

THE IMPACTS OF INDUSTRIAL RESTRUCTURING ON THE EMPLOYMENT  
OF WOMEN AND MINORITIES

by

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
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ABSTRACT

The economic difficulties of the 1970's, the recessions of the 1980's, and the current 1983-85 period of economic recovery all raise serious questions about the future of the U.S. economy and the plight of the American worker. Recently, the industrial policy debate has increased concern and scholarship about the relationship between changing employment trends and the process of industrial restructuring.

The objective of this thesis is to discern whether the structural changes which have been occurring in the economy over the past ten to fifteen years have affected the employment shares of women and minority workers across industries. This task was accomplished by analyzing changes in the employment concentrations of these workers by industry using disaggregated data obtained from the 1980 and 1970 Census Public Use tapes. A matrix reflecting changing employment concentrations was produced for the ten year interval.

The findings of this research illustrate a worsening labor status for women and minority workers in the U.S. labor market. The data shows that these workers tend to be employed in higher concentrations than white males in distressed--restructuring and deindustrializing--industries and therefore are directly affected by the economic condition of the industries and the economy as a whole. This finding raises questions about the future of our labor market which must be addressed if economic and social equality for these groups--women and minorities--is to be realized.

Thesis Supervisor: Dr. Bennett Harrison

Title: Professor of Urban Studies and Planning

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## TABLE OF CONTENTS

Abstract	1
Acknowledgements	2
Chapter One Introduction	4
Chapter Two Research Methodology and Data Analysis	10
Chapter Three Review of Research	41
Chapter Four Conclusion	47
Bibliography	51
Appendix A	53
Appendix B	58

## CHAPTER ONE

### INTRODUCTION

A structural transformation--a restructuring of capital and labor--has been occurring in the U.S. economy over the past ten to fifteen years. The economic difficulties of the 1970's, the recessions of the 1980's and the current 1983-85 period of economic recovery, all raise serious questions about the future of the U.S. economy and the plight of American workers. National unemployment continues to rise, the incidence of poverty is increasing, and the standard of living for the majority of American families is falling. These economic hardships, however, have not been equally distributed throughout the population, rather they have been disproportionately experienced by workers in the Snowbelt regions, minorities everywhere, female heads of households, blue-collar workers in basic industries, youth of all ages, and the like.

The economic crisis caused by structural changes in the U.S. economy has had measurable effects on the employment patterns of women and minority workers. These groups, especially minorities tend to be concentrated in the sectors-- manufacturing and consumer services--and within occupations-- laborers and operatives--which have been hit hardest by industrial restructuring. [Squires, p. 153]

A number of economic trends indicate the presence of structural changes. Shifts in capital investment, the spatial decentralization of the workplace, the higher growth rate of the service sector relative to manufacturing, and labor displacing technology all characterize the current restructuring occurring in the American economy. Cases have been made which attribute these changes to an increase in foreign imports and to the systematic disinvestment in basic industries--deindustrialization--as primary causes in eroding U.S. industrial employment.

Declining levels of employment in basic industries, ie. steel, automobiles, textiles, and apparel have become more and more acute over time. Between 1979 and 1982 U.S. employment in manufacturing declined 10.4 percent, the largest drop in postwar history. [Lawrence, p. 1] Studies in this regard have been undertaken by Robert Z. Lawrence and Charles Schultze of the Brookings Institution which disclaim heightened levels of international trade and deindustrialization as causes for the current economic crisis. These studies, however, are based on aggregate analyses of the manufacturing sector and do not necessarily reflect differing employment patterns amongst industries within the sector.

Regardless of whether deindustrialization is a reality or a myth, America's basic manufacturing industries are currently and have been for the past decade sustaining substantial employment losses. The evidence suggests that it is in fact structural changes as distinct from business cycle fluctua-

tions which are causing these problems. The shift in the U.S. economy from a primarily 'goods-producing' to a 'service-producing' nation also has been attributed as a contributing factor in affecting changes in the composition of the labor force and the distribution of workers across industries.

While the transformation to a service economy seems to have been fruitful in the sense of creating numerous employment opportunities in large numbers, it appears also to have contributed greatly to creating a more divided labor market structure characterized by a polarization of earnings and by systems of work in which workers at the bottom of the structure face restricted opportunities for advancement. [Noyell, Stanback, p.2]

The expansion of employment in the service sector may not sufficiently replace the type of job opportunities lost due to the decline in manufacturing employment. An economic dislocation of specific groups of workers previously employed in manufacturing may take place concomitantly with the growth of the service sector.

Manufacturing industries have been traditionally an important resource of employment, providing jobs with higher-than-average wages and good labor market opportunities and experiences to lesser skilled, uneducated individuals not elsewhere available. The substantial loss of manufacturing employment is expected to fall disproportionately on minorities as well as place women in a disadvantaged position in the labor market.

Doreen Massey in her research on job losses and economic dislocation draws a parallel between industrial restructuring and social restructuring. She writes;

And industrial restructuring is a process of class restructuring; it is one of the mechanisms by which the social structure is re-shaped, social relations changed and the basis for political action broken down or reconstructed. [Massey, p. 74]

Viewing industrial change as a process of social change serves to emphasize the importance of employment and occupational status in determining socioeconomic position in this society. To this extent, the changing industrial or sectoral concentrations of women and minority workers into the lower segments of the labor market where the jobs are characterized by low wages, high turnover, high unemployment, few benefits and little security raises questions as to the future employability of these groups. If women and minority workers are disproportionately concentrated and segregated into distressed--restructuring and deindustrializing--industries how will this bear on the future status--social and economic--of these groups. These implications will be addressed in the concluding chapter of this thesis.

The major focus of this research will be to quantitatively describe the occurrences and proportions in which women and minorities appear in the labor market. The product of this investigation will be a matrix reflecting changes in employment patterns by industry for white and nonwhite, male and female, white male and female, nonwhite male and female workers between 1980 and 1970. The task is to relate the measurable changes in the composition and distribution of these groups within and across industries to the current industrial restructuring.



This thesis will use a disaggregated sectoral analysis to uncover the impact of structural changes on the labor market over the ten year interval. Data obtained from the 1980 and 1970 Census Public Use Tapes will be used to estimate the proportions of women and minorities employed within and across each industry. Attention will focus on industries whose employment growth flattened out in the 1970's, as contrasted to growth industries, in order to develop hypotheses and explanations which address the employment patterns of women and minority workers in the midst of structural transformations--industrial restructuring and continued economic change. The analysis of these employment patterns over the ten year time interval will appear in Chapter Three.

This work is part of a larger research effort being conducted by Professors Bennett Harrison of the Department of Urban Studies and Planning at MIT and Barry Bluestone of the Social Welfare Research Institute at Boston College. The broader research agenda will examine the effects of structural changes within sectors and occupations on labor market conditions and labor force concentrations; and the changing distribution of jobs and wages across the economy. Like this research, emphasis will be placed on disaggregated data to relate changes in employment shares by industry with industrial restructuring.

Over the last decade, it has become more obvious that if women and minority workers are to better their respective positions in the labor force and in society, they must champion political forces behind their cause. All too often,

the economic inequalities of the labor market mirror the inequities of society. The economic democracy and industrial policy arguments provide a forum to debate these issues. The importance of research of this nature is that it documents the degree to which women and minorities are dislocated by job losses due to deindustrialization and affected by new job opportunities created in restructuring industries. The concluding chapter will look at the need for women and minorities to participate in the debate on industrial policy and its implications in the advent of structural transformations occurring in our economy.

CHAPTER TWO  
RESEARCH METHODOLOGY AND DATA ANALYSIS

Method of Research:

Sample census data has collected to test the relationship between the concentration and distribution of women and minorities in distressed industries--those which are experiencing deindustrialization or a decline in employment--and structural changes in the American economy and to make projections about the U.S. labor market as a whole.

The primary task was to analyze empirical data collected from a sample of the 1980 and 1970 Census Public Use tapes. Information was selected from the characteristics of the four major groups comprising the labor force--white males, white females, nonwhite males, and nonwhite females.

The objective of the labor market analysis is to discern whether structural changes in the us economy have affected the observed employment patterns of women and minorities ie. increasing or decreasing shares in specific sectors over the past ten to fifteen years. The focus of the analysis was to look at the relationship between demographic trends in the composition of the work force and the process of industrial change. This will be accomplished by identifying changes in the labor market participation rates within sectors and also

looking at the distribution of women and minority workers across sectors.

