New Jersey) and the Great Lakes (Illinois, Michigan, and Ohio) were "left in the dust."[1] A 1977 *Fortune* article also implied that the South is particularly attractive to foreign investors, for it picked for discussion three firms recently locating in that area, and all three were foreign owned.[2] As for a second widely held assumption,

state development officials, foreign investors and bankers tend to believe that a foreign firm looks at the same locational factors as a U.S. firm in making its plant-site decision.

Recently published Commerce Department and Conference Board data now make it possible to examine some of the facts underlying these assumptions. In actuality, the Mideast and Great Lakes states have not been left behind "in the dust." Indeed, most foreign direct investment activity (acquisitions and constructions per square mile or per capita) between the end of 1974 and the third quarter of 1977 occurred in northern industrial areas. Even when acquisitions — in which location must be a secondary consideration — are excluded and new constructions alone are considered, the Mideast and New England regions still outranked the Southeast while the Great Lakes region followed close behind when the data are adjusted for regional size differences. When the new construction figures are adjusted for regional differences in population, however, the Southeast does appear to lead the Nation with New England, the Mideast and the Southwest effectively clustered together in second place.

Although foreign and U.S. investors undoubtedly do examine the same locational characteristics, they must weight them differently, for

[1] "Let's Go Where the Unions Aren't," *The Economist,* June 4, 1977, p. 101.
[2] Gurney Breckenfeld, "Business Loves the Sunbelt (And Vice Versa)," *Fortune,* June 1977, pp. 132–146.

they frequently make different decisions. Comparisons of the regions' shares of all U.S. manufacturing plants with their shares of foreign manufacturing plants as of 1974 and 1975[3] and similar comparisons of their shares of recent U.S. and foreign investment activity in 1975 and 1976 indicate that some regions are relatively much more attractive to foreigners than they are to U.S. investors and vice versa. More to the point, comparisons of the regions' shares of all plants in specific industries with their shares of foreign-owned plants in those industries also suggest that foreign and U.S. investors do not necessarily focus their investments in the same areas.

This article will describe the locational preferences of foreign investors in manufacturing. It will also compare their decisions with those of U.S. manufacturers and explore some possible reasons for the differences. Finally, it will suggest some consequences for the areas attracting foreign direct investment.

Growth of Foreign Direct Investment

The foreign direct investment position in the United States reached $30.2 billion[4] at the end of 1976, according to the latest sample data linked to the Commerce Department's 1974 benchmark survey.[5] Between 1959 and 1972, the foreign direct investment position grew at an estimated average annual rate of 6.5 percent, with a high of 12.3 percent in 1970. Then in 1973 and 1974 the pace of foreign direct investment climbed abruptly to well over 20 percent a year. Thereafter, the foreign direct investment position grew a more moderate 10 percent in 1975 and 9 percent in 1976. The reduced rate of investment activity undoubtedly reflected sluggish economic activity here and abroad as well as the reclassification of a large investment from foreign to U.S. ownership. Despite this reduction, the annual rate of growth of the foreign direct investment position in the United States between 1972 and 1976 averaged over 15 percent, practically two and one half times the average rate over the previous 13 years and almost twice the average growth in the U.S. position abroad from 1972–1976.

As for 1977, according to another data series, the Conference Board's *Announcements of Foreign Investment in U.S. Manufacturing Industries,*[6] the pace of foreign investment activity has quickened again. Figures for the number of manufacturing investments and for the anticipated values of about half the cases also show the decline in foreign investment activity in 1975–76, but data for 1977 indicate that the number and value of announcements have surpassed their 1974 peak.

Reasons for the Recent Increase in Foreign Investment Activity

Two surveys of foreign direct investors[7] suggest that "gaining access to the huge and growing U.S. market" is a primary motivation

---

[3] Unfortunately, it is not possible to compare U.S. and foreign activity for the same years, because the most recent published state data on the number and industry of U.S. manufacturing plants are for 1974 while state data on foreign-owned plants describe the situation in 1975.

[4] In comparison, the U.S. direct investment position abroad at the end of 1976 was $137.2 billion.

[5] U.S. Department of Commerce, *Foreign Direct Investment in the United States: Report of the Secretary of Commerce to the Congress in Compliance with the Foreign Investment Study Act of 1974* (Public Law 93-479), 9 vols. (Washington, D.C.: U.S. Government Printing Office, April 1976).

[6] The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industries,* fourth quarter, 1976–fourth quarter, 1977.

[7] U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Volume 5, Appendix G, "Investment Motivation," prepared by Arthur D. Little, Inc., March, 1976, and Stuart L. Mandell and Carl Dan Killian, Jr., *An Analysis of Foreign Investment in Selected Areas of the United States: A Research Project on Behalf of the New England Regional Commission* (Boston, Mass.: The International Center of New England, Inc., November 1974).

for direct investment here. This explanation is not entirely satisfactory, however, because the profitability of an investment is not necessarily related to market size, and surely most firms seek profits rather than markets per se. Moreover, in the absence of high transportation costs, tariffs, or other such barriers, exporting also provides ready "access" to the U.S. market. Indeed, most foreign investors do export to the United States before they invest here. What then causes them to switch from an export to an investment strategy?

Generally, the theory of foreign direct investment suggests that this activity will occur only when the foreign firm has an advantage over existing or potentially competitive local companies which offsets the disadvantages and costs of operating over long distances and in an unfamiliar environment. The types of advantages which permit foreign investment include possession of a unique technology and product differentiation, or brand identification, etc. Such distinctions confer some degree of monopoly power which is in fact a precondition for foreign direct investment. Indeed, if perfectly competitive markets for technology, management skills and other factors of production existed, the domestic market would always be served by a domestic firm which could operate more cheaply than a foreigner in the domestic milieu. As a result of the foreigner's unique advantages, however, the foreign firm may in the long run tend to earn more producing in the local market than national firms can earn.[8]

In addition, of course, the foreign investor should be able to earn more by producing locally than it could by producing in its home country and shipping the goods overseas. Otherwise, it would choose to export rather than to expand abroad. (It must also, naturally, make similar

cost calculations concerning licensing foreign production.) Advantages to be gained by investing abroad instead of exporting include: obtaining lower-cost factors of production; avoiding or reducing tariff and nontariff barriers; reducing transportation costs and delivery time; avoiding political instability or government interference at home; obtaining knowledge of foreign tastes, marketing techniques, etc.; and obtaining economies of scale by vertical integration — back to raw materials production, for example.

While obtaining lower-cost factors of production has not been an important incentive in the U.S. case until recently according to foreign investor surveys, avoiding tariff barriers, such as the American Selling Price system, has long been important to chemical producers.[9] Reducing transportation costs has also been a significant incentive in the case of bulk chemicals and heavy machinery products but has been relevant to food processors as well. For instance, Kikkoman, the Japanese soy sauce manufacturer, had long imported large quantities of U.S. wheat and soybeans to turn into soy sauce which it then exported to the United States. Why not set up a U.S. subsidiary, as it did in 1957, and reduce the transportation costs?[10] The Japanese and Canadians have also been particularly interested in integrating backwards to secure raw materials sources. The resources of concern have included oil, coal, metal, and, in the case of the Japanese, lumber and paper, and agricultural products as well.

But what changes in these considerations account for the recent large increases in foreign

---

[8] Charles P. Kindleberger, *American Business Abroad* (New Haven: Yale University Press, 1969), pp. 12–14.

[9] U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Appendix G, p. G-57. Under the ASP system, the United States assesses duties on benzenoid chemicals on the basis of the value of competitive U.S. products rather than the value of the imported chemicals.

[10] John E. Cooney, "Top Soy Sauce Brewer in Japan Shows How to Crack U.S. Market," *The Wall Street Journal,* December 16, 1977, 1:1.

45

direct investment in this country? First of all, since 1945 war-shattered foreign firms have acquired the technological and financial strength permitting them to broaden their horizons and consider foreign investment. For instance, from 1960 to 1974, worldwide exports from countries which are major investors in the United States grew more than one and a half times as fast as U.S. exports.[11] Moreover, although the United States enjoyed great technological superiority in 1945, the relationship is no longer entirely lop-sided. A National Academy of Engineering report indicates, for example, that in 1963 and 1964, U.S. pharmaceutical manufacturers introduced two-thirds of the new chemical entities, while in 1973 and 1974, by contrast, more than half of the new chemical compounds reaching the market were of foreign origin.[12] As for other examples of foreign innovations, British companies introduced the EMI Scanner and new technology in the food machinery industry to the United States via direct investments; Japanese companies have brought advanced production techniques in consumer electronics and miniature bearings; and French and German companies are importing high pressure hydraulics technology through their U.S. subsidiaries.[13] Partly as a result of this renewed economic and technical strength, the official reserves of the major investing countries almost tripled between 1960 and 1974 thereby permitting government policies favorable to investment abroad.

In addition to these post-war developments recent events have particularly encouraged foreign direct investment in the United States. The devaluations of the dollar in 1971 and 1973 and the subsequent depreciation of the dollar vis-à-vis the currencies of some industrial countries have discouraged exporting and encouraged direct investment by lowering the relative cost of U.S. production factors. Between mid-December 1971 and mid-December 1977, the dollar depreciated 32 percent vis-à-vis the German mark, 44 percent vis-à-vis the Swiss franc, 27 percent vis-à-vis the Dutch guilder and 21 percent vis-à-vis the Japanese yen. With this 32 percent rise in the dollar price of marks and of German exports denominated in marks, for example, German manufacturers have found it more difficult to sell German-made products in the United States while the costs of manufacturing in the United States have by contrast become relatively less expensive. For instance, U.S. Department of Labor indexes show that unit labor costs measured in U.S. dollars have grown faster in all other major industrial countries than in the United States between 1970 and 1976.[14] Of course, the dollar depreciation has reduced the relative cost of U.S. plant and equipment as well and, in conjunction with depressed stock prices in 1973–1974 and again in 1977, has fostered foreign acquisitions of U.S. companies when foreigners may have felt they were getting particularly good values for their domestic currency.

In addition, the U.S. economy has been growing faster than the economies of most other major industrial countries since 1975. This development would also tend to encourage interest in direct investment in the United States and may be partly responsible for the recent upsurge in 1977.

Another recent development which has encouraged investment in the United States has been the leftward drift of politics in much of Europe and Canada along with increased government interference and labor militancy. According to the Commerce Department's

---

[11] U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Appendix G, Table 2-6, G.26.

[12] *Ibid.,* Volume I, p. 203.

[13] *Ibid.,* Volume I, pp. 204–5.

[14] Barbara Boner and Arthur Neef, "Productivity and Unit Labor Costs in 12 Industrial Countries," *Monthly Labor Review,* C (July 1977), p. 16.

investor survey, these political and social changes have been primary motivations in the case of U.K. and Canadian companies but are expected by investors from all countries to become increasingly important considerations.[15] Finally, of course, while avoiding tariff and nontariff barriers has always been a major motivation, the wave of protectionist sentiment which occurred in 1974 and now appears to be swelling again tends to spur foreign investment. The Tokyo Shibaura Electric Company has announced plans to build a color television plant in Tennessee, for instance, in part because of the recent U.S.-Japanese agreement limiting Japanese television exports to the United States to 1.75 million sets annually.[16]

Profile of Foreign Direct Investment

Industrial Composition

In 1974, almost one-third of the foreign investment position in the United States was devoted to manufacturing while petroleum (from exploration to distribution) and "finance, insurance and real estate" (primarily holding companies and insurance) each accounted for one-quarter of the total. New data released by the Commerce Department on foreign direct investment transactions in the United States in 1976,[17] while not comparable to the data on

foreign position, do suggest that manufacturing has increased in importance recently while petroleum has shrunk drastically in significance. Manufacturing accounted for almost half of the investment activity by number of transactions and by value (based on partial information generally relating to about 60 percent of the cases) while petroleum accounted for less than 3 percent of the transactions and value. "Finance, insurance and real estate" remained in second place with a quarter of the number and a third of the value of investments. Because of the importance and availability of data on foreign manufacturing investments, the rest of this article will focus on that sector.

Within manufacturing, chemicals — primarily industrial chemicals and drugs — were predominant at the end of 1974, accounting for about one-third of the investment position. Food and machinery followed with 17 percent and 13 percent of the total position respectively. Recently, the industrial emphasis appears to have shifted and become more evenly distributed. Chemicals continue to predominate the new investment activity with about one-fifth of the total, followed by electrical and nonelectrical machinery, which together accounted for one-third of the total, fabricated and primary metal with 10–15 percent and finally food with about 7 percent of the total.[18]

Nationality of Foreign Direct Investors

At the end of 1974, Canadians had the largest investment position in U.S. manufacturing (25 percent of the total foreign position), followed

[15] U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Volume 5, Appendix G, p. G-61.
[16] Alexander Hamilton Institute, *Direct Investment/U.S.A.,* I (January 9, 1978), 1.
[17] U.S. Department of Commerce, Domestic and International Business Administration, Bureau of International Economic Policy and Research, Office of Foreign Investment in the United States, *Foreign Direct Investment in the United States: 1976 Transactions — All Forms; 1974–76 Acquisitions, Mergers and Equity Increases,* December 1977. Data contained in this release are not comparable to the Department's benchmark survey or balance-of-payments data. For instance, the data on the "foreign investment position" are based on the book value of the foreign parents'

investment in the U.S. affiliate, debt and equity, but do not include funds raised in the United States. By contrast, the figures on recent transactions do include capital raised in this country.
[18] The Commerce Department's data on foreign direct investment transactions in 1976 and Conference Board announcements for the same year give similar impressions of the shift in industrial emphasis.

47

closely by the United Kingdom (22 percent) and Switzerland (15 percent), then Germany, the Netherlands and Japan (with a low for this group of 4 percent)[19] in that order. During the first three quarters of 1977, however, judging by data in Conference Board *Announcements,* Germany was the most active foreign investor with a 19.5 percent share of new investment activity. The United Kingdom and Canada were effectively tied for second place with 18.2 percent shares of recent investment activity. Then followed Japan (13.2 percent), France (12.4 percent), Switzerland (5.3 percent) and the Netherlands (2.4 percent). The importance of recent German and Japanese investment activity in comparison with their positions in 1974 may partly reflect the appreciation of their currencies vis-à-vis the dollar and the Japanese government's policy of encouraging foreign investment, while the decrease in the Canadian and U.K. shares may reflect the weaker performances of their currencies. On the other hand, recent activity does not suggest an increase in the importance of Swiss investment despite the huge appreciation of the Swiss franc.

As for the widely feared surge in Arab takeovers, only two OPEC investments in U.S. manufacturing were announced between the beginning of 1975 and the third quarter of 1977. (Indeed, although OPEC foreign direct investments tend to be concentrated in real estate rather than in manufacturing, OPEC accounted for less than 3 percent of all types of acquisitions, mergers and equity increases made by foreigners from 1974–1976.)[20] In other words, OPEC countries are not about to acquire control of large shares of American manufacturing.

Actually, no foreign country is about to dominate U.S. industry, for foreign investors accounted for less than 6 percent of U.S. output in each two-digit Standard Industrial Classification Category in 1974, although within some narrower, four-digit industrial subdivisions, such as chemical dyes, the foreign share rose as high as 30 percent.[21]

Acquisitions or Constructions?

According to Conference Board figures, acquisitions have become more popular relative to constructions between 1973–75 and 1977.[22] Acquisitions, which are favored by firms seeking an established marketing net or hoping to create a U.S. foothold relatively quickly, accounted for 33 percent of all investments (number of plants) in 1973–75 versus 50 percent in 1977. Constructions, by contrast, accounted for 47 percent of all investments in 1973–75 but 35 percent in 1977. The increased choice of acquisition as a form of investment probably reflects the depressed stock market and the impact of inflation on new construction costs.

In the last three years, among the major industries, acquisitions have been most favored in food and electrical machinery and least favored in chemicals and metals. Of the major foreign investors, the Canadians and British are most likely to follow the acquisition route. The French and the Swiss, by comparison, seem least interested in acquisitions.

Where Foreigners Invest

As of the end of 1975 the Mideast led the regions in number of foreign-owned plants, as

---

[19] Although Japan had 22 percent of total foreign direct investment assets in the United States at that time, outstanding loans to Japanese parents — a uniquely Japanese phenomenon — reduced their net position substantially.