The census sample allows for an investigation of several dimensions of disaggregated information on population characteristics related to the labor market ie. industrial concentrations, geographic distributions, and age/sex differentials that are of interest. The following are of interest for this research:

--Within industries identified as deindustrializing, are there any particular sex and or racial groups which are disproportionately experiencing greater changes in employment share for restructuring and deindustrializing industries relative to growth industries?

--Are the changes in the composition and distribution of the work force in the US labor market attributable to industrial restructuring of selected industries? What is the ratio of nonwhite to white changes in employment?

--Do declines in employment or changes in the employment patterns tend to be more acute in industries undergoing structural changes than other industries?

The principal measurement applied to the data will take the form of a matrix; a table of industries by sex and race for 1980 and 1970. Statistical tests, difference between sample means and chi square tests were performed to compare the relative proportions of specific sectors over the ten year

period.

The industries were classified into two groups for analysis. The reason for detailing information on specific industries is that sectorial changes are not always reflected in aggregate measures of the overall economy.

Group I consists of the "Growth" industries. These industries experienced employment growth in the 1970's even after accounting for the business cycle and international trade. Group II consists of the "Nongrowing" industries. These industries are typically those which are experiencing a decline in employment share as the result of some form of deindustrialization or restructuring. See Tables 3 and 4 for the "Growth" and "Nongrowing" industry groupings. Thirty-eight of the 82 or 46 percent of the BEA industries are Group I - Growth Industries, 44 or 54 percent are Group II - Nongrowing Industries.

TABLE 3

GROUP I - GROWTH INDUSTRIES

BUREAU OF ECONOMIC  
ANALYSIS (BEA)  
INDUSTRY CODE

INDUSTRY CATEGORY

	AGRICULTURE :
3	Forestry, Fishery
4	Agriculture, Forestry, Fishery
	MINING :
7	Coal
8	Petroleum Gas
	CONSTRUCTION :
12	Maintenance and Repair Construction
	MANUFACTURING:
19	Misc. Fabricated Textile
20	Lumber Wood
22	Household Furniture
23	Other Furniture, Fixtures
24	Paper Products
26	Printing and Publishing
29	Drugs, Cleaning Preparations
31	Petroleum Refining
40	Heating and Plumbing
41	Metal Stampings
43	Engines, Turbines
45	Construction, Mining Machinery

TABLE 3 (cont.)

47	Metalwork Equipment
48	Special Industry Machinery
49	General Industry Machinery
50	Nonelectrical, Machine Shop Machinery
51	Office Equipment
52	Service Industry Machines
53	Electric Transmission Equipment
57	Electric Components
58	Electrical Machinery
60	Aircraft
63	Optical and Photographic Equipment
	TRANSPORTATION, COMMUNICATION SERVICES :
66	Communications
67	Radio TV Broadcasting
	WHOLESALE AND RETAIL TRADE :
69	Wholesale and Retail Trade
	FINANCE, INSURANCE AND REAL ESTATE :
70	Finance, Insurance
71	Real Estate
	SERVICES :
72	Personal, Repair Services
73	Business Services
74	Food Establishments
75	Automobile Repair and Services
76	Amusements

TABLE 4

GROUP II - NON GROWING INDUSTRIES

BUREAU OF ECONOMIC  
ANALYSIS (BEA)  
INDUSTRY CODE

INDUSTRY CATEGORY

<u>INDUSTRY CODE</u>	<u>INDUSTRY CATEGORY</u>
	AGRICULTURE :
1	Livestock
2	Agriculture
	MINING :
5	Iron Ores
6	Metal Ores
9	Stone/Clay
10	Chemical
	MANUFACTURING:
13	Ordnance
14	Food Kindred
15	Tobacco
16	Fabrics, Yarn, Thread
17	Misc. Textile
18	Apparel
21	Wood Containers
25	Paperboard
27	Chemicals
28	Plastic Materials
30	Paints
32	Rubber Products



TABLE 4 (cont.)

33	Leather Tanning
34	Footwear/Other Leather
35	Glass
36	Stone/Clay Products
37	Iron Steel
38	Nonferrous Metals
39	Metal Container
42	Other Fabricated Metals
44	Farm Machinery
46	Material Machinery
54	Household Appliances
55	Electric Equipment
56	Radio TV Equipment
59	Motor Vehicle
61	Other Transportation Equipment
62	Scientific Instruments
64	Misc. Manufacturing
	TRANSPORTATION, COMMUNICATION SERVICES :
65	Transportation
68	Electric/Gas Utilities Services
	SERVICES :
77	Medical/Education Non-profit Services
78	Federal Government Enterprises
79	Local/State Government Enterprises
82	Government Industry

TABLE 4 (cont.)

83	Rest of World Industry
84	Households

Data Collection:

The U.S. Census is the primary data source for the research. Data was obtained through a .01% sampling of the Census Public Use Sample 'A' tapes. From that sample a 20 percent subset was selected for projecting population employment estimates for this analysis. The 1980 and 1970 samplings resulted in 20789 and 15993 observations respectively. All information was selected from the civilian labor force which includes all persons 16 years or older who were employed at work, employed not at work, or unemployed and seeking work. The following variables were selected for the population from the census tapes:

<u>Census Category</u>	<u>Census Variable</u>
DIVISION:	
New England	1
Middle Atlantic	2
East North Central	3
West North Central	4
South Atlantic	5
East South Central	6
West South Central	7
Mountain	8
Pacific	9
SEX:	
Male	0
Female	1
AGE:	(2 Digit code)
RACE:	
White	0
Black	1

SPANISH:

White, Spanish Surname	0
Negro, Other, Spanish Surname	1
No Spanish Surname, but Spanish	2

INDUSTRY:

(individual industry categories based on standard industrial classification (SIC))	(3 Digit codes)
--	-----------------

OCCUPATION:

(individual occupation categories)	(3 Digit codes)
------------------------------------	-----------------

LABOR STATUS:

At work	1
Not at work, with job	2
Unemployed	3

The above variables were selected from the household and person records for 1980 and from the neighborhood record for 1970.

Once the raw census information was stored on tape, the data was reorganized using SAS statistical programs before being grouped by sex, race and industry codes for analysis.

The 3 digit census industrial classifications (CIC) codes were recoded to the Bureau of Economic Analysis (BEA) Industry Codes for the purpose of standardization and for making comparisons. See Appendices A and B for BEA SIC and CIC equivalents.

The variable "race" was also redefined from the census 9 sub-groupings to white and non-white. The variable Spanish was used to identify any person of Spanish or Hispanic origin who might have listed themselves as white in the census questionnaire. Persons fitting this description were defined as nonwhite.

The division and occupation variables were not used in this analysis. Therefore, these variables were not recoded and remain as they appear on the census sample tape.

The census data was then arranged into 4 tables :

Sex \* industry

Race \* industry

Sex \* industry controlling for race

Race \* industry controlling for sex

The purpose of this task was to create a matrix which illustrates the population proportions by industry, sex and race. See tables 5 and 6 for the 1970 and 1980 results respectively.

TABLE 5

1970 Census Data - Employment Estimates of the US population by Industry (000's)

Industry Category	BEA #	White	Non-White	Male	Female	W_Male	W_Female	NW_Male	NW_Female	Total
Livestock	1									
Agriculture	2	2150 90.34%	230 9.66%	2145 90.13%	235 9.87%	1940 81.51%	210 8.82%	205 8.61%	25 1.05%	2380
Forestry / Fishery	3	90 78.26%	25 21.74%	105 91.30%	10 8.70%	80 69.57%	10 8.70%	25 21.74%	0 0.00%	115
Agriculture Forestry/Fishery	4	520 85.95%	85 14.05%	475 78.51%	130 21.49%	390 64.46%	130 21.49%	85 14.05%	0 0.00%	605
Iron Ores	5	110 100.00%	0 0.00%	100 90.91%	10 9.09%	100 90.91%	10 9.09%	0 0.00%	0 0.00%	110
Metal Ores	6									
Coal	7	170 94.44%	10 5.56%	175 97.22%	5 2.78%	165 91.67%	5 2.78%	10 5.56%	0 0.00%	180
Petroleum Gas	8	220 95.65%	10 4.35%	190 82.61%	40 17.39%	180 78.26%	40 17.39%	10 4.35%	0 0.00%	230
Stone/Clay Mining	9	85 89.47%	10 10.53%	90 94.74%	5 5.26%	80 84.21%	5 5.26%	10 10.53%	0 0.00%	95
Chemicals	10									
New Construction	11									
Construction	12	4575 90.33%	490 9.67%	4850 95.76%	215 4.24%	4365 86.18%	210 4.15%	485 9.58%	5 0.10%	5065
Ornance	13	295 90.77%	30 9.23%	245 75.38%	80 24.62%	235 72.31%	60 18.46%	10 3.08%	20 6.15%	325
Food Kindred	14	1165 87.27%	170 12.73%	1000 74.91%	335 25.09%	870 65.17%	295 22.10%	130 9.74%	40 3.00%	1335
Tobacco	15	60 85.71%	10 14.29%	50 71.43%	20 28.57%	40 57.14%	20 28.57%	10 14.29%	0 0.00%	70

Fabrics, Yarn Thread	16	525 88.24%	70 11.76%	315 52.94%	280 47.06%	285 47.90%	240 40.34%	30 5.04%	40 6.72%	595
Misc Textile	17	75 88.24%	10 11.76%	60 70.59%	25 29.41%	60 70.59%	15 17.65%	0 0.00%	10 11.76%	85
Apparel	18	1225 88.77%	155 11.23%	305 22.10%	1075 77.90%	295 21.38%	930 67.39%	10 0.72%	145 10.51%	1380
Misc Fab Textile	19	140 93.33%	10 6.67%	65 43.33%	85 56.67%	55 36.67%	85 56.67%	10 6.67%	0 0.00%	150
Lumber Wood	20	425 81.73%	95 18.27%	460 88.46%	60 11.54%	370 71.15%	55 10.58%	90 17.31%	5 0.96%	520
Wood Containers	21	55 68.75%	25 31.25%	70 87.50%	10 12.50%	45 56.25%	10 12.50%	25 31.25%	0 0.00%	80
Household Furniture	22	400 91.95%	35 8.05%	320 73.56%	115 26.44%	290 66.67%	110 25.29%	30 6.90%	5 1.15%	435
Other Furniture/ Fixtures	23									
Paper	24	335 97.10%	10 2.90%	275 79.71%	70 20.29%	265 76.81%	70 20.29%	10 2.90%	0 0.00%	345
Paperboard	25	195 92.86%	15 7.14%	150 71.43%	60 28.57%	140 66.67%	55 26.19%	10 4.76%	5 2.38%	210
Printing/ Publishing	26	1450 93.85%	95 6.15%	1020 66.02%	525 33.98%	975 63.11%	475 30.74%	45 2.91%	50 3.24%	1545
Chemicals	27	480 93.20%	35 6.80%	430 83.50%	85 16.50%	400 77.67%	80 15.53%	30 5.83%	5 0.97%	515
Plastics	28	155 96.88%	5 3.13%	120 75.00%	40 25.00%	115 71.88%	40 25.00%	5 3.13%	0 0.00%	160
Drugs Cleaning	29	310 93.94%	20 6.06%	180 54.55%	150 45.45%	170 51.52%	140 42.42%	10 3.03%	10 3.03%	330
Paints	30	70 87.50%	10 12.50%	65 81.25%	15 18.75%	55 68.75%	15 18.75%	10 12.50%	0 0.00%	80
Petroleum Refining	31	195 88.64%	25 11.36%	200 90.91%	20 9.09%	175 79.55%	20 9.09%	25 11.36%	0 0.00%	220
Rubber	32	490 87.50%	70 12.50%	410 73.21%	150 26.79%	350 62.50%	140 25.00%	60 10.71%	10 1.79%	560
Leather Tanning	33	15 100.00%	0 0.00%	10 66.67%	5 33.33%	10 66.67%	5 33.33%	0 0.00%	0 0.00%	15

Footwear/ Other Leather	34	240 90.57%	25 9.43%	100 37.74%	165 62.26%	100 37.74%	140 52.83%	0 0.00%	25 9.43%	265
Glass	35	175 97.22%	5 2.78%	150 83.33%	50 16.67%	145 80.56%	30 16.67%	5 2.78%	0 0.00%	180
Stone Clay	36	355 89.87%	40 10.13%	360 91.14%	35 8.86%	320 81.01%	35 8.86%	40 10.13%	0 0.00%	395
Iron Steel	37	865 86.50%	135 13.50%	930 93.00%	70 7.00%	805 80.50%	60 6.00%	125 12.50%	10 1.00%	1000
Nonferrous Metals	38	215 87.76%	30 12.24%	200 81.63%	45 18.37%	170 69.39%	45 18.37%	30 12.24%	0 0.00%	245
Metal Container	39	380 93.83%	25 6.17%	315 77.78%	90 22.22%	295 72.84%	85 20.99%	20 4.94%	5 1.23%	405
Heating/Plumbing	40	340 93.15%	25 6.85%	345 94.52%	20 5.48%	325 89.04%	15 4.11%	20 5.48%	5 1.37%	365
Metal Stamping	41	210 91.30%	20 8.70%	170 73.91%	60 26.09%	160 69.57%	50 21.74%	10 4.35%	10 4.35%	230
Other Fabricated Metals	42	175 89.74%	20 10.26%	135 69.23%	60 30.77%	125 64.10%	50 25.64%	10 5.13%	10 5.13%	195
Engines/Turbines	43	75 100.00%	0 0.00%	55 73.33%	20 26.67%	55 73.33%	20 26.67%	0 0.00%	0 0.00%	75
Farm Machinery	44	95 82.61%	20 17.39%	105 91.30%	10 8.70%	85 73.91%	10 8.70%	20 17.39%	0 0.00%	115
Construction Equipment	45	280 96.55%	10 3.45%	255 87.93%	35 12.07%	245 84.48%	35 12.07%	10 3.45%	0 0.00%	290
Material Machinery	46									
Metalwork Equipment	47	255 98.08%	5 1.92%	230 88.46%	30 11.54%	225 86.54%	30 11.54%	5 1.92%	0 0.00%	260
Special Industry Equipment	48	820 94.80%	45 5.20%	705 81.50%	160 18.50%	665 76.88%	155 17.92%	40 4.62%	5 0.58%	865
General Industry Equipment	49	25 100.00%	0 0.00%	20 80.00%	5 20.00%	20 80.00%	5 20.00%	0 0.00%	0 0.00%	25
Machine Shop	50									
Office Machines	51	310 95.38%	15 4.62%	265 81.54%	60 18.46%	260 80.00%	50 15.38%	5 1.54%	10 3.08%	325



Service Industry Machines	52									
Electric Transmission	53	875 91.15%	85 8.85%	545 56.77%	415 43.23%	515 53.65%	360 37.50%	30 3.13%	55 5.73%	960
Household Appliances	54	190 90.48%	20 9.52%	155 73.81%	55 26.19%	140 66.67%	50 23.81%	15 7.14%	5 2.38%	210
Electric Equipment	55	220 91.67%	20 8.33%	145 60.42%	95 39.58%	135 56.25%	85 35.42%	10 4.17%	10 4.17%	240
Radio TV Equipment	56	565 90.40%	60 9.60%	375 60.00%	250 40.00%	355 56.80%	210 33.60%	20 3.20%	40 6.40%	625
Electronic Components	57									
Misc Electrical Equipment	58									
Motor Vehicle	59	855 83.82%	165 16.18%	895 87.75%	125 12.25%	745 73.04%	110 10.78%	150 14.71%	15 1.47%	1020
Aircraft	60	620 91.85%	55 8.15%	565 83.70%	110 16.30%	520 77.04%	100 14.81%	45 6.67%	10 1.48%	675
Other Transport Equipment	61	335 83.75%	65 16.25%	320 80.00%	80 20.00%	265 66.25%	70 17.50%	55 13.75%	10 2.50%	400
Scientific Instruments	62	125 92.59%	10 7.41%	80 59.26%	55 40.74%	80 59.26%	45 33.33%	0 0.00%	10 7.41%	135
Optical Photographic	63	210 89.36%	25 10.64%	135 57.45%	100 42.55%	115 48.94%	95 40.43%	20 8.51%	5 2.13%	235
Misc Manufacturing	64	1580 79.60%	405 20.40%	1270 63.98%	715 36.02%	1000 50.38%	580 29.22%	270 13.60%	135 6.80%	1985
Transportation	65	2815 88.24%	375 11.76%	2620 82.13%	570 17.87%	2315 72.57%	500 15.67%	305 9.56%	70 2.19%	3190
Communications	66	945 90.87%	95 9.13%	480 46.15%	560 53.85%	445 42.79%	500 48.08%	35 3.37%	60 5.77%	1040
Radio TV Broadcasting	67	150 96.77%	5 3.23%	120 77.42%	35 22.58%	115 74.19%	35 22.58%	1 0.65%	0 0.00%	155
Electric/Gas Utility Services	68	845 88.95%	105 11.05%	790 83.16%	160 16.84%	695 73.16%	150 15.79%	95 10.00%	10 1.05%	950