[20] U.S. Department of Commerce, *Foreign Direct Investment in the United States: 1976 Transactions — All Forms; 1974–76 Acquisitions, Mergers and Equity Increases,* Table 8, p. 16.

[21] U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Vol. 3: Appendix A, p. A-8.

[22] Regardless of which form of investment a firm employed, incidentally, in 1974 over 90 percent of foreign affiliates were majority owned by foreigners. This figure suggests that a high degree of control is important to foreign investors.

TABLE 1
Regions Ranked by the Number of Foreign Manufacturing Plants
and by the Number of Foreign Manufacturing Plants
per Thousand Square Miles: 1975

Rank by Number of Plants		Rank by Number of Plants per Thousand Square Miles	
Region	Number of Plants	Region	Plants per Thousand Square Miles
1 Mideast	580	1 Mideast	5.13
2 Southeast	495	2 New England	2.94
3 Great Lakes	326	3 Great Lakes	1.34
4 New England	185	4 Southeast	.93
5 Farwest	129	5 Farwest	.30
6 Southwest	98	6 Plains	.18
7 Plains	89	7 Southwest	.17
8 Rocky Mountains	40	8 Rocky Mountains	.09

SOURCE: Based on data from U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Volume 3, Appendix A, Table 30, pp. A 123–A 125; U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 1975* (Washington, D.C.: U.S. Government Printing Office, 1975).

Table 1, Column 1 indicates.[23] The Southeast, Great Lakes, and New England regions followed, in that order, while the Plains and Rocky Mountain areas were least favored by foreigners. Of course, some regions have more land area or population than others; thus ranking the regions by the number of their foreign plants, while frequently done in new articles, etc., may give a misleading impression of their relative attractiveness to foreigners. As a consequence, the rest of this section will put the regions on a more even footing and will examine the number of foreign-owned plants per square mile and per capita in a given region or state.

According to the plants-per-square-mile criterion, as of the end of 1974 the Mideast remained at the top of the list while New England and the Great Lakes region displaced the Southeast, as Table 1, Column 4 shows. This ranking reflects the fact that all of the Mideastern states and four of the six New England states were in the top ten. Indeed, immediately after New Jersey in first place came Rhode Island, Massachusetts, and Connecticut with New Hampshire following in ninth place. Thereafter, all of the Great Lakes states were clustered in the second group of ten. The only Southeastern state in the top ten was South Carolina. The other states in that region were scattered through the second and third ranking groups, with the Atlantic states preceding the others.[24]

Looking at recent investment activity, from

[23] The data and discussion are limited to the contiguous 48 states, because Alaska and Hawaii, with relatively small manufacturing sectors and exceptional relationships with Japan, appear to be special cases. Most foreign investment in Alaska is Japanese and is based on the state's natural resources. With its small manufacturing base, foreigners owned one-third of the plants with 20 or more employees in 1975 — a much higher share than in any other state. In Hawaii foreign investment has also been almost entirely Japanese and has been focused on the tourist and real estate industries. Much of what little manufacturing investment has occurred has been in Hong Kong–based sugar refineries.

[24] The individual state data which provided the basis for the regional tables in this article are given in the appendix.

49

the beginning of 1975 through the third quarter of 1977, suggests that foreigners have continued to favor the same regions for recent acquisitions and constructions of manufacturing plants, as Table 2, Column 1 shows. The Mideast continues to head the list and, indeed, has increased its relative popularity in comparison to the New England, Great Lakes, and Southeast regions. While New England has maintained its second rank and Rhode Island can even claim to lead the Nation in number of foreign acquisitions and constructions per square mile for this period, the region's position vis-à-vis the Great Lakes has slipped a little — to judge by current activity. The Farwest and Southwest have also made some gains vis-à-vis the Southeast and Plains states.

The strengthened lead of the Mideast, as measured by recent acquisitions and constructions, reflects gains in rank by New York and Pennsylvania. These shifts may have occurred because the metal and machinery industries, which are important in these two states have increased their shares of foreign investment. As for the New England region, Vermont climbed into the top ten states in the country while New Hampshire and Maine plummeted in the ranking. The increased importance of fabricated metals may help explain Vermont's climb while the decreased shares of Canadian investors and the food industry may be partly responsible for New Hampshire's and Maine's declines. In the Great Lakes region, only Ohio gained rank while in the Southeast, Virginia, Louisiana, Tennessee and Alabama also improved their positions. The other eight Southeastern states fell in rank, however. This development undoubtedly reflects the increased use of acquisitions as an investment route in recent years and a lack of acquisition opportunities in the Southeast.

Of course, when foreign investment takes the form of acquisitions, location has to be of secondary importance because of the small number of

TABLE 2
Regions Ranked by Number of Foreign Acquisitions and Constructions per Thousand Square Miles and by Number of Foreign Constructions per Thousand Square Miles: 1975–1977, Third Quarter

Rank by Number of Acquisitions & Constructions per Thousand Square Miles		Rank by Number of Constructions per Thousand Square Miles	
Region	Acquisitions & Constructions per Thousand Square Miles	Region	Constructions per Thousand Square Miles
1 Mideast	1.34	1 Mideast	.44
2 New England	.52	2 New England	.24
3 Great Lakes	.30	3 Southeast	.15
4 Southeast	.21	4 Great Lakes	.10
5 Farwest	.12	5 Farwest	.06
6 Plains	.05	6 Southwest	.04
6 Southwest	.05	7 Plains	.02
8 Rocky Mountains	.01	8 Rocky Mountains	. .*

* . . = less than .01 per thousand square miles.
SOURCE: Based on data from The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industry,* 1975: I–1977: III; U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 1975.*

suitable candidates likely to be available at any one time; thus, examining the location of foreign constructions (also shown in Table 2) may better indicate the foreigners' locational preferences. Surprisingly perhaps, when we look at foreigners' recent preferences in their purest form, the Mideast and New England remain in first and second place but with their relative popularity somewhat reduced. Declines in rank on the part of New York, Maryland, Massachusetts, and Maine account for this reduction and may reflect the fact that acquisitions are favored by food and electrical machinery manufacturers and by Canadians who in turn favor these states. The Southeast replaces the Great Lakes in third place, however, and the Southwest (in effect, Texas) jumps to sixth place, displacing the Plains region.

Projects per thousand square miles is one measure of regional attractiveness to foreign investors; another is foreign projects per million persons living in a region. According to this alternative measure, as the first part of Table 3 indicates, New England and the Mideast still lead the list of regions ranked by number of foreign-owned plants as of 1975. In comparison to Table 1, however, they have reversed positions since all of the New England states except Massachusetts are in the top ten while only New Jersey and Delaware from the Mideast are included in the first group. The Southeast also replaces the Great Lakes in third place with South and North Carolina and Georgia in the top ten states. The Rocky Mountains and Southwest also look more attractive by this measure than they did when the data were adjusted for area differences while the Plains and the Farwest fall to the bottom of the list.

As for recent activity, when the regions are ranked by new foreign constructions and acquisitions per capita, the results are very similar to those obtained by our area measure with the

TABLE 3

Regions Ranked by Number of Foreign Projects per Million Persons:
Number of Plants, 1975; Number of Acquisitions and Constructions, 1975–1977, Third Quarter; and
Number of Constructions, 1975–1977, Third Quarter

	Rank by Number of Plants per Million Persons			*Rank by Number of Acquisitions and Constructions per Million Persons*			*Rank by Number of Constructions per Million Persons*	
	Region	*Plants per Million Persons*		*Region*	*Acquisitions and Constructions per Million Persons*		*Region*	*Constructions per Million Persons*
1	New England	15.23	1	Mideast	3.59	1	Southeast	1.60
2	Mideast	13.83	2	New England	2.70	2	New England	1.23
3	Southeast	10.30	3	Southeast	2.33	3	Mideast	1.19
4	Great Lakes	7.97	4	Farwest	1.89	4	Southwest	1.18
5	Rocky Mountains	7.16	5	Great Lakes	1.76	5	Farwest	.85
6	Southwest	5.45	6	Plains	1.61	6	Great Lakes	.61
7	Plains	5.34	7	Southwest	1.44	7	Plains	.54
8	Farwest	4.74	8	Rocky Mountains	.86	8	Rocky Mountains	.17

SOURCE: Based on data from The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industry,* 1975: I–1977: III; U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 1977.*

Mideast and New England heading the list as Table 3 again shows. The only differences are that the Great Lakes falls from third to fifth rank while the Southeast and Farwest move up to third and fourth place, respectively. Finally, looking at new constructions alone on a per capita basis enhances the apparent attractiveness of the Southeast and Southwest, where new constructions represent 69 and 81 percent of the two types of investment, while it casts the Mideast and Great Lakes, where new constructions account for less than a third of new activity, in a less favorable light. According to this measure, the Southeast moves into first place while New England, the Southwest (primarily Texas), and the Mideast are effectively tied for second place. South Carolina leads the Nation in number of recent foreign constructions per capita while Vermont and Rhode Island follow close behind.