Wholesale/Retail Trade	69	14530 92.49%	1180 7.51%	9240 58.82%	6470 41.18%	8480 53.98%	6050 38.51%	760 4.84%	420 2.67%	15710
Finance/Insurance	70	2865 94.55%	195 6.44%	1365 45.05%	1665 54.95%	1305 43.07%	1530 50.50%	60 1.98%	135 4.46%	3030
Real Estate	71	750 89.29%	90 10.71%	565 67.26%	275 32.74%	500 59.52%	250 29.76%	65 7.74%	25 2.98%	840
Personal Repair	72	2365 80.72%	565 19.28%	1290 44.03%	1640 55.97%	1095 37.37%	1270 43.34%	195 6.66%	370 12.63%	2930
Business Services	73	3340 90.27%	360 9.73%	1940 52.43%	1760 47.57%	1785 48.24%	1555 42.03%	155 4.19%	205 5.54%	3700
Food Establishments	74									
Automobile	75	465 87.74%	65 12.26%	510 96.23%	20 3.77%	445 83.96%	20 3.77%	65 12.26%	0 0.00%	530
Amusements	76	685 87.82%	95 12.18%	485 62.18%	295 37.82%	435 55.77%	250 32.05%	250 32.05%	45 5.77%	780
Medical/Education Nonprofit Services	77	10670 87.64%	1505 12.36%	4155 34.13%	8020 65.87%	3700 30.39%	6970 57.25%	455 3.74%	1050 8.62%	12175
Federal Gov't Enterprises	78	480 72.18%	185 27.82%	565 84.96%	100 15.04%	410 61.65%	70 10.53%	155 23.31%	30 4.51%	665
Local/State Gov't Enterprises	79									
Government Industry	82	2840 87.52%	405 12.48%	2145 66.10%	1100 33.90%	1925 59.32%	915 28.20%	220 6.78%	185 5.70%	3245
Rest Of World Industry	83	300 80.00%	75 20.00%	180 48.00%	195 52.00%	135 36.00%	165 44.00%	45 12.00%	30 8.00%	375
Household Industry	84	605 51.93%	560 48.07%	150 12.88%	1015 87.12%	100 8.58%	505 43.35%	50 4.29%	510 43.78%	1165

TABLE 6

1980 Census Data - Employment Estimates of the US population by Industry (000's)

Industry Category	BEA #	White	Non-White	Male	Female	W_Male	W_Female	NW_Male	NW_Female	Total
Livestock	1									
Agriculture	2	2010 87.58%	285 12.42%	1940 84.53%	355 15.47%	1695 73.86%	315 13.73%	245 10.68%	40 1.74%	2295
Forestry / Fishery	3	190 92.68%	15 7.32%	190 92.68%	15 7.32%	180 87.80%	10 4.88%	10 4.88%	5 2.44%	205
Agriculture Forestry/Fishery	4	365 82.95%	75 17.05%	360 81.82%	80 18.18%	290 65.91%	75 17.05%	70 15.91%	5 1.14%	440
Iron Ores	5	125 89.29%	15 10.71%	135 96.43%	5 3.57%	120 85.71%	5 3.57%	15 10.71%	0 0.00%	140
Metal Ores	6									
Coal	7	270 94.74%	15 5.26%	265 92.98%	20 7.02%	250 87.72%	20 7.02%	15 5.26%	0 0.00%	285
Petroleum Gas	8	445 89.00%	55 11.00%	405 81.00%	95 19.00%	370 74.00%	75 15.00%	35 7.00%	20 4.00%	500
Stone/Clay Mining	9	135 93.10%	10 6.90%	130 89.66%	15 10.34%	120 82.76%	15 10.34%	10 6.90%	0 0.00%	145
Chemicals	10									
New Construction	11									
Construction	12	5695 88.09%	770 11.91%	5985 92.58%	480 7.42%	5260 81.36%	435 6.73%	725 11.21%	45 0.70%	6465
Ornance	13	50 83.33%	10 16.67%	35 58.33%	25 41.67%	30 50.00%	20 33.33%	5 8.33%	5 8.33%	60
Food Kindred	14	1380 81.18%	320 18.82%	1220 71.76%	480 28.24%	1020 60.00%	360 21.18%	200 11.76%	120 7.06%	1700
Tobacco	15	45 56.25%	35 43.75%	40 50.00%	40 50.00%	20 25.00%	25 31.25%	20 25.00%	15 18.75%	80

Fabrics, Yarn Thread	16	470 71.21%	190 28.79%	400 60.61%	260 39.39%	285 43.18%	185 28.03%	115 17.42%	75 11.36%	660
Misc Textile	17	135 87.10%	20 12.90%	110 70.97%	45 29.03%	95 61.29%	40 25.81%	15 9.68%	5 3.23%	155
Apparel	18	1115 76.11%	350 23.89%	300 20.48%	1165 79.52%	880 60.07%	65 4.44%	285 19.45%	145 9.90%	1465
Misc Fab Textile	19	105 87.50%	15 12.50%	45 37.50%	75 62.50%	45 37.50%	60 50.00%	0 0.00%	15 12.50%	120
Lumber Wood	20	560 86.15%	90 13.85%	540 83.08%	110 16.92%	465 71.54%	95 14.62%	75 11.54%	15 2.31%	650
Wood Containers	21	85 70.83%	35 29.17%	80 66.67%	40 33.33%	60 50.00%	25 20.83%	20 16.67%	15 12.50%	120
Household Furniture	22	515 88.03%	70 11.97%	395 67.52%	190 32.48%	350 59.83%	165 28.21%	45 7.69%	25 4.27%	585
Other Furniture/ Fixtures	23									
Paper	24	490 87.50%	70 12.50%	445 79.46%	115 20.54%	390 69.64%	100 17.86%	55 9.82%	15 2.68%	560
Paperboard	25	175 92.11%	15 7.89%	140 73.68%	50 26.32%	125 65.79%	50 26.32%	15 7.89%	0 0.00%	190
Printing/ Publishing	26	1515 89.64%	175 10.36%	925 54.73%	765 45.27%	825 48.82%	100 5.92%	75 4.44%	50 2.96%	1690
Chemicals	27	595 86.86%	90 13.14%	575 83.94%	110 16.06%	495 72.26%	100 14.60%	80 11.68%	10 1.46%	685
Plastics	28	195 76.47%	60 23.53%	180 70.59%	75 29.41%	145 56.86%	50 19.61%	35 13.73%	25 9.80%	255
Drugs Cleaning	29	275 77.46%	80 22.54%	200 56.34%	155 43.66%	165 46.48%	110 30.99%	35 9.86%	45 12.68%	355
Paints	30	90 85.71%	15 14.29%	90 85.71%	15 14.29%	75 71.43%	15 14.29%	15 14.29%	0 0.00%	105
Petroleum Refining	31	180 90.00%	20 10.00%	180 90.00%	20 10.00%	160 80.00%	20 10.00%	20 10.00%	0 0.00%	200
Rubber	32	675 91.84%	60 8.16%	510 69.39%	225 30.61%	485 65.99%	190 25.85%	25 3.40%	35 4.76%	735
Leather Tanning	33	15 100.00%	0 0.00%	15 100.00%	0 0.00%	15 100.00%	0 0.00%	0 0.00%	0 0.00%	15

Footwear/ Other Leather	34	215 89.58%	25 10.42%	120 50.00%	120 50.00%	105 43.75%	110 45.83%	15 6.25%	10 4.17%	240
Glass	35	275 94.83%	15 5.17%	190 65.52%	100 34.48%	185 63.79%	90 31.03%	5 1.72%	10 3.45%	290
Stone Clay	36	315 85.14%	55 14.86%	300 81.08%	70 18.92%	255 68.92%	60 16.22%	45 12.16%	10 2.70%	370
Iron Steel	37	910 82.73%	190 17.27%	980 89.09%	120 10.91%	815 74.09%	95 8.64%	165 15.00%	25 2.27%	1100
Nonferrous Metals	38	435 92.55%	35 7.45%	375 79.79%	95 20.21%	340 72.34%	95 20.21%	35 7.45%	0 0.00%	470
Metal Container	39	365 82.95%	75 17.05%	345 78.41%	95 21.59%	280 63.64%	85 19.32%	65 14.77%	10 2.27%	440
Heating/Plumbing	40	445 88.12%	60 11.88%	415 82.18%	90 17.82%	360 71.29%	85 16.83%	55 10.89%	5 0.99%	505
Metal Stamping	41	210 84.00%	40 16.00%	205 82.00%	45 18.00%	165 66.00%	45 18.00%	40 16.00%	0 0.00%	250
Other Fabricated Metals	42	200 88.89%	25 11.11%	145 64.44%	80 35.56%	135 60.00%	65 28.89%	10 4.44%	15 6.67%	225
Engines/Turbines	43	90 90.00%	10 10.00%	90 90.00%	10 10.00%	80 80.00%	10 10.00%	10 10.00%	0 0.00%	100
Farm Machinery	44	220 91.67%	20 8.33%	205 85.42%	35 14.58%	185 77.08%	35 14.58%	20 8.33%	0 0.00%	240
Construction Equipment	45	390 89.66%	45 10.34%	395 90.80%	40 9.20%	360 82.76%	30 6.90%	35 8.05%	10 2.30%	435
Material Machinery	46									
Metalwork Equipment	47	345 92.00%	30 8.00%	310 82.67%	65 17.33%	295 78.67%	50 13.33%	15 4.00%	15 4.00%	375
Special Industry Equipment	48	1085 91.18%	105 8.82%	925 77.73%	265 22.27%	825 69.33%	260 21.85%	100 8.40%	5 0.42%	1190
General Industry Equipment	49	30 100.00%	0 0.00%	25 83.33%	5 16.67%	25 83.33%	5 16.67%	0 0.00%	0 0.00%	30
Machine Shop	50									
Office Machines	51	445 87.25%	65 12.75%	280 54.90%	230 45.10%	245 48.04%	200 39.22%	35 6.86%	30 5.88%	510

Service Industry Machines	52									
Electric Transmission	53	1155 84.00%	220 16.00%	780 56.73%	595 43.27%	675 49.09%	480 34.91%	105 7.64%	115 8.36%	1375
Household Appliances	54	200 86.96%	30 13.04%	150 65.22%	80 34.78%	140 60.87%	60 26.09%	10 4.35%	20 8.70%	230
Electric Equipment	55	180 90.00%	20 10.00%	120 60.00%	80 40.00%	115 57.50%	65 32.50%	5 2.50%	15 7.50%	200
Radio TV Equipment	56	590 90.08%	65 9.92%	350 53.44%	305 46.56%	325 49.62%	265 40.46%	25 3.82%	40 6.11%	655
Electronic Components	57									
Misc Electrical Equipment	58									
Motor Vehicle	59	1205 82.53%	255 17.47%	1185 81.16%	275 18.84%	1005 68.84%	200 13.70%	180 12.33%	75 5.14%	1460
Aircraft	60	620 87.94%	85 12.06%	575 81.56%	130 18.44%	515 73.05%	105 14.89%	60 8.51%	25 3.55%	705
Other Transport Equipment	61	520 82.54%	110 17.46%	510 80.95%	120 19.05%	425 67.46%	95 15.08%	85 13.49%	25 3.97%	630
Scientific Instruments	62	290 89.23%	35 10.77%	195 60.00%	130 40.00%	185 56.92%	105 32.31%	10 3.08%	25 7.69%	325
Optical Photographic	63	385 88.51%	50 11.49%	270 62.07%	165 37.93%	250 57.47%	135 31.03%	20 4.60%	30 6.90%	435
Misc Manufacturing	64	765 85.47%	130 14.53%	475 53.07%	420 46.93%	410 45.81%	355 39.66%	65 7.26%	65 7.26%	895
Transportation	65	3415 84.63%	620 15.37%	3320 82.28%	715 17.72%	2780 68.90%	635 15.74%	540 13.38%	80 1.98%	4035
Communications	66	1080 87.80%	150 12.20%	695 56.50%	535 43.50%	640 52.03%	440 35.77%	55 4.47%	95 7.72%	1230
Radio TV Broadcasting	67	255 92.73%	20 7.27%	170 61.82%	105 38.18%	160 58.18%	95 34.55%	10 3.64%	10 3.64%	275
Electric/Gas Utility Services	68	1120 85.17%	195 14.83%	1100 83.65%	215 16.35%	940 71.48%	180 13.69%	160 12.17%	35 2.66%	1315

Wholesale/Retail Trade	69	18305 89.36%	2180 10.64%	11240 54.87%	9245 45.13%	9970 48.67%	8335 40.69%	1270 6.20%	910 4.44%	20485
Finance/Insurance	70	3790 86.73%	580 13.27%	1645 37.64%	2725 62.36%	1445 33.07%	2345 53.66%	200 4.58%	380 8.70%	4370
Real Estate	71	1355 91.55%	125 8.45%	775 52.36%	705 47.64%	705 47.64%	650 43.92%	70 4.73%	55 3.72%	1480
Personal Repair	72	2185 80.93%	515 19.07%	1015 37.59%	1685 62.41%	830 30.74%	1355 50.19%	185 6.85%	330 12.22%	2700
Business Services	73	4740 89.18%	575 10.82%	3105 58.42%	2210 41.58%	2765 52.02%	1975 37.16%	340 6.40%	235 4.42%	5315
Food Establishments	74									
Automobile	75	770 89.02%	95 10.98%	770 89.02%	95 10.98%	685 79.19%	85 9.83%	85 9.83%	10 1.16%	865
Amusements	76	975 87.05%	145 12.95%	675 60.27%	445 39.73%	575 51.34%	400 35.71%	100 8.93%	45 4.02%	1120
Medical/Education Nonprofit Services	77	14910 82.86%	3085 17.14%	5330 29.62%	12665 70.38%	4465 24.81%	10445 58.04%	865 4.81%	2220 12.34%	17995
Federal Gov't Enterprises	78	525 70.00%	225 30.00%	485 64.67%	265 35.33%	340 45.33%	185 24.67%	145 19.33%	80 10.67%	750
Local/State Gov't Enterprises	79									
Government Industry	82	4460 80.36%	1090 19.64%	3150 56.76%	2400 43.24%	2670 48.11%	1790 32.25%	480 8.65%	610 10.99%	5550
Rest Of World Industry	83	930 77.50%	270 22.50%	405 33.75%	795 66.25%	295 24.58%	635 52.92%	110 9.17%	160 13.33%	1200
Household Industry	84	375 52.08%	345 47.92%	65 9.03%	655 90.97%	35 4.86%	340 47.22%	30 4.17%	315 43.75%	720

Data Analysis:

Industries were divided into the growth categories according to trends in employment and controlling for business cycles and the foreign exchange rate. Of Group I - Growth Industries 29 out of 39 industries were in the manufacturing and mining sectors. While 45 or the 53 industries or 85 percent of the Group II - Nongrowing Industries were in the manufacturing and mining sectors.

After assigning the BEA coded industries to the growth categories, the data was tested for the following hypotheses.

(1) Does knowing the composition of the work force of an industry in 1980 help to explain what type of industrial change occurred in the 1970's?

(2) Does industrial restructuring effect a pattern of changing employment share between growth and nongrowing industries? Does this change the composition of the work force?

For the first hypothesis, a chi square test for independence was performed for 1980 and 1970 on the aggregated industry categories.

1980	<u>Growth</u>	<u>Nongrowing</u>
White Male	6064 (58.57 %)	4290 (41.43 %)
Nonwhite Male	795 (50.16 %)	790 (49.84 %)
White Female	3788 (50.91 %)	3653 (49.09 %)
Nonwhite Female	514 (36.48 %)	895 (63.52 %)



1970	Growth	Nongrowing
White Male	5038 (57.24 %)	3763 (42.76 %)
Nonwhite Male	482 (47.72 %)	528 (52.28 %)
White Female	2745 (51.34 %)	2602 (48.66 %)
Nonwhite Female	287 (36.84 %)	492 (63.16 %)

$$1980 \times 2 = 159.52$$

$$1970 \times =$$

2

3 d.f.

critical at .05=7.81473

.01=11.3449

The chi square tests confirmed that in 1980 and 1970 there were differences between the demographic composition of Growth and Nongrowing industries by sex and race.

The other hypothesis was tested using a difference between sample means test to see if the demographic proportions or shares between the industry categories changed from 1970 - 80. The results were not significant. It appears that in the aggregate, there were no significant changes in the demographic composition of the two categories over the ten year interval.

However, looking at industries in which women and minorities represent a large percent of the industry work force did present evidence that women are increasingly comprising a larger share of employment in nongrowing industries as seen in Table 9 - 11. Table 7 is presented to make comparisons with the employment pattern of white males in the work force.

Tables 8 and 10 show that the same is true for minority workers, who appear in very different industries in 1980 than 1970. The movement, however, tends to shift mostly within Group II - Nongrowing Industries.