In other words whether the data are adjusted by area or by population, the Mideast and New England remain highly attractive to foreign investors. Depending on the measure used, the Southeast and the Great Lakes also appear attractive to foreigners — with the per capita figures favoring the Southeast and the area figures favoring the Great Lakes.

Which Regions Are More Attractive to Foreign than to U.S. Investors?

Regardless of whether the number of foreign-owned plants is measured on a per square mile or per capita basis, other things being equal, one might expect to find the same concentration of foreign as U.S. plants per square mile if there were no differences between foreign and U.S. investors. Significant differences in outlook between the two groups do appear to exist, however. To see evidence of these differences, the regional and state shares of all foreign-owned manufacturing plants should be compared with their shares of U.S. owned manufacturing

---

TABLE 4

Regions Ranked by Relative Attractiveness to Foreign versus U.S. Manufacturers

	Share of Foreign vs. U.S. Plants: 1974–75			*Share of Foreign vs. U.S. New Constructions & Expansions: 1975–76*	
	Region	Ratio		Region	Ratio
1	New England	3.4	1	Southeast	2.1
2	Mideast	1.4	2	Mideast	2.0
3	Southeast	1.1	2	New England	2.0
4	Great Lakes	.9	4	Southwest	1.1
4	Rocky Mountains	.9	5	Plains	.6
6	Farwest	.6	6	Great Lakes	.5
7	Southwest	.5	6	Farwest	.5
8	Plains	.4	8	Rocky Mountains	.2

SOURCE: Based on data from U.S. Department of Commerce, *Foreign Direct Investment in the United States*, Volume 3, Appendix A, Table 30; U.S. Department of Commerce, Bureau of Labor Statistics, *County Business Patterns, U.S. Summary* (CBP-74-1), 1974, Table 2A; The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industries*, 1975: I–1976: IV; and F. W. Dodge Division, McGraw-Hill Information Systems Company, unpublished data.

---

plants, as does Table 4. A ratio above one suggests that the region is relatively more attractive to foreigners while a ratio below one suggests that the region is relatively more attractive to U.S. investors.

Up to 1974–75, as the first part of Table 4 shows,[25] the New England region was historically most attractive to foreign as compared with U.S. investors. The Mideast and Southeast were also comparatively more attractive to foreigners than to U.S. manufacturers, but all the other regions had ratios of less than one. All of the New England states had ratios above one, ranging from 4.8 for Connecticut to 2.4 for Vermont. In the Mideast, New Jersey was the most relatively attractive state in the Nation, with a ratio of 5.8. While three of the other four Mideastern states were relatively more popular with

---

[25] As explained in footnote 3, data availability requires comparing the region's shares of U.S. manufacturing plants in 1974 with their shares of foreign-owned plants in 1975.

foreign than with U.S. investors, New York had a ratio of .9. In the Southeast, all of the Atlantic coast states plus Louisiana, Arkansas, and West Virginia had ratios above one. In the Great Lakes, Indiana, Michigan, and Wisconsin were relatively popular with foreigners, but Illinois and Ohio were not. Two other states with large shares of foreign plants, California and Texas, were nevertheless comparatively more popular at home than they were abroad.

Looking at recent trends by comparing the regions' shares of foreign and U.S. constructions and expansions for 1975 and 1976 suggests that the Southeast is the region which is currently most relatively attractive to new foreign investors.[26] The Mideast and New England are only slightly less relatively attractive than the Southeast, however. In fourth place, the Southwest is also presently more attractive to foreigners than to U.S. investors. Among the regions which have ratios below one, the Great Lakes and Rocky Mountains have lost their previous near balance between foreign and U.S. investment shares.

The rise in the Southeast's rank reflects the fact that its share of foreign constructions and expansions increased while, surprisingly, its share of similar U.S. investments decreased in comparison to the situation which prevailed up to 1974–75. Not so surprisingly, the rise in the Mideast's ratio reflects a fall in the foreign share but an even greater fall in the U.S. share. The Plains states met a similar fate. By contrast, the drop in New England's ratio reflects a slight drop in its foreign share but a bigger increase in its U.S. share. The Great Lakes and Rocky Mountain regions also experienced similar movements. The Southwest, like the Southeast, saw an increase in its foreign share and a

decrease in its U.S. share, while the Far West had a bigger increase in its U.S. share than its foreign share.

Of course, differences in the industrial composition of foreign and U.S. manufacturing investments undoubtedly provide part of the explanation for these ratios and their variations. For instance, the Southeast claims a large share of foreign investment in the nonelectrical machinery and fabricated metals industries. Because these two industries account for a larger proportion of recent foreign than of recent U.S. investments, the Southeast would naturally look relatively more attractive to foreign than to U.S. investors when the comparison is based on total manufacturing activity. (Why the Southeast is attractive to investors in these industries is explored in the next section.)

To see which regions were relatively more attractive to foreign than to U.S. investors in the same industry, therefore, ratios of the regions' shares of foreign versus U.S. plants as of 1974–75 were calculated separately for six industries.[27] The industries were food, chemicals, fabricated metals, nonelectrical machinery, electrical machinery and instruments. The first five were the industries with the largest percentages of foreign-owned plants in 1975 and together accounted for about 60 percent of all foreign facilities, while instruments were included because the industry is also important in New England in terms of employment and value-added and represents its progressive, high technology sector.

As Table 5 shows, the Mideast was relatively more attractive to foreign than to U.S. investors in all of the industries we examined and particularly in nonelectrical machinery and instruments. The Southeast was comparatively more attractive to foreign than to U.S. investors in

---

[26] The U.S. data on the number of constructions and expansions of U.S. manufacturing plants by state were obtained from F. W. Dodge Division, McGraw-Hill Information Systems Company.

[27] Lack of published data for U.S. constructions and expansions by industry by state precluded similar examination of the recent period.

TABLE 5
Ratios of Regions' Shares of Foreign versus U.S. Plants by Industry, 1974–75

	Ratio	Foreign Share	U.S. Share	Ratio	Foreign Share	U.S. Share	Ratio	Foreign Share	U.S. Share
		Food			Chemicals			Fabricated Metals	
New England	1.4	7.6	5.6	1.0	6.1	5.9	.8	6.6	8.8
Mideast	1.5	27.1	18.3	1.5	35.9	23.6	1.2	24.8	20.5
Great Lakes	1.4	26.5	19.4	.5	11.0	20.6	.6	17.3	28.7
Plains	.6	7.1	11.8	.7	5.2	7.0	1.0	6.0	5.8
Southeast	.6	12.9	20.1	1.3	25.5	19.1	2.1	26.4	12.5
Southwest	.2	1.8	7.8	.7	6.1	8.4	.8	5.7	7.0
Rocky Mountains	1.3	4.7	3.6	1.8	2.8	1.6	2.2	3.5	1.6
Farwest	.9	12.4	13.3	.5	7.4	13.9	.6	9.7	15.1
		Nonelectric Machinery			Electric & Electronic Equipment			Instruments	
New England	1.3	10.9	8.2	1.2	11.4	9.6	2.3	25.0	10.8
Mideast	2.2	38.3	17.7	1.6	40.3	24.9	1.7	45.0	26.5
Great Lakes	.6	18.6	30.8	1.3	25.6	20.3	.5	10.0	18.5
Plains	.1	.5	7.3	.5	2.3	5.0	.3	1.7	5.5
Southeast	2.4	27.9	11.4	1.0	11.9	11.4	1.6	15.0	9.2
Southwest	.3	2.2	7.2	.7	4.0	6.0	0.0	0.0	6.1
Rocky Mountains	.3	.5	1.7	0.0	0.0	1.5	.7	1.7	2.4
Farwest	.1	1.1	15.7	.2	4.5	21.3	.1	1.7	20.9

SOURCE: Based on data from U.S. Department of Commerce, *Foreign Direct Investment in the United States*, Volume 3, Appendix A, Table 30; U.S. Department of Commerce, Bureau of the Census, *County Business Patterns, U.S. Summary* (CBP-74-1), 1974, Table 2B.

five of the six industries while New England was more attractive in four industries. New England's highest ratio was in instruments while its lowest ratio was in fabricated metals. The Southeast, on the other hand, was most relatively attractive to foreigners in fabricated metals and nonelectrical machinery and was least favored in food and electrical machinery. The Rocky Mountains, with very small shares of total investments, had three industries with ratios greater than one — food, chemicals, and fabricated metals. The Great Lakes was particularly attractive to foreigners in only two industries — food and electrical machinery — while the Southwest and Farwest were rela-

tively unattractive to foreigners in all of the industries examined.