TABLE 7

INDUSTRIES WITH HIGHEST PROPORTION WHITE MALE  
1970-1980

BEA CODE	INDUSTRY CATEGORY	1970 RANK	1980 RANK	1970 %	1980 %	INDUSTRY TYPE
7	Coal	1	3	91.67	87.72	G
5	Iron Ores	2	4	90.91	85.71	NG
40	Heating/Plumbing	3	-	89.04	71.29	G
47	Metalwork Equipment	4	-	86.54	78.67	G
12	Construction	5	8	86.18	81.36	G
45	Construction Equipment	6	7	84.48	82.76	G
9	Stone Clay Mining	7	6	84.21	82.76	NG
75	Automobile	8	-	83.96	79.19	G
2	Agriculture	9	-	81.51	73.86	NG
10	Stone Clay Products	10	-	81.01	68.92	NG
3	Forestry/Fishery	-	2	69.57	87.80	G
33	Leather Tanning	-	1	66.67	100.00	NG
49	General Ind.	-	5	80.00	83.33	G
43	Engines, Turbines		10	73.33	80.00	G

TABLE 8

## INDUSTRIES WITH HIGHEST PROPORTION NON-WHITE

1970-1980

BEA CODE	INDUSTRY CATEGORY	1970 RANK	1980 RANK	1970 %	1980 %	INDUSTRY TYPE
84	Household	1	1	48.07	47.92	NG
21	Wood Containers	2	4	31.25	29.16	NG
78	Federal Govt. Enterprises	3	3	27.82	30.00	NG
4	Forestry, Fishery	4	-	21.84	17.05	G
64	Misc. Manufacturing	5	-	20.40	14.53	NG
72	Personal Repair	6	10	19.28	19.41	G
16	Fabrics, Yarn, Thread	7	5	18.27	28.79	G
44	Farm Machinery	8	-	17.39	8.33	NG
61	Other Transportation	9	-	16.25	17.46	NG
59	Motor Vehicles	10	-	16.17	17.47	NG
15	Tobacco Products	-	2	14.28	43.75	NG
18	Apparel	-	6	11.23	23.89	NG
28	Plastics	-	7	3.12	23.52	NG
29	Drugs, Cleaning	-	8	6.06	22.53	G
84	Govt. Industry	-	9	12.48	19.64	NG

TABLE 9

## INDUSTRIES WITH HIGHEST PROPORTION FEMALE

1970-1980

BEA CODE	INDUSTRY CATEGORY	1970 RANK	1980 RANK	1970 %	1980 %	INDUSTRY TYPE
84	Household	1	1	87.12	90.97	NG
18	Apparel	2	2	77.89	79.52	NG
77	Medical/Education Non-profit	3	3	65.87	70.38	NG
34	Footwear, Leather	4	7	62.26	50.00	NG
19	Misc. Manufactured Textile	5	4	56.67	62.50	G
72	Personal Repair	6	5	55.97	62.41	G
70	Finance, Insurance	7	6	59.91	62.36	G
66	Communication	8	-	53.84	43.50	G
73	Business Service	9	-	47.56	41.58	G
16	Fabrics, Yarn, Thread	10	-	47.05	39.39	NG
15	Tobacco Products	-	8	28.57	50.00	NG
64	Misc. Manufacturing	-	9	36.02	46.93	NG
56	Radio TV Equipment	-	10	40.00	46.56	NG

TABLE 10

## INDUSTRIES WITH HIGHEST PROPORTION NON-WHITE FEMALE

1970-1980

BEA CODE	INDUSTRY CATEGORY	1970 RANK	1980 RANK	1970 %	1980 %	INDUSTRY TYPE
84	Households	1	1	43.78	43.75	NG
72	Personal Repair	2	7	12.63	12.22	G
17	Misc. Textile	3	-	11.76	3.22	NG
18	Apparel	4	-	10.51	9.90	NG
34	Footwear	5	-	9.43	4.17	NG
77	Medical/Education Non-profit	6	6	8.62	12.34	NG
62	Scientific Instruments	7	-	7.41	7.69	NG
64	Misc. Manufacturing	8	-	6.80	7.26	NG
16	Fabrics, Yarn, Thread	9	8	6.72	11.36	NG
56	Radio TV Equipment	10	-	6.40	6.11	NG
15	Tobacco	-	2	0.00	18.75	NG
29	Drugs, Cleaning	-	3	3.03	12.68	G
19	Misc. Fabricated Textile	-	4	0.00	12.50	G
21	Wood Container	-	5	0.00	12.50	NG
82	Govt. Industry	-	9	5.70	10.99	NG
78	Fed. Govt. Enterprises	-	10	4.51	10.67	NG

TABLE 11

## INDUSTRIES WITH HIGHEST PROPORTION WHITE FEMALE

1970-1980

BEA CODE	INDUSTRY CATEGORY	1970 RANK	1980 RANK	1970 %	1980 %	INDUSTRY TYPE
18	Apparel	1	-	67.39		NG
77	Medical/Education	2	1	57.25	58.04	NG
19	Misc. Fab Textile	3	4	56.67	50.00	G
34	Footwear	4	5	52.83	45.83	NG
70	Finance	5	2	50.50	53.66	G
66	Communications	6	-	48.08	35.77	G
72	Personal Repair	7	3	43.34	50.19	G
29	Drugs Cleaning	8	-	42.42	30.99	G
73	Business Services	9	-	42.03	37.16	G
16	Fabric Yarn	10	-	40.34	28.03	NG
71	Real Estate	-	6	29.76	43.92	G
69	Wholesale/Retail	-	7	38.51	40.69	G
64	Misc. Manufacturing	-	9	29.22	39.66	NG
56	Radio TV Equipment	-	8	33.60	40.46	NG
51	Office Machines	-	10	15.38	39.22	G

### Summary of Findings:

(1) White male workers are presented as a standard for the purpose of comparison, in 1970 4 of the 10 industries which employed the highest proportions--'top ten' industries--of white males were nongrowing. By in 1980, 3 of the 10 were nongrowing industries.

(2) For nonwhites, 7 of the 10 industries were nongrowing both in 1970 and 1980. The industries making up the 'top ten' list were fairly unstable. Half or 5 of the 1970 industries were replaced in the top rankings by different industries in 1980.

(3) For females, 5 of the top 10 industries with large proportions of women in 1970 were nongrowing. By 1980, 7 of the top 10 industries were nongrowing. The industries making up the 'top ten' list, Table 9, were fairly stable. Six of the industries retained the same ranking from 1970 to 1980. Only three of the 1970 industries were replace by differnt industries in 1980, of which all were of Group II - Non-growing Industries.

(4) For nonwhite females, 9 of the 10 industries with the highest proportions of nonwhite females in 1970 were nongrowing industries. These industries were also different from the 'top ten' industries for nonwhites in general. By 1980, 7 of the 10 industries with high proportions of nonwhite female workers were in Group II - Nongrowing Industries.



(5) For white females, 4 of the 10 industries were non-growing both in 1970 and 1980. Half or 5 of the 1970 industries were replaced in the top rankings by different industries in 1980.

The significance tests show no changes in the aggregate between the share of women and minorities by industry category from 1970 to 1980. However, there may be reason to infer that there is a relationship between industries in which women comprise a large proportion of the work force and industries which are categorized as Group II - Nongrowing Industries as Table 9 and 10 show. The concluding chapter will discuss the implication of these findings.

CHAPTER THREE  
REVIEW OF RESEARCH

The current economic crisis caused by structural changes in the U.S. economy has had measurable affects on the concentration and distribution of workers within and across specific industries in the U.S. economy. Women and minority workers tend to be employed in higher concentrations in distressed--restructuring and deindustrializing--industries and therefore are directly affected by the economic condition of these industries.

Changes in the employment patterns of women and minorities as described in the industry by sex and race matrix of the previous chapter are consistant with the hypothesis that the economic hardships associated with industrial restructuring have been experienced disproportionately by workers of these groups.

Two distinct observations relating the impact of structural structural changes and the employment of women and minority workers can be drawn from the research of this thesis. They are as follows:

(1) Nonwhite workers are employed in higher concentrations relative to their work force rates in Group II - Nongrowing Industries than white workers. In 1980, nonwhite

workers represented 17.50 percent of the workforce in non-growing industries while only comprising 14.40 percent of the total work force. Minority workers as a group are more likely to experience economic dislocation resulting from industrial restructuring and structural changes than their white counterparts.

(2) Women, particularly nonwhite females, are not employed in growth industries in proportion to their work force rates. In 1980, female workers made up 42.87 percent of the total work force while only comprising 8.54 percent of the work force of growth industries. Even though more women are increasingly entering the work force, they are not necessarily participating in the new of jobs created in growth industries. And finally, industries where women are a large proportion of the work force tend to be nongrowing rather than growing industries.