As for individual states, because 42 of the 48 contiguous states have a ratio of more than one in at least one of the six industries, only the extremes seem worth mentioning. The states with ratios above one in five or six industries include Maine, New Jersey, and North and South Carolina. The states which never appear relatively more attractive to foreigners than to U.S. investors in any of the industries examined are California, Iowa, Minnesota, Ohio, Oklahoma and Texas. Part of the explanation of California's position (despite its large share of U.S. and foreign investment) may be that it is one of

three states (with Oregon and Alaska) with unitary tax laws. These laws require that total income of all horizontally or vertically related corporations, whether or not they do business within the state, be reported and subjected to the state's allocation formula for tax assessments. For some firms unitary tax laws do in fact raise the state tax burden, and for all the result is extensive and expensive disclosure. Foreign investors are particularly sensitive to the disclosure issue and consider unitary tax laws a considerable disincentive.[28]

Possible Reasons for Locational Decisions

Finding that such diverse states as New Jersey, Maine, and South Carolina are relatively popular with foreign investors, while California, Texas, and Ohio are not, suggests that general explanations for foreigners' locational decisions are not easy to come by. Published surveys, as well as interviews by this author, suggest that locational decisions may be very complex and sometimes include weighting and projecting many different considerations.[29] Certainly, the decisions may be quite subjective, reflecting the investors' national concerns, individual experi-

[28] The new income tax treaty between the United Kingdom and the United States, signed on December 31, 1975, prohibited any state from taxing a United Kingdom direct investor on the basis of income earned outside of the United States. President Carter had made a parallel legislative proposal affecting all foreign investors. Just recently, however, the U.S. Senate ratified the treaty but added a reservation nullifying the prohibition on unitary apportionment. As a consequence, the British House of Commons will reconsider the treaty. Governor Brown of California has also introduced legislation to repeal his state's unitary tax features. The situation is, thus, in flux.

[29] Companies differ widely in the sophistication they bring to bear on their decision. Robert M. Barath found, for instance, that most firms consider only one state for their location. Robert M. Barath, "Interaction Strategies of U.S. Development Agencies and Perceptions of Selected Reverse Investment in U.S. Investment Attraction Programs," Ph.D. thesis, Graduate School of Business, University of California, Berkeley, Cal., p. 157, cited in Mandell and Killian, p. 7.

ences or the personality of the company. A French banker suggested, for instance, that union strength and land costs may loom particularly large for prospective French investors because of their importance on the French domestic scene while regional wage differentials may be downplayed because the French distinction is urban-rural rather than provincial. It is also clear from many selection histories that the reception given to visiting foreigners by state development officials, bankers and even restaurateurs and taxi drivers can be terribly important.

As for other subjective factors, some investors say they could not bear New England's climate while others say that it is just like home; some want to be close to their competitors while others deliberately steer clear of them; some believe that rural labor gives an honest day's work for a day's pay while others do not want to be the first to industrialize agricultural workers. Some decision-makers believe that they can work out the exact dollars-and-cents cost of the wage differential, tax differential, the differentials in transportation charges and fuel prices etc. between two locations and have their choice made for them — "no guess work about it." Other investors, however, look at the health of the railroads serving prospective sites as well as the current costs, and they try to project the future trend in wage rates and taxes. Even here investors make different assumptions, however. Some argue that relatively low regional wages are likely to catch up with the national average, but that a ten-year tax abatement really means something. Others, however, are suspicious of very low local tax rates and believe that in the future they will have to pay for other firms' tax concessions, a belief which thus undermines the impact of any current tax benefits they might be offered.

Another complication facing a study of this kind is that state data are not ideal for this type

of analysis. Clearly state data do not reflect differences in local tax rates, in access to or character of transportation routes, or even in the attributes of the labor force. One foreign investor told this author, for instance, that he drew a sharp distinction between the workers in northern South Carolina and those 100 miles away. Similarly, foreign investors in New England tend to distinguish between the character of the labor force in the more rural sections of northwestern Connecticut, western Massachusetts, and the three northern states and in the rest of the area.[30]

In the face of all these complexities, a survey of 55 foreign investors by Mandell and Killian ranks locational factors by the frequency with which they were mentioned and thus provides some measure of their relative importance. The most frequently mentioned condition was nearness to markets. Second came availability of labor with unskilled labor considered especially desirable but degree of unionization admitted to be of only minor importance. Transportation followed with an emphasis being placed on interstate highways and harbors. Government aid, particularly tax exemptions or reductions and non-pecuniary help, was the fourth concern. Less important issues included the availability of raw materials, low cost land, research facilities, etc.[31]

Regression analysis conducted by the author offers some further insight into which locational characteristics are weighted relatively heavily by foreign investors in comparison to U.S. manufacturers.[32] This analysis also partially explains the ratios of the regions' shares of foreign versus U.S. constructions and expansions in 1975 and 1976 shown in Table 4. To a lesser extent it may

also shed some light on the states' industry ratios for the period up to 1974–75 shown in Table 5. This procedure suggests that, other things being equal, foreigners give relatively greater importance to state wage differentials than do U.S. investors while U.S. manufacturers appear to be comparatively more sensitive to state variations in fuel and electricity costs than are foreigners. In addition, foreigners may stress the availability of large port facilities relatively more than their U.S. counterparts. Other variables which do not appear to be especially important in explaining the state ratios of foreign to U.S. shares of constructions and expansions in 1975 and 1976 are personal income, degree of unionization, the number of state industrial development incentives offered, the number of trade missions sent or development offices established overseas, state and local government tax revenues per capita, manufacturing employees, annual average output per manhour and the unemployment rate.

These results are compatible with Mandell and Killian's findings that availability of labor (especially unskilled labor) and port facilities are particularly important to foreigners. In addition, foreign investors do not appear to be significantly more sensitive to degree of unionization than are U.S. investors, another finding which matches Mandell and Killian's suggestion but which runs counter to popular opinion. On the other hand, foreigners do not seem to stress proximity to broad consumer markets, as represented by personal income, significantly more or less than their U.S. counterparts although they may still attach relatively great importance to access to specific industrial markets. Foreign textile machinery and man-made fibre plants undoubtedly locate in the Southeast, for instance, not only because of its relatively low wage rates but also because it is the heart of the textile industry.

---

[30] See Mandell and Killian, pp. 5–6.
[31] *Ibid.*, Appendix A, Table IX.
[32] For more detailed information on the regression analysis, please see the Technical Appendix.

As usual with regression analysis, a few warnings are in order. The degree of interdependence among supposedly unrelated explanatory characteristics undermines these results. Moreover, the question of industry mix reappears to haunt us again. To return to the example just cited, if textile machinery and man-made fibre plants accounted for a larger share of foreign than of U.S. investment in 1975 and 1976, the attributes of the Southeast may appear relatively more important to foreigners than they really are. It would have been highly desirable, thus, to apply similar regression analysis to the ratios of the states' shares of foreign versus U.S. investment in specific industries and even sub-industries. Lack of published data on U.S. constructions by industry in 1975 and 1976 precluded this procedure, however. Similar caveats could be raised in regards to the nationality of foreign investors. Insufficient data exist, however, to divide the analysis by nationality.