This research has resulted in some very interesting and useful findings regarding the economic and labor market status of women and minority workers. The observations presented above will be further developed. However, for the purpose of making comparisons, summary information on the composition of the workforce by sex and race is supplied as follows:

<u>Sample Observations for Workforce Rates (%)</u>	<u>1980</u>	<u>1970</u>
White	85.60	88.46
Nonwhite	14.40	11.54
Male	57.43	61.35
Female	42.57	38.65

<u>Sample Observations for Workforce Rates (%)</u>	<u>Growth</u>	<u>Nongrowing</u>
White Male	54.33	44.56
Nonwhite Male	7.12	8.21
White Female	33.94	37.94
Nonwhite Female	4.60	9.30

Declines in employment of particular manufacturing industries have had adverse affects on the employment of non-white workers. In 1970, nonwhite males comprised 14.29 percent of the rubber industry. By 1980, that number had fallen a dramatic eleven percentage points to 3.40%. Contrast this with white males, who in 1970 made up 62.50 percent of the rubber industry and 68.84 percent in 1980. Clearly, nonwhite males faced dislocation within this industry while white males sustained slow growth. This type of decline, though not as severe, was similarly experienced by the motor vehicles industries where in 1970 14.71 percent of the workforce was nonwhite contrasted to 12.33% percent in 1980.

Although these two examples of declining shares of manufacturing employment industries are not truly representative of the entire sector, they do illustrate the point that

employment declines in the manufacturing sector as severe as those in the rubber industry can have very adverse effects on the composition of the industry work force as well as labor market conditions of workers.

Like minorities, white women have also experienced the impacts of industrial restructuring. Women tend to be employed in large proportions in nongrowing industries. This is especially true for nonwhite women. This group has been clearly effected by structural changes occurring in the economy.

In 1970, nonwhite women were 4.9 percent of the total work force, yet their work force rate was 6.67 percent in nongrowing industries. By 1980, these numbers had changed to 6.78 percent for the total work force and 9.30 percent work force in nongrowing industries. Nonwhite women as a percentage of the total nonwhite work force in growth industries remained fairly constant ranging from 37.32 percent in 1970 and 39.27 percent in 1980.

These findings all support the hypothesis that the impacts of industrial restructuring bear very heavily on women and minority workers. This data show that nonwhite workers are not participating in the expanded job opportunities created by growth industries, but are continuing to be concentrated in declining and distressed industries. Further research of this nature must be conducted to ensure that the problems and issues which concern these groups of workers are addressed in the midst of this economic transformation.

### Research Recommendations:

This particular research effort was purposefully defined to have a limited scope. Further work on this subject should be conducted to both substantiate and expand upon these findings but also to continue to aid in the political and economic battle in which the target group of this research--women and minorities--find themselves.

There are several possible 'next steps' to take in pursuing research on the relationship between industrial restructuring and the employment patterns and concentrations by industry of particular workers. Firstly, when beginning this process, the census characteristics age, racial group, region/division, occupation, and labor status were considered important to the research. None of these characteristics, however, except racial group were used in this investigation.

"Race" was used only in an aggregated form of white and nonwhite. There is, however, likely to be more variation amongst workers when more detailed information about race is surveyed. For example, reports from the Bureau of Labor Statistics and the U.S. Census show that while low wage industries employ a high percentage of women workers in general, Hispanic women were found in higher percentages than all women in the leather products, household and furniture manufacturing, and banking industries. Similarly, white women make up a very large proportion of the females employed in the electronic components and electrical equipment industries. [Gorham, p.65] These variations by industry type and

occupation by racial breakdown apply to men as well. This type of data would strengthen the argument of who--which group or class of workers--impairticularly or more severely bears the burden of industrial restructuring in specific industries.

Another factor that would be of use is geographical/ regional information on employment. This characteristic would certainly detect the effect of plant closures and site relocations as in the shift of industries from the Snowbelt to the Sunbelt regions. This regional dimension would also reflect the effects of worker migration like the rural to urban movement on employment share by industry.

Another principal correlation that needs to be researched in detail is the relationship between wages and occupations as they relate to industrial restructuring and specific groups of workers. Both person and family household income figures would be of interest as today most households have more than one wage earner. Occupational status seems to vary greatly between sectors. The effect of industrial restructuring on this characteristic would provide significant information about the economic condition of workers within sectors.

As this research effort has shown, there is a relationship between economic structural changes and the changing composition composition and distribution of workers in the economy. Further research possibly using the above mentioned demographic statistics might extend this investigation further to look for causality.

## CHAPTER FOUR

### CONCLUSION

The purpose of this investigation was to collect data on the employment patterns of American industries--with particular interest in restructuring and deindustrializing industries--to relate observable changes in the concentration and distributions of particular groups of workers--women and minorities--to the current structural changes occurring in the U.S. economy.

The findings presented in the previous chapters illustrate a worsening labor force status for women and minorities in the U.S. labor market. The current structural economic transformation is believed by many to effect the concentration and distribution of employment shares by industry of these groups. The research presented in this thesis documents and supports this hypothesis. The findings also suggest that the effects of industrial restructuring are particularly noticeable in the case of nonwhite female workers.

This research is important because it quantitatively describes and illustrates the economic inequalities which exist in the U.S. labor market. The impact of the current economic crisis and of structural changes occurring in the economy when measured by employment have been clearly



distributed unequally amongst American workers.

The fact that women and minorities are replacing employment shares in traditionally above-average wage manufacturing jobs with rapidly expanding low wage occupationally polarized service jobs potentially creates a problem for the future of the labor market and society as well. If women and minorities expect any positive form of social restructuring to result from this process of industrial restructuring they must engage and become active participants in the industrial policy debate.

Improvements in the economic, political, and social status of [women and minorities] are joint effects. Failure to realize the interdependences makes success or improvement in any of the areas unlikely. [Marcus Alexis, p.351]

The task facing the leadership of these groups is to organize their resources to generate and sustain interest in the issue of industrial policy.

Industrial policy promises to be a major issue in the coming years. As a vehicle for economic change, industrial policy is aimed at industries and not workers per se. However, the role of governmental involvement in strategic economic planning suggests that issues of market inefficiencies will be addressed, much to the benefit of groups less represented in the labor force. [McGahey, p.91] To this extent, the overall economic condition of women and minority workers is likely to be improved by this targeted policy.

In concluding, it is important to reiterate that the economic environment which is now taking shape offers both opportunities and challenges for women and minorities. The service sector is growing. A number of new employment opportunities are being created to replace the loss of traditional manufacturing employment. The dilemma, however, is that while these new opportunities are in growth industries, oftentimes the wage levels and job benefits do not compare favorably with that of manufacturing employment.

The future socioeconomic status and labor market conditions of women and minority workers will, to an extent, be a product of the dynamic structural changes currently taking place in the U.S. economy. The impact of these changes obviously are not experienced only by the workers, but also effect most immediately the households and communities of the workers as well. For these reasons, the effect of labor market conditions--restructuring and deindustrializing industries--on the work force concentration and household characteristics of women and minorities is an issue of increasing concern which should continue to be investigated.

The message of all this is that women and minorities are still a very long way from achieving anything resembling economic parity with white males. The current economic transformation has affected the economic status and labor market conditions of women and minorities across industrial sectors. Industrial restructuring, while also a process of social restructuring does not promise to reduce the socioeconomic

differentials between the majority and minority groups of American society. This process will continue until governmental intervention is taken on behalf of women and minority workers.

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Appendix A

1980

Bureau of Economic Analysis <u>Industry Code</u>	<u>Industry Category</u>	Census Inustrial <u>Code</u>	Standard Industrial <u>Code</u>
AGRICULTURE, FORESTRY AND FISHERIES:			
1	Livestock and livestock products	011	02
2	Other agricultural products	010	01
3	Forestry and fishery products	030,031	08,09
4	Agricultural, forestry and fishery services	020,021	07
MINING:			
5	Iron and ferrualloy ores mining	040	10
6	Nonferrous metal ores mining		
7	Coal mining	041	11,12
8	Crude petroleum and natural gas	042	13
9	Stone and clay mining and quarrying	050	14
10	Chemical and fertilizer mineral mining		147
CONSTRUCTION:			
11	New construction		
12	Maintenance and repair construction	060	15,16 17

MANUFACTURING:

13	Ordnance and accessories	292	19,348
14	Food and kindred products	100-22	20
15	Tobacco manufacturers	130	21
16	Broad and narrow fabrics, yarn and thread mills	140,142	221-24 226,228
17	Miscellaneous textile goods and floor coverings	141,150	227,229
18	Apparel	132,151	225, 231-238
19	Miscellaneous fabricated textile products	152	239
20	Lumber and wood products, except containers	230,231 232	241-43 245
21	Wood containers	241	244,249
22	Household furniture	242	25
23	Other furniture and fixtures		25
24	Paper and allied products except containers and boxes	160,161	26
25	Paperboard containers and boxes	162	265
26	Printing and publishing	171,172	27
27	Chemicals and selected chemical products	191,192	281,286 287-289
28	Plastics and synthetic materials	180	282
29	Drugs, cleaning and toilet preparations	181,182	283,284
30	Paints and allied products	190	285
31	Petroleum refining and velated industries	200,201	291 295,299
32	Rubber and miscellaneous plastics products	210,211 212	301-04 306-07
33	Leather tanning and industrial	220	311

	leather products		
34	Footwear and other leather products	221,222	313-17 319
35	Glass and glass products	250	321,323
36	Stone and clay products	251,252 261,262	324-329
37	Primary iron and steel manufacturing	270,271	331,332 339
38	Primary nonferrous metals manufacturing	272,280	333-36
39	Metal containers	300	341,343 347,349
40	Heating, plumbing, and fabricated structure metal products	282	344
41	Screw machine products, bolts, nuts, etc. and metal stampings	290,291	345,346
42	Other fabricated metal products	281,301	342,349
43	Engines and turbines	310	351
44	Farm machinery	311	352
45	Construction, mining, oil field machinery and equipment	312	353
46	Materials handling machinery and equipment		353
47	Metalworking machinery and equipment	320	354
48	Special industry machinery and equipment	331	355,356 358,359
49	General industrial machinery and equipment	332	356
50	Machine shop products		356,359
51	Office, computing, and accounting machines	321,322	357
52	Service industry machines		358



53	Electric transmission and distribution equipment and electrical industrial apparatus	342	361,362 364,367 369
54	Household appliances	340	363
55	Electric lighting and wiring equipment	350	
56	Radio television, and communication equipment	341	365,366
57	Electronic components and accessories		367
58	Miscellaneous electrical machinery equipment and supplies		369
59	Motor vehicle and equipment	351	371
60	Aircraft and parts	352	372
61	Other transportation equipment	360,361 362,370	373-76 379
62	Professional, scientific and controlling instruments and supplies	371,381	381,382 387
63	Optical, ophthalmic, and photographic equipment and supplies	372,380	383-86
64	Miscellaneous manufacturing	390-392	39
TRANSPORTATION, COMMUNICATION, ELECTRIC, GAS AND SANITARY SERVICES:			
65	Transportation and warehousing	400-402 410,411 420-22,432	40-47
66	Communications, except radio and television broadcasting	441,442	481,482 489
67	Radio and television broadcasting	440	483
68	Electric, gas, water and sanitary services	460-62 470-72	491-97

	WHOLESALE AND RETAIL TRADE:		
69	Wholesale and retail trade	500-691	50-59
	FINANCE, INSURANCE, AND REAL ESTATE:		
70	Finance and insurance	700-02 710-11	60-64 67
71	Real estate and rental	712	65,66
	SERVICES:		
72	Hotels and lodging places, personal and repair services, except automobile repair	752,762 770-72 780-82 790-91	70,72 762-764
73	Business services	721,722 730-32 740-42 760 841,882 890-92	73 769 81,89
74	Food establishments		
75	Automobile repair and services	750,751	75
76	Amusements	800-02	78,79
77	Medical, educational services and non-profit organizations	812-81	80,82 83,84,86
	GOVERNMENTAL ENTERPRISES:		
78	Federal government enterprises	412	43
79	State and local government enterprises		
	SPECIAL INDUSTRIES:		
82	Government industry	900-32	91-97
83	Rest of the world industry	990	
84	Household industry	761	88

Appendix B

1970

Bureau of Economic Analysis <u>Industry Code</u>	<u>Industry Category</u>	<u>Census Industrial Code</u>	<u>Standard Industrial Code</u>
AGRICULTURE, FORESTRY AND FISHERIES:			
1	Livestock and livestock products		02
2	Other agricultural products	017	01
3	Forestry and fishery products	027,028	08,09
4	Agricultural, forestry and fishery services	020,021	07
MINING:			
5	Iron and ferrualloy ores mining	047	10
6	Nonferrous metal ores mining		10
7	Coal mining	048	11,12
8	Crude petroleum and natural gas	049	13
9	Stone and clay mining and quarrying	057	14
10	Chemical and fertilizer mineral mining		147
CONSTRUCTION:			
11	New construction		
12	Maintenance and repair construction	067-69 077	15,16 17

MANUFACTURING:

13	Ordance and accessories	258	19
14	Food and kindred products	268,269 278,279 287-89 297,298	20
15	Tobacco manufacturers	299	21
16	Broad and narrow fabrics, yarn and thread mills	308,317	221-24 226,228
17	Miscellaneous textile goods and floor coverings	309,318	227,229
18	Apparel	307,319	225, 231-238
19	Miscellaneous fabricated textile products	327	239
20	Lumber and wood products, except containers	107,108	241-43
21	Wood containers	109	244,249
22	Household furniture	118	25
23	Other furniture and fixtures		25
24	Paper and allied products except containers and boxes	328,329	26
25	Paperboard containers and boxes	337	265
26	Printing and publishing	338,339	27
27	Chemicals and selected chemical products	347 367-69	281 286-89
28	Plastics and synthetic materials	348	282
29	Drugs, cleaning and toilet preparations	357,358	283,284
30	Paints and allied products	359	285
31	Petroleum refining and velated industries	377,378	291 295,299

32	Rubber and miscellaneous plastics products	379,387	30 306-07
33	Leather tanning and industrial leather products	388	311
34	Footwear and other leather products	389,397	312-17 319
35	Glass and glass products	119	321-23
36	Stone and clay products	127,128 137,138	324-329
37	Primary iron and steel manufacturing	139, 147,148	331,332 339
38	Primary nonferrous metals manufacturing	149	333-36
39	Metal containers	168	341,343 347-49
40	Heating, plumbing, and fabricated structure metal products	158	344
41	Screw machine products, bolts, nuts, etc. and metal stampings	159,167	345,346
42	Other fabricated metal products	157,169	342,349
43	Engines and turbines	177	351
44	Farm machinery	178	352
45	Construction, mining, oil field machinery and equipment	179	353
46	Materials handling machinery and equipment		353
47	Metalworking machinery and equipment	197	354
48	Special industry machinery and equipment	197	355,356 358,359
49	General industrial machinery and equipment	198	356

50	Machine shop products		359
51	Office, computing, and accounting machines	188,189	357
52	Service industry machines		358
53	Electric transmission and distribution equipment and electrical industrial apparatus	208	361,362 364,367 369
54	Household appliances	199	363
55	Electric lighting and wiring equipment	209	
56	Radio television, and communication equipment	207	365,366
57	Electronic components and accessories		367
58	Miscellaneous electrical machinery equipment and supplies		369
59	Motor vehicle and equipment	219	371
60	Aircraft and parts	227	372
61	Other transportation equipment	228,229 237,238	373-76 379
62	Professional, scientific and controlling instruments and supplies	239,249 257	381,382 387
63	Optical, ophthalmic, and photographic equipment and supplies	247,248	383-86
64	Miscellaneous manufacturing	259,398	39
TRANSPORTATION, COMMUNICATION, ELECTRIC, GAS AND SANITARY SERVICES:			
65	Transportation and warehousing	407-09 417-19 420-29	40-47
66	Communications, except radio and television broadcasting	448,449	481,482 489

67	Radio and television broadcasting	447	483
68	Electric, gas, water and sanitary services	467-69 477-79	491-97
WHOLESALE AND RETAIL TRADE:			
69	Wholesale and retail trade	507-698	50 52-59
FINANCE, INSURANCE, AND REAL ESTATE:			
70	Finance and insurance	707-09 717	60-64 67
71	Real estate and rental	718	65,66
SERVICES:			
72	Hotels and lodging places, personal and repair services, except automobile repair	758,759 777-79 787-89 797-98	70,72 762-764 769
73	Business services	727-29 737-39 748 849 888,889 897	73 769 81,89
74	Food establishments		
75	Automobile repair and services	749,757	75
76	Amusements	807-09	78,79
77	Medical, educational services and non-profit organizations	828-87	80,82 83,84,86
GOVERNMENTAL ENTERPRISES:			
78	Federal government enterprises	907	43,91
79	State and local government enterprises		

SPECIAL INDUSTRIES:

82	Government industry	917,927 937	91-97
83	Rest of the world industry	999	
84	Household industry	769	88