The results of the regression analysis naturally lead to the question of why U.S. and foreign investors give different weights to various locational characteristics. In the case of wage rates, foreign investors may be relatively more sensitive than U.S. investors because hourly compensation and unit labor costs have risen much faster in most industrial countries than in the United States from 1967 to 1976. As for fuel and electricity costs, foreign manufacturers may be relatively less sensitive to regional cost differences because they face a more uniform market at home than exists here in the United States. As for the availability of port facilities finally, many foreign investors begin their U.S. operations by assembling imported parts. While competition would presumably spur U.S. investors to import low cost inputs too, intracompany pricing policies, and imperfect markets and knowledge may result in good port facilities remaining relatively more important to foreigners than to indigenous manufacturers.

The Local Significance of Foreign Investors' Site Decisions

What, finally, are the implications of foreign investors' locational choices? What is at stake for states which are — or are not — attractive to foreigners? Clearly, the primary stakes are jobs and corporate and personal tax revenues, both those engendered directly by the plant in question and a multiple thereof resulting from a ripple effect throughout the regional economy. Of course, a distinction must be drawn between foreign constructions and acquisitions, for presumably the construction of a new plant will have a greater positive impact on jobs and tax revenues than will a foreign take-over of an existing firm. On the other hand, if the acquired firm would otherwise be cutting production and employment or closing down entirely, the distinction is muted. And, indeed, foreign acquisitions do tend to be focused in areas which have relatively high unemployment rates and are losing plants. Seven out of the ten states which had the highest number of acquisitions per square mile also had unemployment rates ½ percentage point or more above the national average in 1974. Moreover, six of the ten states which had the lowest growth rates in the number of plants with 20 or more employees between 1971 and 1974 were in this group. In other words, foreign acquisition activity has probably been particularly beneficial to depressed areas where it has dampened the impact of changing patterns of domestic investment.

Presumably, too, a state should generally be indifferent as to whether a foreign investor or a similar U.S. investor locates on a given site. In some cases, however, a foreign investor may actually be preferable. After all, foreign investment is usually based on the possession of some unique advantage over local firms; thus, a foreign company may grow faster or be more profitable than its domestic counterpart over the

long term. Available data suggest in contradiction, however, that as of 1974 only in the chemical industry were foreign direct investors in this country in fact obtaining a higher return on net worth than were U.S. corporations in the same field. A large proportion of the foreigners were relative newcomers with high start-up costs, however, and thus these data do not necessarily negate the long-term argument. In addition, it appears that foreign firms tend to spend more of their R&D money on pure research rather than on product development in contrast to U.S. firms.[33] Again, as a result, they may prove more dynamic over the long run.

Conclusions

Contrary to prevailing assumptions, the Mideast and New England remain the areas attracting the greatest concentration of foreign plants. By only one measure discussed in this article, i.e., recent constructions per capita, does the Southeast appear to be more popular with foreigners than the Mideast and New England. In addition, the Mideast with mid-range wages and New England and the Southeast with relatively low wages tend to be comparatively more attractive to foreign than to U.S. investors whether the comparison is based on total manufacturing or investments in specific industries. Indeed, recent manufacturing data suggest that

[33] U.S. Department of Commerce, *Foreign Direct Investment in the United States*, Volume 1, p. 207.

the Southeast may be the region which is currently most relatively attractive to foreigners. By contrast, the high wage Farwest and Great Lakes regions tend to be relatively unattractive to foreigners.

Foreign and U.S. investors do not focus their investments in the same areas even within the same industries, because they appear to accord different weights to various locational characteristics. In particular, foreign investors seem to give relatively heavy weight to state wage differentials and to the availability of port facilities while U.S. investors are comparatively more concerned about regional differences in fuel and power costs. Contrary to popular opinion, foreign investors do not appear to lay any greater emphasis than their U.S. counterparts on avoiding labor unions.

Finally, foreign direct investment appears to have been particularly valuable to the mature industrialized areas, which have so far proved relatively attractive to foreigners and have thus been able to offset to some extent the flow of U.S. investment activity to other parts of the country. In addition, many of the areas which are particularly sensitive to import competition and are thus centers of protectionist sentiment are also states which have been relatively attractive to foreign investors. Encouraging foreign investment in these regions is undoubtedly a healthier reaction to import competition for the economy as a whole than are the protectionist measures currently gaining popularity.

Technical Appendix A

TABLE A-1
States Ranked by Number of Foreign Manufacturing Plants and by Number of Foreign Manufacturing Plants per Thousand Square Miles: 1975

	Rank by Number of Plants			Rank by Number of Plants per Thousand Square Miles	
	State	Number of Plants		State	Number of Plants per Thousand Square Miles
1	New York	222	1	New Jersey	22.25
2	New Jersey	178	2	Rhode Island	16.00
3	Pennsylvania	125	3	Massachusetts	9.25
4	California	103	4	Connecticut	8.80
5	Illinois	92	5	Delaware	7.00
6	North Carolina	90	6	New York	4.63
7	Michigan	87	7	Maryland	4.10
8	Texas	82	8	Pennsylvania	2.78
9	Massachusetts	74	9	New Hampshire	2.44
10	South Carolina	71	10	South Carolina	2.34
11	Georgia	68	11	North Carolina	1.84
12	Virginia	58	12	Illinois	1.64
13	Florida	55	13	Michigan	1.53
14	Ohio	51	14	Virginia	1.45
15	Wisconsin	49	15	Indiana	1.31
16	Indiana	47	16	Ohio	1.24
17	Connecticut	44	17	Georgia	1.17
18	Maryland	41	18	Vermont	1.11
19	Louisiana	35	19	Florida	1.02
20	Kentucky	34	20	Wisconsin	.91
21	Arizona	30	21	Kentucky	.85
21	Missouri	30	22	Louisiana	.78
23	Kansas	27	23	California	.66
24	New Hampshire	22	24	Maine	.61
25	Alabama	20	25	West Virginia	.54
26	Maine	19	26	Tennessee	.46
26	Tennessee	19	27	Missouri	.43
28	Mississippi	18	28	Alabama	.39
29	Colorado	17	29	Mississippi	.38
29	Washington	17	30	Kansas	.33
31	Rhode Island	16	31	Texas	.31
32	Arkansas	14	32	Arkansas	.27
32	Delaware	14	32	Arizona	.27
34	West Virginia	13	34	Washington	.25
35	Vermont	10	35	Colorado	.16
36	Idaho	9	36	Iowa	.14
36	Oklahoma	9	37	Oklahoma	.13
38	Iowa	8	38	Idaho	.11
38	Minnesota	8	38	Nebraska	.11
38	Nebraska	8	40	Minnesota	.10
41	Oregon	7	41	Utah	.07
42	Utah	6	41	Oregon	.07
43	North Dakota	5	41	North Dakota	.07
43	Wyoming	5	44	Wyoming	.05
45	Montana	3	45	South Dakota	.04
45	South Dakota	3	46	Montana	.02
47	Nevada	2	46	Nevada	.02
48	New Mexico	1	48	New Mexico	.01

SOURCE: Based on data from U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Vol. 3, Appendix A, Table 30, pp. A 123–A 125; U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States* 1975, Washington, D.C., U.S. Government Printing Office, 1975.

TABLE A-2
States Ranked by Number of Foreign Acquisitions and Constructions per Thousand Square Miles and by Number of Foreign Constructions per Thousand Square Miles: 1975–1977, Third Quarter

	Rank by Number of Acquisitions and Constructions per Thousand Square Miles			Rank by Number of Constructions per Thousand Square Miles	
	State	No. of Acq. & Const. per Thou. Sq. Mi.		State	No. of Const. per Thou. Sq. Mi.
1	Rhode Island	6.00	1	Rhode Island	4.00
2	New Jersey	4.00	2	Delaware	2.00
3	Connecticut	1.80	3	New Jersey	1.50
4	New York	1.71	4	Connecticut	1.20
5	Massachusetts	1.25	5	Virginia	0.50
6	Delaware	1.00	6	South Carolina	0.43
7	Pennsylvania	0.64	7	New York	0.42
8	Virginia	0.63	8	Pennsylvania	0.33
9	Maryland	0.60	9	North Carolina	0.27
10	Vermont	0.56	10	Massachusetts	0.25
11	South Carolina	0.53	11	Louisiana	0.22
12	Ohio	0.44	11	Vermont	0.22
13	North Carolina	0.37	13	Maryland	0.20
14	Illinois	0.36	14	Illinois	0.16
15	Louisiana	0.33	15	Ohio	0.15
16	Michigan	0.31	16	California	0.13
17	California	0.30	17	New Hampshire	0.11
18	Indiana	0.22	18	Georgia	0.10
19	Georgia	0.21	19	Wisconsin	0.09
20	Wisconsin	0.15	20	West Virginia	0.08
21	Tennessee	0.12	20	Texas	0.08
21	Alabama	0.12	20	Alabama	0.08
21	Missouri	0.12	23	Tennessee	0.07
24	Florida	0.11	24	Florida	0.06
24	New Hampshire	0.11	24	Indiana	0.06
26	Minnesota	0.10	26	Michigan	0.05
26	Kentucky	0.10	26	Kentucky	0.05
28	Texas	0.09	28	Minnesota	0.04
28	Iowa	0.09	28	Iowa	0.04
30	West Virginia	0.08	30	Washington	0.03
31	Maine	0.07	30	Missouri	0.03
32	Mississippi	0.04	32	Mississippi	0.02
32	Nebraska	0.04	33	North Dakota	0.01
32	Colorado	0.04	33	Nebraska	0.01
35	Oregon	0.03	33	Oregon	0.01
35	Washington	0.03	33	Colorado	0.01
37	Kansas	0.02	33	Nevada	0.01
37	Arkansas	0.02	33	New Mexico	0.01
37	Nevada	0.02	39	Arizona	0.00
37	Arizona	0.02	39	Arkansas	0.00
41	North Dakota	0.01	39	Idaho	0.00
41	Utah	0.01	39	Kansas	0.00
41	New Mexico	0.01	39	Maine	0.00
44	Idaho	0.00	39	Montana	0.00
44	Montana	0.00	39	Oklahoma	0.00
44	Oklahoma	0.00	39	South Dakota	0.00
44	South Dakota	0.00	39	Utah	0.00
44	Wyoming	0.00	39	Wyoming	0.00

SOURCE: Based on data from The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industry,* 1975: I–1977: III; U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 1975.*

Table A-3
States Ranked by Number of Foreign Projects per Million Persons:
Number of Plants, 1975; Number of Acquisitions and Constructions, 1975–1977, Third Quarter;
and Number of Constructions, 1975–1977, Third Quarter

	State	No. of Plants per Mill. Persons		State	No. of Acq. & Const. per Mill. Persons		State	No. of Const. per Mill. Persons
1	New Hampshire	27.23	1	Vermont	10.50	1	South Carolina	4.56
2	South Carolina	25.59	2	Rhode Island	6.47	2	Rhode Island	4.31
3	New Jersey	24.31	3	South Carolina	5.62	3	Vermont	4.20
4	Delaware	24.26	4	Virginia	4.97	4	Virginia	3.97
5	Vermont	21.36	5	New York	4.53	5	Louisiana	2.60
6	Maine	18.11	6	New Jersey	4.36	6	North Carolina	2.38
7	Rhode Island	17.06	7	Louisiana	3.91	7	Connecticut	1.92
8	North Carolina	16.74	8	Delaware	3.44	8	Texas	1.68
9	Connecticut	14.26	9	North Carolina	3.29	9	Delaware	1.72
10	Georgia	13.94	10	Nevada	3.28	10	Nevada	1.64
11	Wyoming	13.81	11	Connecticut	2.89	10	New Jersey	1.64
12	Massachusetts	12.76	12	Pennsylvania	2.44	12	North Dakota	1.56
12	New York	12.26	13	Georgia	2.41	13	Pennsylvania	1.26
14	Kansas	11.92	14	California	2.14	14	New Hampshire	1.22
15	Virginia	11.81	15	Minnesota	2.02	15	Georgia	1.21
16	Idaho	11.31	16	Michigan	1.98	16	New York	1.11
17	Wisconsin	10.73	17	Nebraska	1.93	17	West Virginia	1.10
18	Pennsylvania	10.56	18	Texas	1.92	18	Alabama	1.09
19	Kentucky	10.14	19	Maine	1.87	19	Wisconsin	1.08
20	Maryland	10.03	20	Illinois	1.78	20	California	.93
21	Michigan	9.54	21	Iowa	1.74	21	New Mexico	.86
22	Louisiana	9.30	21	Wisconsin	1.74	22	Illinois	.80
23	Indiana	8.85	23	Massachusetts	1.72	23	Minnesota	.76
24	Illinois	8.24	24	Ohio	1.68	24	Tennessee	.71
25	North Dakota	7.86	25	Missouri	1.67	25	Iowa	.70
26	Mississippi	7.71	26	Alabama	1.64	26	Nebraska	.64
27	West Virginia	7.29	27	North Dakota	1.56	27	Kentucky	.58
28	Texas	6.82	28	Colorado	1.55	28	Ohio	.56
29	Florida	6.79	29	Indiana	1.51	29	Washington	.55
30	Arkansas	6.77	30	Maryland	1.45	30	Maryland	.48
31	Colorado	6.76	31	Oregon	1.29	31	Oregon	.43
32	Missouri	6.29	32	New Hampshire	1.22	32	Mississippi	.42
33	Alabama	5.59	33	Tennessee	1.19	32	Missouri	.42
34	Nebraska	5.19	34	Kentucky	1.17	34	Colorado	.39
35	Utah	5.09	35	West Virginia	1.10	35	Indiana	.38
36	California	4.93	36	Arizona	.88	36	Florida	.36
37	Washington	4.87	37	New Mexico	.86	37	Massachusetts	.34
38	Ohio	4.75	37	Kansas	.86	38	Michigan	.33
39	Tennessee	4.58	39	Mississippi	.85	39	Arizona	.00
40	South Dakota	4.41	40	Utah	.81	39	Arkansas	.00
41	Montana	4.07	41	Florida	.71	39	Idaho	.00
42	Nevada	3.48	42	Washington	.55	39	Kansas	.00
43	Oklahoma	3.36	43	Arkansas	.47	39	Maine	.00
44	Oregon	3.10	44	Idaho	.00	39	Montana	.00
45	Iowa	2.80	44	Montana	.00	39	Oklahoma	.00
46	Arizona	2.78	44	Oklahoma	.00	39	South Dakota	.00
47	Minnesota	2.05	44	South Dakota	.00	39	Utah	.00
48	New Mexico	.89	44	Wyoming	.00	39	Wyoming	.00

SOURCE: Based on data from U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Volume 3, Appendix A, Table 30, pp. A 123–A 125; The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industries,* 1975: I–1977: III; and U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 1977.*

TABLE A-4
States Ranked by Relative Attractiveness to Foreign
versus U.S. Manufacturers

	Share of Foreign vs. U.S. Plants: 1974–75			*Share of Foreign vs. U.S. New Constructions and Expansions: 1975–76*				*Share of Foreign vs. U.S. Plants: 1974–75*			*Share of Foreign vs. U.S. New Constructions and Expansions: 1975–76*	
	State	*Ratio*		*State*	*Ratio*			*State*	*Ratio*		*State*	*Ratio*
1	New Jersey	5.8	1	Rhode Island	6.5		31	Nebraska	0.7	31	Michigan	0.5
2	Connecticut	4.8	1	Vermont	6.5		31	Illinois	0.7	31	California	0.5
3	South Carolina	4.5	3	South Carolina	4.9		31	North Dakota	0.7	33	Massachusetts	0.4
4	North Carolina	3.9	4	Virginia	4.1		34	Missouri	0.6	33	Wisconsin	0.4
5	Rhode Island	3.6	5	Delaware	4.0		35	Nevada	0.5	33	Ohio	0.4
6	Maine	3.4	5	New Mexico	4.0		35	Arizona	0.5	36	Missouri	0.3
7	New Hampshire	3.3	7	North Carolina	3.6		35	Ohio	0.5	36	Indiana	0.3
8	Massachusetts	3.1	8	New York	3.4		35	South Dakota	0.5	38	Florida	0.2
9	Wisconsin	2.9	9	Louisiana	2.9		39	Montana	0.4	39	Oregon	0.1
10	Georgia	2.7	10	Georgia	2.4		39	Oregon	0.4	40	Arizona	0.0
11	Kansas	2.4	11	New Hampshire	2.3		41	Alabama	0.3	40	Idaho	0.0
11	Vermont	2.4	12	Connecticut	2.2		41	Kentucky	0.3	40	Kansas	0.0
11	Virginia	2.4	13	Kentucky	2.0		41	Iowa	0.3	40	Montana	0.0
14	Delaware	2.1	13	Maine	2.0		44	Tennessee	0.2	40	Nebraska	0.0
14	Indiana	2.1	13	North Dakota	2.0		44	Washington	0.2	40	Oklahoma	0.0
16	Louisiana	1.6	13	Pennsylvania	2.0		46	New Mexico	0.1	40	South Dakota	0.0
16	Maryland	1.6	17	Mississippi	1.8		46	Oklahoma	0.1	40	Utah	0.0
18	Idaho	1.5	18	Alabama	1.7		46	Minnesota	0.1	40	Wyoming	0.0
19	Florida	1.4	19	Texas	1.5							
19	Arkansas	1.4	20	West Virginia	1.3							
19	Michigan	1.4	20	Illinois	1.3							
22	Pennsylvania	1.1	22	New Jersey	1.2							
22	West Virginia	1.1	23	Iowa	1.1							
24	Wyoming	1.0	23	Minnesota	1.1							
24	California	1.0	25	Tennessee	0.9							
26	New York	0.9	26	Maryland	0.8							
26	Texas	0.9	26	Nevada	0.8							
26	Mississippi	0.9	28	Arkansas	0.7							
29	Colorado	0.8	28	Washington	0.7							
29	Utah	0.8	28	Colorado	0.7							

TABLE A-5
Ratios of States' Shares of Foreign versus U.S. Plants by Industry: 1974–75

	Food	Chemicals	Fabricated Metals	Nonelectric Machinery	Electric & Electronic Equipment	Instruments
Alabama	0.0	2.1	0.5	1.2	0.0	0.0
Arizona	0.0	0.0	0.5	0.0	2.9	0.0
Arkansas	0.5	1.3	1.0	0.0	1.8	0.0
California	0.8	0.5	0.6	0.1	0.2	0.1
Colorado	2.5	0.8	2.4	0.0	0.0	0.0
Connecticut	1.8	1.1	0.6	0.9	1.1	4.3
Delaware	0.0	5.3	3.0	11.0	11.0	0.0
Florida	0.6	0.4	1.4	1.1	1.0	0.7
Georgia	1.2	0.9	3.1	0.9	0.7	1.7
Idaho	1.7	1.5	8.0	2.5	0.0	0.0
Illinois	1.8	0.6	0.7	0.5	0.9	0.2
Indiana	0.9	0.4	1.5	0.0	1.5	2.8
Iowa	0.3	0.5	0.7	0.0	1.0	0.0
Kansas	0.0	1.9	1.1	0.0	1.6	2.4
Kentucky	2.5	0.8	3.1	0.6	0.9	0.0
Louisiana	1.2	2.3	0.4	0.6	0.0	0.0
Maine	2.7	2.0	3.0	5.5	3.0	0.0
Maryland	3.8	0.4	1.8	0.0	1.6	0.0
Massachusetts	1.2	0.6	0.8	0.7	1.1	1.4
Michigan	1.5	1.2	0.6	1.0	1.7	0.5
Minnesota	0.6	0.2	0.2	0.0	0.0	0.0
Mississippi	0.5	1.5	4.8	2.2	0.0	0.0
Missouri	1.0	0.5	2.1	0.0	0.4	0.0
Montana	0.0	1.5	0.0	0.0	0.0	0.0
Nebraska	0.8	2.3	0.0	1.0	0.0	0.0
Nevada	0.0	0.0	6.0	0.0	0.0	0.0
New Hampshire	2.0	0.0	1.0	8.3	1.6	2.8
New Jersey	2.5	2.2	1.5	2.1	1.2	4.2
New Mexico	0.0	0.0	1.5	0.0	0.0	0.0
New York	1.1	1.2	0.8	2.4	2.1	0.9
North Carolina	0.0	2.4	3.6	3.9	1.9	1.6
North Dakota	2.4	0.0	0.0	0.0	0.0	0.0
Ohio	0.8	0.3	0.3	0.2	0.2	0.4
Oklahoma	0.5	0.0	0.3	0.4	0.0	0.0
Oregon	1.2	0.3	0.3	0.0	0.0	0.0
Pennsylvania	0.8	1.0	1.4	2.1	1.0	1.4
Rhode Island	0.0	2.6	0.0	1.8	1.2	2.8
South Carolina	0.0	1.8	2.7	12.4	3.4	4.3
South Dakota	0.0	3.0	0.0	0.0	0.0	0.0
Tennessee	0.0	0.8	1.1	0.5	0.0	0.0
Texas	0.2	0.9	0.9	0.3	0.4	0.0
Utah	0.0	1.5	0.0	0.0	0.0	2.8
Vermont	0.0	1.5	6.0	0.0	0.0	0.0
Virginia	0.6	1.0	4.2	6.9	2.5	8.3
Washington	1.5	0.8	1.0	0.0	0.0	0.0
West Virginia	0.0	1.5	0.8	0.0	0.0	0.0
Wisconsin	1.6	0.3	0.4	1.4	4.0	0.0
Wyoming	0.0	9.0	0.0	0.0	0.0	0.0

SOURCE: Based on data from U.S. Department of Commerce, *Foreign Direct Investment in the United States,* Volume 3, Appendix A, Table 30, U.S. Department of Commerce, Bureau of the Census, *County Business Patterns, U.S. Summary* (CBP-74-1), 1974, Table 2B.

Technical Appendix B
Regression Equation for the Ratios of the States' Shares of Constructions and Expansions of Foreign-Owned Manufacturing Plants to the Shares of All U.S. Constructions and Expansions of Manufacturing Plants, 1975 and 1976

Dependent variable:
    R ≡ Ratio of the state share of constructions and expansions of foreign-owned manufacturing plants to the share of all U.S. constructions and expansions of manufacturing plants, 1975 and 1976.

Explanatory variables:
    E ≡ Ratio of state average hourly earnings to the U.S. average hourly earnings for manufacturing production workers, 1974.
    F ≡ Ratio of state fuel and electricity costs per 1,000 kilowatt hour equivalent to the U.S. average fuel and electricity costs per 1,000 kilowatt hour equivalent, 1974.
  UR ≡ Ratio of state unemployment rate to U.S. average unemployment rate, 1974.
   PI ≡ Ratio of state personal income to the total U.S. personal income, 1974.
    P ≡ Ratio of state volume of port commerce to U.S. total volume of port commerce, 1973.

Selected Equation

$$R = 5.6 + 2.14\ F - 7.86\ E + 30.73\ P - 25.46\ PI + 1.66\ UR$$
$$(2.7391)\ (-3.3201)\ (2.1601)\ (-1.3372)\ (1.2203)$$

$R^2 = .42$

$F(5,42) = 6.0$

(T-ratios for 42 degrees of freedom are given in parentheses.)

Sources

R: Constructions and expansions of foreign-owned manufacturing plants based on data from The Conference Board, *Announcements of Foreign Investment in U.S. Manufacturing Industries,* First Quarter, 1975 through Fourth Quarter, 1976. All U.S. constructions and expansions of manufacturing plants data: F. W. Dodge Division, McGraw-Hill Information Systems Company, unpublished data.

E: Average hourly earnings for manufacturing production workers, U.S. Department of Labor, Bureau of Labor Statistics, *Employment and Earnings, States and Area 1939–75.*

F: Fuel and electricity costs per 1,000 kilowatt hour equivalent, 1974, based on data from U.S. Department of Commerce, Bureau of the Census, *Annual Survey of Manufactures 1974, Fuels and Electric Energy Consumed,* Table 2.

UR: Unemployment rate, U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States 1975,* p. 350.

PI: Personal income, U.S. Department of Commerce, Bureau of Economic Analysis, *Survey of Current Business,* August 1976.

P: Volume of port commerce based on data from U.S. Department of the Army, Corps of Engineers, *Waterborne Commerce of the United States,* 1973, Part 5, pp. 18–23.

In this issue...